

27

For the **1st** Time ever
3 Level Division of Qns.



New Syllabus

**Chapter-wise,
Topic-wise & Skill-wise**

Class
10

SCIENCE

Previous Year Solved Papers (2013 - 2024)
with Value Added Notes

13 Chapter | **52** Topics | **850+** Questions

- 24 Regular Papers (2024 - 2013)
- Past 3 Yrs CBSE Sample Papers (2022 - 2024)
- Trend Analysis of Past 5 Years (2024 - 2019)
- CBSE Competency Based Questions
- All Variety of Qns - MCQs/ A-R/ Statement/ MTF/ VSAQs/ SAQs/ LAQs/ Case based
- Solutions with Marking Scheme



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New Syllabus

**Chapter-wise,
Topic-wise & Skill-wise**

Class
10

Mathematics (Standard)

Previous Year Solved Papers (2013 - 2024)
with Value Added Notes

14 Chapter | **31** Topics | **1000+** Questions

- 24 Regular Papers (2024 - 2013)
- Past 3 Yrs CBSE Sample Papers (2022 - 2024)
- Trend Analysis of Past 5 Years (2024 - 2019)
- CBSE Competency Based Questions
- All Variety of Qns - MCQs/ A-R/ Statement/ MTF/ VSAQs/ SAQs/ LAQs/ Case based
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Topic-wise & Skill-wise**

Class
10

Social Science

Previous Year Solved Papers (2013 - 2024)
with Value Added Notes

22 Chapter | **88** Topics | **900+** Questions

- 24 Regular Papers (2024 - 2013)
- Past 3 Yrs CBSE Sample Papers (2022 - 2024)
- Trend Analysis of Past 5 Years (2024 - 2019)
- CBSE Competency Based Questions
- All Variety of Qns - MCQs/ A-R/ Statement/ MTF/ VSAQs/ SAQs/ LAQs/ Case based
- Solutions with Marking Scheme



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New Syllabus

**Chapter-wise,
Topic-wise & Skill-wise**

Class
10

English Language & Literature

Previous Year Solved Papers (2013 - 2024)
with Value Added Notes

- 24 Regular Papers (2024 - 2013)
- Past 3 Yrs CBSE Sample Papers (2022 - 2024)
- Topper's Answer of Past 3 Years
- Trend Analysis of Past 5 Years (2024 - 2019)
- Divided into Literature, Grammar, Composition and Comprehension sections
- Solutions with Marking Scheme



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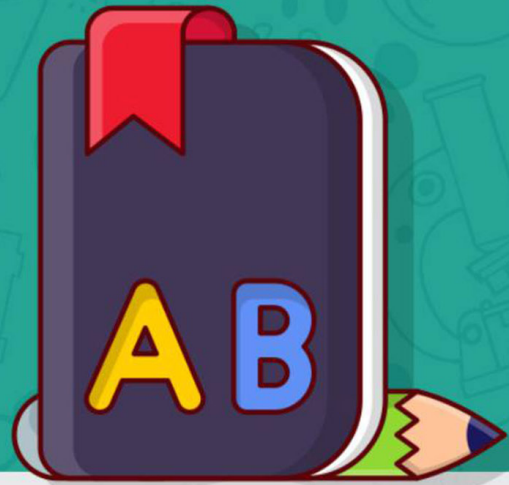
3 SAMPLE

27

New Syllabus

For the **1st** Time ever

3 Level Division of Qns.



**Chapter-wise,
Topic-wise & Skill-wise**

Class
10

English Language & Literature

Previous Year Solved Papers (2013 - 2024)
with Value Added Notes

- 24 Regular Papers (2014 - 2024)
- Past 3 Yrs CBSE Sample Papers (2022 - 2024)
- Topper's Answers of Past 3 Years
- Trend Analysis of Past 5 Years (2019 - 2024)
- Divided into Literature, Grammar, Comprehension sections
- Solutions with Marking Scheme

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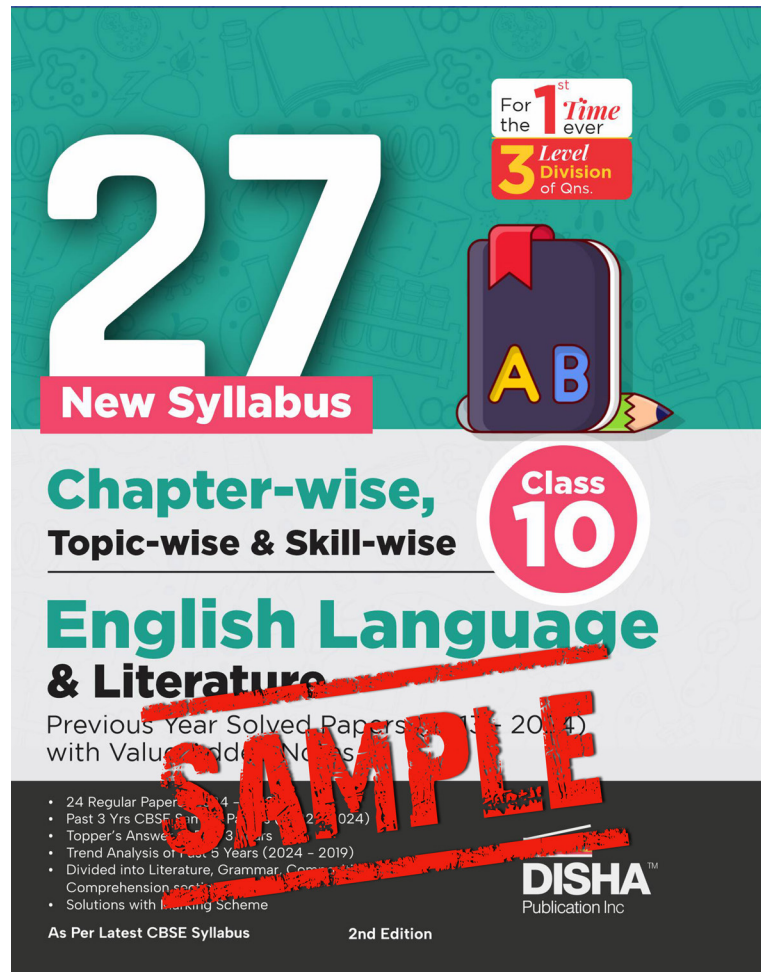
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CONTENTS OF FREE SAMPLE BOOK

All India CBSE Board Solved Paper 2024

1-12

This sample book is prepared from the book "27 New Syllabus Chapter-wise, Topic-wise & Skill-wise CBSE Class 10 English Language & Literature Previous Year Solved Papers (2013 - 2024) with Value Added Notes 2nd Edition".



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CBSE Competency Focused Practice Questions

3rd Level of Division : Skillwise Division

Each Question in the topic has been further divided skillwise using following codes:

K Knowledge **U** Understanding **Ap** Application **A** Analysis

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CBSE BOARD SOLVED PAPER

Time Allowed : 3 Hours

Maximum Marks : 80

General Instructions:

- (i) This question paper comprises 11 questions. All questions are compulsory.
- (ii) The question paper contains **THREE** sections -
Section - A : Reading Skills
Section - B : Grammar and Creative Writing Skills
Section - C : Literature
- (iii) Attempt questions based on specific instructions for each part.

SECTION - A : READING

(20 Marks)

1. Read the following passage carefully:

10

- (1) The words probiotics, prebiotics, and postbiotics may sound like variations of the same thing, but what a difference a prefix makes. The first is a category of health-promoting microbes. The latter two groups are types of beneficial molecules. But all three biotics are critical for supporting the community of microscopic organisms that live in the gastrointestinal tract, known as the gut microbiome. With both beneficial and harmful bacteria living in the human body, these diet-related factors — the biotics — help tip the balance in the positive direction. It is important to understand their differences, as you'll see, because each of these factors serves a distinct purpose, even as they work together.
- (2) Despite their importance for the gut microbiome, the health benefits of these 'biotics', which are present in certain foods or result from their metabolism, extend beyond the digestive tract. A growing body of scientific evidence has linked prebiotics, probiotics, and postirbiotics, with improvements in metabolic diseases — including obesity and cholesterol abnormalities — depressive symptoms and poor sleep quality, among many other conditions.
- (3) Besides promoting general gut health, consuming food rich in probiotics can improve irritable bowel syndrome and antibiotic-related diarrhea, prevent traveller's

diarrhea, produce vitamins and increase nutrient absorption, and decrease the risk of common infections. In fact, when consumed regularly, probiotics have been found to reduce the occurrence of upper respiratory tract infections (like the common cold).

- (4) Many different types of beneficial bacteria are considered probiotics. The most common ones include *Lactobacillus* and *Bifidobacterium*, of which there are dozens of strains. "You have to match what it is you're concerned about with the probiotic you should use," says Gregor Reid. Many different types of beneficial bacteria are considered probiotics.
- (5) Some foods, such as yogurt, kefir, kimchee, and fermented soybeans and kombucha naturally contain probiotics. But here's where things get complicated: not all fermented foods or yogurts contain probiotics, Reid says. As a consumer, a good starting point is to look for the phrase "contains live and active cultures" on the label; it's even better if specific strains of bacteria are listed, because then you'll know you're getting the right stuff.
- (6) Simply put, prebiotics are sources of food for those beneficial microbes — the probiotics. They are typically a form of carbohydrate or fiber that we don't have the enzymes to digest. As a result, they move through the digestive tract to the intestine, where beneficial bacteria (probiotics) can feast on them.
- (7) When you consume foods that are rich in probiotics and prebiotics, the microbes in your gut consume the

undigestible prebiotic fiber and produce bioactive compounds called postbiotics. They are ultimately the endgame that we want — they affect how our gut operates and keeps the good bacteria there and the bad bacteria out.

Answer the following questions, based on the above passage:

- 10
- (i) Which of the following statements best describes the author's attitude towards probiotics? 1
- (a) Probiotics, prebiotics and postbiotics are variations of the same thing, with just a difference of a prefix.
- (b) All fermented foods or yogurts naturally contain probiotics.
- (c) All three biotics are equally important to support microscopic organisms that live in the gut microbiome.
- (d) Only probiotics are important as they can improve irritable bowel syndrome and antibiotic-related diarrhea.
- (ii) According to the writer, health benefits of all the 'biotics' extend beyond the digestive tract. Rationalise your response in about 40 words. 2
- (iii) Complete the sentence appropriately. 1
- To get the right probiotic and to match it with your body's requirement, it is important to see the label for _____.
- (iv) The passage includes some words that are opposites of each other. From the sets (A) - (E) below, identify two sets of antonyms. 1
- (a) increase and decrease
- (b) probiotic and postbiotic
- (c) beneficial and harmful
- (d) feast and fermented
- (e) consuming and digestive
- (v) Complete the sentence appropriately. 1
- The author wants to stress the fact that there is not just one type of beneficial bacteria considered as probiotic, in fact, some probiotics have _____.
- (vi) Based on the reading of the passage, examine in about 40 words, the importance of prebiotics for the human gut and how they are related to probiotics. 2
- (vii) As a consumer, if you want to pick a probiotic product, what is the most important thing to keep in mind? 1
- Pick the best answer.
- (a) Any fermented product that contains probiotics.
- (b) Checking the label for specific strains of bacteria.
- (c) All products under "probiotics" section in a grocery store are safe to pick.
- (d) Checking the label which clearly says "probiotics" is sufficient.
- (viii) "Despite their importance for the gut microbiome, the health benefits of these 'biotics', which are present in certain foods or result from their metabolism, extend beyond the digestive tract." 1
- As per this statement from the passage, how relevant are the 'biotics' for humans? Pick the best answer.
- (a) Their relevance has been proven by scientific evidence.
- (b) Not very relevant as more study is needed.
- (c) Their relevance cannot be generalised for everyone.
- (d) Only probiotics are relevant for humans.
2. Read the following passage carefully: 10
- (1) After more than two years of halted travel, India's tourism and hospitality industry is now cautiously hopeful. Tourism constituted almost 3% of India's GDP and generated around 100 million jobs in 2019. But the sector was severely hit in India — like in other countries — in the past two years.
- (2) Indians are now travelling with a vengeance — 'revenge travel', as the phenomenon is called. And many, experts say, now prefer to travel within the country instead of flying to more expensive destinations abroad. The industry is also benefitting from new trends borne of the pandemic such as micro-holidays and workcations.
- (3) According to a survey, 51 percent of Indian travellers believed that international travel remained an important means of expanding their horizons and connecting with other cultures. Over two years, the survey said, Indian travellers are now dreaming about their next international trip and more than 70 percent of Indians are excited about being able to travel internationally.
- (4) There has also been an increase in the number of students going abroad to study. The increasing desire

to study overseas is credited to the pent-up demand from the pandemic's two-year duration. This has got further pronounced because of growing aspirations and affordability among the middle-class students from Tier II and Tier III cities.

The table below shows foreign travel by Indians for different purposes from 2019 to 2022.

Purpose	2019	2020	2021	2022
Business	14.7 L	2.6 L	1.2 L	4.6 L
Job	25.2 L	7.1 L	8.3 L	21.4 L
Residency	89.5 L	28.9 L	34.6 L	72.5 L
Education	5.8 L	2.6 L	4.4 L	6.5 L
Tourists	63.8 L	13.1 L	12.8 L	30.8 L
Visit	42.1 L	10.1 L	15.1 L	40.9 L
Medical	1,448	390	545	1,253
Pilgrimage	8.8 L	1.1 L	4,139	4.6 L
Others	2.6 L	54,775	58,767	1.6 L
Total	2.5 Crore	66.2 L	77.2 L	1.8 Crore

Answer the following questions, based on the above passage:

- (i) Complete the following analogy appropriately, based on your understanding of paragraphs 1 and 2. 1
We can say that the situation when people were travelling with a vengeance is comparable to people going out to dine in hordes, because _____.
- (ii) Fill in the blanks with the appropriate option from those given in brackets, based on your understanding of paragraph 1. 1
The statement that, 'Tourism constituted almost 3% of India's GDP and generated around 100 million jobs in 2019', is a/an _____ (fact/opinion) because it is a/an _____ (subjective judgement/objective detail).
- (iii) Justify the following in about 40 words. 2
After being cooped up inside their houses for more than two years, Indians are now excited about being able to travel internationally.
- (iv) Based on the given table, for which 'purpose' did Indian foreign travel increase in 2022 as compared to 2019? 1
- (v) 'The industry is also benefitting from new trends borne of the pandemic such as micro-holidays and workcations'. Which 'industry' is being talked about here? 1

- (vi) As per the given table, for which purpose did maximum number of Indians undertake foreign travel in 2019 and in 2022?
State any one inference that can be drawn from this. 1

- (vii) Why are students today choosing to go abroad to study? (Answer in about 40 words.) 2

- (viii) Which of the following is the main takeaway from the study mentioned in the passage? 1

- (a) International travel remains an important means of expanding the horizons and connecting with other cultures.
- (b) Though travel, both domestic and international, has picked up, it has yet to reach its previous levels.
- (c) Indians are excited about being able to travel internationally.
- (d) The study needs to include experts from Tourism Department to offer any recommendations for further research.

SECTION - B

GRAMMAR AND CREATIVE WRITING

SKILLS GRAMMAR (20 Marks)

- 3. Complete ANY TEN of the following twelve tasks, as directed: 10×1=10

- (i) Fill in the blank by using the correct form of the word in the brackets, for the given portion of a letter: 1

Dear Mr. Sanjay,

I am writing this letter to officially inform you that the management has _____ (approve) the request submitted by you for a business trip to Germany.

- (ii) Read the given sentence from a book review article. 1

Identify the error and supply the correction in the sentence.

Isn't it great when you find one of those books that completely pulls you in and make you fall in love with the characters?

Use the given format for your response.

Error	Correction

- (iii) Tanmay and Sonia had a conversation about their summer vacation plans. 1

Report Tanmay's question.

Where are you planning to go this summer vacation?

- (iv) Fill in the blank by choosing the correct option, to complete the warning given before a YouTube video. 1

Any props used in this video that show resemblance to _____ (some/many/any) illegal materials are merely props and should not be taken seriously. Do not try this at home.

- (v) Identify the error and supply the correction for the given sentence taken from an article about law. 1

A literary composition possess its own characteristics and its own standards of merit.

Use the given format for your response.

Error	Correction

- (vi) Complete the given narrative by filling in the blank with the correct option. 1

Summer is an ideal time to take a hike, especially if you _____ the opportunity to explore one of our country's many state and national parks.

- (a) are having (b) will have
(c) have (d) has

- (vii) Read the dialogue between Amit and his sister Ambika regarding his future plan. 1

Ambika : Are you aiming for a State rank?

Amit: Yes, I am. My teachers are guiding me to get my aim fulfilled.

Select the correct option to complete the reporting of the above dialogue.

Ambika asked Amit whether he was aiming for a State rank. Amit replied in the affirmative and _____ to get his aim fulfilled.

- (a) told her that the teachers are guiding him
(b) replied that the teachers were guiding him
(c) told her that his teachers were guiding him
(d) replied that his teachers have been guiding him

- (viii) Select the option that identifies the error and supplies the correction for the opening line of a Privacy Policy document. 1

Your email address can only be recorded if you choose to send a message. It will not be used for any other purpose, and will not be disclosed without your consent.

Option No.	Error	Correction
(A)	can	will
(B)	choose	chooses
(C)	purpose	purposes
(D)	for	of

- (ix) Report the following dialogue between a doctor and his patient, by completing the sentence. 1

Doctor: Do you still have any pain in your lower back?

Patient: No, there is no pain in the lower back, but I feel a numbing sensation in my left leg.

The doctor asked the patient if he still had any pain in his lower back. The patient answered in the negative and explained that _____.

- (x) Fill in the blank by choosing the correct option to complete the part of the acknowledgement printed in a textbook. 1

Every effort _____ made to trace all the copyright holders.

We apologize for some omissions and will gratefully acknowledge them as soon as they can be traced.

- (a) were (b) are being
(c) have been (d) has been

- (xi) Complete the line from a 'Save Trees' song, by filling in the blank with the correct option. 1

The little tree by the old road fence

Grew in the summer sun.

"I want _____ tall," said the little tree,

"And growing is so much fun."

- (a) to grow (b) to be growing
(c) grown (d) growth

- (xii) Identify the error and supply the correction for the following note in a mobile phone's use guide. 1

To maintaining the water-resistant and dust-resistant features of your device, make sure that the SIM card tray openings are free of dust and water.

Use the given format for your response:

Error	Correction

CREATIVE WRITING SKILLS

Note: All details presented in the questions are imaginary and created for assessment purpose.

4. Attempt ANY ONE from (a) and (b) given below:
- (a) The household water supply in your locality is muddy and not fit for drinking. Despite several complaint letters to the civic authorities, the problem is still unresolved.

Write a letter to the editor of a local daily, in about 120 words, expressing your concern at the situation and suggesting measures to resolve the problem and drawing attention of the concerned authorities.

You are Somil/Soumya of 768, Silver's Apartments, Ajitha Vihar, Karampeeth. 5

OR

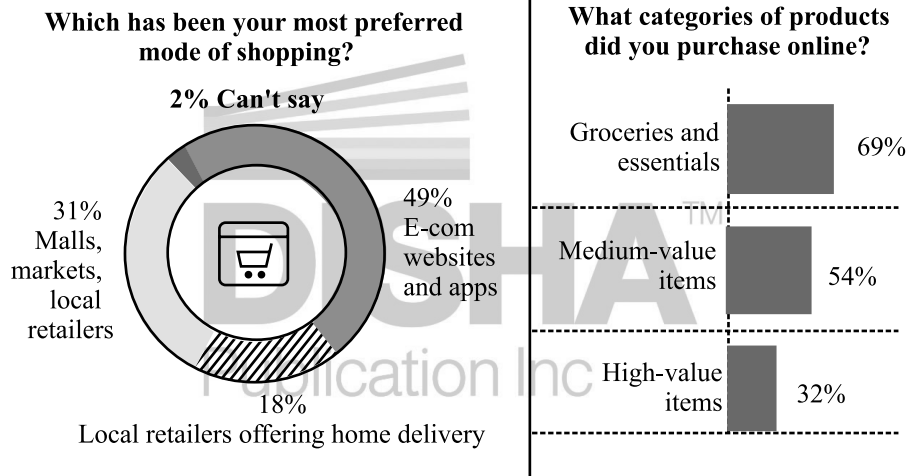
- (b) As Geetanjali/Girish of 83, Star Apartments, Virbagh, you have noticed that a lot of senior citizens in your society are leading lonely lives. Write a letter in about 120 words, to the President of RWA of your society, requesting him to organize more community get-togethers and celebrations to bring cheer to their lonely lives.

5. Attempt ANY ONE from (a) and (b) given below: 5

- (a) E-commerce business for shopping picked up manifold during the pandemic year and consumers have continued to shop online. Given below is a chart that depicts the various trends associated with E-commerce shopping. Analyze this chart and write an analytical paragraph in about 120 words, by selecting features that support your analysis.

The proliferation of e-commerce in India

Consumers who took to e-commerce during the pandemic year are continuing to use them, a Local Circles survey shows.



OR

- (b) There are two types of bottles available in the market: glass and plastic. Based on the information given in the chart below, write an analytical paragraph, in about 120 words, assessing the pros and cons of using glass and plastic bottles.

Glass vs. Plastic Bottles

Pros and Cons

GLASS BOTTLES

PROS

- Non toxic, no chemicals
- Environmentally friendly
- Easy to clean and sanitize
- Durable, last forever
- Do not absorb odours
- Dishwasher safe

PLASTIC BOTTLES

PROS

- Easy to use, lightweight
- Unbreakable
- Widely available
- Wide variety of options
- More affordable

CONS

- Heavy
- More expensive
- Breakable
- Fewer options

CONS

- More chemicals
- Shorter life span
- Harder to clean
- Cannot completely sanitize
- Can absorb odours

SECTION C: Literature

(40 Marks)

6. Read the following extracts and answer the questions for ANY ONE of the given two, (a) or (b): 5

- (a) We have, at last, achieved our political emancipation. We pledge ourselves to liberate all our people from the continuing bondage of poverty, deprivation, suffering, gender and other discrimination.

Never, never, and never again shall it be that this beautiful land will again experience the oppression of one by another.

The sun shall never set on so glorious a human achievement.

Let freedom reign. God bless Africa!

(Nelson Mandela - Long Walk to Freedom)

- (i) State any one inference about Nelson Mandela from the given context: 1
"We have, at last, achieved our political emancipation."
- (ii) State True or False: 1
When Mandela says, "God' bless Africa", he intends to mean well-being and welfare of only black people in South Africa.
- (iii) "Nelson Mandela's speech is full of optimism." Elaborate in about 40 words with reference to the extract. 2
- (iv) Which phrase would correctly substitute 'so glorious', in the given sentence from the extract.
"The sun shall never set on so glorious a human achievement."

OR

- (b) The expected call came within a few days. Mrs. Pumphrey was distraught. Tricki would eat nothing. Refused even his favourite dishes; and besides he had bouts of vomiting. He spent all his time lying on a rug, panting. Didn't want to go for walks, didn't want to do anything.

I had made my plans in advance. The only way was to get Tricki out of the house for a period. I suggested that he hospitalised for about a fortnight to be kept under observation. (A Triumph of Surgery)

- (i) Which of the following is **not** a reason why Mr. Herriot thinks Tricki needs to be taken out of the house for a period? 1
(a) He wanted to keep Tricki away from Mrs. Pumphrey.
(b) He wanted to keep Tricki under observation.
(c) He wanted to do an experiment on Tricki.
(d) He wanted to improve Tricki's health.
- (ii) What was the main reason for Mrs. Pumphrey to be distraught? Answer in about 40 words. 2
- (iii) State True or False:
When Mr. Herriot says, "I had made my plans in advance"- what he actually means is, he had already seen this trauma coming for Tricki.
- (iv) Which of the following best describes Mrs. Pumphrey? 1
(a) unkind and inconsiderate

- (b) impractical but compassionate
(c) anxious and ambitious
(d) fearful but confident

7. Read the following extracts and answer the questions for ANY ONE of the given two, (a) or (b):

- (a) In a world of possessions. People will take
Balls, balls will be lost always, little boy.
And no one buys a ball back. Money is external.
He is learning, well behind his desperate eyes,
The epistemology of loss, how to stand up
Knowing what every man must one day know
And most know many days, how to stand up.

(The Ball Poem)

- (i) Fill in the blank with one word. 1
When the speaker says "People will take balls, Balls be lost always, little boy", his tone is _____.
- (ii) The poet says that money is external. What inference can be drawn from this statement?
Answer in about 40 words. 2
- (iii) Which of the following best describes the speaker's attitude towards material possessions? 1
(a) indifferent (b) emotional
(c) casual (d) respectful
- (iv) Identify the poetic device used in "And no one buys a ball back". 1

OR

- (b) Don't eat that chocolate, Amanda!
Remember your acne, Amanda!
Will you please look at me when I'm speaking too you ,
Amanda!
(I am Rapunzel, I have not a care;
life in a tower is tranquil and rare;) (Amanda)
- (i) What is the central idea of the poem as reflected in the lines above? 2
Answer in about 40 words.
- (ii) Complete the sentence with the appropriate option. 1
"Will you please look at me when I'm speaking to you, Amanda!" tells us that the mother's attitude is _____.
(a) loving (b) relaxed
(c) authoritative (d) thoughtful

- (iii) Identify any one poetic device used in the above extract. 1
- (iv) For what reason does Amanda imagine herself to be Rapunzel? 1
8. Answer **ANY FOUR** of the following five questions in 40-50 words each: 4×3=12
- (i) Maxwell decides to keep an otter as a pet. Elucidate with reference to the fact that owning a pet is a life of commitment. (Mijbil the Otter)
- (ii) 'The Tale of Custard the Dragon' is a humorous ballad. How does Ogden Nash create humour and entertainment in the poem?
- (iii) Justify the title of the play 'The Proposal' with reference to the characters and plot.
- (iv) "Coorgi homes have a tradition of hospitality, and they are more than willing to recount numerous tales of valour related to their sons and fathers."
Elaborate with reference to the chapter "Glimpses of India".
- (v) "The Trees" is a symbolic poem and Adrienne Rich has used trees as a metaphor for human beings. What do they symbolize? Explain.
9. Answer **ANY TWO** of the following three questions in 40-50 words each: 2×3=6
- (i) One should never judge a book by its cover. Explain with reference to Ausable and how he outwits Max with his presence of mind. (The Midnight Visitor)
- (ii) "Horace Danby is a thief who was cheated by another thief." Justify. (A Question of Trust)
- (iii) How can one say that Ebright's curiosity/inquisitiveness drove him to become a scientist?
(The Making of a Scientist)
10. Answer **ANY ONE** of the following two questions in 100-120 words: 6
- (a) You have been asked to present an evaluation of the approaches of both, the Baby Seagull and the Pilot who was lost in the clouds, towards achieving their dreams of conquering the skies.
Write this presentation draft including your insights, comparing the approaches of both.
You may begin this way: One acknowledges that both, the Seagull and the Pilot, wanted to however, (Reference : Two Stories About Flying)
- OR**
- (b) You have been chosen to address the school assembly, to speak on the epistemology of loss and the resilience of the human spirit during times of crisis. Prepare the speech draft, with reference to the commonality of themes in 'The Ball Poem' by John Berryman and from 'The Diary of Anne Frank'.
You may begin this way:
Good morning everyone.
Today, I'd like to discuss two pieces of literature that offer a powerful insight into how to deal with loss and the resilience of the human spirit required during times of crisis.
You may end this way :
To conclude, I'd like to say that Thank you.
11. Answer **ANY ONE** of the following two questions in 100-120 words: 6
- (a) Imagine that. Bholi writes a diary entry, exploring the themes of 'Girl Child' and 'Impact of Education', in the context of her own experiences.
Write this diary entry, as Bholi.
- OR**
- (b) A character arc is the transformation or development of a character throughout a story and refers to the changes a character undergoes as a result of his/her experiences, challenges and interactions with other characters.
In light of the above information, trace the character arc of Griffin in H.G. Wells' 'Footprints without Feet'.

Solutions

SECTION - A

1. (i) Through the given statements, it is stated that all three biotics are equally important to support microscopic organisms that live in the gut microbiome. It is given in the first paragraph: The first is a category of health-promoting microbes. The latter two groups are types of beneficial molecules. But all three biotics are critical for supporting the community of microscopic organisms that live in the gastrointestinal tracts, known as the gut microbiome.
 - (ii) Health benefits of all the 'biotics' extend beyond the digestive tract. From the second paragraph, it can be stated that 'a growing body of scientific evidence has linked prebiotics, probiotics and postbiotics with improvements in metabolic diseases, including obesity and cholesterol abnormalities, depressive symptoms and poor sleep quality.'
 - (iii) To get the right probiotic and to match it with your body's requirement, it is important to see the label for '**containing live and active cultures**'.
 - (iv) Options (a) and (d) are two sets of antonyms: increase/decrease and feast/fermented. Increase means to become or make something larger in number or amount, whereas decrease means to make something lesser or smaller in number. Feast is a large, special meal for many people to celebrate something, while fermented refers to making something go through a chemical change because of the action of yeast or bacteria, which may cause it to produce bubbles or heat.
 - (v) The author wants to stress the fact that there is not just one type of beneficial bacteria considered as probiotic, in fact, some probiotics **have diverse strains and species with varying beneficial effects**.
 - (vi) Prebiotics are food sources that are beneficial microbes for probiotics. They are a form of carbohydrate or fiber for which humans do not have enzymes to digest. They then move to the intestine through the digestive tract wherein beneficial bacteria can feast on them.
 - (vii) As a consumer, if one wants to pick a probiotic product, the most important thing to keep in mind is to check the label which clearly says that 'probiotics' is sufficient. Therefore, option (d) is the best answer.
 - (viii) Option (a) is the correct answer. The 'biotics' present in certain foods or those that are an outcome of their metabolism, their health benefits go beyond the digestive tract. A growing body of scientific evidence has linked prebiotics, probiotics and postbiotics to the improvement in metabolic diseases.
2. (i) We can say that the situation when people were travelling with a vengeance is comparable to people going out to dine in hordes, because they are now preferring to travel within their countries instead of flying to more expensive destinations abroad.
 - (ii) The statement that, 'Tourism constituted almost 3% of India's GDP and generated around 100 million jobs in 2019', is a fact because it is an objective detail.
 - (iii) Due to the pandemic, travel had reduced. Since Indians believed that international travel is a means of expanding their horizons and connecting with other cultures, they are now excited to travel internationally.
 - (iv) For the purpose of education, Indian foreign travel increases in 2022 as compared to 2019.
 - (v) The tourism industry has been benefitting from new trends that have emerged due to the pandemic.
 - (vi) In 2019, about 89.5 lakh people undertook foreign travel for the purpose of residency while in 2022, it was about 72.5 lakh.
 - (vii) Students are choosing to go abroad to study since they had been waiting for the pandemic to end while the aspirations and affordability of the middle-class students from Tier II and III cities had begun growing.
 - (viii) Option (a) is the main takeaway from the study mentioned in the passage, i.e., International travel remains an important means of expanding the horizons and connecting with other cultures.
- ### SECTION - B
3. (i) approved
I am writing this letter to officially inform you that the management has approved the request submitted by you for a business trip to Germany.



Note

BOT Formula for singular verb

B – Body

O – One

T – Thing

Words used: everybody, nobody, anything, anyone, everything

E.g.- Everybody is invited to the play at the National Science Centre for an exhibition.

Body (everybody) + is (singular verb)

(ii)

Error	Correction
Make	Makes

The improved sentence will be- "Isn't it great when you find one of those books that completely pulls you in and makes you fall in love with the characters?" Since only a single entity is being referred to in this sentence, make will becomes 'makes' to make the sentence grammatically correct.

(iii) Tanmay questioned Sonia about her plans of her summer vacations.

(iv) "Any props used in this video that show resemblance to any illegal materials are merely props and should not be taken seriously. Do not try this at home."

(v) The improved sentence will be- "A literary composition possesses its own characteristics and its own standards of merit." Since the word, 'composition' comprises of a number of elements, yet it is mentioned as singular in nature.

Error	Correction
Possess	Possesses

(vi) Option (c) is the right answer. "Summer is an ideal time to take a hike, especially if you have the opportunity to explore one of our country's many state and national parks."

(vii) Option (c) is the correct option. The complete sentence will be, "Ambika asked Amit whether he was aiming for a State rank. Amit replied in the affirmative and told her that his teachers were guiding him."

(viii)

Error	Correction
Can	Will

The improved sentence will be- "Your email address will only be recorded if you choose to send a message. It will not be used for any other purpose, and will not be disclosed without your consent."

(ix) The doctor asked the patient if he still had any pain in his lower back. The patient answered in the negative and explained that he felt a numbing sensation in his left leg.

(x) Every effort **has been** made to trace all the copyright holders. We apologize for some omissions and will gratefully acknowledge them as soon as they can be traced.

(xi) Option (a) is the correct answer. The sentence will complete as: "I want **to grow** tall," said the little tree...

(xii)

Error	Correction
Maintaining	Maintain

The improved sentence will be- "To **maintain** the water-resistant and dust-resistant features of your device, make sure that the SIM card tray openings are free of dust and water."

4.

(a)
Soumya Kumar
768, Silver Apartments
Ajitha Vihar, Karampeeth
20th March, 2024

Mr. Sandeep Nayak
The Indian Express
23, Statesman Building,
Karampeeth

Subject: Urgent need to address the supply of muddy water for drinking

Dear Editor,

I am writing to bring to your attention the supply of muddy water for drinking. It is disheartening to witness the residents of our locality being subjected to insanitary conditions. The presence of muddy water not only poses serious health risks but also undermines the basic human right to clean and safe drinking water. It is important that immediate action be taken to resolve this issue through the following measures:

- **Water Quality Testing:** to identify the source of contamination.
- **Infrastructure Upgrades:** to upgrade and maintain the water treatment system.
- **Accountability:** hold parties accountable for any negligence towards contributing to the contamination.

It is essential that our local government, water authorities, and community leaders work towards prioritizing the safety of our residents by addressing the issue.

Yours sincerely,
Soumya Kumar

OR

(b)

Geetanjali Sinha
83, Star Apartments
Virbagh

23rd March, 2024

Mr. Vivek Chaudhury
Star Apartments RWA
Vivekanand Marg
Virbagh

Subject: Request for organizing celebrations for senior citizens

Dear Mr. Chaudhury,

I am writing on behalf of the senior citizens of my society to express a concern. As we are aware, loneliness and social isolation among the elderly have become increasingly prevalent issues, due to changing family structures and fast-paced modern life. Many of our senior citizens, despite being surrounded by neighbours, often feel isolated and disconnected during celebrations and festivities.

I would like to propose the idea of organizing celebrations specifically for senior citizens. This could provide them with an opportunity to socialize and feel a sense of belonging within the community. By fostering a supportive environment, we can help remove feelings of loneliness and enhance their well-being.

I kindly request the RWA to consider initiating efforts to organize such celebrations for our senior citizens. These initiatives can serve as meaningful opportunities for our elderly to connect with one another and forge lasting friendships.

Warm regards,
Geetanjali Sinha

Resident, Star Apartments

5. (a) E-commerce has revolutionized the shopping experience by offering convenience, accessibility, and a vast range of products at consumers' fingertips, especially during the pandemic. With the proliferation of online marketplaces and advancements in technology, traditional barriers to shopping, such as geographical limitations and operating hours, have been virtually eliminated. As per a survey by *Local Circles*, it was observed that a vast majority of the respondents (49%) preferred e-com websites and shopping applications to make their purchases, while 31% enjoyed visiting malls, markets and local retailers. The categories of products that were purchased included groceries

and essentials (69%), medium value items (54%) and high value items (32%). It has been seen that e-commerce shopping has been the easiest and most relaxing method that people are choosing over the conventional methods in the present-day world.

**Note**

Introduction – write in 2-3 lines

- The above table suggests
- The chart given above describes
- The data given provides information about ...

Body – write in 5-6 lines

- It is clearly evident from the above graph/from the above chart ...

Conclusion – write in 2-3 lines

- In a nutshell / Overall / To conclude

OR

- (b) Among the two types of bottles available in the market, glass bottles are a more sustainable option than plastic bottles. Since they are made of non-toxic materials, they turn out to be environment-friendly, easy to maintain, durable and survive for a long time. On the other hand, though it is easy to handle plastic bottles, without the worry of breakage, they are difficult to maintain as they wear off very quickly and cannot be cleaned completely like glass bottles. The production of glass bottles is quite expensive and tend to break easily, plastic bottles tend to absorb odours, yet remain affordable with a wide variety of options.

SECTION - C

6. (a) (i) This statement means that the black people of South Africa had eventually won their freedom from oppressive laws like apartheid. Therefore, their political rights and opportunities were now the same as the white people.
- (ii) The statement is true. From this statement he means that the people of Africa will now never have to face any kind of oppression.
- (iii) Nelson Mandela, in his speech, talks about how Africa emerged victorious towards achieving peace, justice and human dignity. There was political emancipation wherein people were liberated from the bondages of poverty, deprivation, suffering, gender and discrimination. He even promised that the beautiful land of Africa will never face any kind of oppression and will always remain free.
- (iv) The phrase, 'so glorious' can be substituted by the word, 'magnificent' since the achievement is quite commendable.

OR

- (b) (i) Option (c) is the correct option. There is no mention of any kind of experiment to be performed on Tricki.
- (ii) The main reason why Mrs. Pumphrey was distraught was because Tricki refused to eat nothing, even his favourite dishes. Rather, he was vomiting. He lay on the rug, panting all the time. He did not feel like doing anything, and did not even go for his walks.
- (iii) The statement is true. Mr. Herriot had received a call from Mrs. Pumphrey regarding Tricki's health. He was aware of what may come in the days ahead.
- (iv) Option (b) is the right answer. Mrs. Pumphrey was impractical yet very compassionate and caring. She, along with her staff, arranged every comfort possible for Tricki, including his bed and some toys.
7. (a) (i) The tone of the poet through these lines is introspective.
- (ii) In the poem, when the poet says, 'money is external', he means that money can only buy all worldly or materialistic things. That money cannot buy emotions, attachment, love, childhood, etc. Once these things are lost, they are lost forever and never come back.
- (iii) Material possessions can be bought again when lost, but feelings and emotions attached to those possessions can only become memories. Option (a) is the best emotion that describes the speaker's attitude towards material possessions.
- (iv) The literary device used in the statement is alliteration.
- OR
- (b) (i) The central idea of the poem as reflected in the given lines is the upbringing of a child. When Amanda's mother warns her of not eating the chocolate, reminding her of her acne, she expected her to look up to her and listen to her instructions. But Amanda escapes into her imaginary world, ignoring what her mother was saying.
- (ii) Option (c) is the correct answer. The mother's attitude is authoritative.
- (iii) The poetic device used in the extract is alliteration.
- (iv) Amanda imagines herself to be Rapunzel as she wishes to live alone in a tower as Rapunzel so as not to care about anything.
8. (i) When the British airline refused to fly the animal, Maxwell booked a flight to Paris with another airline. He carried Mijbil on his knee. The lesson conveys the fact that when one decides to keep a pet, it is a lifetime commitment. This is so because we are responsible for the well-being of that life. In fact, keeping a pet at home is like bringing up and nurturing a child.
- (ii) In the poem, 'The tale of Custard the Dragon', Ogden Nash uses literary devices such as simile, repetition, onomatopoeia, poetic license, and alliteration to enhance the humour and rhythm of the poem. The poet deliberately misspelt certain words such as 'winda' and 'realio trulio'. The description of different animals in the poem are also humorous.
- (iii) The title of the play is 'The proposal' and it is a very apt one because the whole play is about Lomov proposing Natalya. Right from the beginning to the end of the play, the story revolves round a marriage proposal. Lomov comes to Natalya's house to propose to her but even before he does it, they both start fighting.
- (iv) Coorgi homes have a tradition of hospitality, and they are more than willing to recount numerous tales of valour related to their sons and fathers. The Coorg Regiment is one of the most decorated in the Indian Army, and the first Chief of the Indian Army, General Cariappa, was a Coorgi. Even now, Kodavus are the only people in India permitted to carry firearms without a license.
- (v) If trees have been used as a metaphor for human beings, then the poem would mean that like the trees, humans too want to break free of the boundaries that life puts on them. Modern life with all kinds of physical comfort has also brought a lot of moral downfall.
9. (i) Ausable outwitted Max by making him believe that there was a balcony in his room by telling him that once a robber had entered the room on the floor below as it was easy to jump from the next building. So it was easy for any robber to steal his documents because of the connection of his balcony and the other building. He thought that someone might steal his secret file which was going to come on that day so he called the police. When the bell rang, Ausable told Max that it must be the police and out of fear, he jumped out of the window. Ausable had just made up a story of the balcony and the police at the door but in real there was no balcony and he had asked the waiter to get water.
- (ii) Horace Danby failed to execute his robbery properly even though he had information about the house. But he did not have information about its real occupants. Although he exhibited smartness in knowing the dog's actual name, when the young lady caught him red-handed while trying to break the lock of the safe, he was frightened and could not understand that the woman tricked him into believing her. When the lady assured him that she would let him free without informing the police, yet he opened the safe without wearing gloves, leaving his fingerprints all over the place.

(iii) Ebright had a driving curiosity with a bright mind. From kindergarten, he began collecting butterflies, rocks, fossils and coins. He was interested in astronomy and would sometimes stargaze all night. His curiosity was so profound that his mother brought him equipment for his tests and studies. On reading 'The Travels of Monarch X', his interest in monarch butterflies was aroused and opened a new world of science to him. This was a crucial turning point in his life that later led him to being a wonderful scientist.

10. (a) One acknowledges that both, the Seagull and the Pilot wanted to achieve their dreams of conquering the skies. In the story 'His First Flight', the seagull who appeared quite hungry, wanted to immediately get the fish from his mother's beak. As he dived closer, he fell outwards and downwards into space. When he fell into space, he felt a monstrous terror. It was then that his wings spread outwards. He could feel the tips of his wings cut through the air. Without falling, he was slowly soaring downwards. He then flapped his wings and soared upwards. While, in the story, 'Black Aeroplane', the pilot flew the airplane back to England as he was journeying the skies. When he called the Paris Control, the voice over the radio asked him to turn a few degrees to the west. Knowing that the aircraft did not have enough fuel to fly to the north or south, the pilot flew the airplane straight through the storm. While in the storm, his radio died, the compass stopped working. He then saw another plane, though it did not have any lights, its pilot asked him to follow. Realizing that he was being helped, he followed his plane through the stormy clouds and was able to see two straight lines of light. After landing, when he went to enquire about the other plane, he was surprised to know that there wasn't anyone except for him in the sky. He wondered who was guiding him in order to land safely.

OR

- (b) Good morning everyone.
Today, I would like to discuss two pieces of literature that offer a powerful insight into how to deal with loss and the resilience of the human spirit required during times of crisis. In the Diary of Anne Frank, Anne is a thirteen-year old girl who has just stepped into adolescence. Therefore, her mood swings and

rebellion towards people keeps growing. She often feels lonely, yet experiences feelings of infatuation. She gets her first period and then realizes she is becoming a mature young woman. With maturity, she struggles to form an identity. On the other hand, in 'The Ball Poem', it talks about how a child attached to his ball loses it in the course of time. Though physical objects can be replaced, but emotions of innocence attached to them can never be overcome. Through this poem, the little boy discovers what it is like to feel sad after losing a prized object that is his ball. In both stories, the protagonists go through a rollercoaster of emotions attached to loss and transition from one stage of life to another.

11. (a) Dear Diary,

Today I was almost going to be a victim of child marriage. But I am thankful to my parents for sending me to school, where I gained insights about societal issues. Had they not sent me to school, I wouldn't have been strong enough to fend for myself at my wedding. Being a girl, I feel that we have been labelled to be homely creatures, spending all day tending to household chores, looking after our husbands if married or taking care of children and the elderly. If we are sent to school, we can learn a lot about how the society functions, about our rights as females and contribute to our family's well-being. We can become financially independent, stand against societal practices and support our parents in their old age. I hope that every girl gets an opportunity to go to school, becomes self-reliant and stands up for her rights in the society.

OR

- (b) Griffin, from the story, 'Footprints without Feet' was a genius scientist who invented invisibility drugs. He was a very selfish and careless man who never cared for others. Despite the fact that he is the protagonist of the novel, his actions are similar to those of an antagonist. Griffin is an out-of-the-ordinary and eccentric scientist. He invented a method of being invisible, then began looting and killing everyone who got in his way. He was gifted, but he used his intellect for evil purposes. He invents a formula to bend light and reduce the refractive index of physical objects, rendering them invisible, when working alone in his apartment.

27

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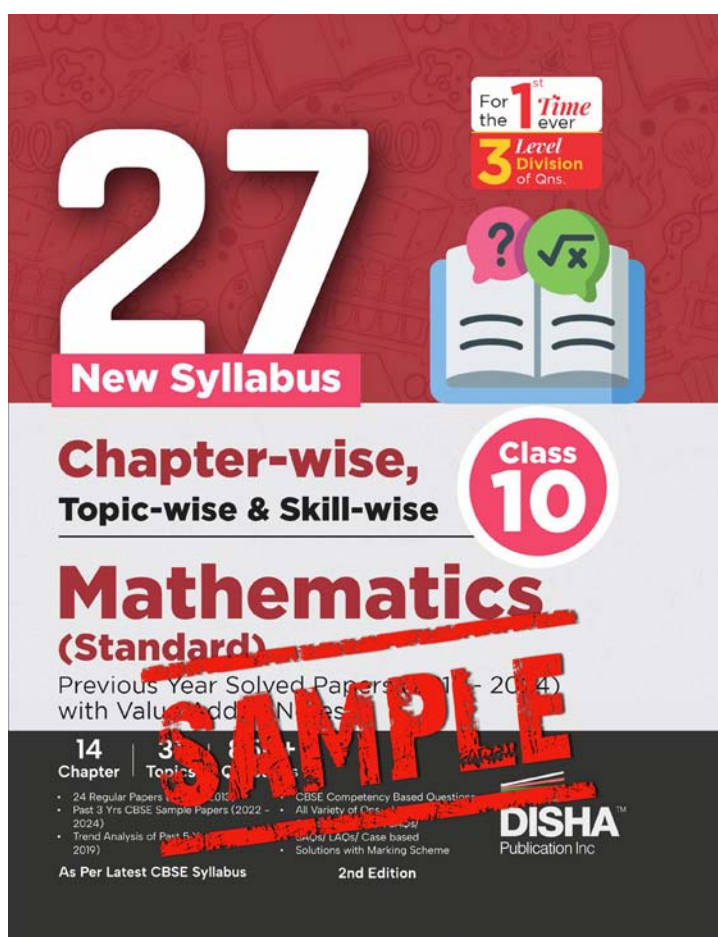
1. Real Numbers

1-12

Topic-1.1 : The Fundamental Theorem of Arithmetic

Topic-1.2 : Revisiting Irrational Numbers

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3rd Level of Division : Skillwise Division

Each Question in the topic has been further divided skillwise using following codes:

K Knowledge

U Understanding

Ap Application

A Analysis

Chapter

1

Real Numbers



Topic-1.1: The Fundamental Theorem of Arithmetic

1

Multiple Choice Questions

- The greatest number which divides 281 and 1249, leaving remainder 5 and 7 respectively, is: **[All India 2024, U]**
 (a) 23 (b) 276
 (c) 138 (d) 69
- The LCM of three numbers 28, 44, 132 is: **[All India 2024, K]**
 (a) 258 (b) 231
 (c) 462 (d) 924
- If the product of two co-prime numbers is 553, then their HCF is: **[All India 2024, AP]**
 (a) 1 (b) 553
 (c) 7 (d) 79
- If two positive integers p and q can be expressed as $p = 18a^2b^4$ and $q = 20a^3b^2$, where a and b are prime numbers then LCM (p, q) is: **[Delhi 2024, U]**
 (a) $2a^2b^2$ (b) $180a^2b^2$
 (c) $12a^2b^2$ (d) $180a^3b^4$
- If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$, where x, y are prime numbers, then the result obtained by dividing the product of the positive integers by the LCM (a, b) is **[CBSE Sample Paper 2023-24, K]**
 (a) xy (b) xy^2
 (c) x^3y^3 (d) x^2y^2
- The ratio of HCF to LCM of the least composite number and the least prime number is: **[Delhi 2023, Set-I, K]**
 (a) 1 : 2 (b) 2 : 1 (c) 1 : 1 (d) 1 : 3
- Let a and b be two positive integers such that $a = p^3q^4$ and $b = p^2q^3$, where p and q are prime numbers. If $\text{HCF}(a, b) = p^m q^n$ and $\text{LCM}(a, b) = p^r q^s$, then $(m + n)(r + s) =$ **[CBSE Sample Paper 2022-23, U]**
 (a) 15 (b) 30 (c) 35 (d) 72
- The exponent of 5 in the prime factorisation of 3750 is **[All India 2022, Term-I, U]**
 (a) 3 (b) 4 (c) 5 (d) 6
- What is the greatest possible speed at which a girl can walk 95 m and 171 m in an exact number of minutes? **[All India 2022, Term-I, AP]**
 (a) 17 m/min (b) 19 m/min
 (c) 23 m/min (d) 13 m/min
- Three alarm clocks ring their alarms at regular intervals of 20 min, 25 min and 30 min respectively. If they first beep together at 12 noon, at what time will they beep again for the first time? **[All India 2022, Term-I, AP]**
 (a) 4 : 00 pm (b) 4 : 30 pm
 (c) 5 : 00 pm (d) 5 : 30 pm
- The greatest number which when divides 1251, 9377 and 15628 leaves remainder 1, 2 and 3 respectively is **[All India 2022, Term-I, A]**
 (a) 575 (b) 450
 (c) 750 (d) 625
- If a and b are two coprime numbers, then a^3 and b^3 are **[All India 2022, Term-I, K]**
 (a) Coprime (b) Not coprime
 (c) Even (d) Odd
- If n is a natural number, then $2(5^n + 6^n)$ always ends with **[All India 2022, Term-I, K]**
 (a) 1 (b) 4 (c) 3 (d) 2
- The LCM of two numbers is 2400. Which of the following cannot be their HCF? **[All India 2022, Term-I, U]**
 (a) 300 (b) 400 (c) 500 (d) 600
- \sqrt{n} is a natural number such that $n > 1$. Which of these can DEFINITELY be expressed as a product of primes? **[CBSE CFPQ 2022, A]**

- (i) \sqrt{n} (ii) n (iii) $\frac{\sqrt{n}}{2}$
- (a) only (ii)
 (b) only (i) and (ii)
 (c) all (i), (ii) and (iii)
 (d) (cannot be determined without knowing n)
16. The HCF of k and 93 is 31, where k is a natural number. Which of these CAN be true for SOME VALUES of k ?
 (i) k is a multiple of 31. [CBSE CFPQ 2022, A]
 (ii) k is a multiple of 93.
 (iii) k is an even number.
 (iv) k is an odd number.
 (a) only (ii) and (iii)
 (b) only (i), (ii) and (iii)
 (c) only (i), (iii) and (iv)
 (d) all (i), (ii), (iii) and (iv)
17. The ratio of LCM and HCF of the least composite and the least prime numbers is
 [CBSE Sample Paper 2021-22, Term-I, U]
 (a) 1 : 2 (b) 2 : 1 (c) 1 : 1 (d) 1 : 3
18. If $\text{LCM}(x, 18) = 36$ and $\text{HCF}(x, 18) = 2$ then x is
 [CBSE Sample Paper 2021-22, Term-I, K]
 (a) 2 (b) 3 (c) 4 (d) 5
19. If sum of two numbers is 1215 and their HCF is 81, then the possible number of pairs of such numbers are
 [CBSE Sample Paper 2021-22, Term-I, K]
 (a) 2 (b) 3 (c) 4 (d) 5
20. The LCM of two prime numbers p and q ($p > q$) is 221. Find the value of $3p - q$.
 [CBSE Sample Paper 2021-22, Term-I, K]
 (a) 4 (b) 28 (c) 38 (d) 48
21. The sum of exponents of prime factors in the prime-factorisation of 196 is [All India 2020, K]
 (a) 3 (b) 4 (c) 5 (d) 2
22. The total number of factors of a prime number is [Delhi 2020, K]
 (a) 1 (b) 0 (c) 2 (d) 3

23. The HCF and the LCM of 12, 21, 15 respectively are
 [All India 2023, Set-II(s), Delhi 2020, K]

(a) 3, 140 (b) 12, 420 (c) 3, 420 (d) 420, 3

2

Assertion Reason/Two Statement Type Questions

DIRECTIONS : Each of these questions contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
 (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
 (c) Assertion (A) is true but Reason (R) is false.
 (d) Assertion (A) is false but Reason (R) is true.
24. **Assertion (A) :** The number 5^n cannot end with the digit 0, where n is a natural number.
Reason (R) : Prime factorisation of 5 has only two factors, 1 and 5. [All India 2023, A]
25. **Assertion (A) :** The number, 5^n cannot end with the digit 0, where n is a natural number.
Reason (R) : Prime factorisation of 5 has only two factors, 1 and 5. [All India 2023, A]
26. **Assertion (A) :** If product of two numbers is 5780 and their HCF is 17, then their LCM is 340
Reason (R) : HCF is always a factor of LCM
 [CBSE Sample Paper 2022-23, A]
- 3
- Very Short Answer Questions (1 Mark)**
27. Show that the number $5 \times 11 \times 17 + 3 \times 11$ is a composite number. [Delhi 2024, U]
28. Using prime factorisation, find HCF and LCM of 96 and 120. [All India 2023, K]
29. Using prime factorisation, find HCF and LCM of 96 and 120. [All India 2023, K]
30. Two numbers are in the ratio 2 : 3 and their LCM is 180. What is the HCF of these numbers? [Delhi 2023, K]

31. If $\text{HCF}(336, 54) = 6$, find $\text{LCM}(336, 54)$.

[All India 2019, K]

32. What is the HCF of smallest prime number and the smallest composite number?

[All India 2018, K]

4

Short Answer Questions (2 or 3 Marks)

33. In a teachers' workshop, the number of teachers teaching French, Hindi and English are 48, 80 and 144 respectively. Find the minimum number of rooms required if in each room the same number of teachers are seated and all of them are of the same subject.

[Delhi 2024, U]

34. National art convention got registrations from students from all parts of the country, of which 60 are interested in music, 84 are interested in dance and 108 students are interested in handicrafts. For optimum cultural exchange, organisers wish to keep them in minimum number of groups such that each group consists of students interested in the same artform and the number of students in each group is the same. Find the number of students in each group. Find the number of groups in each art form. How many rooms are required if each group will be allotted a room?

[CBSE Sample Paper 2023-24, Ap]

35. Show that 6^n can not end with digit 0 for any natural number 'n'.

[All India 2023 Set-II, U]

36. Find the HCF and LCM of 72 and 120.

[All India 2023 Set-II, U]

37. The traffic lights at three different road crossings change after every 48 seconds, 72 seconds and 108 seconds respectively. If they change simultaneously at 7 a.m., at what time will they change together next?

[All India 2023, Ap]

38. M and N are positive integers such that $M = p^2q^3r$ and $N = p^3q^2r$ where, p, q, r are prime numbers.

Find $\text{LCM}(M, N)$ and $\text{HCF}(M, N)$. [CBSE CFPQ]

39. Write the smallest number which is divisible by both 306 and 657.

[All India 2019, V]

40. Find HCF and LCM of 404 and 96 and verify that $\text{HCF} \times \text{LCM} = \text{Product of the two given numbers}$.

[All India 2018, K]

41. Find the greatest number of six digits exactly divisible by 18, 24 and 36.

[All India 2017, Term-I, K]

42. Is it possible that HCF and LCM of two numbers be 24 and 540 respectively. Justify your answer.

[Delhi 2016, Term-I, K]

43. Show that numbers 8^n can never end with digit 0 for any natural number n.

[Delhi 2016, Term-I, K]

44. Can be number 6^n , n being a natural number, end with the digit 5? Give reasons.

[All India 2015, Term-I, K]



Topic-1.2: Revisiting Irrational Numbers

1

Multiple Choice Questions

1. If $p^2 = \frac{32}{50}$, then p is a/an [All India 2023 Set-II, K]

- (a) whole number (b) integer
(c) rational number (d) irrational number

2. If $a^2 = 23/25$, then a is

[CBSE Sample Paper 2021-22, Term-I, K]

- (a) rational (b) irrational
(c) whole number (d) integer

2

Assertion Reason/Two Statement Type Questions

DIRECTIONS : Each of these questions contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

- (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.
3. **Statement A (Assertion):** If $5 + \sqrt{7}$ is a root of a quadratic equation with rational coefficient, then its other root is $5 - \sqrt{7}$.
- Statement R (Reason) :** Surd roots of a quadratic equation with rational coefficients occur in conjugate pairs.
- [All India 2023 Set-II, U]

3

Very Short Answer Questions (1 Mark)

4. Prove that $5 - 2\sqrt{3}$ is an irrational number. It is given that $\sqrt{3}$ is an irrational number.
5. Find a rational number between $\sqrt{2}$ and $\sqrt{3}$.

[Delhi 2019, K]

4

Short Answer Questions (2 or 3 Marks)

6. Prove that $(\sqrt{2} + \sqrt{3})^2$ is an irrational number, given that $\sqrt{6}$ is an irrational number. [All India 2024, A]

7. Prove that $\sqrt{3}$ is an irrational number. [All India 2024, 2023, A]

8. Prove that $\sqrt{2}$ is an irrational number. [Delhi 2019, CBSE Sample Paper 2023-24, K]

9. Prove that $\sqrt{3}$ is an irrational number. [All India 215, Term-I, Delhi 2023, All India 2023, K]

10. Show that $5 + 2\sqrt{7}$ is a irrational number, $\sqrt{7}$ is given to be an irrational number. [All India 2020]

11. Prove that $2 + 5\sqrt{3}$ is an irrational number, given that $\sqrt{3}$ is an irrational number. [CBSE Sampe Paper 2022-23(s), All India 2019, K]

12. Given that $\sqrt{2}$ is irrational, prove that $(5 + 3\sqrt{2})$ is an irrational number. [All India 2018, K]

5

Long Answer Question (4 or 5 Marks)

13. Prove that $\sqrt{5}$ is an irrational number. [All India 2020, K]



Hints & Solutions



Topic-1.1: The Fundamental Theorem of Arithmetic

1. (c) Since, the number divides 281 and 1249 and leaves the remainder 5 and 7 respectively. So, $281 - 5 = 276$ and $1249 - 7 = 1242$ is completely divided by the required number.

\therefore The greatest such number = H.C.F (276, 1242) = 138. [1 Mark]

2. (d) $28 = 2 \times 2 \times 7$
 $44 = 2 \times 2 \times 11$
 $132 = 2 \times 2 \times 3 \times 11$

\therefore LCM (28, 44, 132) = $2 \times 2 \times 3 \times 7 \times 11 = 924$

[1 Mark]

3. (a) Since, the numbers are co-prime. So, there will not be any common factor.

\therefore HCF = 1 [1 Mark]



Note

HCF of prime number is 1.

4. (d) p and q can be written as,
 $p = 18 a^2 b^4 = 2 \times 3 \times 3 \times a \times a \times b \times b \times b \times b$
 and $q = 20 a^3 b^2 = 2 \times 2 \times 5 \times a \times a \times a \times b \times b$
 Hence LCM = $2 \times 2 \times 3 \times 3 \times 5 \times a \times a \times a \times b \times b \times b \times b$
 $\text{LCM} = 180 a^3 b^4$ [1 Mark]

5. (b) xy^2 [1 Mark]

6. (a) $\frac{\text{HCF}(\text{least composite no, Least prime no.})}{\text{LCM}(\text{least composite no, Least prime no.})}$

$$\Rightarrow \frac{\text{HCF}(4, 2)}{\text{LCM}(4, 2)} = \frac{2}{4} = \frac{1}{2} \quad (1 \text{ Mark})$$

7. (c) 35 [1 Mark]

8. (b) Given number is 3750.

$$\begin{aligned} \text{Prime factorisation of } 3750 &= 5 \times 5 \times 5 \times 5 \times 2 \times 3 \\ &= 5^4 \times 2^1 \times 3^1 \end{aligned}$$

5	3750
5	750
5	150
5	30
2	6
3	3
	1

Exponent of 5 = 4.

[1 Mark]



Note

a^m , a = base

m = exponent

9. (b) Given, distances covered by girl are 95m and 171m.

$$95 = 5 \times 19$$

$$171 = 3 \times 3 \times 19$$

H.C.F of (95, 171) = 19

Girl can cover maximum distance 19m in 1 min. Therefore, the speed is 19m/min. [1 Mark]

10. (c) Given, regular intervals are 20 min, 25 min and 30 min.

$$\begin{array}{l|l} \text{L.C.M of } (20, 25, 30) &= 2 \times 5 \times 2 \times 3 \times 5 \\ &= 300 \text{ min.} \end{array}$$

They beep together at 12 noon, then

they beep after 300 minutes again.

$$300 \text{ min} = \frac{300}{60} = 5 \text{ h}$$

All clocks will beep again together at 5 : 00 pm.

[1 Mark]

11. (d) Three numbers are 1251, 9377, 15628 and the respective remainders are 1, 2 & 3.

$$(1251 - 1) = 1250$$

$$(9377 - 2) = 9375$$

$$(15628 - 3) = 15625$$

H.C.F of (1250, 9375, 15625) is shown below.

$$1250 = 2 \times 5 \times 5 \times 5 \times 5$$

$$9375 = 3 \times 5 \times 5 \times 5 \times 5 \times 5$$

$$15625 = 5 \times 5 \times 5 \times 5 \times 5 \times 5$$

$$\text{H.C.F of } (1250, 9375, 15625) = 5 \times 5 \times 5 \times 5 = 625$$

Therefore, the greatest no. is 625.

[1 Mark]

12. (a) Given a and b are coprime, whose H.C.F is 1.

Then, a^3 & b^3 also the coprime numbers.

Whose H.C.F is 1. (1 Mark)

13. (d) Number $2(5^n + 6^n)$ contains power n to the base 5 and 6.

For every $n \in \mathbb{N}$ 5^n ends with 5 and 6^n ends with 6.

Sum of 5 & 6 is 11, then $2 \times 11 = 22$.

Therefore, the number always ends with 2. (1 Mark)

14. (c) LCM = 2400

HCF of two numbers will always divide the LCM of two numbers.

Factors of $2400 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 5$

$2 \times 2 \times 5 \times 5 \times 3 = 300$

$2 \times 2 \times 5 \times 5 \times 3 \times 2 = 600$

$2 \times 2 \times 5 \times 5 \times 2 \times 2 = 400$

As per options, it will give all numbers except 500.

(1 Mark)

15. (b)

(1 Mark)

16. (c)

(1 Mark)

17. (b) Least composite number is 4 and the least prime number is 2. LCM (4, 2) : HCF(4, 2) = 4 : 2 = 2 : 1

(1 Mark)

18. (c) LCM \times HCF = Product of two numbers

$36 \times 2 = 18 \times x$

$72 = 18x$

$4 = x$

$x = 4$

(1 Mark)

24.

19. (c) Since HCF = 81, two numbers can be taken as $81x$ and $81y$,

ATQ

$81x + 81y = 1215$

or $x + y = 15$

which gives four co prime pairs-

1, 14

2, 13

4, 11

7, 8

Such pair of numbers are, (81, 1134) (162, 1053) (324, 891) and (567, 648) (1 Mark)

20. (c) LCM of two prime numbers = product of the numbers

$221 = 13 \times 17$.

So $p = 17$ & $q = 13$

$\therefore 3p - q = 51 - 13 = 38$

(1 Mark)

21. (b) $196 = 2^2 \cdot 7^2$, sum of exponents = $2 + 2 = 4$

(1 Mark)

22. (c) Prime number have two factor 1 and itself.

(1 Mark)

23. (c) $12 = 2^2 \times 3$; $21 = 3 \times 7$; $15 = 3 \times 5$

HCF = 3

LCM = $2^2 \times 3 \times 5 \times 7 = 420$

(1 Mark)



Topper's Answer

(c) Assertion (A) is true but Reason (R) is false.
 [only 1 factor = 5] \therefore prime factorisation of a prime number is the number itself.

25. (d) The number 5^n end with multiple of 5 for all $n \in \mathbb{N}$
 \Rightarrow R : Prime factorisation of 5 are 1, 5 (1 Mark)

26. (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A)

(1 Mark)

27. (B) Let $p = 5 \times 11 \times 17 + 3 \times 11 = (5 \times 17 + 3) \times 11$
 $= 88 \times 11$

Since given number have more than 2 divisors, Hence it is a composite number. [2 Marks]

28.



Topper's Answer

First number = 96
Second number = 120

$$96 = 2^5 \times 3$$

$$120 = 2^3 \times 3 \times 5$$

$$\text{HCF}(96, 120) = 2^3 \times 3$$

$$= 8 \times 3$$

$$= 24$$

$$\text{LCM}(96, 120) = 2^5 \times 3 \times 5$$

$$= 32 \times 3 \times 5$$

$$= 480$$

$\therefore \text{HCF}(96, 120) = 24$ and $\text{LCM}(96, 120) = 480$

2	96	2	120
2	48	2	60
2	24	2	30
2	12	3	15
2	6		5
	3		

29. $96 = 2^2 \times 3 \times 2^3 = 2^5 \times 3$

$120 = 2^2 \times 3 \times 5 \times 2 = 2^3 \times 3 \times 5$ (½ Mark)

$\text{HCF} = 2^3 \times 3 = 24$; $\text{LCM} = 2^5 \times 3 \times 5 = 480$ (½ Mark)

30. Let No. are $2x, 3x$

Product of No. = $\text{LCM} \times \text{HCF} \Rightarrow 2x \times 3x = 180 \times x$

$6x^2 = 180x \Rightarrow x = 30 \Rightarrow \text{HCF} = 30$ (1 Mark)

31. Given, $\text{HCF}(336, 54) = 6$

We know,

$\text{HCF} \times \text{LCM} = \text{Product of numbers}$

$\Rightarrow 6 \times \text{LCM} = 336 \times 54$

$\Rightarrow \text{LCM} = \frac{336 \times 54}{6} = 336 \times 9 = 3024$ (1 Mark)

32. As smallest prime number = 2

and smallest composite number = 4 (½ Mark)

$\therefore \text{HCF of } 2 \text{ and } 4 = 2$

Hence HCF of smallest prime number and smallest composite number is 2. (½ Mark)

33. Number of students in each group subject to the given condition = $\text{HCF}(60, 84, 108)$ (½ Mark)

$\text{HCF}(60, 84, 108) = 12$ (½ Mark)

Number of groups in music = $\frac{60}{12} = 5$ (½ Mark)

Number of groups in dance = $\frac{84}{12} = 7$ (½ Mark)

Number of groups in handicrafts = $\frac{108}{12} = 9$ (½ Mark)

Total number of rooms required = $5 + 7 + 9 = 21$

(½ Mark)

34. $48 = 2^4 \times 3$ [1 Mark]

$80 = 2^4 \times 5$

$144 = 2^4 \times 3^2$ [1 Mark]

$\therefore \text{HCF}(48, 80, 144) = 2^4 = 16$ [1 Mark]

 \therefore Maximum 16 teachers of same subject can be in one room

Hence, required number of rooms = $\frac{48+80+144}{16} = 17$ [1 Mark]

35. If the number 6^n , for any n , were to end with digit zero, thenit would be divisible by 5. That is, the prime factorisation of 6^n would contain the prime number 5. (1 Mark)This is not possible because $6^n = (2 \times 3)^n$, so the only prime numbers in the factorisation of 6^n are 2 and 3.

So, the uniqueness of the fundamental theorem of Arithmetic guarantees that there are no other prime number other than 2 and 3 in the factorisation of 6^n so there is no natural “ n ” for which 6^n ends with digit zero. (1 Mark)

36. We have

$$72 = 2^3 \times 3^2 \quad (1 \text{ Mark})$$

$$120 = 2^3 \times 3 \times 5 \quad (1 \text{ Mark})$$

37. Take the LCM of given time

$$48 = 2^4 \times 3; 72 = 2^3 \times 3^2; 108 = 2^2 \times 3^3 \quad (1 \text{ Mark})$$

$$\text{Then, LCM} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$$

After 432 seconds, they will change simultaneously.

$$\Rightarrow 432 \text{ seconds} = 7 \text{ min } 12 \text{ sec}$$

$$\text{Time} = 7 : 07 : 12 \text{ am} \quad (1 \text{ Mark})$$

38. $\text{LCM} = p^3q^3r \quad (1 \text{ Mark})$

$$\text{HCF} = p^2q^2 \quad (1 \text{ Mark})$$

39. Smallest number which is divisible by 306 and 657 is,

$$\text{LCM} (657, 306)$$

$$657 = 3 \times 3 \times 73$$

$$306 = 3 \times 3 \times 2 \times 17 \quad (1 \text{ Mark})$$

$$\text{LCM} = 3 \times 3 \times 73 \times 2 \times 17 = 22338 \quad (1 \text{ Mark})$$



Note

For LCM take each prime factor with highest power in all then multiply it.

2	404
2	202
101	101
	1

2	96
2	48
2	24
2	12
2	6
3	3
	1

$$\therefore 404 = 2 \times 2 \times 101$$

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \quad (1 \text{ Mark})$$

$$\text{HCF of } 404 \text{ and } 96 = 2 \times 2 = 4$$

$$\text{LCM of } 404 \text{ and } 96 = 4 \times 101 \times 2 \times 2 \times 2 \times 3$$

$$= 9696$$

$$\text{HCF} \times \text{LCM} = 4 \times 9696 = 38784$$

$$\text{Product of numbers} = 404 \times 96 = 38784$$

Hence verified that

$$\text{HCF} \times \text{LCM} = \text{Product of the two numbers.} \quad (1 \text{ Mark})$$

41. LCM of 18, 24 and 36 is 72

$$\begin{array}{r} 72 \overline{)999999} (13888 \\ \underline{999936} \\ 63 \end{array}$$

(1 Mark)

$$\therefore \text{Required number} = 9,99,936.$$

(1 Mark)



Note

HCF will be find when we have to find greatest (maximum) number wick exactly divide the given number.

42. $\text{HCF} = 24$

$$\text{LCM} = 540$$

$$\text{Now, } \frac{\text{LCM}}{\text{HCF}} = \frac{540}{24} = 22.5 \text{ not an integer} \quad (1 \text{ Mark})$$

Since LCM is always a multiple of HCF, hence two numbers cannot have HCF and LCM as 24 and 540 respectively. (1 Mark)

43. If 8^n ends with 0, then it must have 5 as a factor.

But prime factor of 8^n is 2.

$$\therefore 8^n = 2^n \times 2^n \times 2^n \quad (1 \text{ Mark})$$

From the fundamental theorem of arithmetic, the prime factorisation of every composite number is unique.

$\therefore 8^n$ can never ends with 0. (1 Mark)

44. No, because $6^n = (2 \times 3)^n = 2^n \times 3^n$, so the only primes in the factorisation of 6^n are 2 and 3, and not 5. (2 Marks)



Topic-1.2: Revisiting Irrational Numbers

1. (c) $p^2 = \frac{32}{50}$

$$\Rightarrow p^2 = \frac{16}{25}$$

$$\Rightarrow p = \pm \frac{4}{5}$$

p is in the form of $\frac{a}{b}$, where “a” and “b” are integers

having no common factor other than 1, also $q \neq 0$.

(1 Mark)

2. (b) $a^2 = \frac{23}{25}$, then $a = \frac{\sqrt{23}}{5}$, which is irrational.

(1 Mark)

3. (b)

(1 Mark)

4. (A) If possible, let $5 - 2\sqrt{3}$ is a rational number.

$\therefore 5 - 2\sqrt{3} = \frac{p}{q}$ — where $q \neq 0$

$$\Rightarrow \sqrt{3} = \frac{(5q-p)}{(2q)} \quad [1 \text{ Mark}]$$

Which means that $\sqrt{3}$ is also a rational number but this is a contradiction because $\sqrt{3}$ is irrational.

Hence $5 - 2\sqrt{3}$ is an irrational number. [1 Mark]



Note

Addition, subtraction, multiplication and division of two rational is rational.

5. Since, $\sqrt{2} = 1.414\dots$ and $\sqrt{3} = 1.732\dots$ (½ Mark)

Hence, the rational number between $\sqrt{2}$ and $\sqrt{3}$ is 1.5 or $\frac{3}{2}$.

(½ Mark)



Note

There are infinite rational numbers between any two irrational numbers.

6. $(\sqrt{2} + \sqrt{3})^2 = (\sqrt{2})^2 + (\sqrt{3})^2 + 2(\sqrt{2})(\sqrt{3})$ [1 Mark]

$$= 2 + 3 + 2\sqrt{6}$$

$$= 5 + 2\sqrt{6}$$

[1 Mark]

$\therefore \sqrt{6}$ is an irrational number.

$\Rightarrow 5 + 2\sqrt{6}$ is an irrational number.

$\Rightarrow (\sqrt{2} + \sqrt{3})^2$ is an irrational number. [1 Mark]



Note

Product of rational and irrational number is irrational..

7.



Topper's Answer

Let us assume, to the contrary, that
 a) $\sqrt{3}$ is rational.
 $\Rightarrow \sqrt{3} = \frac{p}{q}$ where $q \neq 0$, p and q are coprime positive integers

Squaring both sides,
 $\Rightarrow 3 = \frac{p^2}{q^2}$
 $\Rightarrow p^2 = 3q^2$
 $\Rightarrow 3$ divides p^2
 $\Rightarrow 3$ divides p ($\because 3$ is prime)

So, let $p = 3m$
 Substituting in
 $(3m)^2 = 3q^2$
 $\Rightarrow 9m^2 = 3q^2$
 $\Rightarrow q^2 = 3m^2$
 $\Rightarrow 3$ divides q^2
 $\Rightarrow 3$ divides q

From (3) and (4),
 3 divides both p and q
 But p and q are coprime, i.e. $\text{HCF}(p, q) = 1$ (Using (1))
 which is a contradiction
 \therefore our supposition is wrong
 $\therefore \sqrt{3}$ must be irrational.
 Hence, proved

TM

8. Let us assume, to the contrary, that $\sqrt{2}$ is rational.

So, we can find integers a and b such that $\sqrt{2} = \frac{a}{b}$ where
 a and b are coprime. (½ Mark)

So, $b\sqrt{2} = a$.

Squaring both sides, we get $2b^2 = a^2$.

Therefore, 2 divides a^2 and so 2 divides a . (½ Mark)

So, we can write $a = 2c$ for some integer c .

Substituting for a , we get $2b^2 = 4c^2$, that is, $b^2 = 2c^2$.

This means that 2 divides b^2 , and so 2 divides b .

(½ Mark)

Therefore, a and b have at least 2 as a common factor.

But this contradicts the fact that a and b have no common factors other than 1 . (½ Mark)

This contradiction has arisen because of our incorrect assumption that $\sqrt{2}$ is rational.

So, we conclude that $\sqrt{2}$ is irrational.

9. (a) Let $\sqrt{3}$ is rational no. So $\sqrt{3}$ can be written as

$\sqrt{3} = \frac{p}{q}$, $q \neq 0$, $\text{HCF}(p, q) = 1$ (½ Mark)

i.e. $p \neq q$ are co-prime to each other

Squaring both sides

$3 = \frac{p^2}{q^2} \Rightarrow p^2 = 3q^2$ (1 Mark)

$\Rightarrow 3$ is a factor of p^2 ... (i)

$\Rightarrow 3$ is a factor of p ... (ii) (½ Mark)

So $p = 3m$ from (i), where m is any integer. $p^2 = 9m^2$

$$3q^2 = 9m^2$$

$$q^2 = 3m^2$$

$\Rightarrow 3$ is factor of $q^2 \Rightarrow 3$ is a factor of q

HCF $(p, q) \neq 1$ contradicts our & supposition. So $\sqrt{3}$ is irrational. (1 Mark)

10.



Topper's Answer

Let us assume to the contrary that $5 + 2\sqrt{7}$ is rational.

Then $5 + 2\sqrt{7}$ is of the form $\frac{p}{q}$ where p and q are coprimes and $q \neq 0$.

$$\frac{p}{q} = 5 + 2\sqrt{7}$$

$$\frac{p - 5q}{q} = 2\sqrt{7}$$

$$\frac{p - 5q}{2q} = \sqrt{7}$$

$\frac{p - 5q}{2q}$ is rational as p and q are integers

This contradicts the given fact that $\sqrt{7}$ is irrational.

\therefore Our assumption is wrong.

$5 + 2\sqrt{7}$ is irrational //

Proved.

11. Let $2 + 5\sqrt{3} = r$, where, r is rational number.

$$\Rightarrow (2 + 5\sqrt{3})^2 = r^2 \quad (\frac{1}{2} \text{ Mark})$$

$$\Rightarrow 4 + 75 + 20\sqrt{3} = r^2$$

$$\Rightarrow 79 + 20\sqrt{3} = r^2 \quad (\frac{1}{2} \text{ Mark})$$

$$\Rightarrow 20\sqrt{3} = r^2 - 79$$

$$\Rightarrow \sqrt{3} = \frac{r^2 - 79}{20} \quad (\frac{1}{2} \text{ Mark})$$

Since r is rational number therefore $r^2 - 79$ is also rational number $\Rightarrow \frac{r^2 - 79}{20}$ is a rational number. So, $\sqrt{3}$ must also be a rational number.

But $\sqrt{3}$ is an irrational number (Given).

So, our assumption is wrong.

$2 + 5\sqrt{3}$ is an irrational number.

Hence proved. (1/2 Mark)

12. Let $5 + 3\sqrt{2}$ be a rational number

$$\Rightarrow 5 + 3\sqrt{2} = \frac{p}{q}, \quad (\frac{1}{2} \text{ Mark})$$

where p and q are coprime integers and $q \neq 0$

$$\Rightarrow 3\sqrt{2} = \frac{p}{q} - 5 = \frac{p - 5q}{q}$$

$$\Rightarrow \sqrt{2} = \frac{p - 5q}{3q} \quad (\text{1 Mark})$$

Since p & q are integers

$$\Rightarrow \frac{p - 5q}{3q} \text{ is a rational number} \quad (\frac{1}{2} \text{ Mark})$$

But $\sqrt{2}$ is irrational.

We know that an irrational number cannot be equal to a rational number.

\Rightarrow Our supposition is wrong that $5 + 3\sqrt{2}$ is a rational number.

Hence $5 + 3\sqrt{2}$ is irrational. (1 Mark)

**Note**

Addition of a rational and an irrational number is an irrational number.

13. Let $\sqrt{5}$ is rational number

$$\therefore \sqrt{5} = \frac{p}{q}, \quad \text{(1 Mark)}$$

where p and q are coprime integers and $q \neq 0$.

$$\sqrt{5} = \frac{p}{q} \Rightarrow p = \sqrt{5}q$$

Squaring both sides

$$p^2 = 5q^2 \quad \dots(i) \text{ (1 Mark)}$$

So, p^2 is divisible by 5

Then, p is also divisible by 5

$$\text{Let } p = 5m \quad \text{(1/2 Mark)}$$

Putting in (i)

$$(5m)^2 = 5q^2 \Rightarrow 25m^2 = 5q^2 \Rightarrow q^2 = 5m^2 \quad \text{(1/2 Mark)}$$

So, q^2 is divisible by 5

$$\text{Then } q \text{ is also divisible by 5} \quad \text{(1/2 Mark)}$$

Thus, p and q both divisible by 5 but p and q are coprime integers.

By contradiction.

$\sqrt{5}$ is irrational number.

Hence, proved. (1/2 Mark)



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3 Level Division of Qns.



**Chapter-wise,
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10

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As Per Latest CBSE Syllabus

2nd Edition

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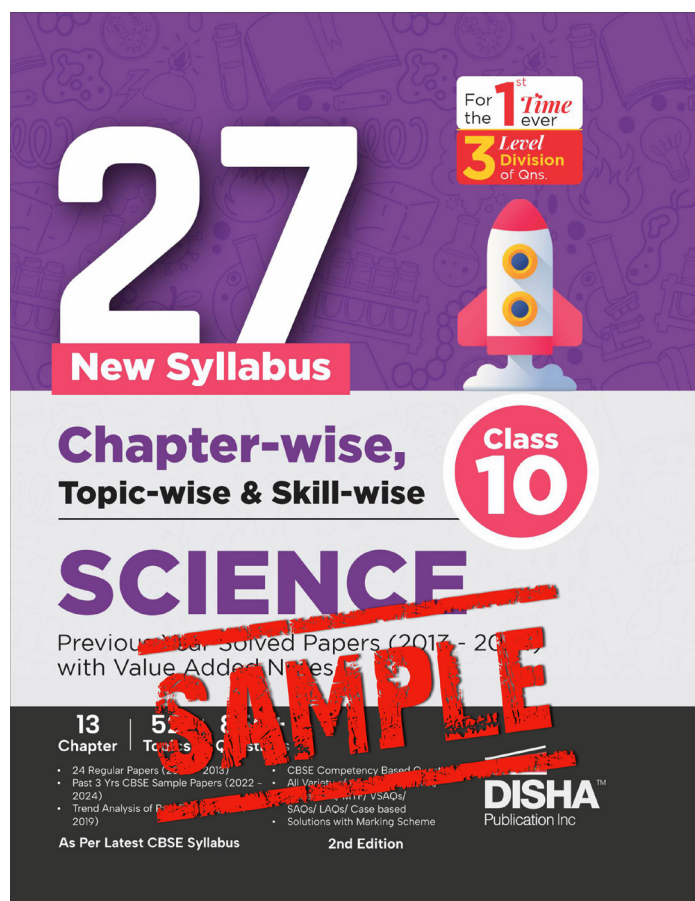
1-14

Topic-1.1 : Chemical Equations

Topic-1.2 : Types of Chemical Reactions

Topic-1.3 : Have You Observed the Effects of Oxidation Reactions in Everyday Life ?

This sample book is prepared from the book "27 New Syllabus Chapter-wise, Topic-wise & Skill-wise CBSE Class 10 Science Previous Year Solved Papers (2013 - 2024) with Value Added Notes 2nd Edition".



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3rd Level of Division : Skillwise Division

Each Question in the topic has been further divided skillwise using following codes:

K Knowledge

U Understanding

Ap Application

A Analysis

Chapter

1

Chemical Reactions and Equations

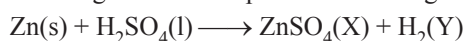


Topic-1.1: Chemical Equations

1

Multiple Choice Questions

1. Select the appropriate state symbols of the products given as X and Y in the following chemical equation by choosing the correct option from table given below:



	(X)	(Y)
(a)	(s)	(l)
(b)	(aq)	(g)
(c)	(aq)	(s)
(d)	(g)	(aq)

All India 2023, K

2. Which of the following is a NECESSARY condition for ALL chemical reactions? CFPQ CBSE 2022, K

- (a) The reactants should be in the same state.
 (b) Energy should be supplied to the reactants.
 (c) The reactants should be at the same temperature.
 (d) There should be physical contact between the reactants.

3. Sodium reacts with water to form sodium hydroxide and hydrogen gas. The balanced equation which represents the above reaction is: All India 2022, Term-I, K

- (a) $\text{Na(s)} + 2\text{H}_2\text{O(l)} \rightarrow 2\text{NaOH(aq)} + 2\text{H}_2(\text{g})$
 (b) $2\text{Na(s)} + 2\text{H}_2\text{O(l)} \rightarrow 2\text{NaOH(aq)} + \text{H}_2(\text{g})$
 (c) $2\text{Na(s)} + 2\text{H}_2\text{O(l)} \rightarrow \text{NaOH(aq)} + 2\text{H}_2(\text{g})$
 (d) $2\text{Na(s)} + \text{H}_2\text{O(l)} \rightarrow 2\text{NaOH(aq)} + 2\text{H}_2(\text{g})$

4. It is important to balance the chemical equations to satisfy the law of conservation of mass. Which of the following statements of the law is incorrect?

All India 2022, Term-I, K

- (a) The total mass of the elements present in the reactants is equal to the total mass of the elements presents in the products.
 (b) The number of atoms of each element remains the same, before and after a chemical reaction.
 (c) The chemical composition of the reactants is the same before and after the reaction.
 (d) Mass can neither be created nor can it be destroyed in a chemical reaction.

5. In which of the following the identity of initial substance remains unchanged. All India 2020, K

- (a) Curdling of milk
 (b) Formation of crystals by process of crystallisation
 (c) Fermentation of grapes
 (d) Digestion of food

4

Short Answer Questions (2 or 3 Marks)

6. (a) Copper powder is taken in a china dish and heated over a burner. Name the product formed and state its colour. Write the chemical equation for the reaction involved. All India 2024, Ap

OR

- (b) Write chemical equation for the chemical reaction which occurs when the aqueous solutions of barium chloride and sodium sulphate react together. Write the symbols of the ions present in the compound precipitated in the reaction. All India 2024, K

7. Translate the following statement into a balanced chemical equation. Delhi 2024, Ap

"When barium chloride reacts with aluminium sulphate, aluminium chloride and barium sulphate are formed."
 State the type of this reaction giving reason to justify your answer.

8. With the help of an appropriate example. Justify that some of the chemical reactions are determined by

- (a) Change in temperature.
 (b) Evolution of a gas, and
 (c) Change in colour

Give chemical equation for the reaction involved in each case. All India 2023, Set-I, Ap

9. Complete and balance the following chemical equations:

- (i) $\text{NaOH(aq)} + \text{Zn(s)} \rightarrow$ All India 2020, Ap
 (ii) $\text{CaCO}_3(\text{aq}) + \text{H}_2\text{O(l)} + \text{CO}_2(\text{g}) \rightarrow$
 (iii) $\text{HCl(aq)} + \text{H}_2\text{O(l)} \rightarrow$

10. Balance the following chemical equations :

- (a) $\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$
 (b) $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
 (c) $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$

All India 2014-2015, Term-1 Ap

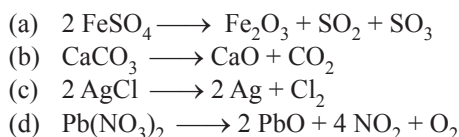


Topic-1.2: Types of Chemical Reactions

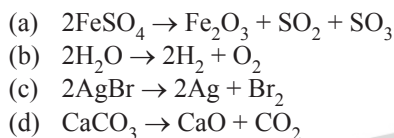
1

Multiple Choice Questions

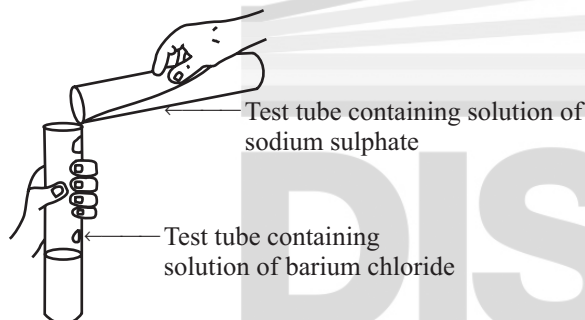
1. Which of the following is **not** a thermal decomposition reaction? **All India 2024, U**



2. Select from the following a decomposition reaction in which source of energy for decomposition is light: **Delhi 2024, K**



3.

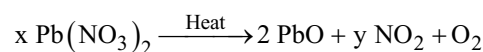


Identify the product which represents the solid state in the above reaction. **CBSE Sample Paper 2023-24, U**

- (a) Barium chloride (b) Barium sulphate
 (c) Sodium chloride (d) Sodium sulphate
4. The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is **CBSE Sample Paper 2023-24, U**
- (a) Blue (b) Colourless
 (c) Dirty green (d) Reddish Brown
5. Consider the following chemical equation I and II
- I. $\text{Mg} + 2\text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2$
 II. $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
 The correct statement about these equations is – **All India 2023, Set-I, Ap**
- (a) 'I' is a displacement reaction and 'II' is a decomposition reaction.
 (b) 'I' is a displacement reaction and 'II' is double displacement reaction.
 (c) Both 'I' and 'II' are displacement reactions.
 (d) Both 'I' and 'II' are double-displacement reactions.
6. During electrolysis of water, if the volumes of oxygen and hydrogen evolved at the electrodes are V_{O} and V_{H} respectively, then $V_{\text{O}}/V_{\text{H}}$ is **All India 2023, Set-II, Ap**

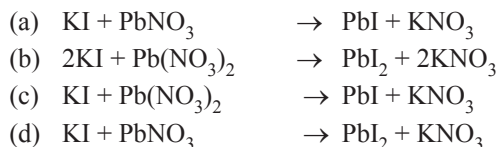
- (a) 4 (b) 2
 (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

7. In order to balance the following chemical equation, the values of the coefficients x and y respectively are: **All India 2023, Set-II, Ap**



- (a) 2, 4 (b) 2, 2
 (c) 2, 3 (d) 4, 2

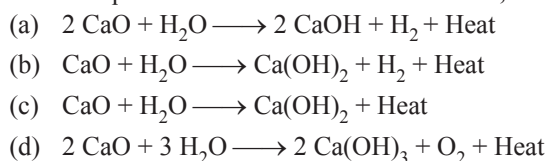
8. When aqueous solutions of potassium iodide and lead nitrate are mixed, an insoluble substance separates out. The chemical equation for the reaction involved is: **Delhi 2023, Set-I, K**



9. A metal ribbon 'X' burns in oxygen with a dazzling white flame forming a white ash 'Y'. The correct description of X, Y and the type of reaction is: **Delhi 2023, Set-I, Ap**

- (a) X = Ca; Y = CaO;
 Type of reaction = Decomposition
 (b) X = Mg; Y = MgO;
 Type of reaction = Combination
 (c) X = Al; Y = Al_2O_3 ;
 Type of reaction = Thermal decomposition
 (d) X = Zn; Y = ZnO;
 Type of reaction = Endothermic

10. The balanced chemical equation showing reaction between quicklime and water is: **Delhi 2023, Set-II, K**

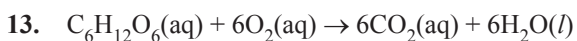


11. Which of the following an example of simple displacement? **CFPQ CBSE, 2022, U**

- (a) the electrolysis of water
 (b) the burning of methane
 (c) the reaction of a metal with an acid
 (d) the reaction of two salt solutions to form a precipitate

12. A student took Sodium Sulphate solution in a test tube and added Barium Chloride solution to it. He observed that an insoluble substance has formed. The colour and molecular formula of the insoluble substance is: **All India 2022, Term-I, Ap**

- (a) Grey, Ba_2SO_4 (b) Yellow, $\text{Ba}(\text{SO}_4)_2$
 (c) White, BaSO_4 (d) Pink, BaSO_4



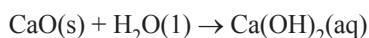
The above reaction is a/an **All India 2022, Term-I, Ap**

- (a) displacement reaction
 (b) endothermic reaction
 (c) exothermic reaction
 (d) neutralisation reaction
14. Which one of the following reactions is categorised as thermal decomposition reaction?

All India 2022, Term-I, Ap

- (a) $2H_2O(l) \rightarrow 2H_2(g) + O_2(g)$
 (b) $2AgBr(s) \rightarrow 2Ag(s) + Br_2(g)$
 (c) $2AgCl(s) \rightarrow 2Ag(s) + Cl_2(g)$
 (d) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
15. Calcium oxide reacts vigorously with water to produce slaked lime.

Delhi 2020, U



This reaction can be classified as:

- (A) Combination reaction
 (B) Exothermic reaction
 (C) Endothermic reaction
 (D) Oxidation reaction

Which of the following is a correct option?

- (a) (A) and (C)
 (b) (C) and (D)
 (c) (A), (C) and (D)
 (d) (A) and (B)
16. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a:

Delhi 2020, U

- (a) Combination reaction
 (b) Displacement reaction
 (c) Decomposition reaction
 (d) Double displacement reaction
17. In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution:

Delhi 2020, U

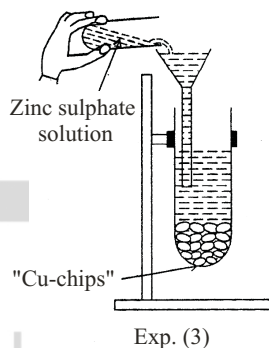
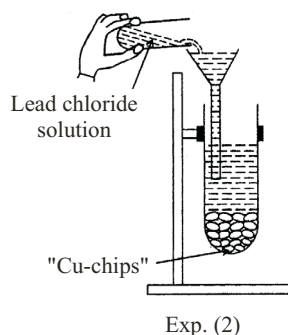
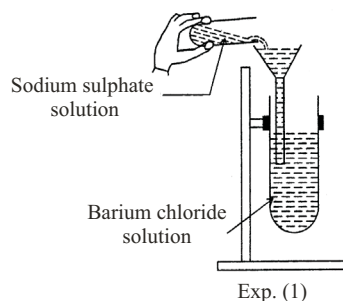
- (A) exchange of atoms takes place
 (B) exchange of ions takes place
 (C) a precipitate is produced
 (D) an insoluble salt is produced
- The correct option is:
- (a) (B) and (D)
 (b) (A) and (C)
 (c) only (B)
 (d) (B), (C) and (D)

18. Take about 1.0g $CaCO_3$ in a test tube. Heat it over a flame, when a colourless gas comes out. The reaction is called a

All India 2016-2017, Term-1 Ap

- (a) decomposition reaction
 (b) displacement reaction
 (c) double decomposition reaction
 (d) double displacement reaction

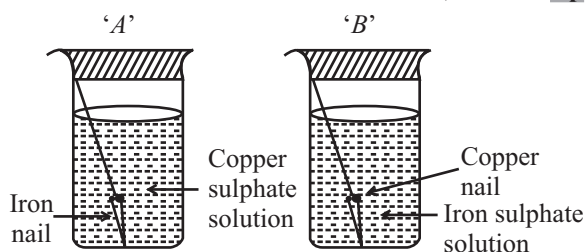
19. Observe the experiment set-up carefully:



In which experiment an insoluble precipitate is formed and of which substance? **All India 2014-2015, Term-1 A**

- (a) Exp 1, Na_2SO_4 (b) Exp 2, $CuCl_2$
 (c) Exp 3, $CuSO_4$ (d) Exp 1, $BaSO_4$
20. Three beakers labelled as *A*, *B* and *C* each containing 25 mL of water were taken. *A* small amount of NaOH, anhydrous $CuSO_4$ and NaCl were added to the beakers *A*, *B* and *C* respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers *A* and *B*, whereas in case of beaker *C*, the temperature of the solution falls. Which one of the following statement(s) is (are) correct? **All India 2013-2014, Term-1 U**
- (i) In beakers *A* and *B*, exothermic process has occurred.
 (ii) In beakers *A* and *B*, endothermic process has occurred.
 (iii) In beaker *C* exothermic process has occurred.
 (iv) In beaker *C* endothermic process has occurred.
- (a) (i) only
 (b) (ii) only
 (c) (i) and (iv)
 (d) (ii) and (iii)

21. Observe the following experimental set-up 'A' and 'B' carefully and answer in which beaker reaction will occur?
All India 2013-2014, Term-1 Ap



- In beaker A
- In beaker B
- None of the two beakers
- Reaction occur in both beakers

2

Assertion Reason/Two Statement Type Questions

Given below are two statements labelled as Assertion (A) and Reason (R). Select the most appropriate answer from the options given below:

- Both (A) and (R) are true and (R) is the correct explanation of (A).
- Both (A) and (R) are true, but (R) is not the correct explanation of (A).
- (A) is true, but (R) is false.
- (A) is false, but (R) is true.

22. **Assertion (A)** : Reaction of Quicklime with water is an exothermic reaction.

Reason (R) : Quicklime reacts vigorously with water releasing a large amount of heat. Delhi 2023, Set-I, K

23. **Assertion (A)** : Burning of Natural gas is an endothermic process.

Reason (R) : Methane gas combines with oxygen to produce carbon dioxide and water.

All India 2022, Term-I, U

3

Very Short Answer Questions (1 Mark)

24. Dilip was comparing combination reactions with decomposition reactions.

Which class of chemical substances may be the product of a decomposition reaction but NOT a product of a combination reaction?
CFPQ CBSE, 2022, U

25. Can a double displacement reaction take place when the products are highly soluble or highly ionized?

All India 2016-2017, Term-1 U

26. What happens chemically when quicklime is added to water?

All India 2015-2016, Term-1 U

27. Give one example of decomposition reaction in which solid and gas are two products obtained.

All India 2013-2014, Term-1 K

4

Short Answer Questions (2 or 3 Marks)

28. Write down the balanced chemical equations for the following reactions and identify the types of reaction in each case.

All India 2023, Set-II, U

- Nitrogen gas is treated with hydrogen gas to form ammonia gas.
 - Lead nitrate is heated strongly to form lead monoxide, nitrogen dioxide and oxygen.
 - A copper wire is dipped in silver nitrate solution and a shining deposit of silver is produced.
29. (i) While electrolysis of water before passing the current some drops of an acid are added. Why? Name the gases liberated at cathode and anode. Write the relationship between the volume of gas collected at anode and the volume of gas collected at cathode.

Delhi 2023, Set-I, Ap

- (ii) What is observed when silver chloride is exposed to sunlight? Give the type of reaction involved.

Delhi 2023, Set-I, K

30. (a) Define a double displacement reaction.
(b) Write the chemical equation of a double displacement reaction which is also a (i) Neutralization reaction and (ii) Precipitation reaction. Give justification for your answer.

Delhi 2023, Set-II, K

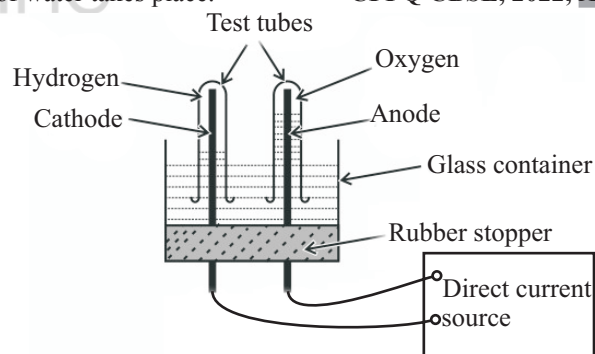
31. Trupti mixes an aqueous solution of sodium sulphate (Na_2SO_4) and an aqueous solution of copper chloride (CuCl_2).

Will this lead to a double displacement reaction? Justify your answer.

CFPQ CBSE, 2022, U

32. The diagram below shows the set-up in which electrolysis of water takes place.

CFPQ CBSE, 2022, A



- What type of reaction takes place?
- Explain why this is an example of an endothermic reaction?
- The test tube containing hydrogen is removed carefully from the apparatus. A lit match stick is brought near the mouth of this test tube. The gas burns with an explosive "pop" sound.

Write a balanced chemical equation for this reaction and indicate whether energy is absorbed or released.

33. Mention with reason the colour changes observed when :
All India 2020, U
 (i) silver chloride is exposed to sunlight.
 (ii) copper powder is strongly heated in the presence of oxygen.
 (iii) a piece of zinc is dropped in copper sulphate solution.
34. Identify the type of each of the following reactions.
All India 2020, K
 Also write balanced chemical equation for each reaction.
 (i) A reaction in which the reaction mixture becomes warm.
 (ii) A reaction in which an insoluble substance is formed
35. Complete and balance the following chemical equations:
All India 2020, K
 (i) $\text{NaOH(aq)} + \text{Zn(s)} \rightarrow$
 (ii) $\text{CaCO}_3(\text{s}) + \text{H}_2\text{O(l)} + \text{CO}_2(\text{g}) \rightarrow$
 (iii) $\text{HCl(aq)} + \text{H}_2\text{O(l)} \rightarrow$
36. 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case ? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction.
Delhi 2019, U
37. Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions.
Delhi 2019, U
 (a) Zinc reacts with silver nitrate to produce zinc nitrate and silver.
 (b) Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.
38. What would you observe on adding zinc granules to freshly prepared ferrous sulphate solution? Give reason for your answer.
Delhi 2019, K
39. Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light and electricity.
All India 2018, U
40. What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube? Write equation for the chemical reaction involved and name the type of reaction in this case.
All India 2018, U
41. (a) State one difference between.
 (i) Combination and decomposition reaction.
 (ii) Displacement and double displacement reaction
 (b) Balance the following chemical equation:

$$\text{Pb(NO}_3)_2(\text{s}) \xrightarrow{\text{Heat}} \text{PbO(s)} + \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$$

All India 2015-2016, Term-1 Ap
42. Represent each of the following word equations with a balanced chemical equation.
 (a) Disilane gas (Si_2H_6) undergoes combustion to form solid silicon dioxide and water.
 (b) Solid aluminium hydride is formed by a combination reaction of its two elements.
 (c) When solid calcium bisulfite is heated, it decomposes to solid calcium oxide, sulfur dioxide gas, and water.
All India 2015-2016, Term-1 Ap
43. (a) What is the colour of ferrous sulphate crystals? How does this colour change after heating?
 (b) Name the products formed on strongly heating ferrous sulphate crystals. What type of chemical reaction occurs in this change?
All India 2013-2014, Term-1 U
44. (i) Define a decomposition reaction. Write chemical equation for the reaction that occurs when lead nitrate is heated strongly in a boiling tube.
 (ii) In electrolytic decomposition of water two gases are liberated at the electrodes. Give the mass ratio of the gas liberated at the cathode and at the anode.
Delhi 2024, Ap



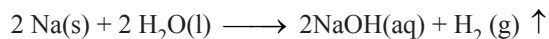
Have You Observed the Effects of Oxidation Reactions in Topic-1.3: Everyday Life ?

1

Multiple Choice Questions

1. Which of the following is a redox reaction, but **not** a combination reaction?
All India 2024, A
 (a) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
 (b) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
 (c) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
 (d) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$
2. $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$
 The reaction given above is a redox reaction because in this case:
Delhi 2024, U
 (a) MnO_2 is oxidised and HCl is reduced.
 (b) HCl is oxidised.
 (c) MnO_2 is reduced.
 (d) MnO_2 is reduced and HCl is oxidised.

3. Study the following chemical reaction:



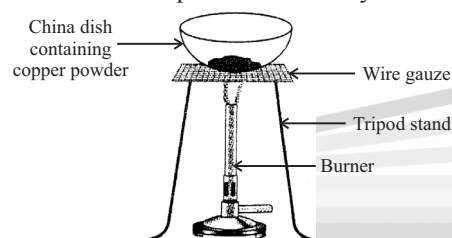
The reducing agent in this reaction is:

Delhi 2023, Set-II, U

- (a) Na (b) H₂O
(c) NaOH (d) H₂
4. Which of the following statements about the reaction given below are correct? **All India 2022, Term-I, Ap**



- (i) HCl is oxidized to Cl₂
(ii) MnO₂ is reduced to MnCl₂
(iii) MnCl₂ acts as an oxidizing agent
(iv) HCl acts as an oxidizing agent
- (a) (ii), (iii) and (iv) (b) (i), (ii) and (iii)
(c) (i) and (ii) only (d) (iii) and (iv) only
5. Observe this experiment carefully :



In above experiment copper powder turned to black coloured product on heating. It is due to the reason that:

All India 2015-2016, Term-1 U

- (a) Copper has absorbed heat
(b) Copper (II) oxide is formed
(c) Copper (I) oxide is formed
(d) Both (a) and (c) are correct

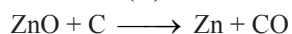
2

Assertion Reason/Two Statement Type Questions

Given below are two statements labelled as Assertion (A) and Reason (R). Select the most appropriate answer from the options given below:

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false.
(d) (A) is false, but (R) is true.

6. **Assertion (A):** In the following reaction



Reason (R): Carbon is a reducing agent that reduces ZnO to Zn. **Delhi 2023, Set-II, U**

4

Short Answer Questions (2 or 3 Marks)

7. State whether the given chemical reaction is a redox reaction or not. Justify your answer.

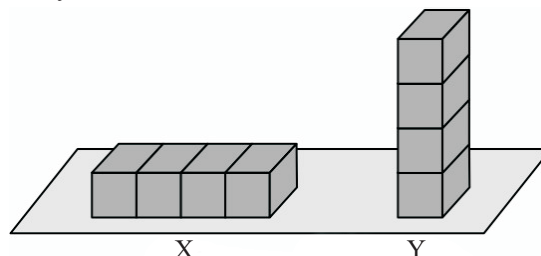
All India 2023, Set-I Ap



8. When copper powder is heated in a watch glass, a black substance is formed.

- (i) Why is this black substance formed? Name it.
(ii) How can this black substance be reversed to its original form? **All India 2023, Set-II, U**

9. Eight identical, iron blocks are placed on the ground in the two arrangements X and Y as shown below. The block arrangements are kept moist by sprinkling water every few hours.



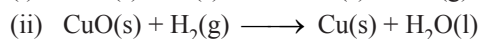
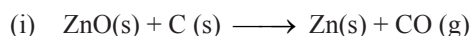
Which of the arrangements is likely to gather more rust after days? Justify your answer. **CFPQ CBSE 2022, U**

10. 1 g of copper powder was taken in a China dish and heated. What change takes place on heating? When hydrogen gas is passed over this heated substance, a visible change is seen in it. Give the chemical equations of reactions, the name and the color of the products formed in each case. **Delhi 2020, U**

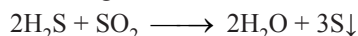
11. You might have noted that when copper powder is heated in a china dish, the reddish brown surface of copper powder becomes coated with a black substance. **Delhi 2019, U**

- (a) Why has this black substance formed?
(b) What is this black substance?
(c) Write the chemical equation of the reaction that takes place.
(d) How can the black coating on the surface be turned reddish brown?

12. (a) Identify the substances that are oxidised and the substances that are reduced in the following reactions.



- (b) Name the oxidising and reducing agent in the following reaction:



All India 2014-2015, Term-1 Ap

13. (a) What is rancidity? What is the general name of chemical which are added to fat and oil containing food so as to prevent the development of rancidity?
(b) Metal X becomes green when left in air, turns black when heated in air. Name the metal and the compounds formed in both the cases?

All India 2013-2014, Term-1 U



Hints & Solutions



Topic-1.1: Chemical Equations

1. (b) The reaction between Zn and H_2SO_4 gives an ionic compound ZnSO_4 that remains in aqueous state along with the release of H_2 gas.
Thus, X = (aq.), Y = (g) (1 Mark)



Topper's Answer

3. b) x - (aq) , y - (g)

2. (d) (1 Mark)
3. (b) When sodium reacts with water, it forms sodium hydroxide and hydrogen gas.
 $\text{Na(s)} + \text{H}_2\text{O(l)} \longrightarrow \text{NaOH(aq)} + \text{H}_2\text{(g)}$ (1 Mark)
 In reactant side; Na and H_2O is multiply by 2 and in product side; NaOH is multiply by 2 to balance the reaction.
4. (c) The chemical composition of the reactants changes but total mass of the reactants remains same before and after the chemical reaction. (1 Mark)

5.



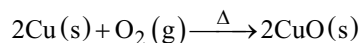
Topper's Answer

b) Formation of crystals by process of crystallization

6. (a) When copper powder is taken into a china dish and heated, a black coloured substance is formed.

(½ mark)

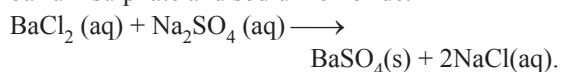
This substance is a copper oxide (CuO) (½ mark)



The crimson red copper is converted into black copper oxide. (1 mark)

OR

- (b) Sodium sulphate reacts with barium chloride to give barium sulphate and sodium chloride.



Barium sulphate is insoluble in water and will precipitate as a white solid.

This reaction is an example of double displacement reaction. (2 marks)

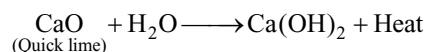


Note

In double displacement two ionic compound exchanging anion and cations. They are of two types.

(1) Precipitation reaction (2) Neutralization reaction

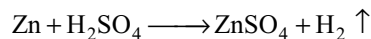
7. $3\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_2 \longrightarrow 3\text{BaSO}_4 + 2\text{AlCl}_3$ (1 mark)
 In this reaction Barium sulphate is formed as a precipitate. It is a precipitation reaction in which a chemical reaction occurring in an aqueous solution where two compounds combine result in the formation of an insoluble salt. These insoluble salt is called as precipitate. (1 mark)
8. (a) Chemical reaction detected by a change in temperature:-



This reaction involves release of heat (exothermic reaction) along with the formation of Ca(OH)_2 .

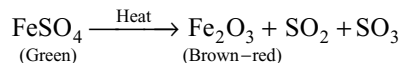
Thus, the temperature of the system rises indicating a chemical change. **(1 Mark)**

- (b) Chemical Reaction detected by evolution of a gas:-



The H_2 gas produced here gives a popping sound upon burning, indicating a chemical change has taken place. **(1 Mark)**

- (c) Chemical reaction detected by a change in colour:-



Here, the thermal decomposition of FeSO_4 causes it to give brown-reddish Fe_2O_3 . **(1 Mark)**

9. (i) $2\text{NaOH (aq.)} + \text{Zn (s)} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$ **(1 Mark)**
 (ii) $\text{CaCO}_3 \text{ (s)} + \text{H}_2\text{O (l.)} + \text{CO}_2 \text{ (g)} \rightarrow \text{Ca(HCO}_3)_2$ **(1 Mark)**

5. (b) 'I' is a displacement reaction as it involves displacement of H^+ ions from HCl and formation of MgCl_2 .

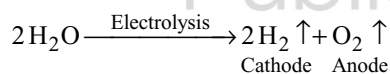
'II' is a double displacement reaction as it involves exchange of ions between NaOH and HCl . **(1 Mark)**



Topper's Answer

12. (b) 'I' is a displacement reaction and 'II' is a double displacement reaction.

6. (c) During the electrolysis of water, volume of hydrogen evolved (V_H) at cathode is double than that of volume of oxygen evolved (V_O) at anode.



Thus, $V_H = 2 V_O$

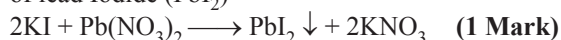
$$\therefore \frac{V_O}{V_H} = \frac{1}{2}$$

(1 Mark)

7. (a) $2\text{Pb(NO}_3)_2 \text{ (s)} \xrightarrow{\text{Heat}} 2\text{PbO (s)} + 4\text{NO}_2 \text{ (g)} + \text{O}_2 \text{ (g)}$ **(1 Mark)**

Hence, $x = 2$, $y = 4$

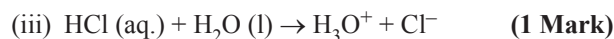
8. (b) Potassium iodide and lead nitrate react and undergo a double-displacement reaction to give a precipitate of lead Iodide (PbI_2)



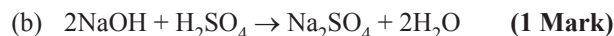
9. (b) Mg burns in air with a dazzling flame to give white ashes of MgO .

Thus, 'X' = Mg , 'Y' = MgO

The given reaction is a combination reaction as only a single product is obtained. **(1 Mark)**



10. (a) $2\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + 2\text{H}_2\text{O}$ **(1 Mark)**



Topic-1.2: Types of Chemical Reactions

1. (c) $2\text{AgCl} \longrightarrow 2\text{Ag} + \text{Cl}_2$

Silver chloride decomposes in the presence of light not heat. **(1 mark)**

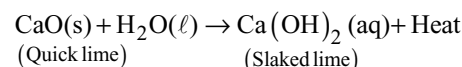
2. (c) $2\text{AgBr} \rightarrow 2\text{Ag} + \text{Br}_2$

It is a type of decomposition in which light or photons are used to break the reactants to form several products. **(1 mark)**

3. (b) Barium sulphate **(1 Mark)**

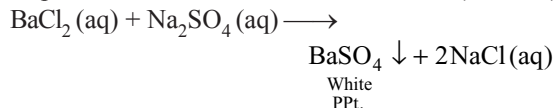
4. (b) Colourless **(1 Mark)**

10. (c) Calcium oxide (Quick lime) reacts vigorously with water to produce calcium hydroxide (slaked lime) releasing a large amount of heat. The balanced chemical equation can be given as: **(1 Mark)**



11. (c) **(1 Mark)**

12. (c) When sodium sulphate reacts with barium chloride solution, then insoluble white precipitate of barium sulphate is formed. **(1 Mark)**



13. (c) $\text{C}_6\text{H}_{12}\text{O}_6 \text{ (aq)} + 6\text{O}_2 \text{ (aq)} \longrightarrow 6\text{CO}_2 \text{ (aq)} + 6\text{H}_2\text{O (l)} + 686 \text{ Kcal}$

The given reaction is a type of exothermic reaction as energy is released during the reaction. **(1 Mark)**

14. (d) $\text{CaCO}_3 \text{ (s)} \xrightarrow{\Delta} \text{CaO (s)} + \text{CO}_2 \text{ (g)}$; is a type of thermal decomposition reaction. When calcium carbonate is heated, it decomposes into calcium oxide and carbon dioxide. **(1 Mark)**

**Note**

Reaction (b) and (c) are the examples of photodecomposition reactions where decomposition takes place in the presence of light. Reaction in option (a) is the electrolytic process in which decomposition process takes place with electricity.

15. (d) Calcium oxide react with water to form calcium hydroxide with the evolution of heat therefore it is a type of combination reaction and exothermic. (1 Mark)

16. (d) $\text{H}_2\text{S}(\text{g}) + \text{CuSO}_4(\text{aq}) \longrightarrow \text{CuS}\downarrow + \text{H}_2\text{SO}_4(\text{aq})$ (1 Mark)

**Note**

Double displacement reactions are the reactions in which the reactants exchange place to form product. Generally precipitate is formed as the product of double displacement reaction.

17. (d) Exchange of ions take place in double displacement reaction that results into the formation of precipitate which is a insoluble salt. (1 Mark)

18. (a) $\text{CaCO}_3 \xrightarrow{\Delta} \text{CaO} + \text{CO}_2 \uparrow$ (1 Mark)

19. (d) $\text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \longrightarrow \text{BaSO}_4(\text{s})\downarrow + 2\text{NaCl}(\text{aq})$ (1 Mark)

20. (c) (1 Mark)

21. (a) Reaction will occur in beaker A only because iron lie above copper in reactivity series thus being more active will displace copper from its salt. (1 Mark)

22. (a) Quicklime (CaO) reacts with water to give limewater $\text{Ca}(\text{OH})_2$ along with the release of heat.
 $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2 + \text{Heat}$ (1 Mark)
 Thus, the reaction is a fast reaction and an exothermic reaction.

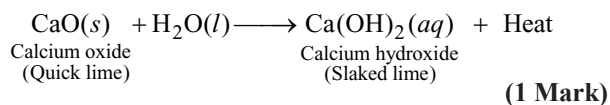
23. (d) Burning of natural gas is an exothermic process. When methane gas combines with oxygen, it will produce carbon dioxide and water.



24. Element [1 Mark]

25. No, double displacement reaction takes place when there is formation of a sparingly soluble salt. (1 Mark)

26. Quicklime reacts with water to produce slaked lime. In this process, large amounts of heat is released.



27. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2\downarrow$
 CaO is solid and carbon dioxide is gas. (1 Mark)

28. (a) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightarrow 2\text{NH}_3(\text{g})$ (½ Mark)
 (Nitrogen) (Hydrogen) (Ammonia)

This is a combination reaction. (½ Mark)

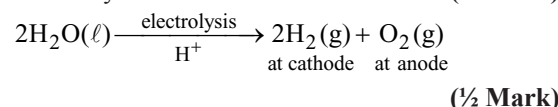
- (b) $2\text{Pb}(\text{NO}_3)_2(\text{s}) \xrightarrow{\text{Heat}}$
 (lead nitrate) $2\text{PbO}(\text{s}) + 4\text{NO}_2(\text{g}) + \text{O}_2(\text{g})$
 (lead oxide) (Nitrogen dioxide) (Oxygen)
- (½ Mark)

This is a decomposition reaction (½ Mark)

- (c) $\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$ (½ Mark)

This is a displacement reaction. (½ Mark)

29. (i) Addition of some drops of acid like dilute H_2SO_4 increases the conductivity of the solution to be electrolysed as water is a bad conductor of electricity. (½ Mark)



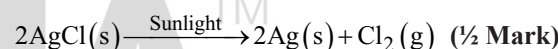
Gas liberated at cathode = H_2

Gas liberated at anode = O_2 (½ Mark)

According to the balanced chemical equation, the volume of hydrogen gas collected at the cathode is double the volume of the oxygen gas collected at the anode.

$$V(\text{H}_2) = 2V(\text{O}_2) \quad (½ \text{ Mark})$$

- (ii) AgCl turns grey in the presence of sunlight.



This is a decomposition reaction. (½ Mark)

30. (a) The reaction in which exchange of ions takes place between the reactants are called double displacement reactions. (1 Mark)

- (b) (i) A neutralization reaction is the reaction in which an acid reacts with a base to form salt and water.

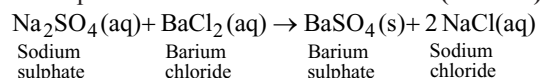
When sodium hydroxide (base) reacts with hydrochloric acid, it gives sodium chloride (salt) and water. This is a double displacement reaction as well as neutralization reaction.



Sodium hydroxide
Hydrochloric acid
Sodium chloride
Water

- (ii) A precipitation is a type of reaction in which two or more reactants react together to form an insoluble solid substance (precipitate).

When sodium sulphate reacts with barium chloride, it forms sodium chloride and white precipitate of barium sulphate. This reaction is an example of precipitation as well as double displacement reaction. (1 Mark)

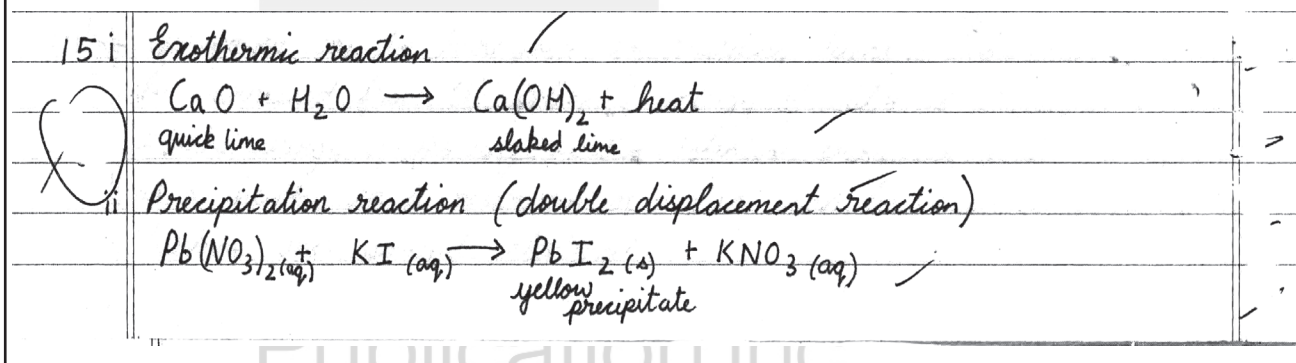


31. There will be no reaction. (1 Mark)
All the ions will be in solution.
There is no insoluble product formed on mixing the two solutions. (1 Mark)
32. (a) Decomposition/Electrolytic decomposition (½ Mark)
(b) Energy in the form of electrical energy is absorbed during the decomposition of water. (½ Mark)
(c) Balanced equation:
 $2\text{H}_2\text{O} + \text{energy} \rightarrow 2\text{H}_2 + \text{O}_2$. (½ + ½ = 1 Mark)
33. (i) Photo decomposition of silver chloride takes place which results in formation of silver and colour changing to grey. (1 Mark)
 $2\text{AgCl} \rightarrow 2\text{Ag} + \text{Cl}_2$
- (ii) Copper undergoes oxidation and black coloured copper oxide is formed. (1 Mark)
 $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$
- (iii) Zinc displaces copper from its solution as Zn is relatively and is more active than Cu and forms Zn^{2+} in solution colour of the solution changes from blue to colourless.
 $\text{Zn (s)} + \text{CuSO}_4 \text{ (aq.)} \rightarrow \text{Cu (s)} + \text{ZnSO}_4 \text{ (aq.)}$ (1 Mark)

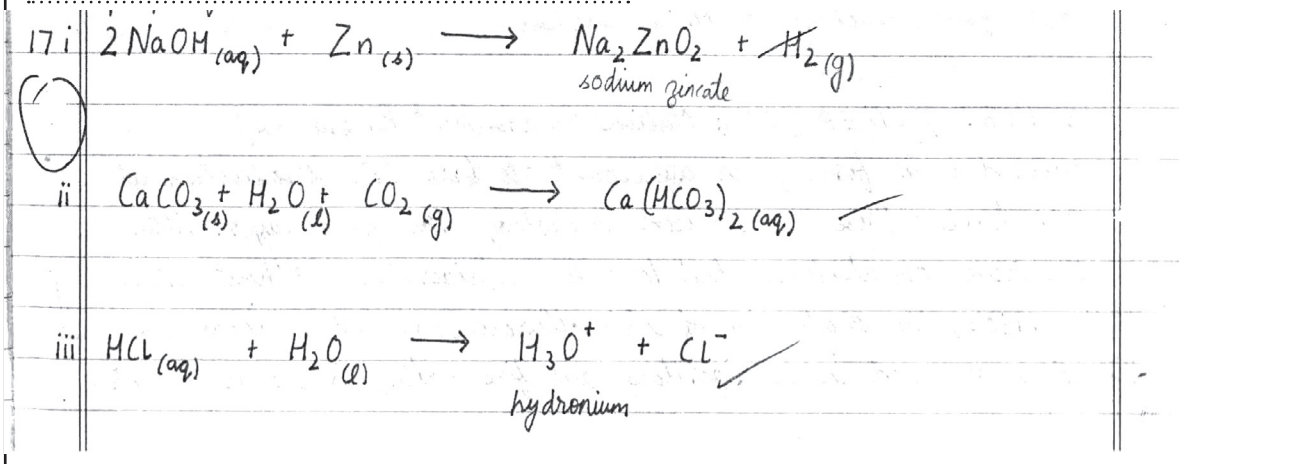
**Note**

Zinc is placed above copper in the reactivity series therefore zinc is able to displace copper from its solution. Reverse of this reaction is not possible.

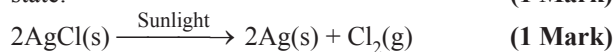
34.

**Topper's Answer**

35.

**Topper's Answer**

36. When silver chloride is kept in sunlight in a china dish we observe that white color of silver chloride changes into grey which is due to the formation of silver in solid state. (1 Mark)



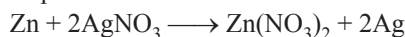
The above reaction is a type of decomposition reaction. In this reaction silver chloride decomposes in presence of sunlight into silver and chlorine gas. (1 Mark)



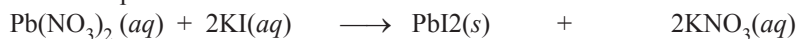
Note

Decomposition reaction in presence of light is known as photodecomposition reaction while in presence of heat it is known as thermal decomposition reaction.

37. (a) displacement reaction (½ Mark)



- (b) double displacement reaction (½ Mark)



Lead nitrate Potassium Lead iodide Potassium

iodide (Yellow ppt.) nitrate

(1 Mark)

38.



Topper's Answer

Q5. ✓

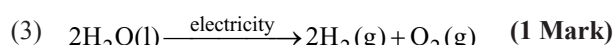
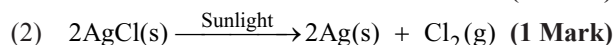
$$\text{FeSO}_4(aq) + \text{Zn}(s) \xrightarrow{\text{displacement}} \text{ZnSO}_4(aq) + \text{Fe}(s)$$

ferrous sulphate zinc granules zinc sulphate ferrous iron

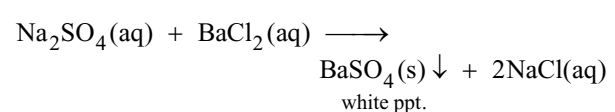
The green colour of the solution changes to greyish-white as there is a displacement reaction occurring. Zinc being more reactive than iron displaces it from its salt solution.

∴ Fe powder can be observed.

39. (1) $2\text{FeSO}_4(s) \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3(s) + \text{SO}_2(g) + \text{SO}_3(g)$
 Ferrous sulphate Ferric oxide (1 Mark)



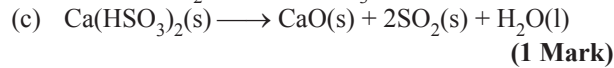
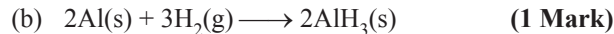
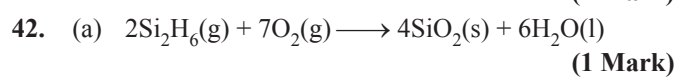
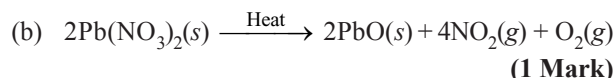
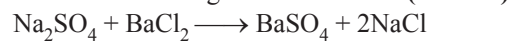
40. When a solution of sodium sulphate is added to a solution of barium chloride a white insoluble substance is formed.



This is a double displacement reaction. (2 Marks)

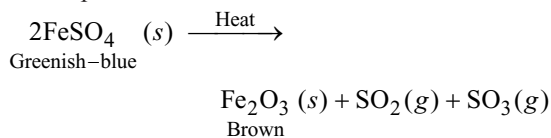
41. (a) (i) Combination reactions are generally exothermic whereas decomposition reaction are endothermic. (1 Mark)
- $$2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$$

- (ii) In a displacement reaction one element displaces another element from its compound, whereas in double displacement reaction two different atoms or group of atoms are exchanged. (1 Mark)



43. (a) The colour of ferrous sulphate crystals is green. On heating, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ first decomposes to form anhydrous ferrous sulphate (FeSO_4) which is white in colour. (1 ½ Marks)

- (b) The products formed on strongly heating ferrous sulphate crystals are ferric oxide, sulphur dioxide and sulphur trioxide.

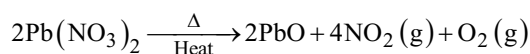


(1 Mark)

This is a type of decomposition reaction (thermal decomposition) (½ Mark)

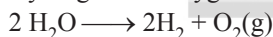
44. (i) A chemical reaction in which one substance splits into two or more single substance is called as decomposition reaction.

Chemical Reaction :-



When Lead Nitrate is heated in a boiling tube. It decompose into Lead oxide (PbO) and Nitrogen dioxide (NO₂). O₂ gas evolved from it. Due to formation of Lead oxide it will turn into yellow colour. (1 mark)

- (ii) In electrolytic decomposition of water two gases Hydrogen and oxygen were liberated.



Two moles of water undergo electrolysis and produce two moles of hydrogen and one mole of oxygen gas. Hydrogen gas released at cathode and oxygen gas is released at anode.

The mass ratio of the gas liberated at the cathode and at the anode is 1 : 8. (1 mark)

Note

Anode → It acts as an electron donor.

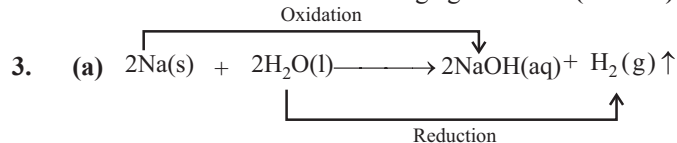
Cathode → It acts as an electron acceptor.



Topic-1.3: Have You Observed the Effects of Oxidation Reactions in Everyday Life?

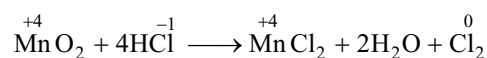
1. (d) $\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$
This is redox reaction and not a combination reaction. In which Fe₂O₃ is reduced and CO is oxidised to form the products. (1 mark)

2. (d) MnO₂ is reduced and HCl is oxidised. MnO₂ loses oxygen therefore it is reduced and act as a oxidizing agent. On the other side HCl loses hydrogen. It is oxidized and act as reducing agent. (1 mark)



In this reaction, H₂O is reduced to H₂ while Na is oxidised to NaOH. Hence, Na is the reducing agent as it reduces H₂O to H₂. (1 Mark)

4. (c) HCl forms Cl₂ by losing 1'H' atom per molecule. Thus it gets oxidized itself and acts as reducing agent. Simultaneously, MnO₂ loses 2 'O' atoms per molecule and forms MnCl₂ thus, it gets reduced and acts as an oxidizing agent.



HCl is oxidised to Cl₂, thus there is increase in oxidation state while MnO₂ is reduced to MnCl₂, thus there is decrease in oxidation state. Hence MnO₂ act as an oxidizing agent and HCl act as a reducing agent. (1 Mark)

Note

Modern definiton of oxidatin Reduction process:

Loss of electron → Charge over element increases
→ Oxidation

Gain of electron → Charge over elements decreases
→ Reduction

$\overset{-1}{\text{HCl}} \longrightarrow \overset{0}{\text{Cl}_2}$ (charge increases by one unit) →
Oxidation

$\overset{+4}{\text{MnO}_2} \longrightarrow \overset{+2}{\text{MnCl}_2}$ (charge decrease by two unit)
→ Reduction

5. (b) $2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO} \downarrow$ (1 Mark)
Black
6. (a) $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$
In this reaction, ZnO is reduced to Zn and C is oxidised to CO. Thus, C is reducing agent while ZnO is oxidising agent. (1 Mark)

7. The given reaction involves conversion of MnO_2 into MnCl_2 in which the oxidation state of Mn changes from +4 to +2. Thus, it is reduced. (1 Mark)
 The oxidation state of Cl changes from -1 in HCl to 0 in Cl_2 . Thus, it is oxidized. (1 Mark)
 Therefore, the given reaction is a Redox reaction.



Topper's Answer

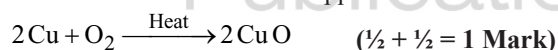
21. The given reaction:



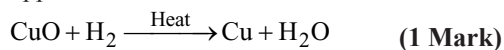
A redox reaction is a reaction in which both oxidation and reduction is taking place. In this reaction, MnO_2 is getting reduced to MnCl_2 as O_2 is ~~reduced~~ removed from it. HCl is getting oxidised, as Cl_2 separates and H_2O is formed. Hydrogen is removed from HCl and is getting oxidised to form H_2O here. Thus, the given reaction is a redox reaction.

8. When copper powder is heated in a watch glass, a black substance is formed.

(i) This black substance is copper (II) oxide. It is formed due to oxidation of copper.



(ii) This black substance (CuO) can be reversed in its original form by passing hydrogen gas over this heated material. The reverse reaction takes place and the black coating on the surface turns brown and copper is obtained.



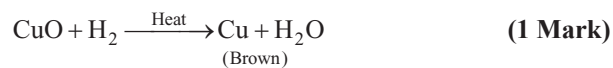
9. Arrangement Y [1 Mark]

Rusting is a surface phenomenon. [$\frac{1}{2}$ Mark]

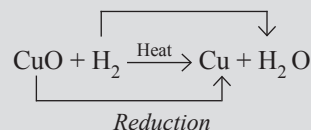
Arrangement Y has a larger surface area exposed to air. [$\frac{1}{2}$ Mark]

10. When copper powder is heated in a china dish it gets oxidised and converted to copper (II) oxide which is

black in colour. When Hydrogen gas is passed over this heated substance black coloured copper oxide further reduced to copper and colour changes to brown.



Note



Oxidation : gain of oxygen or loss of Hydrogen

Reduction : loss of oxygen or gain of Hydrogen

Oxidising agent : reduces itself and oxidises other substance.

Reducing agent : oxidises itself and reduces other substance.

11.



Topper's Answer

9.

a) This black substance has been formed due to the oxidation of copper powder.

b) This black substance is copper oxide (CuO).

c)
$$\text{Cu} + \text{O}_2 \xrightarrow{\text{Heat}} 2\text{CuO}$$

 (s) (g) (s)

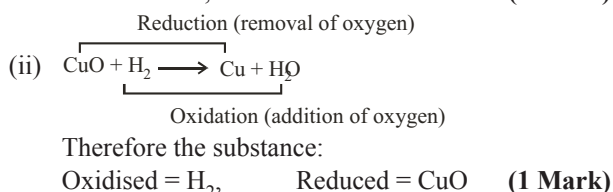
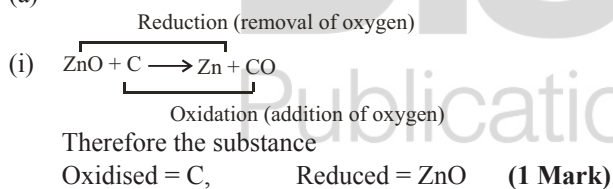
 Copper (reddish brown) (from air) Copper oxide (black)

d) This black coating can be removed by treating the black compound with hydrogen.

$$\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$$

 Copper oxide (black) Hydrogen Copper metal (shiny brown) Water

12. (a)



(b) H₂S is the reducing agent while SO₂ is the oxidising agent. (1 Mark)

**Note**

Oxidising agents are the compounds that oxidises the other substance and itself get reduced.
 Reducing agent are the compounds that reduces other substance and itself get oxidised.

13. (a) The oil and fat containing food when left exposed to air reacts with oxygen and gets oxidized forming a toxic chemical called rancid, this process is called rancidity. The general name of the chemicals that are added to prevent this oxidation are called as antioxidants. For example, Nitrogen gas is anti-oxidant. (2 Marks)

(b) X is copper.
 Green compound is due to formation of copper carbonate and black colour compound is due to the formation of copper oxide. (1 Mark)

**Note**

Copper articles when left in open green coating of copper carbonate deposited on the surface: when silver articles are kept in open they acquire black coating of Ag₂S.

27

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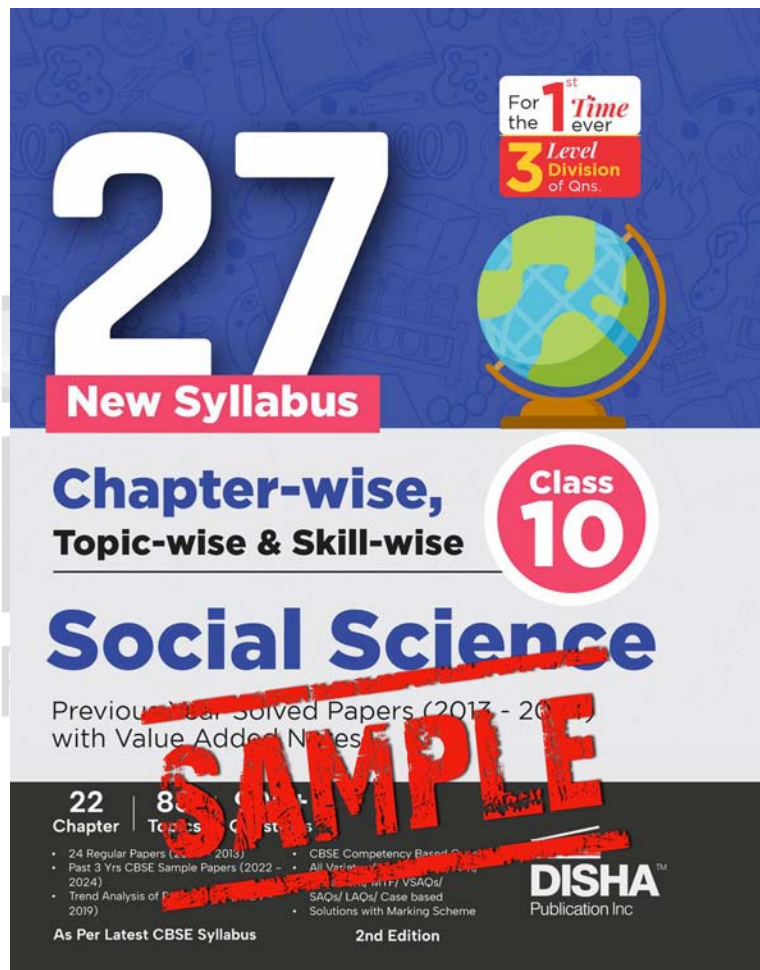

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1-28

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Chapterwise Topicwise CBSE 2024

All India and Delhi Solved Paper

ECONOMICS

Chapter 1 : Development



Topic-1: National Development

1. Which of the following are development goals of a prosperous farmer?
Choose the correct from the given options.
- Better wages
 - Higher support prices for crops
 - Assured high family income
 - More days for work
- [Delhi 2024]
- (a) Only I and II are correct.
(b) Only II and IV are correct.
(c) Only II and III are correct.
(d) Only I and IV are correct.



Topic-2: Comparing Countries and States

2. Look at the given picture. The work being done in the picture comes under which one of the following economic sectors?
[All India 2024]



- (a) Primary (b) Secondary
(c) Tertiary (d) Quaternary
3. Suppose, the monthly income of the family members is as follows respectively:
[Delhi 2024]
- Mother – Rs. 50, 000/-
 - Father – Rs. 40,000/-
 - Son – Rs. 20, 000/-
 - Daughter – Rs. 20, 000 /-
- The average income of the family would be:
- (a) Rs. 32,000/- (b) Rs. 30,000/-
(c) Rs. 32,500/- (d) Rs.33,000/-
4. Which one of the following indices is given priority by the World Bank with respect to development ?
[Delhi 2024]
- (a) Infant Mortality Rate
(b) Equality
(c) Body Mass Index
(d) Per Capita Income



Topic-4: Sustainable Development

5. How is the issue of sustainability important for development? Explain.
[Delhi 2024]

Chapter 2 : Sectors of Indian Economy



Topic-1: Primary, Secondary and Tertiary Sectors in India

6. Which one of the following sectors has the highest share in employment in India?
[All India 2024]
- (a) Primary (b) Secondary
(c) Tertiary (d) Quaternary
- Note:** The following question is for the **Visually Impaired Candidates** only, in lieu of Q. No. 16.
'Floriculture' comes under which one of the following sectors of the economy?
- (a) Primary (b) Secondary
(c) Tertiary (d) Quaternary
7. (a) Examine the significance of the tertiary sector in the Indian economy.
[All India 2024]

OR

- (b) Explain the contribution of the primary sector in the context of employment in India.



Topic-3: Organised and Un-Organised Sectors

8. Which one of the following is an example of organized sector activities?.
[Delhi 2024]
- (a) A farmer irrigating his field.
(b) A handloom weaver working in her house.
(c) A headload worker carrying cement.
(d) A teacher taking classes in a government school.



Topic-4: Public and Private Sectors

9. Differentiate between Public and Private Sector
[Delhi 2024]

Chapter 3 : Money and Credit



Topic-2: Modern form of money

10. Look at the given picture carefully and infer the income of the bank.



Choose the correct options from the following.

[Delhi 2024]

- The difference between the amount deposited and borrowed by the bank to Reserve Bank of India.
- The difference of amount of interest between what is charged from borrowers and what is paid to depositors.
- The difference of interest rate between what is charged from borrowers and what is charged from depositor.
- The difference between the amount deposited by the depositor and borrowed by the borrower.

Note : The following question is for **Visually Impaired Candidates only in lieu of Q. No. 20.**

Which one of the following supervise the functioning of formal sources of loan in India?

[Delhi 2024]

- Reserve Bank of India
- State Bank of India
- National Development Council
- National Finance Commission



Topic-3: Loan from Banks

11. Two statements are given below. They are Assertion (A) and Reason (R). Read both the statements and choose the correct option.

[All India 2024]

Assertion (A) : Rural poor families are still dependent on informal sources of credit.

Reason (R) : For obtaining loan from banks, collateral and special documents required.

- Both (A) and (R) are true and (R) is the correct explanation of (A).
 - Both (A) and (R) are true, but (R) is not the correct explanation of (A).
 - (A) is true, but (R) is false.
 - (A) is false, but (R) is true.
12. In one of the small villages, a farmer borrows money from the village moneylender at a high monthly interest rate but is not able to repay it back. Next, he borrows it from a bank at a lower interest rate. Gradually he earns and pays back the loan to the moneylender and the bank. Which of the following best describes the role of the bank in this credit situation?
- [All India 2024]
- The bank acts as a cooperative lender.
 - The bank facilitates a debt-trap situation.
 - The bank ensures a fair exchange of goods.
 - The bank saves the farmer from debt-trap.

13. Read the given source and answer the questions that follow :
- [All India 2024]

Loan from Cooperatives

Besides banks, the other major source of cheap credit in rural areas are the cooperative societies (or cooperatives). Members of a cooperative pool their resources for cooperation in certain areas. There are several types of cooperatives possible such as farmers cooperatives, weavers cooperatives, industrial workers cooperatives, etc. Krishak Cooperative functions in a village not very far away from Sonpur. It has 2300 farmers as members. It accepts deposits from its members. With these deposits as collateral, the Cooperative has obtained a large loan from the bank. These funds are used to provide loans to members. Once these loans are repaid, another round of lending can take place.

Krishak Cooperative provides loans for the purchase of agricultural implements, loans for cultivation and agricultural trade, fishery loans, loans for construction of houses and for a variety of other expenses.

- 13.1 How do 'Krishak Cooperatives' secure funds for providing loans to their members? [All India 2024]
- 13.2 What are the different types of loans that 'Krishak Cooperatives' offer to their members? [All India 2024]
- 13.3 Why are such cooperatives desirable in the rural areas? 2 [All India 2024]

14. Why do lenders often required collateral before lending loan? Choose the most suitable options from the following.
- [Delhi 2024]

- To lower interest rates for borrowers.
- To establish personal relations.
- To increase their profit margins.
- To mitigate the risk of loan default.



Topic-4: Credit System

15. How is credit essential for economic activities? Explain with examples.
- [Delhi 2024]



Topic-5: Self Help Groups

16. Select the formal sources of credit from the given sources and choose the correct option. [All India 2024]

- | | |
|--------------------|---------------------|
| I. Bank | II. Moneylender |
| III. Cooperatives | IV. Businessman |
| (a) Only I and II | (b) Only II and III |
| (c) Only I and III | (d) Only I and IV |

Chapter 4 : Globalisation and the Indian Economy



Topic-2: Meaning of Globalisation

17. (A) "Globalisation is the process of rapid integration and inter connection between countries." Explain the statement with examples. [Delhi 2024]



Topic-3: Factors lead to Globalisation

18. Which one of the following is included in 'liberalization'? [All India 2024]
- (a) Promoting trade barriers
(b) Removing trade barriers

- (c) Controlling the other country through trade
(d) Increasing import, export duty on goods
19. How have the developments in information and communication technology been the major factor to enable globalisation? Explain. [All India 2024]
20. Choose the correct option to fill the blank. Removing barriers or restrictions on business and trade set by the government is called as _____. [Delhi 2024]
- (a) Disinvestment
(b) Special Economic Zones
(c) Liberalisation
(d) Foreign Direct Investment
21. (B) 'Improvement in technology has stimulated the globalisation process'. Explain the statements with examples. [Delhi 2024]

HISTORY

Chapter 1 : The Rise of Nationalism in Europe



Topic-1: The French Revolution and the Idea of the Nation

1. (a) "The first clear expression of nationalism came with the French Revolution in 1789." Evaluate the statement. [All India 2024]
2. "The Silk route was a good example of vibrant pre-modern trade and cultural links between distant parts of the world." Explain the statement with any two examples. [Delhi 2024]



Topic-2: The Making of Nationalism in Europe

3. Who among the following hosted the 'Vienna Congress' in 1815? [All India 2024]
- (a) Chancellor Duke Metternich
(b) Ernst Renan
(c) William I
(d) Otto von Bismarck
4. (b) "Following the defeat of Napoleon in 1815, European governments were driven by a spirit of conservatism." Evaluate the statement. [All India 2024]
5. Two statements are given below. They are **Assertion (A)** and **Reason (R)**.
Read both the statements and choose the correct option.
Assertion (A) : The most serious source of nationalist tension in Europe after 1871 was Balkan.
Reason (R) : A large part of the Balkan was under the control of Ottoman Empire. [Delhi 2024]

- (a) Both, (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true but (R) is false.
(d) (A) is false but (R) is true.
6. (A) How did the ideology of 'liberalism' affect the Europe in early nineteenth century? Explain. [Delhi 2024]



Topic-4: The Making of Germany and Italy

7. From which of the following countries Giuseppe Garibaldi belonged to? [Delhi 2024]
- (a) Austria (b) Italy
(c) Greece (d) Spain
8. Arrange the following events in chronological order and choose the correct option from the following :
I. Treaty of Constantinople
II. Defeat of Napoleon
III. Unification of Italy
IV. Unification of Germany [Delhi 2024]
- (a) I, II, IV and III (b) II, III, I and IV
(c) II, I, IV and III (d) IV, I, III and II
9. (B) Explain the process of formation of 'United Kingdom of Great Britain'. [Delhi 2024]
10. (A) How is energy a basic requirement for economic development? Explain. [Delhi 2024]



Topic-6: Nationalism and Imperialism

11. Choose the correct option to fill in the blank. [All India 2024]

In the beginning of the 19th century, _____ a girl married in a very orthodox household wrote an autobiography called 'Amar Jiban'.

- (a) Pandita Ramabai (b) Rashundari Devi
(c) Tarabai Shinde (d) Kailashbashini Debi

Chapter 2 : Nationalism in India

Topic-1: The First World War, Khilafat and Non-Cooperation

12. Arrange the following events in chronological order and choose the correct option. [All India 2024]
- I. Formation of Khilafat Committee in Bombay
II. Jallianwala Bagh Massacre
III. Bardoli Satyagraha
IV. Withdrawal of Non-Cooperation Movement
- (a) I, II, III, IV (b) II, I, IV, III
(c) I, II, IV, III (d) III, IV, II, I
13. (a) Explain the role of women in the Civil Disobedience Movement, with examples. [All India 2024]
14. (A) Describe any three causes that led to the Non - Cooperation Movement. [Delhi 2024]

Topic-2: Differing Strands within the Movement

15. (a) Two places 'A' and 'B' have been marked on the given political outline map of India (on page 27). Identify them with the help of the following information and write their correct names on the lines drawn near them :
- A. The place where the session of Indian National Congress was held in 1920. [All India 2024]
B. The place where Gandhiji broke the salt law.
- (b) On the same political outline map of India, locate and label any three of the following with suitable symbols :
16. (i) Two places 'A' and 'B' have been marked on the given Political outline map of India. Identify them with the help of the following information and write their correct names on the lines drawn near them: [Delhi 2024]
- (a) The place where Mahatma Gandhi broke the salt law.
(b) The place where Session of Indian National Congress was held in 1927.

Topic-3: Towards Civil Disobedience

17. (B) Describe any three causes of 'Civil Disobedience Movement'. [Delhi 2024]

Topic-4: The Sense of Collective Belonging

18. (b) How did the Indian folklore and symbols strengthen the idea of nationalism during the twentieth century? Explain with examples. [All India 2024]
19. Which one of the following pairs regarding Indian nationalism is correctly matched? [Delhi 2024]
- | Leaders | Contribution |
|------------------------|---|
| (a) Sardar Patel | : Hindustan Socialists
Republican Army |
| (b) Bhagat Singh | : Swaraj Party |
| (c) C. R. Das | : Bardoli Satyagraha |
| (d) Jawahar Lal Nehru: | Oudh Kisan Sabha |

Chapter 3 : The Making of a Global World

Topic-1: The Pre-modern World

20. Which one of the following religions emerged from eastern India and spread in several directions through intersecting points on the 'silk routes'?
- (a) Hinduism (b) Christianity
(c) Buddhism (d) Jainism

Topic-2: The Nineteenth Century (1815-1914)

21. Why did people flee Europe for America in the nineteenth century? [All India 2024]

Chapter 5 : Print Culture and the Modern World

Topic-4: The Reading Mania

22. Read the following source carefully and answer the questions that follow : [Delhi 2024]

Printed Words

This is how Mercier described the impact of the printed word, and the power of reading in one of his books:

'Anyone who had seen me reading would have compared me to a man dying of thirst who was gulping down some fresh, pure water Lighting my lamp with extraordinary caution, I threw myself hungrily into the reading. An easy eloquence, effortless and animated, carried me from one page to the next without my noticing it. A clock struck off the hours in the silence of the shadows, and I heard nothing. My lamp began to run out of oil and produced only a pale light, but still I read on. I could not even take out time to raise the wick for fear of interrupting my pleasure. How those new ideas rushed into my brain! How my intelligence adopted them!

- 22.1 How does the passage reflect the immersive nature of reading of Mercier?
- 22.2 Why did Mercier describe himself as a virtual writer?
- 22.3 How did reading influence Mercier's intellectual capacity and his engagement with new concepts? Explain in any two points.



Topic-6: India and the World of Print

23. Read the given source and answer the questions that follows:

Print Comes to India

[All India 2024]

From 1780, James Augustus Hickey began to edit the *Bengal Gazette*, a weekly magazine that described itself as 'a commercial paper open to all, but influenced by none'. So it was private English enterprise, proud of its independence from colonial influence, that began

English printing in India. Hickey published a lot of advertisements, including those that related to the import and sale of slaves. But he also published a lot of gossip about the Company's senior officials in India. Enraged by this, Governor-General Warren Hastings persecuted Hickey, and encouraged the publication of officially sanctioned newspapers that could counter the flow of information that damaged the image of the colonial government. By the close of the eighteenth century, a number of newspapers and journals appeared in print. There were Indians, too, who began to publish Indian newspapers. The first to appear was the weekly *Bengal Gazette*, brought out by Gangadhar Bhattacharya, who was close to Raja Rammohan Roy.

- 23.1 In which language was '*Bengal Gazette*' edited by James Augustus Hickey published?
- 23.2 Why was James Augustus Hickey persecuted?
- 23.3 Which newspapers were encouraged during the 1780s? Why were they encouraged?

GEOGRAPHY

Chapter 1 : Resources and Development



Topic-1: Development of Resources

1. Read the given source and answer the questions that follows :

Conservation of Resources

At the international level, the *Club of Rome* advocated resource conservation for the first time in a more systematic way in 1968. Subsequently in 1974, Gandhian philosophy was once again presented by Schumacher in his book *Small is Beautiful*. The seminal contribution with respect to resource conservation at the global level was made by the Brundtland Commission Report, 1987. This report introduced the concept of 'Sustainable Development' and advocated it as a means for resource conservation, which was subsequently published in a book entitled *Our Common Future*. Another significant contribution was made at the Earth Summit at Rio de Janeiro, Brazil in 1992.

- 1.1 Explain the meaning of sustainable development. [All India 2024]
- 1.2 In which international conference was 'Agenda-21' accepted? [All India 2024]
- 1.3 Explain any two outcomes of the Summit. [All India 2024]



Topic-4: Soil as a Resource

2. Identify the soil with the help of following information.
- It develops in areas with high temperature.

- It is the result of intense leaching due to heavy rain.
- Humus content is low.

Soil :

[Delhi 2024]

- (a) Arid soil (b) Yellow soil
(c) Laterite soil (d) Black soil

Chapter 2 : Forest and Wildlife Resources



Topic-1: Conservation of Forest and Wildlife

3. Match Column I with Column II and choose the correct option. [All India 2024]

Column-I

Column-II

(National Park)

(State)

- i. Kaziranga a. Madhya Pradesh
ii. Jim Corbett b. Assam
iii. Sunderbans c. Uttarakhand
iv. Bandhavgarh d. West Bengal

- (a) i-a, ii-b, iii-c, iv-d
(b) i-d, ii-c, iii-b, iv-a
(c) i-c, ii-b, iii-d, iv-a
(d) i-b, ii-c, iii-d, iv-a

4. (A) Suggest any two measures for the conservations of Wildlife. [Delhi 2024]

OR

- (B) Suggest any two measures for the conservations of Wildlife. [Delhi 2024]

Chapter 3 : Water Resources



Topic-3: Rainwater Harvesting

5. In which one of the following states is 'bamboo drip irrigation system' prevalent? [All India 2024]
 (a) Tamil Nadu (b) West Bengal
 (c) Meghalaya (d) Odisha
6. Read the following source carefully and answer the questions that follow: [Delhi 2024]

FLOODS

Basic safety Precautions To Be Taken:



- Listen to radio / TV for the latest weather bulletins and flood warnings.
Pass on the information to others.
- Make a family emergency kit which should include; a portable radio / transistor, torch, spare batteries, a first aid box along with essential medicines, ORS, dry food items, drinking water, matchboxes, candles and other essential items.
- Keep hurricane lamp, ropes, rubber tubes, umbrella and bamboo stick in your house. These could be useful.
- Keep your cash, jewellery, valuables, important documents etc. in a safe place.
- If there is a flood, move along with your family members and cattle to safe areas like relief camps, evacuation centers, elevated grounds where you can take shelter.
- Turn off power and gas connections before leaving your house.

During floods:

- Don't enter into flood waters; it could be dangerous.
- Don't allow children to play in or near flood waters.
- Stay away from sewerage line, gutters, drains, culverts etc.
- Be careful of snakes; snakebites are common during floods.
- Stay away from electric poles and fallen power - lines to avoid electrocution.
- Don't use wet electrical appliances - get them checked before use.
- Eat freshly cooked and dry food. Always keep your food covered.

- Use boiled and filtered drinking water.
- Keep all drains, gutters near your house clean.
- Stagnation of water can breed vector/ water - borne diseases. In case of sickness, seek medical assistance.
- Use bleaching powder and lime to disinfect the surroundings.

- 6.1 Mention any two essential items that should be included in a 'family emergency kit'.
- 6.2 Why are the items of family emergency kit important during flood situation?
- 6.3 In case of a flood, what are the recommended actions to ensure the safety of your family and belongings? Describe any two.

Chapter 4 : Agriculture



Topic-2: Cropping Pattern: Rabi, Kharif and Zaid

7. Describe any three features of Rabi crop season. [All India 2024]
8. Read the given statements and choose the correct options with regard to Rabi cropping season from the following:
 I. Rabi crops are sown in winter.
 II. Sown from October to December and harvested from April to June.
 III. Important crops are Maize, Cotton, Jute.
 IV. Punjab, Haryana, Uttar Pradesh are important for the production of wheat. [Delhi 2024]
 (a) I, III and IV (b) II, III and IV
 (c) I, II and IV (d) I, II and III

Chapter 5 : Minerals and Energy Resources



Topic-1: Mineral Resources: Metallic and Non-Metallic

9. Which one of the following is the highest 'bauxite' producing state of India? [All India 2024]
 (a) Maharashtra (b) Jharkhand
 (c) Gujarat (d) Odisha
10. (a) "Minerals occur in igneous and metamorphic rocks." Explain the statement with example. [All India 2024]

OR

- (b) "The ocean waters contain vast quantities of minerals." Explain the statement with example.
11. Choose the correctly matched pair. [Delhi 2024]
 (a) Ferrous – Natural Gas
 (b) Non - Ferrous – Nickel
 (c) Non - Metallic – Limestone Minerals
 (d) Energy Minerals – Cobalt

Topic-3: Energy Resources: Conventional and Non-Conventional

12. (B) How are conventional sources of energy different from non – conventional sources ? Explain.

[Delhi 2024]

Chapter 6 : Manufacturing Industries

Topic-1: Importance of Manufacturing

13. (b) “Agriculture and Industry move hand in hand,” Justify the statement. [All India 2024]

Topic-2: Classification of Industries

14. ‘Manufacturing industries are considered the backbone of economic development.’ Justify the statement.

[Delhi 2024]

Chapter 7 : Lifeline of National Economy

Topic-1: Means of Transport: Land, Air, and Water

15. (i) Bailadila - Iron ore Mines [All India 2024]
 (ii) Namrup - Thermal Power Plant
 (iii) Kandla - Major Sea Port
 (iv) Meenam Bakkam - International Airport
 (ii) On the same Political outline map of India, locate and label **any three** of the following with suitable symbols: [Delhi 2024]
- | | | |
|----------------|---|--------------------------|
| (a) Hirakud | – | Dam |
| (b) Mumbai | – | Software Technology Park |
| (c) Raja Sansi | – | International Airport |
| (d) Naraura | – | Nuclear Power Plant |

POLITICAL SCIENCE

Chapter 1 : Power Sharing

Topic-1: Power Sharing in Sri Lanka

1. Two statements, I and II are given below. Read both the statements and choose the correct option.

[All India 2024]

Statement I: Division of power is good for democratic systems.

Statement II: It helps to reduce the possibility of conflict between social groups.

- (a) Statement I is true, but II is false.
 (b) Statement I is false, but II is true.
 (c) Statements I and II are true and II is the correct explanation of I.
 (d) Statements I and II are true, but II is not the correct explanation of I.
2. Which of the following was the primary objective of Belgium to form the separate government in Brussels? [Delhi 2024]
- (a) Promoting cultural events.
 (b) Managing international relations.
 (c) Enforcing local laws.
 (d) Ensuring linguistic accommodation.
3. Why is power sharing desirable ? Explain. [Delhi 2024]

Topic-3: Why Power Sharing is Desirable

4. (B) How do democracies lead to peaceful and harmonious life among citizens? Explain.

[Delhi 2024]

Topic-4: Forms of Power Sharing

5. What role do ‘checks and balances’ play in a democratic country?

Choose the most suitable option from the following.

[Delhi 2024]

- (a) To establish a direct form of government without representatives.
 (b) To create a separation of powers to prevent from authoritarianism.
 (c) To prevent any change to the Constitution.
 (d) To ensure absolute power for one branch of government.

Chapter 2 : Federalism

Topic-1: Features of Federalism,

6. Choose the most appropriate option regarding the division of legislative rights in India. [All India 2024]

Subject list in Indian Constitution	Subjects
-------------------------------------	----------

- | | | |
|------------------------|---|-----------------------------|
| (a) Union List | – | Defence and Commerce |
| (b) State List | – | Police and Agriculture |
| (c) Concurrent List | – | Forest and Communication |
| (d) Residuary Subjects | – | Computer Software and Trade |

7. Describe any three characteristics of the Indian federal system. [All India 2024]



Topic-2: India: A Federal Country

8. Which one of the following is a scheduled language as per the Constitution of India? [All India 2024]
 (a) Bhojpuri (b) Garhwali
 (c) Nepali (d) Rajasthani



Topic-3: How is federalism practised?

9. Mention the formation of Zilla Parishad. [All India 2024]

10. Match the Column I with Column II and choose the correct option:

Column I (List)	Column II (Jurisdiction Sphere)
I. Union list subjects	A. State Governments alone make laws on it.
II. State list subjects	B. For uniformity Central Government Legislates on it.
III. Concurrent subjects	C. Subjects under Jurisdiction of Centre and State Governments.
IV. Residuary subjects	D. Central government legislates on new subjects.

[Delhi 2024]

I	II	III	IV
(a) A	B	C	D
(b) C	D	A	B
(c) D	C	B	A
(d) B	A	C	D



Topic-4: Decentralisation in India

11. Read the following source carefully and answer the questions that follow: [Delhi 2024]

LOCAL GOVERNMENT

This new system of local government is the largest experiment in democracy conducted anywhere in the world. There are now about 36 lakh elected representatives in the panchayats and municipalities etc., all over the country. This number is bigger than the population of many countries in the world. Constitutional status for local government has helped to deepen democracy in our country. It has also increased women's representation and voice in our democracy. At the same time, there are many difficulties. While elections are held regularly and enthusiastically, gram sabhas are not held regularly. Most state governments have not transferred significant powers to the local governments. Nor have they given adequate resources. We are thus still a long way from realising the ideal of self - government.

- 11.1 Analyse the significance of the elected representatives in the Panchayats.

- 11.2 In what way has the representation of women in democracy influenced by Constitutional status for local government?

- 11.3 What has been the impact of granting Constitutional status to local government on the democratic landscape of the country? Analyse any two impacts?

Chapter 3 : Gender, Religion and Caste



Topic-1: Gender and Politics

12. Two statements, I and II are given below. Read both the statements and choose the correct option.

[All India 2024]

Statement I: Women are now actively contributing to various professions including roles as doctors, engineers, lawyers, managers and university teachers.

Statement II: Political expression of gender division and political mobilization helped to improve women's role in public life.

- (a) Statement I is true, but II is false.
 (b) Statement I is false, but II is true.
 (c) Statements I and II are true and II is the correct explanation of I.
 (d) Statements I and II are true, but II is not the correct explanation of I.

13. Which of the following term refers to the belief in and advocacy for the social, political and economic equality of women? [Delhi 2024]

- (a) Patriarchy (b) Matriarchy
 (c) Socialist (d) Feminists



Topic-2: Religion, communalism and politics,

14. Read the following provisions regarding Secularism in the Indian Constitution and choose the correct option.

[All India 2024]

- I. The Indian State has not adopted any religion as its official religion.
 II. The Constitution gives freedom to all the citizens to practice and propagate any religion.
 III. The Constitution declares any kind of discrimination done on the basis of religion to be legal.
 IV. It gives the government the right to intervene in religious matters for ensuring equality within religious communities.
 (a) Only I, II and III are correct.
 (b) Only I, II and IV are correct.
 (c) Only I, III and IV are correct.
 (d) Only II, III and IV are correct.

15. Read the given statements :
- India has no official religion.
 - All the communities have freedom to profess and practice any religion in India.
- Which one of the following constitutional term is used for the above statements? [Delhi 2024]
- (a) Republic (b) Secular
(c) Sovereign (d) Socialist

Chapter 4 : Political Rights



Topic-1: Meaning, functions and Necessity

16. Two statements are given below. They are Assertion (A) and Reason (R). [All India 2024]
Assertion (A) : Multi-party system has been adopted in India.
Reason (R) : It is capable of accommodating all the social and geographical differences in India.
- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false.
(d) (A) is false, but (R) is true.
17. Analyse the role of political parties in shaping the outcomes of democracy. [All India 2024]
18. Analyse the role of political parties in a democracy [Delhi 2024]



Topic-2: National and State Parties

19. Which one of the following countries has two - party system? [Delhi 2024]

- (a) China (b) United Kingdom
(c) India (d) Pakistan



Topic-4: Reformation of political parties

20. Which one of the following steps has been taken by the Election Commission of India to reform political parties? [All India 2024]
- (a) Amended the Constitution to Prevent defection
(b) Candidates will have to give the details of criminal cases on affidavit.
(c) Candidates will have to give details of their property on affidavit.
(d) It has been made mandatory for all parties to conduct organizational elections and file income tax returns.

Chapter 5 : Outcomes of Democracy



Topic-1: Understanding Democracy

21. (A) How are democratic governments better than other forms of government? Explain. [Delhi 2024]



Topic-2: Accountable, responsive and legitimate government

22. (a) Explain with examples the role of democracy in the reduction of inequality and poverty. [All India 2024]
23. (a) "Manufacturing sector is considered the backbone of development of the country." Justify the statement. [All India 2024]



Hints & Solutions

ECONOMICS

Chapter 1 : Development



Topic-1: National Development

- (c) Prosperous farmers; assured high family income through higher support price for their crops and through hard working and cheap labourers they should be able to settle their children abroad.



Topic-2: Comparing Countries and States

- (c) The tertiary sector is also called as service sector. This sector also includes essential services that may not directly help in the production of goods. Examples: Education, Utilities, Transportation, Hospitality, etc. For example, we require teachers, doctors, tailors, some of which provide us with personal services.
- (c) Sum of all the incomes divided by total member of the family is equal to the average income of family.
Total Income: ₹50,000 + 40,000 + 20,000 + 20,000 = 1,30,000.
No. of family member = 4
Average Income $1,30,000/4 = ₹32,500$
Therefore, the answer is (c)
- (d) World Development Indicators includes data spanning more than 60 years from 1960. World view frames global trends with indicators on population, population density, urbanization, GNI, and GDP.



Topic-4: Sustainable Development

- Sustainability is crucial for development for several reasons:
 - Environmental Preservation** : Sustainable development ensures that natural resources are utilized in a way that preserves them for future generations. By adopting practices that minimize environmental degradation, such as renewable energy sources, efficient waste management, and conservation of biodiversity, societies can maintain ecological balance and mitigate the negative impacts of climate change.

- Social Equity** : Sustainable development emphasizes social equity by ensuring that economic growth benefits all members of society, including marginalized and vulnerable populations. It promotes fair distribution of resources, access to education and healthcare, and opportunities for economic participation.
- Long-Term Economic Viability**: Sustainable development recognizes the interdependence between economic prosperity and environmental health. By integrating sustainability principles into economic planning and policymaking, such as investing in clean technologies, promoting sustainable agriculture, and adopting green infrastructure, societies can achieve long-term economic viability. Sustainable practices enhance efficiency, reduce costs, and create new markets and job opportunities, driving innovation and fostering economic resilience.

Chapter 2 : Sectors of Indian Economy



Topic-1: Primary, Secondary and Tertiary Sectors in India

- (a) Agriculture and allied activities provide the highest employment in the Indian economy. In India, Agriculture employs 50%-60% of the population. Agriculture is included in the primary sector.
- (a) The tertiary sector, also known as the service sector, plays a crucial role in the Indian economy due to several significant reasons. Firstly, it is the largest sector in terms of contribution to GDP, accounting for around 55% of India's GDP. This dominance reflects the country's transition from agrarian to service-based economy, mirroring global trends.

Secondly, the tertiary sector is a significant source of employment, absorbing a considerable portion of India's workforce. This is particularly crucial in a country with a large population like India, where job creation is vital for sustainable development and social stability.

Thirdly, the tertiary sector encompasses a wide range of industries including IT, finance, healthcare, tourism, and education, contributing to economic

diversification and resilience. It has propelled India as a global hub for IT services and business process outsourcing, attracting foreign investment and fostering technological advancement.

Moreover, the growth of the tertiary sector has led to urbanization and the rise of metropolitan cities as centers of commerce and innovation. This urban-centric growth has further fueled demand for services, creating a positive feedback loop for economic expansion.

OR

- (b) The primary sector, which includes agriculture, forestry, fishing, and mining, plays a significant role in India's employment landscape. Historically, it has been the largest employer, providing livelihoods to a substantial portion of the population.

Agriculture alone accounts for a major share of employment, especially in rural areas where a significant portion of the Indian population resides. Despite the growth of other sectors, agriculture continues to be the primary source of income for a vast number of households.

Additionally, forestry, fishing, and mining sectors also contribute to employment, albeit to a lesser extent compared to agriculture. These sectors provide employment opportunities, particularly in regions where natural resources are abundant.

Furthermore, the primary sector serves as a crucial source of livelihood for millions of people engaged in activities such as farming, animal husbandry, and allied services. It not only sustains rural livelihoods but also supports the overall economy by supplying raw materials for various industries.

In summary, the primary sector remains integral to India's employment scenario, supporting livelihoods, particularly in rural areas, and contributing significantly to the nation's economy.



Note

The tertiary sector's significance in the Indian economy lies not only in its substantial contribution to GDP but also in its role as a catalyst for employment generation, economic diversification, and urban development.



Topic-3: Organised and Un-Organised Sectors

8. (d) The organised sector refers to economic activities that are formally registered and regulated by the government, typically involving larger businesses and formal employment with benefits and protections. For examples: government employees; banks; registered industrial workers; government schools and colleges.



Topic-4: Public and Private Sectors

9.

Ownership and Control:	Objectives and Goals:
<ul style="list-style-type: none"> Public Sector: Owned and controlled by the government or its agencies. Decision-making is often influenced by political considerations and public interest. 	<ul style="list-style-type: none"> Public Sector: Focuses on providing essential services to the public, such as education, healthcare, and infrastructure, with the aim of promoting societal welfare.
<ul style="list-style-type: none"> Private Sector: Owned and controlled by individuals or groups of individuals, usually for profit. Decision-making is driven by market forces and the pursuit of profit. 	<ul style="list-style-type: none"> Private Sector: Primarily aims to generate profits for owners or shareholders by producing goods or services that meet consumer demand. Profit maximization is a key goal.

Chapter 3 : Money and Credit



Topic-2: Modern form of money

10. (b) When banks collect deposits, they pay interest for the savings. Similarly, when banks give loans, they collect interest from the borrowers. The primary source of income for banks is the difference between the interest charged from the borrowers and the interest paid to the depositors.



Topic-3: Loan from Banks

11. (a) Rural families in India often rely on the informal sector for loans due to limited access to formal banking services, bureaucratic hurdles, and lack of collateral. Informal lenders offer quicker and easier access to credit, albeit at higher interest rates, making them a preferred option for many rural households.
12. (d) The role of the bank in this credit situation would be best described as (d) the bank saves the farmer from a debt trap. By offering the farmer a loan at a lower interest rate, the bank provides the farmer with an opportunity to repay the high-interest loan from the moneylender and escape the cycle of high debt and interest payments.
13. 13.1 Krishak Cooperative secures funds for loans by accepting deposits from its 2300 farmer members. Utilizing these deposits as collateral, it obtains

a significant loan from a bank. These funds are then lent to members for various purposes like agricultural needs, construction, and other expenses, facilitating rural development and empowerment.

13.2 Krishak Cooperatives offer loans for various purposes including agricultural implements, cultivation and trade, fishery, construction of houses, and miscellaneous expenses. These loans are secured by members' deposits, allowing the cooperative to obtain funds from banks for lending. Repayment allows for continuous lending cycles benefiting rural communities.

13.3 Cooperatives are desirable in rural areas because they offer accessible and affordable credit to members who may otherwise struggle to obtain loans from traditional sources like banks.

- 14. (d)** The lenders ask for a collateral before lending because: It is an asset that the borrower owns and uses this as a guarantee to the lender – until the loan is repaid. Collateral with the lender acts as a proof that the borrower will return the money.



Topic-4: Credit System

- 15.** Credit is vital for economic activities as it facilitates investment, consumption, and growth. It allows individuals and businesses to access funds for various purposes, thereby stimulating economic activity.

For example, consider a small business owner who wants to expand operations by purchasing new equipment. Without access to credit, they might struggle to afford the upfront cost. However, with credit, they can obtain a loan or line of credit to finance the purchase. This enables them to invest in their business, increase productivity, create jobs, and contribute to economic growth.

Similarly, consumers rely on credit to make significant purchases like homes, cars, or education. By taking out loans or using credit cards, they can spread out payments over time, making these purchases more attainable. This boosts demand for goods and services, driving economic activity.



Note

Credit enables entrepreneurs to innovate and develop new products or services. Startups often rely on credit to fund research, development, and marketing efforts. Without access to credit, many innovative ventures would never materialise, hindering economic progress.



Topic-5: Self Help Groups

- 16. (c)** Formal sector credit are those that are supervised by the government and the Reserve Bank of India (RBI).



Note

Banks come under the formal sector. Even cooperatives are registered with the government and fall under the formal sector. The RBI, directly or indirectly, supervises the functioning of the formal sources of loans.

Chapter 4 : Globalisation and the Indian Economy



Topic-2: Meaning of Globalisation

- 17. (A)** Globalisation refers to the rapid interconnectedness and interdependence of countries economically, politically, socially, and culturally.

- 1. Economic Integration:** One of the most visible aspects of globalisation is the integration of economies through trade and investment. For instance:

- **International Trade:** Companies like Apple design their products in the United States, manufacture them in China, and sell them worldwide. This illustrates how goods and services move across borders seamlessly.

- **Foreign Direct Investment (FDI):** Multinational corporations (MNCs) have operations and investments in multiple countries, contributing to the global flow of capital and technology.

- 2. Cultural Exchange:** Globalisation has led to the exchange of cultural ideas, values, and practices across borders. Examples include:

- **Pop Culture:** Hollywood movies like Marvel's superhero films are watched globally, influencing fashion, entertainment preferences, and even language.

- **Food:** McDonald's and Starbucks have become global symbols of American culture, with branches in numerous countries adapting menus to local tastes.

- 3. Technological Advancements:** Advances in communication and transportation have facilitated globalisation. Examples include:

- **Internet:** Platforms like Facebook, Google, and Twitter connect people worldwide, allowing instant communication and information sharing.
 - **Transportation:** Airlines such as Emirates or FedEx offer efficient global transportation networks, enabling the movement of people and goods across continents rapidly.
4. **Political Interdependence:** Globalisation has led to increased cooperation and interdependence among nations. Examples include:
- **International Organizations:** The United Nations, World Bank, and International Monetary Fund (IMF) are examples of institutions that facilitate global governance and cooperation on issues like climate change, peacekeeping, and economic development.
 - **Regional Integration:** The European Union (EU) is a prime example of countries pooling sovereignty for mutual benefit, allowing for free movement of goods, services, and people across member states.
5. **Environmental Impact:** Globalisation has both positive and negative environmental consequences. Examples include:
- **Climate Change:** Industrial activities in one country can affect the environment globally through greenhouse gas emissions, leading to climate change that impacts all nations.
 - **Resource Extraction:** Global demand for resources like oil, minerals, and timber can lead to environmental degradation in countries where extraction occurs.
20. (c) Removing barriers or restrictions set by the government is known as liberalisation. Liberalisation means minimising the government's restrictions and regulations in an economy, in return for higher involvement of private organisations.
21. (B) The advancement of technology has significantly accelerated the process of globalisation by breaking down barriers to communication, transportation, and trade.
- **Communication Technology:** The internet and mobile technology have revolutionised communication by enabling instant connectivity across the globe. Platforms like social media, email, and messaging apps allow individuals and businesses to communicate seamlessly across borders. For example, a business in the United States can easily collaborate with partners in China through video conferencing and instant messaging.
 - **E-commerce:** Online shopping platforms have facilitated global trade by allowing businesses to reach customers worldwide. Companies like Amazon, Alibaba, and eBay provide a platform for sellers to offer their products to a global audience. Consumers can purchase goods from anywhere in the world and have them delivered to their doorstep. This has led to increased cross-border trade and economic integration.



Topic-3: Factors lead to Globalisation

18. (b) Liberalization entails reducing government restrictions on economic activities, fostering free market principles. Key features include deregulation, allowing private sector participation, trade liberalization through lowered tariffs, and financial sector reforms like privatization of state-owned enterprises and opening up capital markets to foreign investment. This often leads to increased competition and economic growth.
19. • **Instant Communication:** ICT has facilitated real-time communication across borders through emails, video conferencing, instant messaging, and social media platforms. This instantaneous exchange of information has significantly reduced

- **Transportation Technology:** Advances in transportation technology, such as containerization and air freight, have made it faster, cheaper, and more efficient to transport goods across long distances. This has enabled companies to source materials and products from different countries based on cost and quality considerations. For instance, perishable goods like fruits and vegetables can be transported quickly from farms in one country to markets in another, thanks to refrigerated shipping containers and efficient logistics networks.
- **Digitalization of Services:** The digitalization of services has allowed companies to provide services remotely, transcending geographical boundaries. For example, consulting firms, software development companies, and customer support centers can deliver their services to clients anywhere in the world via the internet. This has enabled businesses to tap into global talent pools and access new markets without the need for physical presence.
- **Financial Technology (Fintech):** Fintech innovations such as online banking, digital payment systems, and blockchain technology have facilitated international financial transactions. Businesses and individuals can transfer money across borders quickly and securely, reducing the cost and complexity of international payments. Cryptocurrencies like Bitcoin also offer an alternative means of conducting cross-border transactions without relying on traditional banking systems.

HISTORY

Chapter 1 : The Rise of Nationalism in Europe



Topic-1: The French Revolution and the Idea of the Nation

1. (a) The French Revolution was a pivotal moment in history, characterized by the overthrow of the monarchy, the establishment of a republic, and the rise of democratic ideals. It fostered a sense of national unity and identity among the French people, as they rallied behind revolutionary slogans such as “Liberty, Equality, Fraternity.” The revolutionaries sought to redefine the French nation based on principles of citizenship and sovereignty of the people, rather than allegiance to a monarch or dynasty. This emphasis on the sovereignty and rights of the nation’s citizens can be seen as an early manifestation of nationalist ideology.

However, it’s essential to recognize that nationalist sentiments predated the French Revolution and were not exclusive to France. Throughout history, various factors such as language, culture, religion, and shared historical experiences have contributed to the formation of collective identities and allegiances among different groups of people. For example, the rise of nation-states in Europe during the Renaissance and early Modern periods saw the emergence of national consciousness among peoples such as the English, Spanish, and Dutch.

Moreover, the French Revolution itself was influenced by Enlightenment ideas that emphasized individual rights, social contracts, and the

sovereignty of the people. These ideas were not confined to France but circulated widely throughout Europe, inspiring movements for political change and self-determination in other countries.

2. Certainly! The Silk Road, stretching from China to the Mediterranean, was a network of trade routes that facilitated not only the exchange of goods but also of ideas, culture, and technology.
 - Spices from Southeast Asia to Rome : Spices such as cinnamon, pepper, and cloves were highly sought after in ancient Rome for their flavoring properties and as status symbols. These spices were not native to the Mediterranean region but were brought to Rome via the Silk Road. Along the way, they passed through various regions including India, Persia, and Central Asia. The trade of spices not only enriched the cuisine of ancient Rome but also contributed to the development of cultural exchange, as traders from different regions interacted, exchanged languages, customs, and beliefs.
 - **Buddhism’s Spread to China :** Buddhism originated in ancient India but spread rapidly along the Silk Road to Central Asia and eventually to China.



Note

Buddhist monks and traders played a crucial role in disseminating Buddhist teachings, scriptures, and artistic styles as they traveled along these trade routes. The Silk Road served as a conduit for the flow of religious ideas and cultural practices, fostering connections between distant civilisations.



Topic-2: The Making of Nationalism in Europe

3. (a) Congress at Vienna was hosted by Austrian chancellor Duke Metternich in 1815. Its first goal was to establish a new balance of power in Europe.
4. (b) The statement regarding the dominance of conservatism in European governments following Napoleon's defeat in 1815 reflects a significant aspect of post-Napoleonic Europe, yet it oversimplifies the complex political landscape of the time. While there was indeed a prevailing sentiment favoring conservatism, characterized by a desire to maintain traditional institutions and social hierarchies, the period also witnessed various other ideological currents.

Conservatism did hold sway in many European nations, as monarchies and aristocracies sought to reassert control after the upheaval of the Napoleonic era. The Congress of Vienna, for instance, aimed to restore the pre-Napoleonic order, emphasizing stability and the preservation of existing power structures. However, it would be inaccurate to portray this as the sole driving force behind European governance.

The period also saw the emergence of liberal and nationalist movements, driven by ideals of individual rights, constitutionalism, and the desire for self-determination among various ethnic groups. These forces, though often suppressed by conservative regimes, were nonetheless influential in shaping the political discourse and contributing to later developments such as the Revolutions of 1848.

In conclusion, while conservatism was indeed a dominant force in post-Napoleonic Europe, the political landscape of the time was more nuanced, featuring a dynamic interplay of conservative, liberal, and nationalist ideologies, each leaving its mark on the trajectory of European history.

5. (a) The most serious source of nationalist tension in Europe after 1871 was the area called the Balkans. It was a region of geographical and ethnic variation. A large part of the Balkans was under the control of the Ottoman Empire. The spread of the ideas of romantic nationalism in the Balkans together with the disintegration of the Ottoman Empire made this region very explosive.
6. (A)
- **Political Reforms:** Liberalism in the early nineteenth century Europe contributed to the demand for political reforms, advocating for the principles like constitutionalism, representative

government, and individual rights. This led to movements such as the Revolutions of 1848, where liberal ideals prompted uprisings against autocratic monarchies in several European countries.

- **Economic Liberalization:** Liberalism stood for the freedom of markets and the abolition of state-imposed restrictions on the movement of goods and capital. Economic policies advocated the rise of industrialization and economic growth.
- **Social Reforms:** Liberalism also spurred movements for social reforms aimed at improving living and working conditions for the working class. This included labour rights advocacy, calls for public education, and efforts to abolish slavery and serfdom, reflecting a growing awareness of social justice and equality.
- **Nationalism:** Liberalism played a significant role in the rise of nationalism in Europe during this period. Liberal ideals of individual freedom and self-determination fueled nationalist movements seeking to unify ethnically and culturally similar groups into nation-states, challenging the multiethnic empires that dominated much of Europe.
- **Cultural and Intellectual Flourishing:** Liberalism fostered a climate of intellectual and cultural flourishing, promoting values such as reason, progress, and secularism. This period saw the emergence of literary and artistic movements, as well as advancements in science and technology, fueled by the liberal emphasis on individual autonomy and innovation.



Topic-4: The Making of Germany and Italy

7. (b) Giuseppe Maria Garibaldi (4 July 1807 – 2 June 1882) was an Italian general, patriot, revolutionary and republican. He fought for Italian independence and political unification. In 1848, he played an important role in the movement for Italian freedom by organising the Red Shirts, a corps of volunteers.
8. (c) (i) **Napoleon was defeated** at the battle of Waterloo on June 18, **1815**. He was defeated by a coalition of nations consisting of Prussia, Britain and the Netherlands.
- (ii) The **Treaty of Constantinople** was the product of the London Conference of **1832** which opened in February 1832 with the participation of the Great Powers (Britain, France and

Russia) on the one hand and the Ottoman Empire on the other.

(iii) The **Unification of Germany** into the German Empire, dominated by Prussia with a federalist structure was announced on **18 January 1871** in the Hall of Mirrors at the Palace of Versailles in France.

(iv) The **Unification of Italy** was a 19th century political and social movement that resulted in the unification of the different states of the Italian Peninsula, into a single state – the Kingdom of Italy. Beginning in the 1840s, the unification was completed in **1871**, the same year as the unification of Germany.

9. (B)

- **Act of Union 1707:** The formation of the United Kingdom of Great Britain began with the Act of Union in 1707, which merged the Kingdom of England and the Kingdom of Scotland into a single political entity called the Kingdom of Great Britain. This act was driven by economic, political, and military factors, including the desire for stability and the need to compete more effectively in international affairs.
- **Treaty of Union:** Negotiations for the union began after the Scottish Parliament passed the Act of Union in 1706, and the English Parliament passed a corresponding act in 1707. The Treaty of Union formalized the terms of the merger, establishing a unified Parliament of Great Britain based in Westminster, London, while preserving certain aspects of Scotland's legal and educational systems.
- **Hanoverian Succession:** The accession of the House of Hanover to the British throne in 1714 further solidified the unity of Great Britain. Queen Anne, the last monarch of the House of Stuart, died without an heir, leading to the Protestant Hanoverian succession under King George I. This succession helped stabilize the political landscape and reinforce the union between England and Scotland.
- **Expansion and Consolidation:** Over the following centuries, the United Kingdom expanded its territory through colonization and conquest, incorporating Wales, Ireland, and various overseas territories into the British Empire. This expansion

further strengthened the political and economic power of the UK and contributed to its emergence as a global superpower.

- **Acts of Union with Ireland:** The final stage in the formation of the United Kingdom occurred in the 18th and 19th centuries with the Acts of Union with Ireland. The first of these acts, in 1800, merged the Kingdom of Great Britain and the Kingdom of Ireland to create the United Kingdom of Great Britain and Ireland. Following Irish independence in 1922, the UK was renamed the United Kingdom of Great Britain and Northern Ireland, reflecting the partition of Ireland.

10. (A) Energy is fundamental for economic development due to the following reasons:

- **Production Processes:** Energy is essential for powering machinery, equipment, and technology used in manufacturing and production processes. Industries rely on energy to extract, process, and transport raw materials, as well as to manufacture goods efficiently.
- **Transportation:** Energy fuels various modes of transportation, including automobiles, trains, ships, and airplanes. Access to reliable and affordable energy sources is crucial for the movement of goods and people, facilitating trade and economic growth.
- **Infrastructure Development:** Energy is a key component in the construction and maintenance of infrastructure such as roads, bridges, airports, and communication networks. These infrastructures are vital for fostering economic activities and connectivity within and between regions.
- **Commercial and Residential Needs:** Energy is indispensable for meeting the heating, cooling, lighting, and electronic needs of both commercial establishments and households. Access to affordable and reliable energy services enhances living standards and productivity.
- **Innovation and Technological Advancement:** Energy availability drives innovation and technological advancement in various sectors, including renewable energy, efficiency improvements, and energy storage technologies. Investing in energy infrastructure and research fosters economic competitiveness and sustainability in the long run.


Topic-6: Nationalism and Imperialism

11. (b) Rashundari Devi was apparently the first Indian woman to study history. She was a writer by occupation and is the most well known for her autobiography called *Amar Jiban*, which was published in 1876. She was among the first few Bengali writers who had written autobiographies.

Chapter 2 : Nationalism in India

Topic-1: The First World War, Khilafat and Non-Cooperation

12. (c) (i) The Khilafat Committee was formed in Bombay in March 1919.
 (ii) Jallianwala Bagh Massacre, incident on April 13, 1919.
 (iii) Bardoli Satyagraha began on 12 June 1928. It was eventually led by Sardar Vallabhbhai Patel.
 (iv) Gandhiji called off the movement in February 1922 in the wake of the Chauri Chaura incident.

13. (a) • **Leadership and Mobilization** : Women played crucial roles in leading and mobilising communities during the Civil Disobedience Movement. For instance, Sarojini Naidu, known as the “Nightingale of India,” was a prominent figure in the Indian independence movement. She fearlessly led protests, organised meetings, and inspired masses with her speeches, galvanizing women to actively participate in civil disobedience against British rule.

- **Active Participation** : Women actively participated in acts of the civil disobedience, such as boycotting British goods, picketing, and joining protest marches. An example is the Salt Satyagraha of 1930, where women from all walks of life, including rural areas, joined Mahatma Gandhi in defying the British salt laws. They marched to the beaches, produced salt, and faced arrests, showcasing their commitment to the cause of independence.
- **Symbolism and Sacrifice** : Women’s involvement in civil disobedience movements often symbolized their commitment to freedom and sacrifice for the nation’s cause. One notable example is that of Kamaladevi Chattopadhyay, who not only participated in protests but also faced imprisonment for her activism. Her resilience and sacrifice

inspired countless others to join the struggle for independence and highlighted the integral role of women in the movement’s success.

14. (A)

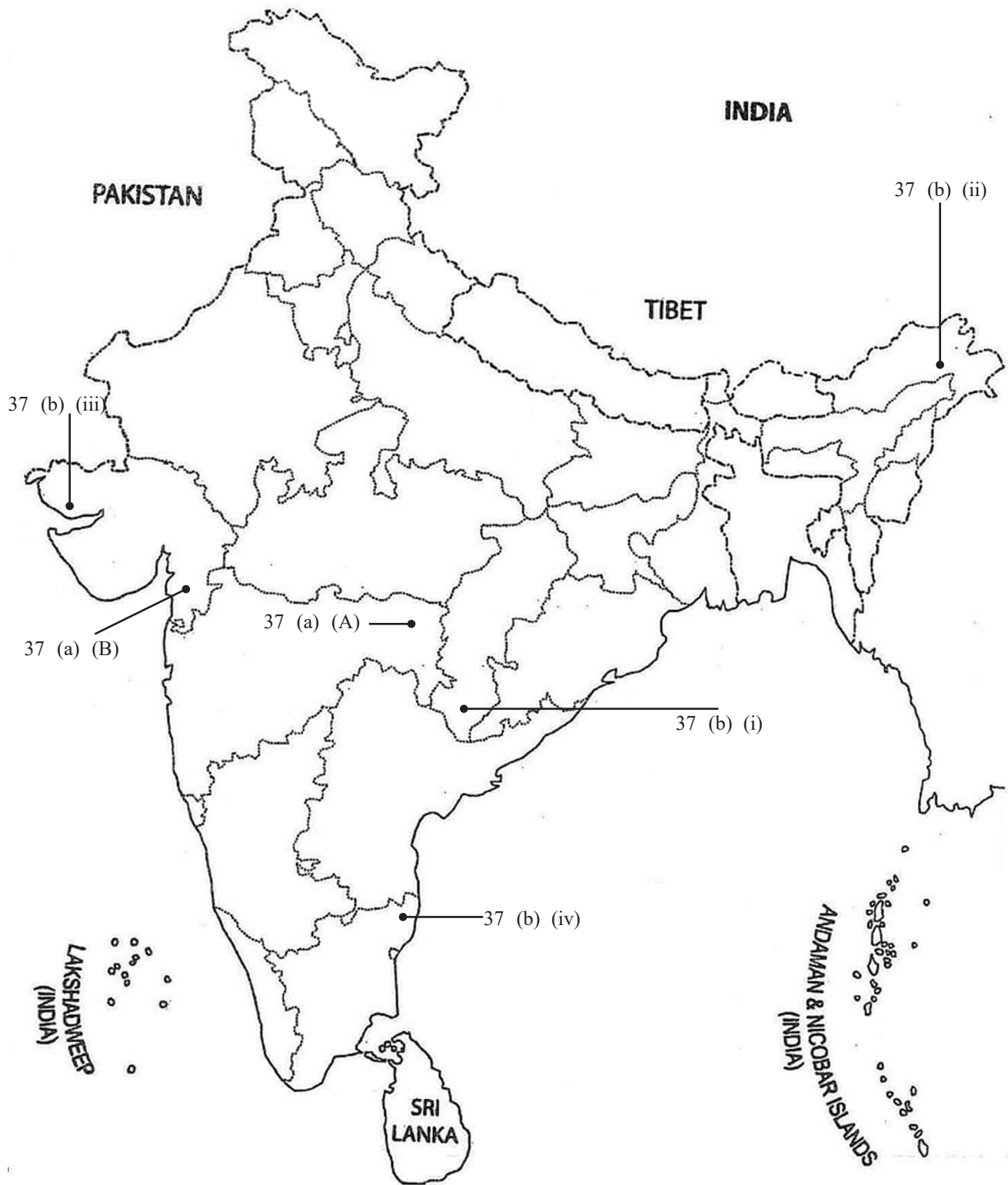
The Non-Cooperation Movement in India, led by Mahatma Gandhi in the early 1920s, was a significant step towards India’s independence from British rule. Several causes contributed to the emergence of this movement:

- **Jallianwala Bagh Massacre**: The Jallianwala Bagh massacre of 1919 was a turning point. British troops under the command of General Dyer opened fire on a peaceful gathering of unarmed civilians in Amritsar, Punjab, killing hundreds and injuring thousands. This brutal incident outraged the Indian population and deeply shook their faith in British justice and governance.
- **Khilafat Movement**: The Khilafat Movement was launched by Indian Muslims to protest against the dismantling of the Ottoman Empire Caliphate by the Allies after World War I. Muslims in India felt a strong emotional attachment to the Caliphate, and its abolition by the British deeply offended them. Mahatma Gandhi saw an opportunity to unite Hindus and Muslims in a common cause against the British rule and linked the Khilafat cause with the struggle for Indian independence.
- **Rowlatt Act and Repressive Policies**: The Rowlatt Act of 1919, enacted by the British government, severely curtailed civil liberties and empowered the colonial authorities to imprison individuals without trial. This act was seen as a betrayal of the promises made by the British during World War I regarding democratic reforms in India. The repressive measures taken by the British administration, combined with economic exploitation and cultural oppression, fueled widespread discontent among the Indian populace.


Topic-2: Differing Strands within the Movement

15. (a) (A) Nagpur
 (B) Dandi
 (b) [Refer to the given map]

- 16. (a) Dandi
- (b) Madras





Topic-3: Towards Civil Disobedience

17. (B) The Civil Disobedience Movement, particularly associated with Mahatma Gandhi's leadership during India's struggle for independence, was propelled by several underlying causes:

- **British Colonial Oppression:** The oppressive policies of the British colonial administration in India served as a primary catalyst for civil disobedience. Indians were subjected to discriminatory laws, heavy taxation, and economic exploitation. For instance, the Salt Act imposed a monopoly on the production and sale of salt, a vital commodity in Indian life, leading to widespread discontent.
- **Salt Tax and Salt Satyagraha:** The Salt Tax levied by the British on the production and sale of salt was symbolic of colonial economic exploitation and served as a unifying cause for the Indian masses. Mahatma Gandhi's Salt Satyagraha in 1930, where he led a march to the Arabian Sea to make salt in defiance of British law, became a powerful symbol of resistance and inspired widespread civil disobedience.
- **Demand for Purna Swaraj (Self-Government):** The overarching goal of the Indian National Movement was to achieve self-rule and independence from British colonial rule. Civil disobedience was seen as a strategic tool to assert Indian sovereignty and press for political rights. The Indian National Congress declared Purna Swaraj on 26th January 1930.



Topic-4: The Sense of Collective Belonging

18. (b)
- **Cultural Identity and Unity :** Indian folklore, including myths, legends, and symbols, served as potent tools to foster a sense of cultural identity and unity among diverse communities across the country. For instance, the figure of Bharat Mata (Mother India) emerged as a powerful symbol of the nation during the Indian independence movement.
 - **Resistance Against Colonialism :** Indian folklore and symbols were often used to express resistance against colonial rule and imperialism. The use of traditional symbols and narratives in literature, art, and music became a form of cultural resistance against the cultural hegemony of the British. For example, the stories of valorous kings and warriors

from Indian epics like the Ramayana and the Mahabharata were invoked to inspire Indians to fight against oppression and injustice.

- **Cultural Renaissance and Nationalism :** Scholars and artists like Rabindranath Tagore, Bankim Chandra Chattopadhyay, and Mahatma Gandhi emphasised the importance of reconnecting with India's rich cultural heritage to instill a sense of pride and self-respect among the masses. The promotion of folk dances, music, and traditional arts not only revitalized indigenous cultural expressions but also reinforced the idea of an independent Indian identity rooted in its ancient traditions.
19. (d) In June 1920, Jawaharlal Nehru began going around the villages in Awadh, talking to the villagers, and trying to understand their grievances. By October, the Awadh Kisan Sabha was set up headed by Jawaharlal Nehru, Baba Ramchandra, and a few others.

Chapter 3 : The Making of a Global World



Topic-1: The Pre-modern World

20. (c) The religion that emerged from eastern India and spread through intersecting points on the Silk Routes is Buddhism. Originating in the region of present-day Nepal and northeastern India (particularly Bihar and Uttar Pradesh), Buddhism gradually spread across Asia, facilitated by trade routes like the Silk Road.



Topic-2: The Nineteenth Century (1815-1914)

21. •
- **Economic Opportunities:** Many Europeans fled to America in the 19th century seeking better economic prospects. Industrialization and agricultural changes in Europe led to overcrowding in cities and displacement in rural areas. America promised vast expanses of land, particularly through initiatives like the Homestead Act of 1862, offering land to settlers willing to cultivate it. This attracted farmers, laborers, and entrepreneurs looking for opportunities to improve their economic circumstances.
 - **Religious and Political Freedom:** Europe in the 19th century was marked by social and political unrest, as well as religious persecution in some regions. America, on the other hand, offered greater religious and political freedom. Many immigrants sought refuge from religious discrimination or political persecution, finding in America a place

where they could practice their faith freely and participate in democratic processes without fear of repression. This freedom attracted diverse groups, including Jews fleeing pogroms in Eastern Europe and political refugees from revolutions across the continent.

Chapter 5 : Print Culture and the Modern World



Topic-4: The Reading Mania

22. 22.1 Mercier vividly captures the immersive essence of reading, likening it to a parched man consuming water eagerly. The text portrays a trance-like state where time is forgotten, and the mind is consumed by the flow of ideas.
- 22.2 Convinced of the power of print in bringing enlightenment and destroying the basis of despotism, Mercier proclaimed: ‘Tremble, therefore, tyrants of the world! Tremble before the virtual writer.
- 22.3 Reading greatly enhanced Mercier’s intellectual capacity by exposing him to diverse perspectives and challenging ideas. Firstly, through reading, he encountered a multitude of view points, expanding his understanding of various subjects and fostering critical thinking skills. Secondly, exposure to new concepts through reading stimulated Mercier’s

curiosity, motivating him to delve deeper into unfamiliar topics and engage with them actively. Consequently, reading not only broadened Mercier’s knowledge but also sharpened his analytical abilities, enabling him to navigate complex ideas with greater clarity and insight.



Topic-6: India and the World of Print

23. 23.1 The “Bengal Gazette” edited by Gangadhar Bhattacharya was published in English.
- 23.2 James Augustus Hickey was persecuted because he published gossip about the Company’s senior officials in India in the Bengal Gazette. This angered Governor-General Warren Hastings, who felt that such publications damaged the image of the colonial government. As a result, Hastings persecuted Hickey and encouraged the publication of officially sanctioned newspapers to counteract the flow of information that was perceived as harmful to the colonial administration’s reputation.
- 23.3 During the 1780s, Governor-General Warren Hastings encouraged the publication of officially sanctioned newspapers in response to the activities of James Augustus Hickey and the Bengal Gazette. These newspapers were encouraged because Hastings perceived them as a means to counter the flow of information that damaged the image of the colonial government.

GEOGRAPHY

Chapter 1 : Resources and Development



Topic-1: Development of Resources, Topic 2: Resource Planning

1. 1.1 Sustainable development is a holistic approach to growth that meets present needs without compromising future generations’ ability to meet their own needs. It integrates economic, social, and environmental considerations, aiming for a balanced and enduring progress that preserves natural resources, fosters equity, and promotes resilience.
- 1.2 Agenda 21 was accepted at the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit. It took place in Rio de Janeiro, Brazil, in 1992.



Note

Agenda 21 is a comprehensive blueprint for sustainable development covering various aspects like environmental protection, social equity, and economic development.

- 1.3 The Earth Summit in Rio de Janeiro, 1992, resulted in the acceptance of Agenda 21, a blueprint for sustainable development. Two outcomes emerged: heightened global awareness of environmental issues and a commitment to address them through coordinated efforts in environmental protection, social equity, and economic development.



Topic-4: Soil as a Resource

2. (c) The laterite soil develops in areas with high temperature and heavy rain. This is the result of intense leaching due to heavy rain. Humus content of the soil is low because most of the micro-

organisms, particularly the decomposers, like bacteria, get destroyed due to high temperature.

Chapter 2 : Forest and Wildlife Resources



Topic-1: Conservation of Forest and Wildlife

3. (d) Kaziranga National Park lies partly in Golaghat District and partly in Nagaon District of Assam. Sundarbans is a mangrove area in the delta formed by the confluence of the Ganges, Brahmaputra and Meghna Rivers in the Bay of Bengal. Bandhavgarh National Park is spread over the Vindhya hills in Madhya Pradesh. Jim Corbett National Park is a national park in India located in the Nainital district of Uttarakhand state.

4. (A)

- **Establishment of Protected Areas:** Designating protected areas such as national parks, wildlife sanctuaries, and forest reserves is crucial for safeguarding diverse ecosystems and habitats. These areas provide refuge for various plant and animal species, allowing them to thrive undisturbed.
- **Sustainable Forest Management:** Implementing sustainable forest management practices ensures that the resources extracted from forests are replenished at a rate that maintains their availability for future generations. This involves strategies like selective logging, reforestation, and promoting natural regeneration.
- **Community Participation and Engagement:** Involving local communities in forest conservation efforts is essential for long-term success. Engaging communities in decision-making processes, providing them with alternative livelihood options, and raising awareness about the importance of forests can foster a sense of ownership and stewardship. (Any two)

OR

(B)

- **Endangered Species Protection:** Implementing measures to protect endangered species is essential for preventing their extinction. This involves enacting laws and regulations to prohibit hunting, trading, and habitat destruction of endangered species. Conservation breeding programs, reintroduction efforts, and habitat restoration targeted at endangered species' needs can also help bolster their populations.
- **Mitigation of Human-Wildlife Conflict:** Human-wildlife conflict arises when the interests of wildlife and human populations clash, leading to negative

consequences for both. Implementing strategies such as wildlife corridors, fencing, and deterrent methods can help reduce conflicts between wildlife and human activities like agriculture and urban development. Furthermore, community-based approaches that involve local communities in conflict resolution and compensation schemes can foster coexistence.

- **Education and Awareness:** Raising public awareness about the importance of wildlife conservation and the threats facing biodiversity is crucial for fostering a conservation ethos. Educational programmes, outreach initiatives, and campaigns can help inspire people to value and protect wildlife. Additionally, promoting sustainable practices and responsible tourism can minimise negative impacts on wildlife and their habitats. (Any two)

Chapter 3 : Water Resources



Topic-3: Rainwater Harvesting

5. (c) The bamboo drip irrigation system is particularly prevalent in states like Meghalaya. It's a technique commonly used in hilly regions where conventional irrigation methods might not be feasible.
6. 6.1 A portable radio/transistor, torch, first aid kit should be included in a family emergency kit.
- 6.2 Family emergency kit items are crucial during floods as they provide immediate necessities. A waterproof flashlight ensures visibility in darkness or power outages, aiding navigation and signaling for help. Non-perishable food supplies sustain energy and nutrition when access to fresh food is limited, ensuring survival until assistance arrives.
- 6.3 During floods, securing the safety of your family and belongings is paramount. Firstly, prioritize evacuation to higher ground or designated shelters as advised by authorities. Ensure everyone knows evacuation routes and have a designated meeting point. Secondly, safeguard important documents, valuables, and sentimental items by storing them in waterproof containers or moving them to higher levels of your home. Additionally, turn off utilities to prevent electrical hazards. Regularly monitor weather updates and stay tuned to emergency broadcasts for guidance. By preparing in advance and staying informed, you can minimize risks and protect your loved ones and possessions during a flood.

Chapter 4 : Agriculture



Topic-2: Cropping Pattern: Rabi, Kharif and Zaid

7. • **Timing:** The Rabi crop season typically occurs during the winter months, starting from October and extending until March or April, depending on the region. It follows the monsoon season, which is crucial for replenishing soil moisture levels. The cooler temperatures during this period are favorable for the growth of certain crops.
- **Crops:** Rabi crops are mainly winter crops that are sown in the autumn and harvested in spring. Some common Rabi crops include wheat, barley, mustard, chickpeas, lentils, and peas. These crops are well-suited to the cooler climate and can thrive even with less water, making them ideal for cultivation during the winter months.
- **Water Availability:** Unlike the Kharif season, which relies heavily on monsoon rains, Rabi crops are generally cultivated with irrigation water. Since the monsoon has already passed, farmers often depend on irrigation from canals, wells, or reservoirs to provide the necessary water for their crops. Proper water management is essential during this season to ensure optimal growth and yield of Rabi crops.
8. (b) Rabi crops are known as winter crops. They are grown in October or November. The crops are then harvested in spring. These crops require frequent irrigation because they are grown in dry areas.

Chapter 5 : Minerals and Energy Resources



Topic-1: Mineral Resources: Metallic and Non-Metallic

9. (d) Odisha is India's largest bauxite producer accounting for about 49% of the total production followed by Gujarat (24%), Jharkhand (9%), Chhattisgarh and Maharashtra (8% each). The remaining was produced by Madhya Pradesh, Goa, Karnataka and Tamil Nadu.
10. (a) Minerals are naturally occurring inorganic substances with distinct chemical compositions and crystal structures. They are often found in igneous and metamorphic rocks, formed through different geological processes.

Igneous rocks, like granite and basalt, originate from the cooling and solidification of molten magma or lava. During this process, minerals such as quartz, feldspar, and mica crystallize from the cooling magma and become integral parts of the rock.

Metamorphic rocks, such as marble and slate, are formed through the alteration of existing rocks by heat, pressure, or chemically active fluids deep within the Earth's crust. These conditions cause minerals within the original rock to recrystallize and rearrange into new forms. For example, limestone can metamorphose into marble, with the mineral calcite transforming into larger, interlocking crystals.

OR

- (b) The statement emphasizes the abundance of minerals dissolved in ocean water, vital for marine life and human use. For instance, sodium and chloride ions make seawater saline, crucial for maintaining marine ecosystems' balance. Additionally, minerals like magnesium, calcium, and potassium contribute to ocean chemistry, influencing biological processes. These minerals are also extracted for various purposes, such as magnesium for alloy production and desalination processes. Overall, the ocean serves as a vast reservoir of essential minerals indispensable for both natural processes and human activities.
11. (b) Non-ferrous metals include aluminium, copper, lead, nickel, tin, titanium and zinc, as well as copper alloys like brass and bronze. There are a large number of non-ferrous materials, covering every metal and alloy that does not contain iron.



Topic-3: Energy Resources: Conventional and Non-Conventional

12. (B)
- **Source Origin:** Conventional sources of energy come from finite resources like fossil fuels (coal, oil, natural gas) and uranium for nuclear power, which are formed over millions of years. Non-conventional sources, on the other hand, harness renewable resources like sunlight, wind, water (hydro), geothermal heat, and biomass, which are replenished naturally and are essentially inexhaustible.
 - **Environmental Impact:** Conventional sources typically have a higher environmental impact due to pollution and greenhouse gas emissions

during extraction, transportation, and combustion. Non-conventional sources, being renewable, generally have a lower environmental impact, with significantly reduced or no emissions during energy generation.

- **Reliability and Availability:** Conventional sources often offer consistent energy output, but their availability is subject to geopolitical factors, resource depletion, and price fluctuations. Non-conventional sources can be less predictable due to weather variations (e.g., solar and wind energy), but they are abundant and widely distributed globally, providing a more stable long-term energy solution.
- **Technological Maturity:** Conventional energy technologies like coal, oil, and gas power plants have been developed and optimized over many decades, with well-established infrastructures and supply chains. Non-conventional energy technologies, while rapidly advancing, may still be considered nascent in comparison, with ongoing innovation and improvements in efficiency and cost-effectiveness.
- **Economic Considerations:** Conventional energy sources have historically enjoyed lower initial investment costs and have been deeply entrenched in existing energy systems and economies. Transitioning to non-conventional sources may require significant upfront investments in infrastructure and technology but can lead to long-term cost savings, energy independence, and economic opportunities in emerging industries like renewable energy and clean technology.

Chapter 6 : Manufacturing Industries



Topic-1: Importance of Manufacturing

13. (b) Agriculture and industry indeed complement each other, forming a symbiotic relationship crucial for economic development. Agriculture provides raw materials like crops, livestock, and fibers, essential for various industrial processes. Industries, in turn, supply agriculture with machinery, fertilizers, pesticides, and technology, enhancing productivity and efficiency.

Moreover, industries create employment opportunities for rural populations, reducing dependency on agriculture alone. This

diversification encourages economic stability and growth. Additionally, advancements in industrial technology lead to innovations in agricultural practices, improving yields and sustainability.

Conversely, agricultural products serve as inputs for many industries, including food processing, textile manufacturing, and biofuel production. This interdependence fosters economic resilience, ensuring stability in times of fluctuating market conditions. Furthermore, industries often invest in rural infrastructure, such as transportation networks and storage facilities, facilitating the distribution of agricultural products. This collaboration between agriculture and industry fosters balanced regional development, bridging urban-rural divides.

In conclusion, the synergy between agriculture and industry is fundamental for fostering economic growth, ensuring food security, and enhancing livelihoods. Their intertwined relationship underscores the importance of collaboration for sustainable development.



Topic-2: Classification of Industries

14. **Employment Generation:** Manufacturing industries create a significant number of job opportunities, ranging from skilled labor on the factory floor to management positions.

Multiplier Effect: Manufacturing has a multiplier effect on the economy. It stimulates growth in other sectors such as transportation, logistics, and services. For instance, the demand for raw materials, machinery, and infrastructure to support manufacturing processes generates additional economic activity, fostering a more robust and interconnected economy.

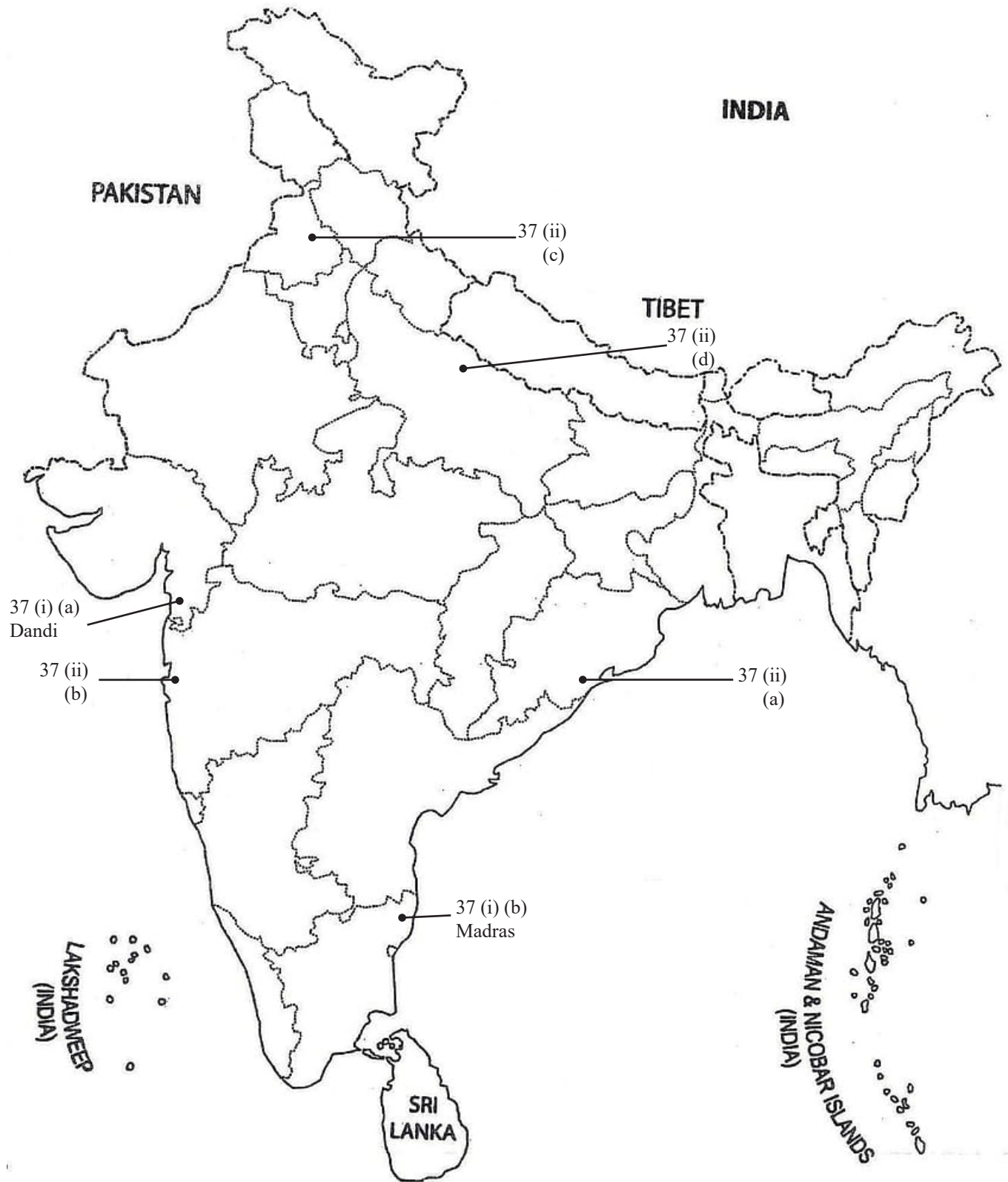
Technological Advancement: Manufacturing drives innovation and technological advancement. The pursuit of efficiency and quality in production processes leads to the development of new technologies and techniques. These innovations often spill over into other sectors, enhancing overall productivity and competitiveness on a global scale.

Chapter 7 : Lifeline of National Economy



Topic-1: Means of Transport: Land, Air, and Water

15. (ii) [Refer attached sheet]



POLITICAL SCIENCE

Chapter 1 : Power Sharing



Topic-1: Power Sharing in Sri Lanka

1. (a) Both the assertion (A) and the reason (R) are accurate. Power sharing is indeed beneficial for democracy. When power is shared among different groups or institutions within a democratic system, it promotes inclusivity, representation, and accountability. One of the key benefits of power sharing is its capacity to mitigate conflicts between various social, ethnic, or religious groups.
2. (d) Brussels has a separate government in which both the communities have equal representation. The French-speaking people accepted equal representation in Brussels because the Dutch-speaking community has accepted equal representation in the Central Government.
3. Power sharing is a fundamental aspect of governance aimed at distributing authority among different levels and branches of government, as well as among diverse social groups. There are several prudential reasons why power sharing is considered crucial in political systems:
 - It help to reduce the possibility of conflict between social groups. Power sharing is a good way to ensure the stability of political order.
 - Power sharing is the true spirit of democracy. Every section of community the right to be consulted on how they are to be governed. People have the power to change the government in the next election process.



Topic-3: Why Power Sharing is Desirable

4. (B)
 - **Representation and Participation:** Democracies provide mechanisms for citizens to participate in the political process through voting, activism, and representation. When people feel their voices are heard and their interests represented, they are more likely to engage constructively in society, reducing frustration and potential for conflict.
 - **Rule of Law:** Democracies typically uphold the rule of law, ensuring that laws are applied equally to all citizens regardless of their status. This fosters a sense of fairness and justice, promoting trust in the legal system and minimising grievances that can lead to social unrest.

- **Protection of Rights:** Democratic systems often enshrine fundamental rights and freedoms in their constitutions or legal frameworks. Protecting individual liberties such as freedom of speech, assembly, and religion creates an environment where diverse perspectives can coexist peacefully, fostering tolerance and understanding.
- **Institutional Checks and Balances:** Democracies typically have systems of checks and balances to prevent the concentration of power in any one institution or individual. This helps prevent abuses of power, corruption, and authoritarian tendencies, contributing to stability and confidence in the government.
- **Conflict Resolution Mechanisms:** Democracies provide peaceful mechanisms for resolving conflicts and addressing grievances through legal channels, mediation, and negotiation. By offering non-violent avenues for expressing dissent and seeking redress, democracies mitigate the likelihood of violent conflict and promote social cohesion.



Topic-4: Forms of Power Sharing

5. (b) Checks and balances play a vital role in a modern democracy. They prevent power from being concentrated too much in one part of the governing system and help to avert the problems that can arise when decisions are taken without proper scrutiny or when high standards of behaviour are not enforced.

Chapter 2 : Federalism



Topic-1: Features of Federalism,

6. (b) The 7th Schedule of Indian Constitution has three lists namely, the Union list, state list, and concurrent list that show the division of power between the Union and States concerning certain subjects. The Union List has a total of 97 subjects, the State List has 66 subjects, and the Concurrent List has 47 Subjects.
7. • **Division of Powers :** India divides powers between the central (union) government and the state governments. The Constitution of India clearly outlines the powers assigned to each level of government, with the Union List containing subjects exclusively under the jurisdiction of the central government, the State List containing subjects under the exclusive jurisdiction

of the state governments, and the Concurrent List containing subjects on which both levels of government can legislate.

- **Flexible Federalism:** India's federal system is often described as exhibiting "flexible federalism." While the Constitution delineates the powers of the central and state governments, it also provides mechanisms for altering these powers when necessary. For example, during emergencies, the central government can assume greater authority, and the Constitution allows for the reorganisation of states or the alteration of their boundaries through legislative processes. This flexibility allows for adjustments to accommodate changing socio-political dynamics and administrative needs.
- **Strong Center:** Despite being a federal system, India's political structure often emphasizes a strong central government. The Constitution grants significant powers to the Union government, including matters of national importance such as defense, foreign affairs, and inter-state commerce. Additionally, the Union government has the authority to intervene in state affairs under certain circumstances, such as maintaining law and order, ensuring the implementation of central policies, or in cases of constitutional breakdown. This feature reflects a balance between decentralization and centralization, with the Union government playing a crucial role in preserving the unity and integrity of the nation.



Topic-2: India: A Federal Country

8. (c) The Eighth Schedule to the Constitution consists of the following 22 languages: Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Bodo, Santhali, Maithili and Dogri.



Topic-3: How is federalism practised?,

9. • **Constitutional Provision:** Zila Parishads were formed in India as a part of the Panchayati Raj system, which was introduced through the 73rd Amendment Act of 1992. This amendment aimed to decentralize power by establishing elected local governments at the village, intermediate (block), and district levels, with Zila Parishads representing the district level.
- **Role and Responsibilities:** Zila Parishads serve as the apex bodies at the district level, responsible for coordinating the functioning of Panchayats within

the district. They oversee various developmental activities including planning, implementation, and monitoring of programs related to agriculture, rural development, health, education, infrastructure, and welfare schemes within their jurisdiction.

10. (d) The Union List is a list of 97 subjects as provided in the Seventh Schedule the Constitution of India. The Union Government or Parliament of India has exclusive power to legislate on matters relating to these items.

The State List is a list of 66 subjects in the Schedule Seven of the Constitution of India. The respective state governments have exclusive power to legislate on matters relating to these items.

The concurrent list embodying a total of 47 subjects on which both the Union Parliament and the state legislatures are empowered to legislate.

Residuary subjects: Parliament has exclusive authority to enact legislation on any subject not covered by the Concurrent or State Lists.



Topic-4: Decentralisation in India

11. 11.1 Elected representatives in panchayats play a crucial role in grassroots governance, representing the interests of local communities. They facilitate participatory decision-making, prioritize development initiatives, and ensure equitable distribution of resources. Their presence strengthens democracy by empowering marginalized groups and fostering inclusive development at the grassroots level.
- 11.2 The constitutional status for local government has often shaped the representation of women in democracy by providing frameworks for gender inclusion in local decision-making bodies. Through mandates or quotas, it ensures women have opportunities to participate in governance at the grassroots level, enhancing their political empowerment and representation.
- 11.3 Granting constitutional status to local government in a democratic country fosters decentralization, enhancing citizen participation and accountability. Firstly, it strengthens grassroots democracy by empowering local communities to make decisions tailored to their needs, thereby promoting inclusivity and responsiveness. Secondly, it mitigates bureaucratic inefficiencies by enabling quicker responses to local issues, leading to more efficient service delivery and resource allocation. Overall, constitutional recognition of local government promotes bottom-up governance, empowering citizens and enhancing the overall democratic fabric of the nation.

Chapter 3 : Gender, Religion and Caste



Topic-1: Gender and Politics

12. (d) Both statements are true, but statement 2 does not directly explain statement 1.
13. (d) Feminism, the belief in social, economic, and political equality of the male and female. Although largely originating in the West, feminism is manifested worldwide and is represented by various institutions committed to activity on behalf of women's rights and interests.



Topic-2: Religion, communalism and politics,

14. (b) In India, the term 'secularism' was introduced in the year 1976 of the 42nd Amendment of the constitution. Secularism means separating government from religion which simply means that the government of India should not follow or favor any particular religion rather every religion should be favored equally.
15. (b) The term 'Secular' was added to the preamble by the 42nd Constitution Amendment Act of 1976. It states that constitutionally.



Note

India is a secular country without any state religion. And it also says India shall accept all religions and not favour any religion.

Chapter 4 : Political Rights



Topic-1: Meaning, functions and Necessity

16. (b) The assertion (A) is correct, as India indeed adopted a multi-party system. However, the reason (R) provided does not directly explain why India adopted a multi-party system. While India's vastness and social/geographical diversity are factors that contribute to its multi-party system, there are additional reasons behind it.
17. • **Representation and Governance :** Political parties serve as vehicles for representation in democracies, aggregating diverse interests and perspectives within society. They formulate policies, nominate candidates for elections, and seek to implement their agenda if elected.
- **Political Competition and Accountability:** This competition encourages parties to respond to citizens' demands, address societal issues, and improve

governance to attract voter support. In this way, political parties serve as mechanisms for holding elected officials accountable to the electorate.

- **Formation and Maintenance of Democratic Institutions :** Political parties play a crucial role in the establishment and maintenance of democratic institutions. They often operate within a framework of rules and norms that ensure fair competition, protect individual rights, and uphold the rule of law. Through participation in electoral processes, legislative debates, and policy making, parties contribute to the functioning and development of democratic institutions, such as legislatures, judiciaries, and electoral commissions.
18. • **Representation:** Political parties serve as vehicles for the expression of diverse political ideologies, interests, and opinions within a society. They represent different segments of the population, advocating for their concerns and preferences through electoral campaigns and legislative processes.
- **Governance and Policy Formulation:** In a democracy, political parties play a central role in governance by forming governments, either through majority or coalition arrangements. They also engage in policy formulation through debates, consultations, and negotiations, shaping the direction of public policy and addressing societal challenges according to their vision and priorities.
 - **Accountability and Oversight:** Political parties serve as mechanisms for holding elected officials accountable to the electorate. Parties provide a platform for public discourse and debate, facilitating the exchange of ideas and fostering civic engagement. This process of accountability strengthens democratic institutions and promotes trust between the government and the governed.



Topic-2: National and State Parties

19. (b) In some countries, power usually changes between the two main parties. Several other parties may exist, contest elections and win a few seats in the national legislatures. But only the two main parties have a serious chance of winning the majority of seats to form a government. Such a party system is called a two-party system. The United States of America and U.K. are examples of two-party systems.



Topic-4: Reformation of political parties

20. (d) The Election Commission passed an order making it necessary for political parties to hold their organisational elections and file their income tax returns.

Chapter 5 : Outcomes of Democracy



Topic-1: Understanding Democracy

21. (A)

- **Representation:** In democracies, citizens have the opportunity to elect their leaders through free and fair elections. This ensures that the government reflects the will of the people, allowing for greater representation of diverse viewpoints and interests within society.
- **Accountability:** Democratic governments are accountable to the people. Elected officials are responsible for their actions and decisions through mechanisms such as regular elections, freedom of speech, and independent media. This accountability helps to prevent abuses of power and corruption.
- **Protection of Rights:** Democracies typically uphold individual rights and freedoms, including freedom of speech, assembly, religion, and the press. Constitutional safeguards and the rule of law ensure that the government respects and protects the rights of all citizens, regardless of their background or beliefs.
- **Stability and Peace:** Democracies tend to be more stable and peaceful compared to autocratic or authoritarian regimes. By providing mechanisms for peaceful transition of power and resolving conflicts through dialogue and negotiation, democracies reduce the likelihood of internal strife and violent conflict.
- **Innovation and Progress:** The open and inclusive nature of democratic societies fosters innovation, creativity, and progress. By encouraging debate, diversity of opinion, and the free exchange of ideas, democracies create an environment conducive to economic growth, scientific advancement, and social development.



Topic-2: Accountable, responsive and legitimate government

22. (a) Democracy plays a crucial role in reducing inequality and poverty by fostering inclusivity, accountability, and representation. In a democratic society, citizens have the power to elect leaders who are responsive to their needs, thereby ensuring policies that address socio-economic disparities.

For example, in a democratic country, governments can implement progressive taxation systems where the wealthy contribute more to social welfare programmes aimed at uplifting the impoverished. Additionally, democratic institutions promote transparency and accountability, reducing corruption and ensuring that resources are allocated efficiently and equitably.

Moreover, democracy allows for the protection of individual rights and freedoms, including access to education, healthcare, and employment opportunities. By empowering marginalized groups to participate in the political process, democracy enables them to advocate for policies that advance their socio-economic status and alleviate poverty. Furthermore, democratic governance encourages civil society engagement, facilitating the emergence of grassroots movements and initiatives to address inequality and poverty at the community level.

23. (a) The manufacturing sector serves as the cornerstone of a nation's development for several compelling reasons. Firstly, it generates substantial employment opportunities across diverse skill levels, from manual labor to high-tech engineering, fostering economic stability and reducing unemployment rates. This, in turn, stimulates consumer spending and enhances living standards.

Moreover, manufacturing fuels innovation and technological advancement by driving research and development activities. It serves as a catalyst for the growth of associated industries such as transportation, logistics, and services, forming intricate supply chains that amplify economic activity.

Additionally, a robust manufacturing base bolsters a country's resilience against external shocks by reducing dependency on imports and enhancing self-sufficiency. It also contributes significantly to exports, generating foreign exchange earnings and improving the trade balance.

Furthermore, the manufacturing sector fosters regional development by establishing industrial clusters, attracting investments, and facilitating infrastructure development. Ultimately, the manufacturing sector's pivotal role in job creation, innovation, economic diversification, and national self-reliance underscores its status as the backbone of a country's development, driving sustained economic growth and prosperity.