

CLASS-VI

ENGLISH:

- 1) Write the five headlines of newspaper from 27th October to 6th October.
- 2) Write down a paragraph within 200 words about how you spend your autumn break in your home.
- 3) Write down five examples of Adjective and adverb.
- 4) Rearrange the words to form meaningful sentences. Place the adjectives at the correct place.
 1. an/Henry/is/man/honest
 2. Colorful/birds/are/Parakeets
 3. Bench/We/a/sat/wooden/on
 4. Cold/It/in/is/London
 5. a/country/India/large/is
- 4) Write two words everyday along with synonyms and antonyms.
- 5) Read a novel of your choice and write down the summary of the novel (any novel) you read.
- 6). Write a brief note on any of the characters that you like most in the novel you read.
- 7). Write a biographical sketch of the author of the novel. (life and career, achievements)

HINDI:

- 1- 'आज का नया शब्द' रोज एक नया हिन्दी शब्द सीखकर उसका वाक्य बनाए।
- 2- रहीम के पांच दोहे लिखिए।
- 3- 'हार या जीत' पाठ का सारांश लिखिए।
- 4- हिंदी में एक छोटी कहानी लिखिए।
- 5- 'मेरा प्रिय खेल' पर अनुच्छेद लिखिए।
- 6- अपने मित्र को जन्म दिन की शुभकामनाएं देते हुए पत्र लिखिए।
- 7- आठ पंक्तियों की एक कविता लिखिए।
- 8- संज्ञा, सर्वनाम, विशेषण की परिभाषा लिखिए।
- 9- दश विलोम शब्द, दश पर्यायवाची शब्द लिखिए।

MATHS:

1. Write and learn tables from 1 to 20
2. Find the place values for each of the digit for the followings
1)353 2)254 3)568
3. Find the LCM for the followings
1)12, 15, 2)24, 32, 3)12, 16, 32
4. Find the HCF for the followings
1)12, 15, 2)24, 32, 3)12, 16, 32
5. Write the common multiples for the followings (first six only)
1)6, 8, 2)9, 12, 3)12, 14
6. Write the weight units
7. Write the distance units
8. Make any five 2-d and 3-d shapes with card board
9. Write prime numbers up to 100(read and write)

SCIENCE:

1. Write about different types of materials.
2. What are lustrous and Non lustrous materials
3. What are transparent, opaque and translucent materials and give their examples
4. Write about soluble and insoluble materials

SOCIAL:

1. Read the following chapters :-
1.Landforms and Life
2.The Beginning of India's civilization and write 10 important points in your homework notebook from each chapter.
- 2.In political maps of India Mark & label states and UTs and neighbouring countries .
- 3.. In Physical map of World , mark and label all continents and oceans .
- 4.Write explanation of all six fundamental rights in your notebook.

SANSKRIT:

- 1- दश फलों के नाम संस्कृत में लिखिए।
- 2- दश घर की वस्तु के नाम संस्कृत में लिखिए।
- 3- दश फूलों के नाम संस्कृत में लिखिए।
- 4-दश श्लोक संस्कृत में लिखिए।
- 5- संस्कृत में एक कहानी लिखिए।
- 6- बालक के शब्द रूप लिखिए।
- 7-पठ् धातु रूप लिखिए।

8- अस्मद् शब्द के शब्द रूप लिखिए।

9- समय लेखनम् लिखिए -

7:00-

7:15-

8:15-

2:30-

3:45-

4:00

4:15

3:15

LIBRARY:

WRITE A FEW SENTENCES ABOUT ANY ONE OF THE FOLLOWING AUTHORS IN A LIBRARY NOTEBOOK.

1. MUNSHI PREMCHAND
2. SUDHA MURTY
3. PARO ANAND
4. ANUSHKA RAVI SHANKAR

CLASS-VII

ENGLISH:

1. Write the five headlines of the newspaper from 27th September to 6th October.

2. Write down a paragraph within 200 words about how you spend your autumn break in your home.

3. Which is the most interesting character that you have ever met on a journey? Use the following clues to describe the person in about 100 words.

Clues: Physical Appearance-Emotional State-Focus on unique Details-Use Vivid Imagery-Show.

5. Fill in the blanks with the correct articles

1 They saw-----Film last night.

2.Saurabh does not like-----basketball.

3.The Eastern Ghats do not run in-----continuous line.

4.K2 is the highest peak in----Karakoram Range and -----Second highest in the world.

6. Your family doctor called to inform your mother about the upcoming health check up, since you are going out, write a message to your mother asking her to give a call back to the doctor.

7. You are the school captain of the school. You have found a watch in the school playground. Write a notice informing about the same, urging the owner to get it from you, with the proper description.

8. Read a novel of your choice and write down the summary of the novel (any novel) you read.

HINDI:

- 1- 'दशहरा' पर अनुच्छेद लिखिए।
- 2- एक प्रेरणादायक कहानी लिखिए।
- 3- दश पंक्तियों की एक कविता लिखिए।
- 4- संज्ञा की परिभाषा और उसके प्रकार लिखिए।
- 5- दश नये शब्द की सहायता से दश वाक्य बनाये।
- 6- पाठ 3 का सारांश अपने शब्दों में लिखिए।
- 7- दश विलोम शब्द, दश पर्यायवाची शब्द लिखिए।
- 8- एक संवाद अपने शब्दों में लिखिए।

MATHS:

1. Write and learn tables from 1 to 20
2. Convert into the fractions
1) 3.53 2) 0.254 3) 56.889
3. Find the LCM for the followings
1) 12, 15, 18 2) 24, 32, 42 3) 12, 16, 32
4. Find the HCF for the followings
1) 12, 15, 2) 24, 32, 3) 12, 16, 32
5. Write the common multiples for the followings (first six only)
1) 6, 8, 2) 9, 12, 3) 12, 14
6. Write the weight units
7. Write the distance units
8. Make any five 2-d and 3-d shapes with card board
9. Write prime numbers up to 100 (read and write)

SCIENCE:

INSTRUCTIONS

This question paper is divided into 4 sections.

1. In section A- MCQ's from Q.no 1 to 12, one mark each.
2. In section B- Very short answer questions from 13 to 21, 2 marks each.
3. In section C- Short answer questions from 22 to 26, each of 3 marks.
4. In section D- Case study based questions from 27 to 29, each of 5 marks.

SECTION A (1*12 = 12)

Q1. A solution turns the red litmus paper to blue. Excess addition of which of the following solution would reverse the change?

(a) Lime water (b) Baking soda (c) Vinegar (d) Common salt

Q2. Which of the following is an example of an acid found in food?

(a) Soap. (b) Vinegar. (c) Milk of magnesia. (d) Sugar.

Q3. Which of the following statements are the characteristics of a physical change?

(i) The state of the substance may or may not change.

ii. A substance with different properties is formed.

iii. No new substance is formed. (iv) The substance undergoes a chemical reaction.

(a) (i) and (ii) (c) (i) and (iii) (b) (ii) and (iii)

(d) (iii) and (iv) Q4. Choose the incorrect statement-

i. A switch is the source of electric current in a electric circuit.

ii. A switch helps to complete or break the circuit.

iii. A switch helps us to use electricity as per the requirement.

iv. When the switch is in OFF position there is an air gap between its terminals. Q5. What is the purpose of activities and experiments in science?

a. To make the class fun

b. To explore the world and gain a deeper understanding of the environment

c. To memorise facts (d) To avoid learning

Q6. In an electric circuit, what happens when the switch is in the 'OFF' position?

a. The circuit is open, and no current flows (b) The circuit is closed, and current flows

(c) The bulb lights up (d) The battery gets charged Q7. Which of

the following component is used to store electrical energy?

(a) Battery. (b) Switch. (c) Wire. (d) Bulb.

Q8. What is the primary reason for storing sodium in kerosene oil?

(a) To increase its density. (b) To make it easier to handle.

(c) To prevent its reaction with air and water. (d) To make it more

stable. Q9. 'Litmus', a natural dye is an extract of which of the following?

(a) Red hibiscus (b) Lichen (c) Beetroot (d) Purple cabbage

Q10. What is science primarily about?

(a) Discovering new facts (b) Learning about different things in nature

(c) A process of thinking that welcomes curiosity and asks questions

(d) Memorising facts

Q11. Which non metal is essential for breathing and used to make water?

(a) Carbon. (b) Nitrogen. (c) Oxygen (d) Sulphur.

Q12. Which of the following is an example of an irreversible chemical change?

(a) Boiling of water. (b) Melting of wax. (c) Curdling of milk. (d) Kneading of dough.

SECTION B (2*9=18)

Q 13 Write the name of indicators which occurs naturally? Q 14 name the acid present in lemon juice, tomato and curd .

OR

Which acid is injected in our body by an ant sting that causes pain? How can we treat it naturally..

Q 15 Why are electric wires covered with plastics or rubber?

Q 16 why did we use metal wires for making electric circuit? Can we not use some other material for wires?

Q17 In a torch, we generally use more than one cell. Are those placed in any particular order Q 18 Are the changes of water to ice and water to steam, physical or chemical? Explain.

Q 19 Some changes are given here. Write physical changes in the area marked 'A' and chemical changes in the area marked 'B'. Enter the changes which are both physical and chemical in the area marked 'C'

Process of burning a candle; Tearing of paper; Rusting; Curdling of milk; Ripening of fruits; Melting of ice; Folding of clothes; Burning of magnesium and Mixing baking soda with vinegar.

Q 20 what happens when oxygen react with magnesium and sulphur what are the main difference in the nature of products formed?

Q 21 Why is it important to step out the classroom and engage in activities and experiments for learning science?

SECTION C (3*5 = 15)

Q 22. Explain the importance of understanding the properties of different materials and how does this help in everyday life?

Q 23 how can natural indicators be prepared ? Explain by giving example.

OR

Write down any main three differences between acids and bases.

Q 24 Vidyut has made the circuit as shown in Fig. 3.19. Even after closing the circuit, the lamp does not glow. What can be the possible reasons? List as many possible reasons as you can for this faulty operation. What will you do to find out why the lamp did not glow?

OR

An LED requires two cells in series to glow. Tanya made the circuit as shown in Fig. Will the lamp glow? If not, draw the wires for correct connections.

Q 25 Answer the following questions -

- A metal which catches fire easily.
- The property of metals to be drawn into sheets.
- A metal which is best conductor of electricity.

Q 26 The experiments shown in Fig. a, b, c, and d were performed. Find out in which case(s) did lime water turn milky and why?

SECTION D (3*5 = 15)Case Study based questions.

Q27 Read the following paragraph and answer the

questions:- A Curious class room activity.

During a class ,students were ask to place an ice cube in the glass and observe it over time as it melted. The teacher asked is this change similar to the way battery drains or how fruits ripen ? The discussion then moved to heat flow reversible or irreversible change and melting of ice due to climatic change.

i.Which of the following best describe the type of change occur when ice melts in a glass?

- (a) Chemical change ,reversible (b) physical change ,reversible. (c) Chemical change ,irreversible. (d) Physical change , irreversible.

ii. The ripening of fruit and draining of battery are example of -

- (a) Both Physical change (b) both reversible change. (c) Irreversible change (d) example of changes involving only water.

iii. Why is the melting of glacier a concern in science and society?

- (a) It is natural and reversible process. (b) It effects only mountain regions. (c) It contributes to rising sea level and climatic impact .(d) It produces fresh drinking water in abundance.

iv. Which of the following best explains why ice melting is not same as fruit ripening?

- (a) Ice melting involves new substances. (b) Fruit ripening is a physical change (c) ice melting is a chemical change. (d) Fruit ripening forms new substances, ice melting does not.

v. In physical change when ice cube melts into water due to following changes-

- (a) Change in colour. (b) Change in size and state. (c) Gas evolved. (d) Chemical reaction occurs.

Q 28. Read the following paragraph and answer the questions-

As part of their homework the students tested various kitchen items to observe other properties of metals such as ductility ,sonority,heat conduction ,electrical conductivity .they dipped metal and wooden spoon in hot water and checked which spoon get hotter.They also dropped the metal coin and the wooden block to hear the sound .In another experiment they used tester circuit to see if the material conducted electricity or not.

i.Why did the metal spoon become hotter than the wooden spoon in hot water?

- (a) Metal reacts with hot water. (b) Metal is a poor conductor of heat (c) metal is a good conductor of heat (d) wooden spoon absorbs water.

ii. What property of metals allow them to produce a ringing sound when dropped from height?

- (a) Malleability. (b) Conductivity. (c). Sonority (d) elasticity.

iii. Which of the following materials would call a bulb to glow in a tester circuit?

- (a) Plastic rod. (b) Iron nail. (c). Rubber band. (d). Nylon rope.

iv. Why is rubber used in the handles of tools used by electricians?

- (a) It is shining and attractive (b)it is soft and comfortable (c) it is poor conductor of electricity
d. it. reacts with metals.

- v. Why is handles of Pan and cooker is made up of bakelite or wood?
 (a) As poor conductor of heat. (b). Malleable and ductile. (c) As good conductor of electricity.
 (d) Sonority.
- Q 29. Read the following paragraph and answer the questions-
- Seema wants to bake vanilla cake .She followed the instruction as per the recipe. She made up batter with flour ,butter ,powder sugar ,milk and Vanilla essence.She then added 1 tablespoon of baking powder to the batter and mixed them together in a separate bowl. she took half tablespoon baking soda and mixed half tablespoon of vinegar to it ,the batter rises up as she pouredthat into the batter and batter looked fluffy.
- i.Baking soda and vinegar are chemically called & .
 (a) Sodium carbonate and acetic acid. (b). Sodium bicarbonate and acetic acid. (c) Sodium hydroxide and oxalic acid. (d) Bicarbonate and oxalic acid.
- ii. When vinegar and baking soda war mix together the pair forms up because .
 (a) Nitrogen gas was produced. (b). Oxygen gas was produced. (c) Carbon dioxide gas was produced. (d) Ammonia gas was produced.
- iii. Baking a cake is a .
 (a) Physical change. (b) Chemical change. (c) Both and b (d) reversible change.
- iv. What two things would happen if the gas produced in above case is produced to the lime water?
 (a) Turn lime water milk. (b) No change in my water. (c) Water evolved carbon dioxide gas. (d) Colour change to yellow.
- v. Write chemical equation for reaction of baking soda and vinegar.

SOCIAL:

1. Solve Half Yearly question paper.
2. Read the following chapters :-
 A)From Rulers to the Ruled: Types of Govts.,
 B) Climates of India and write important points in your homework notebook.
- 3.In 2 political maps of India Mark state and UTs and neighbouring countries .
4. In 2 Physical map of World Mark and label all continents and oceans .
5. Write and Explain all fundamental rights.

SANSKRIT:

- 1- संस्कृत में अपना परिचय दीजिए।
- 2-पठ् धातु रूप पांचों विकारों में लिखिए।
- 3- बालक,नदी, फल, गुरु के शब्द रूप लिखिए।
- 4-संस्कृत में एक कहानी लिखिए।
- 5-संस्कृत में दश श्लोक लिखिए।

- 6- दश सब्जी के नाम संस्कृत में लिखिए।
7- दीपावली पर संस्कृत में अनुच्छेद लिखिए।
8- दश क्रिया के नाम लिखिए।

LIBRARY:

WRITE AN ESSAY ON ANY ONE OF THE FOLLOWING TOPIC IN LIBRARY NOTE BOOK
WORD LIMIT (500 to 750) words

IMPORTANCE OF READING
MY FAVOURITE BOOK
SCHOOL LIBRARY AND ITS IMPORTANCE
MY FAVOURITE FICTIONAL CHARACTER

CLASS-VIII

ENGLISH:

- 1). Write an informal letter to Siddhartha, the grandson. After reading your grandfather's heartfelt letter, you decide to write back to him expressing your thoughts feelings, and how his words have inspired you. Write an informal letter to your grandfather in about 150-180 words.
2. Describe the poem somebody's mother in your own words and write the literary device in the poem?
3. Fill in the blanks with suitable prepositions. 1. I started my working life----- our country became independent.
2. Your grandmother stood -----me and gave me strength.
3. I choose to work----- Annand, Gujarat.
4. I always emphasised that it is a recognition----- many people.
5. You will find there is a lot waiting to be done----- you.
4. Write an imaginative essay in 150-200 words describing what you would do if you had Gopi's magical paintbrush.
5. Read a novel of your choice and write down the summary of the novel (any novel) you read.
6. Write a brief note on any of the characters that you like most in the novel you read.
7. Write a biographical sketch of the author of the novel. (life and career, achievements etc..)
8. Identify phrasal verbs and homophones from the chapter The Case of the fifth word and write them in your notes.
9. Write a letter to your friend on the first day of vacation explaining him or her how do you want to spend your vacation, balancing the work along with holidays.

10. Write a letter to the editor of a local newspaper, requesting him to publish an article on the importance of traffic sense and the need to follow the traffic rules as there has been a rise of accidents in your city.

11. Write a paragraph on all the following topics:

A). Information Technology

B). Advancement in the field of Medical Science in India.

C). A visit to a Book Fair

HINDI:

1 . लेखन कार्य

- निबंध: "दशहरा का महत्व" या "अच्छाई की बुराई पर जीत" पर एक निबंध लिखें।

- कहानी लेखन: दशहरे से संबंधित एक लघु कथा लिखें जिसमें अच्छाई और बुराई के बीच के संघर्ष को दर्शाया गया हो।

2 . सृजनात्मक लेखन

- पत्र लेखन: अपने मित्र या परिवार के किसी सदस्य को दशहरे की शुभकामनाएं देते हुए एक पत्र लिखें।

- दशहरे के लिए घर सजाने के उत्पादों और सजावटी वस्तुओं के प्रचार के लिए एक विज्ञापन तैयार कीजिए।

MATHS:

1. Write and learn tables from 1 to 20

2. Convert into the fractions

1) 3.53 2) 0.254 3) 56.889

3. Find the LCM for the followings

1) 12, 15, 18 2) 24, 32, 42 3) 12, 16, 32

4. Find the HCF for the followings

1) 12, 15, 2) 24, 32, 3) 12, 16, 32

5. Find the area and perimeter for the square, rectangle, and triangle

1) Square- side-6cm 2) Rectangle-L=6cm, B=4cm 3) Triangle-

Base=6cm, Height=12cm other side=8cm

6. Write the weight and distance units

7. Draw and write the all types of angles with their ranges.

8. Write prime numbers up to 100 (read and write)

SCIENCE:

1. Write answers to all the questions of PT 2, both SET 1 and SET 2.

SOCIAL:

1. Solve Half Yearly question paper.
2. Read the following chapters :-
Factors of Production , Rise of Marathas and write 10 important points in your homework notebook.
3. In 2 political maps of India Mark state and UTs and neighbouring countries .
4. In 2 Physical map of World Mark and label all continents and oceans

SANSKRIT:

- 1- उच्चारण स्थान लिखिए।
- 2- ल्यप् के आठ उदाहरण लिखिए।
- 3- दश श्लोक संस्कृत में लिखिए।
- 4- संस्कृत में एक कहानी लिखिए।
- 5- सन्धि के आठ उदाहरण लिखिए।
- 6- बालक, फल, गुरु, नदी के शब्द रूप लिखिए
- 7- पठ्, गम् के धातु रूप पांचों लकारों में लिखिए।

LIBRARY:

WRITE AN ESSAY ON **ANY ONE** OF THE FOLLOWING TOPIC IN LIBRARY NOTE BOOK

WORD LIMIT (500 to 750) words

1. IMPORTANCE OF READING
2. MY FAVOURITE BOOK
3. SCHOOL LIBRARY AND ITS IMPORTANCE
4. MY FAVOURITE FICTIONAL CHARACTER

CLASS-IX

ENGLISH:

1. Write a diary entry describing a memorable moment during the Autumn break.

Skills: Reflective writing.

2. Vocabulary Building:

Choose 10 new words from any chapter (October syllabus) and create sentences using them.

Skills: Vocabulary application.

3. Descriptive Paragraph Writing:

Write a descriptive paragraph on "The Role of Technology in Education."

Skills: Argumentative writing, reasoning.

4. Analyze a newspaper editorial and write 3 new things you learned.

Competency: Critical analysis.

5. Write the theme and poetic devices used in the poem "Legend of the North Land."

6. Vocabulary Building:

Choose 10 new words from any chapter (October syllabus) and create sentences using them.

Skills: Vocabulary application.

7. Grammar Practice:

Practice exercises on Modals (can, could, may, might, etc.). Using them write a paragraph or 10 sentences

Competency: Understanding modal verbs in context.

8. Descriptive Paragraph Writing:

Write a descriptive paragraph on "The Role of Technology in Education."

Skills: Argumentative writing, reasoning.

9. Reading Comprehension:

Analyse a newspaper editorial and write 3 new things you learned.

Competency: Critical analysis.

10. Speaking Activity:

Record a 3 minute speech on "How can we protect the environment?"

Skills: Public speaking, fluency. Read any short story from your NCERT textbook (from October syllabus) and write a 200 word summary.

Skills: Understanding themes and key ideas.

11. Grammar Practice:

Complete the given exercise on Subject-Verb Agreement

1. The government ————— criticized for being too slow to act. (was/were)

2. No one ————— a greater collection of coins than my aunt. (has/have)

3. Somebody ———— waiting at the door. (is/are)

4. Two years ————— a long time to be out of work. (is/are)

5. Fatty foods, especially fries and burgers ———— are harmful for health. (is/are)

6. Some students-----excited about the idea. (is/are)
7. Either Jane or Susie---- to go. (has/have)
8. If anybody..... tell them that I am out. (calls/call)

HINDI:

1 . लेखन कार्य

- प्रेमचंद के फटे जूते पाठ का सारांश लिखें।
- कैदी और कोकीला कविता के आधार पर एक निबंध लिखें। (150-200 शब्द)

2. अर्थ के आधार पर वाक्य भेद

- अर्थ के आधार पर वाक्य भेदों के उदाहरण देकर समझाएं।

2 . सृजनात्मक लेखन

- पत्र लेखन: अपने मित्र या परिवार के किसी सदस्य को दशहरे की शुभकामनाएं देते हुए एक पत्र लिखें।

MATHS:

1.Solve the PT-1 and PT-2 exam papers.

1.Read and write tables from 1 to 20

2.Write prime numbers up to 100

3.Write square numbers up to 20

4.Write cube numbers up to 20

5.Draw the transversal angles

6. Read and write Euclid laws

BIO:

Collect information about:

1. Macro and Micro nutrients

2. Types of irrigation

3. What is Animal husbandry & what are the types of farming?

4. Inland fishes and Marine Water fishes.

PHYSICS: Write answers to all the questions of SET 1 and SET 2 of PT 2

AI :

1.EXPLAIN GENERATIVE AI WITH FEW REAL LIFE APPLICATIONS

(AT LEAST 2)

2.WHAT IS AN ALGORITHM.HOW IT IS USEFUL WITH AI MODELS.

3.WRITE ABOUT FLOW CHART AND EXPLAIN DIFFERENT SHAPES AND FLOW OF CONTROL IN IT WITH EXAMPLES

CHEMISTRY:

1. Convert the following temperature to Kelvin Scale (a) 100°C(b) -100 C

2. Convert the following temperature to the CELCIUS scale (a) 25K (b) 373K

3. Give the characteristics of the particles of matter. .

4. Explain why temperature remain constant during the change of state of any substance?

5. Define Sublimation with examples.

6. Do we sweat more on a dry day or humid day ? Justify your reason.

7. Why do we see water droplets on the outer surface of a glass containing ice cold water?

8. List two properties that liquids have in common with solids.

9. List two properties that liquids have in common with gases.

10. What will happen to the melting point of ice if some common salt is added to it? Justify your answer.

11. Liquids generally have lower density as compared to solids. But you must have observed that ice floats on water. Why?

12. What is the physical state of water at 250°C, 100°C, 0°C?

13. Give reasons :

i) A sponge can be pressed easily; still it is called a solid.

ii) Water vapours have more energy than water at same temperature.

SOCIAL:

Write note on any four points given below (about 120 words each)

- a. Poverty in India
- b. Elections in India
- c. Tropical Evergreen and Deciduous forests
- d. Advantages of having healthy population

2. Map pointing

Label the following on outline map of India

- i. All states and UTs

Label the following on outline map of World

- i. All continents and oceans

3. Solve PT-2 question in your notebooks.

SANSKRIT:

- 1- दो पत्र वर्णन
- 2- दो चित्र वर्णन
- 3-तीन अपठित गद्यांश
- 4-बीस सन्धि के उदाहरण
- 5-दश अव्यय शब्द वाक्य प्रयोग सहित लिखिए।
- 6- साधु, राम, कवि, नदी के शब्द रूप लिखिए।
- 7-लभ्, पिब्, लिख्, धातु रूप पांचों लकारों में लिखिए

CLASS-X

ENGLISH:

General Instructions:

Read the instructions very carefully and strictly follow them :

1. This question paper comprises 11 questions. All questions are compulsory.
2. The question paper contains THREE sections -
 - Section - A : Reading Skills
 - Section - B : Grammar and
 - Creative Writing Skills Section - C

: Literature Text Book
3. Attempt questions based on specific instructions for each part.

1. Read the passage given below:

1. Hiking is a great source of pleasure to us besides being beneficial for health.

Once we leave the crowded streets of a city and go out for a walking tour away from the mad world, we really feel free. The open air has a bracing effect on the mind. The congestion of the city, the uproar and tumult, the intolerable noise hectic daily routine, all these are forgotten and the mind is at ease. We then feel like running, leaping, singing and laughing. We travel merrily mile after mile in the company of friends and associates.

2. Hiking takes us in the midst of nature. The sight of waterfalls, flowers, streams, trees and bushes is pleasing. A connect is established between us and nature. Various sounds of nature, like the murmur of a brook or the song of a bird, acquire a new meaning and significance to us.

3. You enjoy the beauty of nature. Minute observations like a snake casting its slough, a mouse peeping out of its hole, a squirrel leaping about on the branches of a tree, a bird flying past us, all these are noticed and they arouse our interest. We have no business worries, no fear of the examination, no anxiety about the home. We have leisure to stand, to walk and talk. It is more thrilling and pleasurable to hike in a mountainous region than in the plains. The excitement of climbing up to the top of a hill, the adventure of coming down a slope, the grandeur of sunset behind a mountain - All these sights lend a rare charm and interest to our journey.

4. We walk along a zigzag motor road or cut across a mountain path in search of adventure. We may have bright sunny weather or might get caught in a shower of rain. We may look below us into the yawning chasm or up at the mountain peak. The feeling of unlimited freedom makes our hearts leap with joy.

5. Hiking is one of the healthiest sports. It ensures a complete escape from the urgent and busy activities of life and therefore gives solace to our brain. It regains its lost energy and is able to do twice as much work as before.

majestic trees, chirping sound of birds make one's mind and soul at peace with nature.

Based on your understanding of the passage, answer the questions below: (10)

i. (i) Based on the reading and understanding of the above passage, list 2 reasons why hiking is considered

ii.

iii. beneficial. (1)

(a)

(b)

iv. Select the beneficial..(1)

ii. Select the option that corresponds to the meaning of the following sentence from paragraph 1: (1) "The open air has a bracing effect on the mind."

(a) Fresh air causes discomfort and unease.

(b) The fresh air refreshes and strengthens the mind.

(c) Open air leads to congestion in the mind.

(d) The open air reduces physical strength.

iii. Based on your reading of the passage, examine in about 40 words how hiking connects us with nature. (2)

iv. What is the tone of the writer in the given line from paragraph 3? Rationalize your response in about 40 words: (2)

"It is more thrilling and pleasurable to hike in a mountainous region than in the plains."

v. The phrase 'yawning chasm' in paragraph 4 refers to: (1)

1. a wide and deep gap

2. a narrow and shallow gap

3. a bridge connecting two areas

4. a small and safe path

vi. In sets a-e below, identify two sets of synonyms: (1)

a. hectic and calm

b. solitude and peace

c. bracing and refreshing

d. adventure and monotony

e. charm and allure

Options:

- a. c and e
- b. a and d
- c. b and c
- d. b and e

vii. Complete the sentence appropriately: (1)

Hiking is thrilling because it involves _____.

viii. Complete the following sentence: (1)

The fresh air and beautiful scenery during a hike _____.

ii. Read the following passage carefully:

- a. Rotation of crops is a universal phenomenon which is practised by most of the farmers of the tropical and temperate countries. The main objective of rotation of crops is to obtain higher agricultural returns on the one hand, and to maintain the soil fertility on the other.
- b. In other words, the rotation of crops helps in making agriculture more sustainable. The importance of crop rotation is more in the areas where farmers grow two, or more than two crops in the same field in a year. Irrigation facilities have also been appreciably developed in the country during the last three decades. The availability of water to the arable land has helped in the intensification of agriculture.
- c. In the areas such as Punjab and Haryana, where the Green Revolution is a big success, one soil exhaustive crop (rice) is followed by another soil exhaustive crop (wheat). Subsequently, the field vacated by wheat is devoted to either rice or maize or cotton. Thus, in one year, the farmers are harvesting three soil exhaustive crops from the same field. Such a rotation of crops may fetch more income to the farmers, but depletes the soil fertility at a faster pace.

- d. A number of field studies were conducted to assess the traditional crop rotation pattern. One such field

study about the changes in the rotation of crops was conducted in the village

Banhera (Tanda), Haridwar district. The main rotation of crops of the village is shown

Traditional Rotation of Crops (1960-65) in Banhera (Tanda)				

in the table below.

Year	Kharif (mid-June to mid-October)	Rabi (mid-October to mid-April)	Zaid (April to June)	No. of days land left fallow
1960	Millet/fodder/rice	Gram	Fallow	90
1961	Fallow	Wheat	Fallow	210
1962	Millet/fodder/rice	Gram	Fallow	90
1963	Fallow	Wheat	Fallow	210
1964	Millet mixed with urad/fodder/rice	Gram	Fallow	90
1965	Fallow	Wheat	Fallow	210

Answer the following questions, based on the above passage: (10)

- Fill in the blanks with the appropriate option from those given in brackets, based on your understanding of para 2. (1)
One of the reasons that there has been an intensification of agriculture in the country is the development of irrigation facilities is a/an (fact/opinion) because it is a/an (subjective judgement/objective detail).
- Based on your understanding of paras 1 and 2, state whether the following statement is true or false. (1) If proper irrigation facility is provided, higher agricultural returns can be obtained by making crop rotation more sustainable.
- Justify the following in about 40 words.
Crop rotation may fetch more income to the farmers, but depletes the soil fertility

- at a faster pace. (2)
- iv. Based on the table, mention the years when the land was left fallow for maximum number of days. (1)
- v. The study conducted in village Banhera (Tanda) reflects that during the years 1960 to 1965, from April to June, the land was left fallow or uncultivated throughout. State any one inference that can be drawn from this. (1)
- vi. Select the option that correctly states the significance of crop rotation as given below: (1)
1. Crop rotation is done to obtain higher agricultural returns.
 2. Higher agricultural returns can be obtained by harvesting soil exhaustive crops.
 3. Crop rotation demands that land should be left fallow for a few months to increase the fertility of soil.
 4. Better irrigation facility to the arable land has helped in the intensification of agriculture.
 5. If crops to be harvested are chosen wisely, crop rotation can help in maintaining fertility of soil.
- Options:
- A. (1), (2) and (4)
 - B. (1) only
 - C. (3) and (5)
 - D. (1) and (5)
- vii. Crop rotation is helping in making agriculture more sustainable. Mention one benefit and one drawback of crop rotation. (Answer in about 40 words) (2)
- viii. Which of the following is the main takeaway from the study mentioned in the passage? (1)

- A. The study needs to include more valid data to support the practice of crop rotation.
- B. Crop rotation is a sustainable practice that can transform the agricultural sector.
- C. The impact of crop rotation on been thoroughly explained.
- D. Crop rotation is independent of the type of crops harvested and availability of water for irrigation.

SECTION B GRAMMAR

3. Complete ANY TEN of twelve of the following tasks, as directed [10]

(i) Fill in the blank by using the correct form of the word in the bracket, for [1]
the given portion of a letter: Dear Sir

(ii) In response to your query, the document that (explain) our [1]
country's sustainability initiatives has been attached for your
consideration.

Identify the error and supply correction for the following note in a toaster's instruction manual:

(iii) Use this appliance only for its intentional use as described in this manual. [1]
Do not use attachments that are not recommended by the manufacturer.

(iv) Use the given format for your response.

Error	Correction

Radhika shared some information with Sant about her school trip. [1]

Report Sant's question. What did you learn from the museum visit?

Read the dialogue between Vilakshna and her physician, Dr. Sharnani, regarding the effectiveness of her medication.

Dr. Sharnani: How is your acid reflux problem now?

Vilakshna: I'd tried everything without success, but this new medicine is great. Select the correct option to complete the reporting of the above dialogue.

Dr. Sharnani asked Vilakshna about her acid reflux problem to which Vilakshna replied that she'd tried everything without success, .

a) but she thought

medi

(v) that this new

cine

wa eat

s Fill in the blank by choosing the
correct option.

gr

ea

t

c)

b

ut

s

h

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e

to

b

e

gr

b) but that new medicine
was great

d) but the new medicine
was great

[1]

- (vi) The teacher gave (every / each / either) of the students a piece of paper. [1]
- Identify the error and supply correction for the following sentence taken from a course's flyer: Our courses offer you concise training on individual growth and personal developments.
- Use the given format for your response.

Error	Correction

Select the option that identifies the error and supplies the correction for the following line, from a news report:

A school has adopted safety measures like screening of everyone who enters school premises and special sanitization of the school as per WHO guidelines.

Option no.	Error	Correction
A	a	the

B	has	have
C	enter s	ente r
D	the	a

(viii) Time_____over. We_____fifty applications in all.

[1]

a) had been / received

b) is / have received

c) is / received

d) was / had been receiving

(ix) Report the dialogue between the shopkeeper and customer, by completing the sentence: Customer: Do you sell battery operated toys for children?

[1]

Shop keeper: Yes, we have a wide range of toys.

The customer asked the shopkeeper if he sold battery operated toys for children. In

(x) response, the shopkeeper replied____.

He said to his friend, "please wait for me".

[1]

Reported speech: _

a) He told his friend to wait for him.

b) He requested his friend that he should wait for him.

c) He said to his friend to wait for him.

d) He requested his friend to wait for him.

(xi) **Complete the line from a self-awareness song, by filling the blank with the correct option.**

[1]

Where the mind is without tear and the head is held high

Where knowledge is free

Where the world_____not_____up into

fragments By narrow domestic walls

A. has been broken

B. had been broken

~~C. will be broken~~

(xii) D. have been broken

Delhi Government

COVID-19 FAMILY FINANCIAL ASSISTANCE SCHEME

Identify the error and supply the correction, for the following:

[1]

An assistance of ₹2,500/- per month will be given to family residing in Delhi where earning

members died due to COVID-19

Use the given format for your response.

error	correction

SECTION B CREATIVE WRITING SKILLS

4. During the monsoons, mosquitoes find safe places like stagnant water and piles of garbage for breeding. As a result, many cases of dengue fever in your city have been noticed. More than a thousand victims have been hospitalized in different parts of the city. You are Varun/Varsha, a responsible citizen. Write a letter to the editor of a local daily, emphasizing the need to create awareness of the problem of dengue, its causes,

ntion and treatment.

[5]

OR

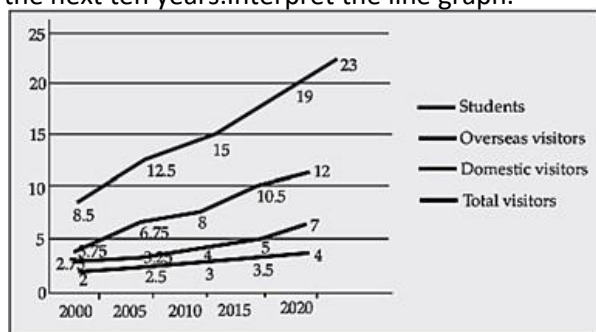
Owing to the MCD employees' strike, the roads in your area are littered with garbage. Not only the place is stinking but also is a health hazard. As Miki/Manish of 112, Laxmi Nagar, write a letter to the editor of a local newspaper informing the concerned authorities of the unhygienic conditions and requesting them to take appropriate and necessary action in the matter.

5. Look at the data given below which shows the changes that have occurred between 1995 to 2010 in Bilaspur regarding the women education. Write a paragraph to record the changes by interpreting this data. [5]

Female Education in Bilaspur	1995	2010
1. No. of Girl's school	10	15
2. No. of Women Colleges	3	4
3. No. of students in schools	10,000	16,000
4. No. of students in colleges	6000	10,000
5. Literacy rate	30%	55%
6. Distance Education Centres	Nil	03

OR

The following graph shows the number of visitors (in millions) who visited the famous Salarjung Museum in Hyderabad between 2000 and 2010 as well as the number of visitors expected to visit it in the next ten years. Interpret the line graph.



SECTION C - LITERATURE

6. Read the given extracts and answer the questions for ANY ONE of the two, given. [5]
- (a) Read the following extracts and answer the question/complete the sentences that follow:
- "He was silent, stupefied, in dismay, at the sight of his wife weeping. He stammered, "What is the matter? What is the matter?" By a violent effort, she had controlled her vexation and responded in a calm voice, wiping her moist cheeks, "Nothing. Only I have no dress and consequently I cannot go to this affair. Give your card to some colleague whose wife is better fitted out than I." He was grieved, but answered, "Let us see, Matilda. How much would a
- suit
able
cost
um
e
cost
,

something
that would
serve for
other
occasions,
something
very
simple?"
She
reflected
for some
seconds
thinking of
a sumthat
she could
ask for
without
bringing
with it an
immediate
refusal and
a
frightened
exclamatio
n from the
economical
clerk."

i. What
does
'econom
ical
clerk'
indicate?
(1)

a. M
Loisel
was a
spen

ii. Fill in the blank with one word:

"I thought Matilda would be _____ seeing the invitation in my hand." (1)

iii. Why was Matilda vexed? How did she react? (2)

iv. What was Loisel's reaction to his wife's desire for a new dress? (1)

(b) **Read the extract given below and answer the questions that follow:**

[5]

We, who were outlaws not so long ago, have today been given the rare privilege to be host to the nations of the world on our own soil. We thank all of our distinguished international guests for having come to take possession with the people of our country of what is, after all, a common victory for justice, for peace, for human dignity. 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!

i. The guests at the spectacular ceremony are being called distinguished because: (1)

- A. They have been invited as guests to attend it.
- B. They are eminent world leaders witnessing it.
- C. They are visiting the country for this purpose.
- D. They have resumed diplomatic relations with the country.

ii. Mention the words or phrase from the extract that encompasses the quality of equality, liberty, and self-respect. (1)

iii. Why was this a 'rare privilege' according to the speaker? Elaborate in about 40 words with reference to the extract. (2)

iv. How do you think the speaker feels? Choose the option that best fits his state of mind. (1)

- A. (i) emotional (ii) elated (iii) unmindful
- B. (i) elated (ii) unmindful (iii) overwhelmed
- C. (i) overwhelmed (ii) elated (iii) honoured
- D. (i) elated (ii) honoured (iii) unmindful

7. **Read the given extracts and answer the questions for ANY ONE of the two, given.**

[5]

(a) Read the following extracts and answer the question/complete the sentences that follow:

If strolling forth, a beast you view,

Whose hide with spots is

peppered As soon as he has leapt

on you You'll know it is the

leopard.

He will do no good to roar with pain,

He'll only leap and leap again

i. While walking, how does a leopard's hide appear to be? (1)

ii. What is the hide peppered with? Which animal is being described here? (2)

iii. The
e
rep
etit
ion
use
d
in
"he
'll
onl
y
lep
an
d

lep
again" is
an
example
of
. (1)

a. Jasmeet skids sharply on the ice skate rink.

b. Jasmeet rushes to switch off the water pump in the backyard.

- (b) Read the following extracts and answer the question/complete the sentences that follow: But he's locked in a concrete cell

[5]

His strength behind bars,

Stalking the length of his

cage, Ignoring visitors.

He hears the last voice at

night, The patrolling cars,

And stares with his brilliant

eyes At the Brilliant stars

- i. What is the caged tiger NOT likely to do? Why? (2)
- ii. What does the tiger's 'brilliant eyes' reveal? (1)
- iii. Here stalking means _____. (1)
- iv. The fact that the tiger is 'stalking the length of his cage' tells us that he is (1)
 - a. restless
 - b. reckless
 - c. resilient
 - d. reverent.

8. Answer ANY FOUR of the following five questions, in about 40-50 words

[12]

- (a) What type of place is Coorg? [3]
- (b) What is a hemlock tree? [3]
- (c) Why did Lencho's happiness change into concern? [3]
- (d) Anne says that there were so many dummies in the class that about a quarter of them shouldn't be promoted. Is she being rude or brutally honest? Evaluate. [3]
- (e) How did Ink and Blink behave when they saw the pirate? (**The Tale of Custard the Dragon**) [3]

9. Answer ANY TWO of the following three questions, in about 40-50 words. [6]

- (a) Why did Mrs. Pumphrey call Mr. Herriot? What did he do to save Tricki? [3]
- (b) What were Ram Lal and his wife's plans regarding Bholi's marriage? [3]
- (c) What were the reactions of Ausable, Max and Fowler when they heard a knock at the door? [3]

10. Answer ANY ONE of the following two questions, in about 100-120 words [6]

- (a) Motivation plays an important role in taking risks in life and in succeeding. Do you agree? [6]
Discuss with reference to the pilot of the old Dakota and the young seagull.
- (b) If Mijbil were living in the world of the poem, The Tale of Custard the Dragon, how do you think he would have [6]
 - i. behaved with Custard?
 - ii. reacted to the appearance of the pirate? Rationalise your answer.

11. Answer ANY ONE of the following two questions, in about 100-120 words. [6]
- (a) "Where there is a will, there is a way." Elaborate in the context of the story of "The Making of a Scientist." [6]
- (b) Describe Anil's qualities as a man and as an employer. [6]

HINDI:

1. लेखन कार्य

- यह दंतुरित मुस्कान - कविता के आधार पर एक निबंध लिखें जिसमें मुस्कान के महत्व का वर्णन हो।
- फसल - फसल कविता के आधार पर एक लेख लिखें जिसमें कृषि के महत्व पर प्रकाश डाला जाए।
- नौबत खाने में इबादत - कहानी का सारांश लिखें और इसकी मुख्य थीम को समझाएं।

2. सृजनात्मक लेखन

- अपने भविष्य के लक्ष्यों और सपनों पर एक निबंध लिखें। (120-150 शब्द)

CHEMISTRY:

Very Short Answer Type Questions [2 Marks]

1. "We need to balance a skeletal chemical equation." Give reason to justify the statement.
2. Name the reducing agent in the following reaction: $3\text{MnO}_2 + 4\text{Al} \longrightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$
State which is more reactive, Mn or Al and why?
3. What is observed when a solution of potassium iodide solution is added to a solution of lead nitrate? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction.
4. Write balanced chemical equations for the following reactions.
 - i. Silver bromide on exposure to sunlight decomposes into silver and bromine,
 - ii. Sodium metal reacts with water to form sodium hydroxide and hydrogen gas.
 - iii.
5. Identify the type of reaction(s) in the following equations. (i) $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
 ii. $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \longrightarrow \text{PbI}_2 + 2\text{KNO}_3$
 iii. $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2$
 iv. $\text{CuSO}_4 + \text{Zn} \longrightarrow \text{ZnSO}_4 + \text{Cu}$
6. Write balanced equation for the reaction between magnesium and hydrochloric acid. Name the products obtained, identify the type of reaction.

7. What is the colour of ferrous sulphate crystals? How does this colour change after heating?
8. Why does the colour of copper sulphate solution change when an iron nail is dipped in it? Write two observations.
9. Translate the following statement into chemical equation and then balance it : Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate. State the two types in which this reaction can be classified.
10. Hydrogen being a highly inflammable gas and oxygen being a supporter of combustion, yet water which is a compound made up of hydrogen and oxygen is used to extinguish fire. Why?
11. (a) A solution of substance 'X' is used for white washing. What is the substance 'X'? State the chemical reaction of 'X' with water.
(b) Why does the colour of copper sulphate solution change when an iron nail is dipped in it?
12. Write the balanced equation for the following reaction and identify the type of reaction in each case.
 - i. Potassium bromide + Barium iodide \longrightarrow Potassium iodide + Barium bromide.
 - ii. $\text{Hydrogen(g)} + \text{Chlorine(g)} \longrightarrow \text{Hydrogen chloride(g)}$
13. A zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After few days, when zinc plate was taken out of the solution, a number of holes were observed on it.
 - i. State the reason for changes observed on the zinc plate.
 - ii. Write the chemical equation for the reaction involved.
14. What is a redox reaction? When a magnesium ribbon burns in air with a dazzling flame and forms a white ash, is magnesium oxidized or reduced? Why?
15. When the powder of a common metal is heated in an open china dish, its colour turns black. However, when hydrogen is passed over the hot black substance so formed, it regains its original colour. Based on the above information, answer the following questions.
 - i. What type of chemical reaction takes place in each of the two given steps?
 - ii. Name the metal initially taken in the powder form. Write balanced chemical equations for both reactions.

Long Answer Type Questions [5 Marks]

1. (a) Define a balanced chemical equation. Why should an equation be balanced?
b. Write the balanced chemical equation for the following reaction:
 - i. Phosphorus burns in presence of chlorine to form phosphorus penta chloride.
 - ii. Burning of natural gas.
 - iii. The process of respiration.
2. (a) Explain two ways by which food industries prevent rancidity.
b. Discuss the importance of decomposition reaction in metal industry with three points.
2. (a) Write one example for each of decomposition reaction carried out with help of
(i) Electricity (ii) Heat (iii) Light
b. Which of the following statements is correct and why copper can displace silver from silver nitrate and silver can displace copper from copper sulphate solution.

4. What happens when a piece of
 - a. Zinc metal is added to copper sulphate solution?
 - b. Aluminium metal is added to dilute hydrochloric acid?
 - c. Silver metal is added to copper sulphate solution?
 Also write the balanced chemical equation if the reaction occurs.
5. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed.
 - a. Write a balanced chemical equation of the reaction
 - b. Identify the brown gas X evolved.
 - c. Identify the type of reaction
 - d. What could be the pH range of aqueous solution of the gas X?
6. On adding a drop of barium chloride solution to an aqueous solution of sodium sulphate, white precipitate is obtained.
 - a. Write the balanced chemical equation of the reaction involved.
 - b. What other name can be given to this precipitation reaction?
 - c. On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?
7. You are provided with two containers made up of copper and aluminium. You are also provided with solutions of dilute HCl, dilute HNO_3 , ZnCl_2 and H_2O . In which of the above containers of these solutions can be kept?

NOTE: REVISE FIRST 3 CHAPTERS IN SCIENCE DURING AUTUMN BREAK

PHYSICS:

MATHS:

ARITHMETIC PROGRESSION

1. Find the 10th term of the AP : 2, 7, 12, . . . [2]
2. Which term of the AP : 21, 18, 15, . . . is -81 ? Also, is any term 0? Give reason for your answer. [3]
3. Determine the AP whose 3rd term is 5 and the 7th term is 9. [2]
4. Check whether -150 is a term of the AP : 11, 8, 5, 2 . . . [2]
5. The 17th term of an AP exceeds its 10th term by 7. Find the common difference. [2]
6. Which term of the AP : 3, 15, 27, 39, . . . will be 132 more than its 54th term? [3]
7. How many three-digit numbers are divisible by 7? [3]
8. How many multiples of 4 lie between 10 and 250? [2]
9. Find the sum of first 22 terms of an AP in which $d = 7$ and 22nd term is 149. [2]
10. Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively. [3]
11. Find the sum of the first 40 positive integers divisible by 6. [2]
12. Find the sum of the first 15 multiples of 8. [2]
13. Find the sum of the odd numbers between 0 and 50. [2]

TRIANGLES

- Q.1: In the given figure, $DE \parallel BC$. Find EC. (1)
- Q.8: State and prove Basic Proportionality Theorem. (4)

COORDINATE GEOMETRY

Q.1: Find the distance between the given pairs of points (a, b) , $(-a, -b)$ (1)

Q.2: Find the length of all the sides of a triangle whose vertices are $(1, -1)$, $(-4, 6)$ and $(-3, -5)$. (1)

Q.4: Find the coordinates of a point A, where AB is the diameter of a circle whose centre is $(2, -3)$ and B is $(1, 4)$. (2)

Q.5: Find the coordinates of the point which divides the join of $(-1, 7)$ and $(4, -3)$ in the ratio 2 : 3. (2)

Q.6: Find the point on the x-axis which is equidistant from $(2, -5)$ and $(-2, 9)$. (3)

Q.8: Find a relation between x and y such that the point (x, y) is equidistant from the point $(3, 6)$ and $(-3, 4)$. (3)

Q.9: Show that the points $(1, 7)$, $(4, 2)$, $(-1, -1)$ and $(-4, 4)$ are the vertices of a square. (3)

Q.10: Find the ratio in which the line segment joining A $(1, -5)$ and B $(-4, 5)$ is divided by the x-axis. Also find the coordinates of the point of division. (4)

INTRODUCTION TO TRIGONOMETRY

Q.1: In ΔABC , right-angled at B, $AB = 24$ cm, $BC = 7$ cm. Find: $\sin A$, $\cos A$. (2)

Q.2: If $\sin A = 3/4$ calculate $\tan A$. (2)

Q.3: Evaluate $2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$ (2)

Q.4: Show that $\cos 30^\circ \cos 60^\circ - \sin 30^\circ \sin 60^\circ = 0$ (2)

Q.6: If $\sin(A - B) = 1/2$ $\cos(A + B) = 1/2$ where $0^\circ < A + B \leq 90^\circ$, $A > B$, find A and B. (3)

Q.7: Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$ (3)

Q.8: Prove that : $\sec A (1 - \sin A)(\sec A + \tan A) = 1$. (3)

Q.10: Prove that : $(\operatorname{cosec} \theta - \cot \theta)^2 = 1 - \cos \theta / 1 + \cos \theta$ (3)

SOME APPLICATIONS OF TRIGONOMETRY

Q.1: A tower stands vertically on the ground. From a point on the ground, which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° . Find the height of the tower. (2)

Q.2: A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole, if the angle made by the rope with the ground level is 30° . (2)

Q.3: The shadow of a tower standing on a level ground is found to be 40 m longer when the Sun's altitude is 30° than when it is 60° . Find the height of the tower. (3)

Q.4: From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower. (4)

Q.5: The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high, find the height of the building. (4)

Q.6: From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45° . Determine the height of the tower. (4)

Q.7: The angles of depression of two ships from the top of a lighthouse and on the same side of it are found to be 45° and 30° . If the ships are 200 m apart, find the height of the lighthouse. (4)

CIRCLES

Q.1: How many tangents can a circle have? (1)

Q.2: A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that $OQ = 12$ cm. Find PQ. (1)

Q.3: Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact. (3)

Q.4: Prove that the lengths of tangents drawn from an external point to a circle are equal. (3)

Q.5: A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$ (3)

Q.6: In the given figure, XY and X'Y' are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and X'Y' at B. Prove that $\angle AOB = 90^\circ$. (4)

Q.7: Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line-segment joining the points of contact at the centre. (4)

Q.8: Prove that the parallelogram circumscribing a circle is a rhombus. (3)

AREAS RELATED TO CIRCLES

1. Write the formula to find area of a sector of a circle.
2. Find the area covered by the minute hand 7 cm long when it moves from 2 to 5.
3. Find the area of the quadrant of a circle of diameter 14cm.
4. Find the area of minor segment of quadrant of a circle of radius
5. The area of a circle is 154cm^2 . Find the length of arc making an angle 60° at the centre.

Find the area of the sector of a circle with radius 14cm and angle 30° .

BIO:

Write notes for Heredity

Complete intext and exercise questions of heredity
practice diagrams from all the chapters.

SOCIAL:

1. Write note on any three points given below (about 120 words each)

- a. Bright future of Solar Energy in India
- b. Industrial Pollution and steps to be taken to minimize it
- c. Role of banks in Indian Economy
- d. Mahatma Gandhi and Non co-operation movement

2. Map pointing

Label the following on outline map of India

1. Coal mines – Raniganj , Bokaro, Korba, Singrauli, Singareni, Neyveli , Jharia
2. Oil fields - Digboi, Ankaleshwar, Mumbai high,
3. Nuclear Power plants -Tarapur , Kakrapara, Rawat Bhata, Naraura, kalpakkam, Kaiga.
4. Solve PT - 2 question papers

SANSKRIT:

- 1- व्यंजन सन्धि के दश उदाहरण
- 2- विसर्ग सन्धि के दश उदाहरण
- 3- दो पत्र वर्णन
- 4- दो चित्र वर्णन
- 5- दो अपठित गद्यांश

अनुवाद

- 1- यह बालक है।
- 2- वन में शेर है
- 3- बालक माता के साथ बाजार जाता है।
- 4- वह कल आयेगा।
- 5- विवाद मत करो
- 6- शिव को नमस्कार।
- 7- बालिका चित्र बनाती है।
- 8- वह कल जयपुर जायेगा।
- 9- वे दोनों यहां आते हैं
- 10- बालक दूध पीता है।

समास

- 1- तत्पुरुष समास के दश उदाहरण। (विग्रह सहित)
- 2- बहुब्रीहि के दश उदाहरण।
- 3- द्वन्द्व समास के दश उदाहरण।

AI : 1. What do you understand by the Data Exploration stage in AI project cycle? Briefly explain any 3 methods of data exploration techniques.

2. A 52-year-old man named Satya, a partially blind writer, writes short stories and poems in rural newspapers and magazines. He is dependent on villagers for his work. Suggest some NLP-based techniques so that he can continue his work independently.
3. What is an RGB image? Why is it called so?
4. "Symbolically encoded paintings on stones, coins, caves, monuments and other historical events provide information about the past." What type of communication was used by our ancestors to convey their messages to future generations?
5. Adesh, a tech fresher, doesn't like any involvement or suggestions in his project and likes to work independently. During COVID-19, the company culture changed and asked their employees to work from home. Being a fresher, Adesh started facing technical issues." What would be your suggestion to Adesh on working independently?
6. Differentiate between supervised machine learning and unsupervised machine learning.
7. What is Tokenization? Count the number of tokens in the following sentence: If you fail, never give up because FAIL means "First Attempt in Learning."
8. What do you understand by the Evaluation and Deployment stage in AI project cycle?
9. Payal is stressed due to her career and job. Has some stress in life its benefits or is all stress bad? Explain.
10. What is a computer virus? Name any two antivirus packages commonly used.
11. How can one enhance their ability to work independently?
12. Write two applications of AI used in e-shopping.
13. How do smartphones generate customized recommendations?
14. Pragya is working on an AI project and has completed the first stage of Problem Scoping. In the second stage, she wants to collect all the data sets required for the project. Identify the stage name and different methods to collect data.
15. Differentiate between script bot and smart bot.
16. What are the different steps implemented in bag of words algorithm?
17. "A neural network is divided into multiple layers and each layer is further divided into several blocks." What do you understand by neural network? Explain the different layers of a neural network
18. What are the benefits of working independently?
19. Explain two popular mobile operating systems.
20. Write two stress causal agents.
21. Differentiate between ML and DL.
22. How can we solve the problems of gender bias in AI?
23. Nitya has learnt different types of modelling in AI project life cycle. But she is confused about the Supervised and Unsupervised learning algorithms. Help her to understand them.
24. What is text normalization? What are the different steps used in text normalization?
25. What is the significance of Stop Words, Special Characters and Numbers in a token obtained by tokenization?
26. What are the applications of TFIDF?
27. Mention some applications of Natural Language Processing.
28. What do entrepreneurs do when they run their business? Mention any two points.

29. Enlist any two methods to protect our data on the computer.
30. Sameera is always punctual at school. She has a regular schedule that she follows every day. She plans for study and play time in advance. Enlist the four steps Sameera must have followed for effective time management.
31. How do you understand whether a machine/application is AI based or not? Explain with the help of an example.
32. Define the following:
- Stemming
 - Lemmatization
33. What will be the results of conversion of the term, 'happily' in the process of stemming and lemmatization? Which process takes longer time for execution?
34. What do we get from the "bag of words" algorithm?
35. Samarth attended a seminar on Artificial Intelligence and has now been asked to write a report on his learnings from the seminar. Being a non-technical person, he understood that the AI enabled machine uses data of different formats in many of the daily based applications but failed to sync it with the right terminologies and express the details. Help Samarth define Artificial Intelligence, list the three domains of AI and the data that is used in these domains.
36. Neural networks are said to be modelled the way how neurons in the human brain behave. A similar system is mimicked by the AI machine to perform certain tasks. Explain how neural networks work in an AI model and mention any three features of Neural Networks.
37. Samiksha, a student of class X, was exploring the Natural Language Processing domain. She got stuck while performing the text normalization. Help her to normalize the text on the segmented sentences given below:
- Document 1: Akash and Ajay are best friends.
- Document2: Akash likes to play football but Ajay prefers to play online games.
- 38.
- Automated trade industry has developed an AI model which predicts the selling and purchasing of automobiles. During testing, the AI model came up with the following predictions.
- | ConfusionMatrix | | Reality | |
|-----------------|-----|---------|----|
| | | Yes | No |
| Predicted | Yes | 60 | 25 |
| | No | 05 | 10 |
- (i) How many total tests have been performed in the above scenario?
- (ii) Calculate precision, recall and F1 Score.
39. Ashwat is amazed to learn about his sister Ananya who is multi-talented and has excelled in academics, music, dancing, sports and painting. He was quite curious when Ananya told him that he too possessed all these intelligences like every human being does, but only at different levels. He wondered which intelligence she was talking about. Can you help Ashwat in learning about different types of intelligences by naming and explaining any four types of intelligences?
40. Enumerate any two ways to overcome barriers to effective communication.
41. What are the factors that affect self-confidence?
42. Explain 'Affordable and Clean Energy'.
43. All of us use smartphones. When we install a new app, it asks us for several permissions to access our phone's data in different ways. Why do apps collect such data?
44. Geetha wants to know the need of exploring data through visualization? Explain her.
45. Explain the term "Computer Vision" and its primary goal.
46. Explain the key steps of NLP – based text analysis.

47. What is Accuracy? Mention its formula.
48. Sundar was confused with the following terms. Explain them to make him understand:
- a) True Positive (TP)
 - b) True Negative (TN)
 - c) False Positive (FP)
 - d) False Negative (FN)
49. What are the key components of self-management skills, and why are they important in personal and professional life?
50. What is the difference between wage-employed and self-employed people?
51. Name any first five Sustainable Development Goals
52. Provide an example of an AI application that involves decision-making based on data
53. Explain the term "Computer Vision" and its primary goal
54. What is evaluation of an AI model?
55. Define AI Project Cycle; Name all the stages of an AI Project cycle.
56. Briefly explain the applications of TF-IDF
57. Name two applications of Computer Vision in the healthcare industry.
58. Describe the difference between supervised, unsupervised, and reinforcement learning.
59. What are the five components of SMART goals, and why is each one important for effective goalsetting?
60. What is the difference between human language and computer language.
61. List four characteristics of effective feedback
- 62 Describe four traits of a self-motivated individual.
63. Provide four tips to help secure your data.
- 64 What strategies can be implemented to address the challenges of achieving Sustainable Development Goals (SDGs)?
65. Explain any four Applications of Artificial Intelligence?
66. Two sustainable Development Goals are mentioned below. Write 2 problems under each goal that you think should be addressed for achieving the goal.
- a. Quality Education
 - b. Clean Water and Sanitation
- 67 Explain the differences between lemmatization and stemming. Give an example to assist you explain.

CLASS-XI

ENGLISH:

- 1 Solve two note making passages with summaries.
- 2 Design two posters. Say no to drugs, city circus or exhibition.
3. write two speeches importance of education, saving girl child.
- 4 write two debates on we should ban social media

5. collect different classifieds on wanted, situation wanted, property for sale, flat / House for rent , vehicle for sale.

6. Solve one unseen reading comprehension passage.

MATHS:

RELATIONS AND FUNCTIONS

1. If , and verify that
i. = (ii) =
2. If , and find
3. If , and , find
4. $A = \{1, 0, -1\}$, $B = \{2, 3\}$, $C = \{1, -1\}$, find $A \cap B \cap C$ and $B \cap A \cap C$
5. If $(a, 1)$, $(b, -1)$ and (c, c) are three elements of $A \cap B$ and $n(B \cap A) = 9$, Find the sets A , B and $B \cap C$. Ans $\{a, b, c\}, \{1, -1, c\}, \{(a, 1), (a, -1), (a, c), (b, 1), (b, -1), (b, c), (c, 1), (c, -1), (c, c)\}$
6. 7. If , then find
7. Let Define a relation R on set A , . Write ,
represent using arrow diagram and also write domain and range of .
8. is defined by, . Find , ,
9. Find the domain and range of function given by
10. **Find domain and range of following functions:**
a) b) c) d)
e) f)

COMPLEX NUMBERS

1. $i^{49} + i^{68} + i^{89} + i^{110}$
2. $i^{37} + i^{67}$
3. $1 + i^{10} + i^{20} + i^{30}$
4. $2i^2 + 6i^3 + 3i^{16} - 6i^{19} + 4i^{25} + 4$
5. Show that $i^n + i^{n+1} + i^{n+2} + i^{n+3} = 0$
6. Show that $(-i)^{4n+3} = i$
Express in standard form
- 7.
- 8.
- 9.
- 10.
11. Find x and y in the following case
3. $x + (2x - 3y)i = 6 + 3i$
12. Find x and y in the following case
13. $(x + i).(x + iy) = 2 - 5i$
14. Find x and y in the following case
15. **Find the conjugate and the modulus of the followings**
a) $(3 - 2i).(3 + 2i)(1 + i)$ b) $(2 + 3i)^2$

- 16) If conjugate of is , find
- 17) If conjugate of is , find
- 18) If , find a and b
- 19) Find the least value of n if
- 20) If $z_1 = 2 + 3i$ and $z_2 = -1 + 3i$, then find Im

LINEAR INEQUALITIES

Solve for x from Q No 1 to 9

1. $3x - 25 \geq 2 - x$
2. $2(2x + 3) - 10 < 6(x - 2)$
3. $3(2 - x) \geq 2(1 - x)$
4. $37 - (3x + 5) \geq 9x - 8(x - 3)$
5. $5 - 2x \leq x - 5$
6. $-3 - 3x + 2 < 4$,
7. $2x - 13 \leq x - 24 \leq -x + 5$
8. $x^4 < 5x^2 - 35$

9. Solve the system of inequalities

$3x - 7 < 5 + x$ and $11 - 5x \leq 1$ and represent the solutions on the number line

10. A manufacturer has 600 litres of a 12% solution of acid. How many litres of a 30% acid solution must be added to it so that acid content in the resulting mixture will be more than 15% but less than 18%?

PERMUTATIONS AND COMBINATIONS

Case study based

Q.1 A state cricket authority has to choose a team of 11 members, to do it so the authority ask 2 coaches of a government academy to select the team

Members that have experience as well as best performer in the last 15 matches. They can make up a team of 11 cricketers amongst 15 possible candidates in which 5 players can bowl.

- (i) In how many ways can the final eleven be selected from 15 cricket players ?
- (ii) In how many ways can the final eleven be selected if exactly 4 bowlers must be included.
- (iii) In how many ways can the final eleven be selected if all bowlers must be included.

Short answer type question

Q.1 How many number of rectangle forming by 5 different horizontal parallel lines and 7 other

different vertical parallel line.

Q.2 How many arrangement of the letters of the word APPLICATION.

Q.3 There are 12 point on a circle. How many chord can be draw? Find number of intersection of all chord in the circle?

Long answer type questions

Q.1 Find rank of the word MONDAY in the dictionary wise all arrangements of word MONDAY, also find the word which will on the rank 400.

Q.2 Find the arrangements of the letters of the word VOLUMES. Find the arrangements if:-

- (a) all vowels come together.
- (b) all vowels don't come together.
- (c) vowel don't come together.

Case study based

Q.1 In a company, CEO wants to establish a new branch. New branch required a committee of 5 members is to be formed out of 6 gents and 4 ladies.

In how many ways this can be done, when

- i. At least two ladies are included?
- ii. At most two ladies are included?

Q.2 Read the following passage and answer the questions given below.

Every person has Independence thought.

Find the number of arrangements of the letters of the word INDEPENDENCE. In how many of these arrangements,

- i. Do the words start with P
- ii. Do all the vowels always occur together
- iii. Do the vowels never occur together

OR

Do the words begin with I and end in P?

Q.3 Read the following passage and answer the question given below.

The longest river of North America is *Mississippi River*

In how many ways can the letters of the word MISSISSIPPI be arranged Such that

- i. All letters are used
- ii. All I's are together
- iii. All I's are not together

OR

All S's are not together

Short answer type question

Q.1 If ${}^{10}P_r = 5040$, find the value of r

Q.2 If ${}^5C_r = 6$, find value of r.

Q.3 How many 6-digit number can be formed from the digits 0,1,3,5,7,9 which are divisible by 10 and no digit is repeated ?

Q.4 How many words can be formed by using the letters of the word ORIENTAL, so that the vowels always occupy the odd places ?

Q.5 How many squares in a chess board?

Q.6 How many palindrome of 5 letters can be made by using letters of the word MATHS?

Q.7 It is required to seat 5 men and 4 women in a row so that the women occupy the even places. How many such arrangements are possible ?

Q.8 Given 12 flags of different colours, how many different signals can be generated if each signal requires the use of 2 flags, one below the other?

Q.9 There are four bus routes between A and B; and three bus routes between B and C. A man can

travel round-trip in number of ways by bus from A to C via B. If he does not want to use a bus route more than once, in how many ways can he make round trip?

Q.10 In an examination there are three multiple choice questions and each question has 4 choices. Find the number of ways in which a student

BINOMIAL THEOREM

1	$1+4x+4x^2+10x^3+10x^4+4x^5+x^6$ has A) 10 TERMS B) 11 TERMS C) 20 TERMS D) 21 TERMS
2	The ratio of the coefficients of x^r and x^{r-1} in $(1+x)^n$ is A) $n+r$ B) $n-r+1$ C) $n+r-1$ D) NONE
3	If the coefficient of x^2 and x^3 in the expansion of $(3+mx)^9$ are equal, then the value of m is A) -97 B) -79 C) 97 D) 79
4	The term independent of x in the expansion of $(2x+13x^2)^6$ is A) 2^{nd} B) 3^{rd} C) 4^{th} D) 5^{th}
5	Using binomial theorem, evaluate 995 .
6	Expand $(x^2+3x+4)^n$, $x \neq 0$ using Pascal triangle.
7	Prove that: $a^6+b^6-a^3b^3$ is an even number if a and b are integers:
8	Find 4^{th} term of the expansion $(3x+2x^6)^6$
9	Find 5^{th} term from the end of the expansion $(a+bx)^7$
10	Find $a^6+b^6-a^3b^3$ hence evaluate $3^6+2^6-3 \cdot 2^3$
11	Find a , if the 4^{th} and 5^{th} term of the expansion $(2+a)^7$ are equal.
12	Expand: $(x^2+1-2x)^3$
13	Find the value of $a^2+a^2-14+a^2-a^2-14$
14	Using binomial theorem prove that $5^{4n}+52n-1$ is divisible by 676 $\forall n \in \mathbb{N}$
15	Find the middle term in the expansion $(x^7-5x)^6$
16	Find the coefficient of x^4 in $(2x^2-3x)^5$
17	Using the binomial theorem, show that 6^n-5n always leaves remainder 1 when divided by 25
18	Find a if coefficients of x^2 and x^3 in $(3+ax)^9$ are equal.
19	The coefficients of 2^{nd} and 3^{rd} terms in the expansion of $(1+ax)^n$ are in the ratio 1:2. Find n .
20	Find the middle term(s) in the expansion of $(3x-x^3)^6$
21	<p>Case based Question: In class XI, teacher explained binomial theorem. Two students Shivani and Vishwani trying to solve the exercise. Shivani expanded $(1+x)^6$ by using Binomial theorem, Vishwani expanded $(x+1)^6$.</p> <p>Based on this above information answer the following questions.</p> <ol style="list-style-type: none"> According to Shivani find 4^{th} term. (1M) Find the value of ${}^6C_0 + {}^6C_1 + {}^6C_2 + {}^6C_3 + \dots + {}^6C_6$ (1M) Find the positive value of x if 3^{rd} terms of Shivani and Vishwani are equal. (2M)

Answers:

1	D	6	$x^5+10x^2+40/x+80/x^4+80/x^7+32/x^{10}$	11	2	16	720
2	B	7	Hint: expand and simplify.	12	$x^6-6x^5+15x^4-20x^3+15x^2-6x+1$	17	Hint: write $6^n=[1+5]^n$ the expand
3	C	8	4320	13	$2[a^8+6a^6-5a^4-2a^2+1]$	18	9/7
4	C	9	$21a^5b^2x^2$	14	Hint: write $5^{4n}=25^{2n}=(26-1)^{2n}=(1-26)^{2n}$ The expand	19	5
5	9509900499	10	3966	15	-205373	20	-5x812
21	(1) $20x^2 \times 64$ 3) $6C2 \times 2 = 6C2 \times 4 \therefore x = \pm 1$ but x is positive $\therefore x = 1$						

CS:

Conditional Statements (15 Questions)

- Write a Python program to check whether a number is **even or odd**.
- Write a program to check whether a number is **positive, negative, or zero**.
- Take input of age from the user. Check whether the person is **eligible to vote** or not ($\text{age} \geq 18$).
- Write a Python program to find the **largest of two numbers**.
- Write a program to find the **largest among three numbers** using if-elif-else.
- A student gets marks in 5 subjects. Calculate the **percentage** and print the **grade** as per this scale:
 - ≥ 90 : A
 - ≥ 80 : B
 - ≥ 70 : C
 - ≥ 60 : D
 - < 60 : F
- Write a program to check whether a given year is a **leap year**.
- Write a program to check whether a character entered is a **vowel or consonant**.
- Write a program to check whether a number is **divisible by both 5 and 11**.
- Write a program to accept three angles and check whether they can form a **valid triangle**.
- Take marks as input from the user and print:
 - "Pass" if marks ≥ 33 ,
 - "Fail" otherwise.
- Write a program to input a character and determine whether it is **uppercase, lowercase, digit, or special character**.
- Write a Python program to find the **absolute value** of a number.
- Write a program to find the **roots of a quadratic equation** using if-elif-else.
- Write a program to take a number from the user and check if it is a **multiple of 3 or 7**.

Loops (15 Questions)

- Write a program to print numbers from **1 to 10** using a for loop.
- Write a program to print the **first 10 natural numbers** using a while loop.
- Write a program to print the **sum of first n natural numbers**, where n is entered by the user.
- Write a program to display the **multiplication table of a number** entered by the user.
- Write a program to calculate the **factorial of a number** using a for loop.
- Write a program to print all **even numbers between 1 and 50**.
- Write a program to find the **sum of digits** of a number using a loop.
- Write a program to **count the number of digits** in a number using a while loop.

24. Write a program to **reverse a number** using a loop.
25. Write a program to **check if a number is prime**.
26. Write a program to print the **Fibonacci series up to n terms**, where n is given by the user.
27. Write a program to find the **LCM** of two numbers using loops.
28. Write a program to check if a number is a **palindrome**.
29. Write a pattern using nested loops:

```
*
* *
* * *
* * * *
```

30. Write a menu-driven program using a while loop:

- Press 1 to check even/odd
- Press 2 to find factorial
- Press 3 to exit

PHYSICS:

1. Work out first 10 numerical from exercises of
 - a. Force and laws of motion
 - b. Work, energy, Power.

CHEMISTRY:

1. An organometallic compound on analysis was found to contain, C = 64.4%, H = 5.5% and Fe = 29.9%. Determine its empirical formula (At. mass of Fe = 56 u). 2
2. Calculate the number of protons, neutrons and electrons in . 2
3. Among the second period elements, the actual ionization enthalpies are in the order 2
 $\text{Li} < \text{B} < \text{Be} < \text{C} < \text{O} < \text{N} < \text{F} < \text{Ne}$.
 Explain, why
 i. Be has higher $\Delta_i H$ than B?
 ii. O has lower $\Delta_i H$ than N and F?
4. Which of the following pairs of elements would have a more negative electron gain enthalpy? 2
 i. O or F (ii) F or Cl
5. Draw molecular orbital energy level diagram for N_2^+ . Calculate its bond order and explain its magnetic characteristics. 2
6. Define octet rule. Write its significance and limitations. 2
7. Define hybridization. Explain the structure of C_2H_2 with orbital diagram. 2

8. A welding fuel gas contains carbon and hydrogen only. Burning a small sample of it in oxygen gives 3.38 g of carbon dioxide, 0.690 g of water and no other products. A volume of 10 L (measured at STP) of this welding gas is found to weigh 11.6 g. Calculate (i) empirical formula, (ii) molar mass of the gas and (iii) molecular formula. (At. wt. of C = 12, H = 1, O = 16 u). 3
9. 50.0 kg of $\text{N}_2(\text{g})$ and 10.0 kg of $\text{H}_2(\text{g})$ are mixed to produce $\text{NH}_3(\text{g})$. Calculate the $\text{NH}_3(\text{g})$ formed. 3 Identify the limiting reagent in the production of NH_3 in this situation.
10. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction $3\text{A} + 4\text{B} \rightarrow 3\text{C} + 4\text{D}$, when 5 moles of A react with 6 moles of B, then
i. which is the limiting reagent?
ii. calculate the amount of C formed.
11. (i) State Pauli's exclusion principle. 3
ii. Account for the following:
a. Chromium has configuration $3\text{d}^5 4\text{s}^1$ and not $3\text{d}^4 4\text{s}^2$.
b. Bohr's orbits are called stationary orbits or states.
12. What are the frequency and wavelength of a photon during a transition from $n = 5$ state to $n = 2$ 3 state in the He^+ ion.
13. Yellow light emitted from a sodium lamp has a wavelength of 580 nm. Calculate the frequency (ν) and wave number of the yellow light. 3
14. An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons than the electrons, find the symbol of the ion. 3
15. The quantum numbers of six electrons are given below. Arrange them in order of increasing energies. If any of these combination(s) has/have the same energy lists: 3
16. Among the following pairs of orbitals, which orbital will experience the larger effective nuclear charge? (i) 2s and 3s, (ii) 4d and 4f and (iii) 3d and 3p. 3
17. (i) How many sub-shells are associated with $n = 4$? 3
i. How many electrons will be present in the sub-shells having m_s value of $-1/2$ for $n = 4$?
18. (i) Arrange the following ions in the order of increasing ionic radii. 3
 Na^+ , Mg^{2+} , F^- , O^{2-}
i. Explain why Be has higher ionization enthalpy than B.
ii. Predict the formula of compound which might be formed by silicon and bromine.
19. Give reason for the following: 3
i. Halogens act as good oxidising agent.

- ii. Electron gain enthalpy of noble gas is almost zero.
 iii. Na and Mg^+ have same number of electrons but removal of electron from Mg^+ requires more energy.

20. Give reason for the following: 3

- iv. Halogens act as good oxidising agent.
 v. Electron gain enthalpy of noble gas is almost zero.
 vi. Na and Mg^+ have same number of electrons but removal of electron from Mg^+ requires more energy.

21. Among the elements of second period Li to Ne, pick out element: 3

- i. with the highest first ionisation energy
 ii. with highest electronegativity
 iii. with largest atomic radius
 iv. that is most reactive non-metal
 v. that is most reactive metal
 vi. with valency equal to 4.

22. The first (IE_1) and second (IE_2) ionisation enthalpies (kJ mol^{-1}) of three elements I, II and III are 3 given below:

Element	IE_1	IE_2
I	403	2640
II	549	1060
III	1142	2080

Identify the element which is likely to be (i) non-metal (ii) an alkali metal (iii) an alkaline earth metal.

23. The first ($\Delta_i H_1$) and the second ($\Delta_i H_2$) ionization enthalpies (in kJ mol^{-1}) and the ($\Delta_{eg} H$) electron 3 gain enthalpy (in kJ mol^{-1}) of a few elements are given below:

Element	$\Delta_i H_1$	$\Delta_i H_2$	$\Delta_{eg} H$
I	520	7300	- 60
II	419	3051	- 48
III	1681	3374	- 328
IV	1008	1846	- 295
V	2372	5251	+ 48
VI	738	1451	- 40

Which of the above elements is likely to be:

- i. the least reactive element.
 ii. the most reactive metal.
 iii. the most reactive non-metal.
 iv. the least reactive non-metal.
 v. the metal which can form a stable binary halide of the formula MX_2 (X = halogen).
 vi. the metal which can form a predominantly stable covalent halide of the formula MX (X = halogen)?

24. Draw the molecular structures of 3

- (i) XeF_2 , (ii) $XeOF_2$ and (iii) XeF_4 .

25. What is meant by hydrogen bond? What is bond energy of hydrogen bond? Why is HF, H_2O are 3 liquids whereas HCl, HBr, HI and H_2S are gases?

26. What is the total number of sigma and pi bonds in the following molecules? 3
(i) C_2H_2 (ii) C_2H_4
27. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction 5
given below:
 $CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$
What mass of $CaCl_2$ will be formed when 250 ml of 0.76 M HCl reacts with 1000 g of $CaCO_3$? Name the limiting reagent. Calculate the number of moles of $CaCl_2$ formed in the reaction.
28. (i) Write outer electronic configuration of Cr atom. Why are half filled orbitals more stable? 5
(ii) State Heisenberg's uncertainty principle. An electron has a velocity of 50 m s^{-1} , accurate upto 99.99%. Calculate the uncertainty in locating its position.
(Mass of electron = $9.1 \times 10^{-31} \text{ kg}$, $h = 6.6 \times 10^{-34} \text{ J s}$)

BIOLOGY:

Read and write all the Exercise questions from chapter 9 and 11

Practice diagrams

CLASS-XII

ENGLISH:

KENDRIYA VIDYALAYA SANGATHAN

HYDERABAD REGION

MODEL QUESTION PAPER-02

ENGLISH CORE: 301

Class : XII

Time : 3 hour

Max. Marks: 80

SECTION A

READING SKILLS (22 marks)

1. Read the following passage carefully: 12

1. The newest stress buster is paper yoga. Adults are now changing over from their smartphones to colouring books to beat anxiety and relax. They spend hours hunched over the drawing of mandalas filling in their words into the circle, with colours. These adult colouring books are classified in the adult category and are becoming fast selling items as people reach out to them to relax their minds. And it is not just mandala drawings that are in vogue. Others settle for elaborate landscapes, cultural tableaux, brimming with images of dancers, singers and concerts. Involuters of various shapes also make up this list.

2. Just as the demand has kept growing, there are also authors who are much in demand for their relaxing creations. Leading in this field is Johanna Basford, who has sold 1.4 million copies of her books 'Secret Garden',

'Enchanted Forest' and 'Lost Ocean', in a matter of just two years. More bookstores have now started stocking such books as customers are asking for them. Publishers now contend that it is not just celebrity authors in this category but any book with the tag-line 'de-stress' has a readymade market for it.

3. Another reason for the success of this multilingual is the way that they speak to adults of all these books not bees and dispositions. Even nursery teachers are they speaking customers of these books not because they are overworked but because of the fun that even five-year olds are having with these colouring books.

4. The new trend has been dubbed 'Paper Yoga'. While the junior versions of these books hold simple generously proportioned patterns, that allow for a child's broad strokes, the adult variants typically have tight kaleidoscopes that require a fine pen and a staunch eye. As they do not require special skills to execute, publishers are marketing it with the tag-line that their target customer is anyone who can draw satisfaction from something beautiful. The skills of drawing and colouring or conceptualization, essentials for the art of drawing, are not in this list of requirements. Thus the phobia of being an expert or amateur is not a deterrent.

5. So far, publishers have had to import their stock as there are not sufficient titles available. But illustrators are fast catching up with this trend and some have even ventured into self-publishing in this line. Others are innovating still more meaningful inputs into this work by asking customers to bring their own experiences to the book.

6. Individual stories of success are making an appearance too. Illustrator Indu Harikumar started her self-published colouring book, 'Beauty Needs Space', on social media. She priced a copy of 12 artworks at ₹1500 each and sold 155 of the 200 she had printed. 'People have written to say that they connected with the book as they worked on it.'

7. While adults are discovering their inner selves through this creative pursuit, art-based therapeutics warn against expecting too much from these books for saving lives or minds. At best, they calm the mind and are a temporary diversion, for the mind and cut off the noise of clamouring thoughts. These books they claim can offer therapeutic returns only when used in conjunction with a therapist's counsel. As yet the entire process is undergoing a testing time but whatever little of it has emerged, is being hailed as a step in the positive direction.

Answer the following questions, based on the passage above.

- I. Why do the adults spend hours over their mandalas ? 1m
- II. Why is the author using the phrase 'filling in their words into the circle, with colours' in para 1 ? Are the pictures meant for writing words ? 2m
- III. Choose the correct option - 1m
ASSERTION (A): Paper Yoga don't require any special skills.
REASON(R): People with phobia for drawing can't do paper yoga.
 - a) both A and R are true and R is the correct explanation of A
 - b) both A and R are true and R is not the correct explanation of A
 - c) A is true but R is false
 - d) A is false but R is true
- IV. Where did Indu Harikumar start selling her book ? 1m
 - a in international meets
 - b in public spaces
 - c in school classrooms
 - d on social media
- V. 'Beauty Needs Space', the colouring book was selling like hot cake because people _____. 1m
- VI. The colouring books are called 'multi-lingual' because they aren't written in different languages but 1m
- VII. Mention two reasons adopted by publishers to sell these colouring books. 2m
- VIII. The art-based therapeutics don't recommend Paper yoga to all as they believe 1m

- IX. Complete the analogy with ONE word from paragraph 7. 1m
 vogue : fashion:: _____ : praised
 a) temporary c) creative
 b) hailed d) clamouring
- X. Complete the sentence using a suitable phrase from para 4. 1m
 The fashion designer designed the intricate pattern in the delicate silk with his fine hand and _____ .

2. Read the following carefully. 10m

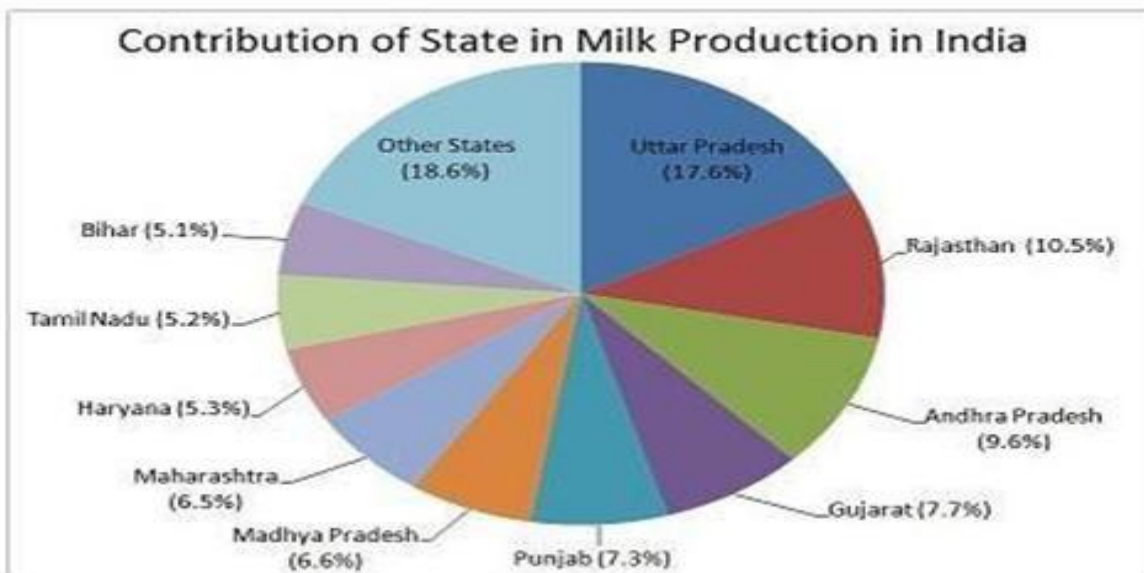
The White Revolution, known as Operation Flood, was launched in 1970. It was an initiative by India's National Dairy Development Board (NDDB) and was the world's biggest dairy development programme. It transformed India from a milk deficient nation into the world's largest milk producers. Operation Flood was based on the experimental pattern set up by Verghese Kurien, chairman and founder of AMUL, who was named the Chairman of NDDB and was also recognized as the architect of Operation Flood. There were three phases of the White Revolution in India.

Phase 1: This phase started in July 1970 with the objective of setting up dairy cooperatives in 18 milk sheds in 10 states. They were to be linked with the four best metropolitan markets. By the end of this phase in 1981 there were 13,000 village dairy cooperatives covering 15,000 farmers.

Phase 2: It aimed at building on the designs of phase 1 and on the assisted Dairy development programmes in Karnataka, Rajasthan and Madhya Pradesh. By the end of this phase in 1985 there were 136 milk sheds, 34,500 village dairy cooperatives and over 36 lakh members.

Phase 3: This phase emphasised on consolidating the gains of the earlier two phases by improving the productivity and efficiency of the dairy sectors for long term sustainability. It ended in 1996 and by that time there were 73,300 dairy cooperatives and over 9.4 million farmer members.

It ended the imports of milk solids in India and India started exporting milk powder to many foreign nations.



Answer the following questions, based on given passage.

- The White Revolution was responsible for turning India to _____ .
- What was the major achievement of White Revolution ?
- Arrange the following states in decreasing order in the share of states in Milk Production in India – Gujarat, Rajasthan, UP, Maharashtra.
- UP's production of milk is _____ that of Gujarat and Punjab.
- Milk production in Maharashtra and MP is _____
- Milk production in Haryana and Tamil Nadu together is closest to _____ .

- vii. The word 'sustainability' in the passage means the ability to be maintained at a certain rate or level – state true or false.
- viii. Who was known as the architect of Operation Flood and why?
- ix. What was the development in phase 2 of the White Revolution in India ?
- x. What did phase 3 emphasise on ?

SECTION B - CREATIVE WRITING SKILLS (18 marks)

3. Attempt any one of the two, (A) or (B), in about 50 words 1x4m=4m

A. Jaivik Kheti is going to organise a seed and sapling swapping programme among the residents of Dwaraka Nagar on the last week of December in Public garden for promoting organic farming, vermicompost and kitchen garden concepts. As Secretary of Dwaraka Nagar Cultural Club, write a notice in about 50 words giving the necessary information to the residents. You are Moksha/Mokshith Reddy. 4m

OR

B. As an animal lover, you are moved by the pathetic conditions of stray dogs and how they are becoming a threat to the public for their rampant attacks. You alongwith your 2 friends have decided to open a dog shelter in your house for these animals to provide them better care, vaccination drive. But you need sufficient fund and help to run this shelter smoothly as you are still a student. Write a notice in about 50 words inviting the names of those in your locality who want to help monetarily as well as spend some quality time. You are Farhan/ Farida of Gulmarg colony. 4m

4. Attempt any one of the two, (A) or (B), in about 50 words. 1x4m=4m

A. You are a student of Johnson Boys Public School, Lodhi Road. The school is organizing Annual Craft Fest at 11 am on 10th January, 2025 at the school ground where items created from recycled materials by the students will be sold. Mr Vinod Gaitonde, noted painter has consented to be the Chief Guest. Draft an invitation card to be sent to the parents and other invitees.

OR

B. Mr. Cherian, the School Captain invited you to give exam preparation tips to Secondary students of KV Bowenpalli as you won gold medal in International Mathematics Olympiad 2023. You are Neera/ Neeraj. Draft a suitable reply of acceptance to attend the function.

5. Attempt any one of the two, (A) or (B), in 120 150 words 1x5m =5m

A. You are Srinitya Rao, the founder of an NGO in Hyderabad, that provides financial opportunities to workers in rural areas by helping them sell their handmade products such as sarees, paintings, toys, pickles, snacks, crafts to mainstream markets. You started the enterprise with the mission to empower local communities while preserving the natural environment.

Write a letter to the editor of a national daily in about 120–150 words to make readers aware of your mission and urge them to go 'Vocal for Local' by buying locally-made products. Use the clues given below along with your own ideas to compose this letter.

- ◆ Local communities ---> have specific indigenous skills ---> use the local resources sustainably ---> create products without harming the environment
- ◆ The enterprise ---> finds markets for specific products ---> scales up using local labour ---> creates more job opportunities

OR

B. You are Nitya/Nitin, and have completed your graduation in Graphic designing. You saw the given advertisement in a daily newspaper and wish to apply for the position. Write a letter in 120–150 words to the Human Resources Manager at Rachna Sagar Publications, along with your bio-data, expressing your interest in the advertised post.

HIRING

GRAPHIC DESIGNER

Experience: 0 to 3 years with relevant experience

Location: Hyderabad, Banjara Hills

JOB DESCRIPTION

- Think creatively and develop new design concepts, graphics and layouts based on client's requirements.
- Designing posts for Social Media, layouts, logo creation etc
- Exceptional creativity and innovation.
- Create images that identify a product or convey a message.

6. Attempt any one of the two, (A) or (B), in 120 150 words 1x5m =5 m

A. The literary club of Koti recently invited a well-known author, Ms P Manashi. She talked about how reading fiction helps one develop emotional skills while reading non-fiction helps build practical knowledge and intelligence. As Meher Ray, draft a report covering the event for a local daily. Support your ideas with the cues given below.

- purpose of the talk
- who attended the talk
- books that were discussed as examples
- key messages or takeaways from the talk
- post-talk resources and information given to attendees
- what impact the talk would have on the attendees and their reading habits

OR

B. Today's youth need to engage themselves in various community services as it'll provide them ample opportunity to be empathetic and help in personality development. But the present education system and parental pressure limit their horizon to some competitive exams and lucrative jobs. Write an article for a newspaper on the topic 'Community Service is the need of the hour'. You are Manashi/ Manish.

SECTION C - LITERATURE (40 marks)

7. Read the following extracts and answer the questions for any one of the given two-A or B 1x6m=6m

A. *Aunt Jennifer's finger fluttering through her wool
Find even the ivory needle hard to pull.
The massive weight of Uncle's wedding band
Sits heavily upon Aunt Jennifer s hand.*

I. How would you describe Aunt Jennifer based on the above extract?

- a) oppressed b) malnourished c) ageing d) diseased

II. Uncle's wedding band sits heavily on Aunt Jennifer's hand because

- a) it is an expensive and heavy ring. b) she was married against her will.
c) she feels burdened in her marriage. d) their relationship is lacking in love.

III. Choose the option that displays the same poetic device as used in the first line of the extract

- a) The dazzling drizzle drenched all. b) I'm as happy as I can be.
c) Life is a roller coaster ride. d) Nature is God's gift to us.

IV. The ivory needle used to embroider is _____ the difficulty in using it.

- a) symbolic of b) in sharp contrast to
c) a distraction from d) representative of suppression which results in

V. Marital subjugation is symbolised by the _____.

VI. Aunt Jennifer is a victim of the patriarchal society. a) True b) False

OR

B . *Therefore, on every morrow, are we wreathing*

*A flowery band to bind us to the earth,
 Spite of despondence, of the inhuman dearth
 Of noble natures, of the gloomy days,
 Of all the unhealthy and o'er-darkened ways
 Made for our searching: yes, in spite of all,*

i). How do we tie ourselves to the Earth?

- a. life b. band of flowers c. gloom d. beautiful things

ii). Why do we need to tie ourselves to the Earth?

- a. Earth is a beautiful place b. Earth is a Spiteful place
 c. Earth is a busy place d. Earth is a bountiful place

iii). What do you understand by the inhuman dearth?

- a. Lack of beauty b. Lack of power
 c. Lack of noble ideals d. Lack of humanity

iv). "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair." -Which line in the extract reflect the poetic device used in the opening of The Tale of Two Cities by Charles Dickens.

- a. 'are we wreathing A flowery band to bind us to the earth'
 b. Spite of despondence, of the inhuman dearth
 c. Made for our searching: yes, in spite of all,
 d. Of noble natures, of the gloomy days,

v) Complete the sentence using a suitable word from the extract-

Sadao watched mists hide outlines of a little island near the shore and then come creeping up the beach below the house, _____ around the pines.

vi) What is making the poet search for beautiful things in these lines -

- a. absence of shady place b. scarcity of musk rose blooms
 c. lack of noble souls in this cruel world d. streams of dirty water

8. Read the following extracts and answer the questions for any one of the given two, (A) or (B)
4x1=4

A. The corridor I was in began angling left and slanting downward and I thought that was wrong, but I kept on walking. All I could hear was the empty sound of my own footsteps and I didn't pass a soul. Then I heard that sort of hollow roar ahead that means open space and people talking. The tunnel turned sharp left; I went down a short flight of stairs and came out on the third level at Grand Central Station. For just a moment I thought I was back on the second level, but I saw the room was smaller, there were fewer ticket windows and train gates, and the information booth in the centre was wood and old-looking. And the man in the booth wore a green eyeshade and long black sleeve protectors. The lights were dim and sort of flickering. Then I saw why; they were open flame gaslights.

I. Why did the narrator hear the empty sound of his own footsteps?

- a. Because he was walking fast b. Because he had again lost his way.
 c. Because he was frightened. d. Because he was walking alone.

II. How did the narrator confirm that he was on different level and not 1st or 2nd I?

III. Of the given meanings of 'Flight' in Flight of stairs, select the option that matches in meaning with its usage in the extract.

- a. An act of flying. b. A set of steps.
 c. An aeroplane. d. An escalator.

IV. Select the option that lists the feelings and attitudes corresponding to the following:

- (1) I thought that was wrong,
 (2) but I kept walking.

a	(1) Charley was sure he was going to the right way.
	(2) He kept walking out of curiosity.
B	(1) Charley was not sure where he was going.
	(2) He kept walking out as he had no choice
C	(1) Charley thought it is not right to go that way.
	(2) He kept walking as he heard people's voices.
D	(1) Charley knew he was wrong about the third level
	(2) He kept walking to find his way out.

OR

B. *"Nobody lives on it because in storm it is submerged. But this is not the season of storm. You could live there until you saw a Korean fishing boat pass by. They pass quite near the island because the water is many fathoms deep there." The young man stared at him, slowly comprehending. "Do I have to?" he asked. "I think so," Sadao said gently. "You understand — it is not hidden that you are here."*

I. In the above line from 'The Enemy', the young man is showing _____ about leaving Sadao's house because _____.

- A. resistance; he wasn't used to being ordered around by someone
- B. confusion; he didn't understand why Sadao had decided to no longer protect him
- C. reluctance; he knew that he would be in danger as soon as he was out of Sadao's house
- D. sadness; he had grown fond of Sadao and his family and wanted to spend more time with them

II. Why it was no longer a secret that the young man was there?

III. Why was it so necessary for Sadao to take this step?

IV. Which quality can't be attributed to Sadao after this decision?

- a. patriot b. traitor c. logical thinker d. considerate

9. Read the following extracts and answer the questions for any one of the given two, (A) or (B)
1x6=6

A. 1. Film making must have been and was so easy with a man like Subbu around and if there was a man who gave direction and definition to Gemini Studios during its golden years, it was Subbu. Subbu had a separate identity as a poet and though he was capable of more complex and higher forms, he deliberately chose to address his poetry to the masses. His success in films overshadowed and dwarfed his literary achievements - or so his critics felt.

I. Why does the narrator refer that film making was easy with a man like Subbu ?

II. How a poet can reach out to common people ?

- a. by addressing the people as his brothers and sisters
- b. by writing about entertainment and love for nature
- c. by writing in folk refrain and diction
- d. by releasing his poems in public meetings and media

III. What might be the reason behind Subbu's decision to deliberately address his poems to the masses?

- a. He wanted his poems to reach the maximum number of common people.
- b. There were better poets than him and thought that his complex and higher forms of poetry wouldn't be accepted by literary society
- c. He was not aware of his literary talent
- d. He preferred to be known as an actor than a poet

IV. What does the author mean by 'separate identity' ?

V. Choose the correct option –

Subbu was capable of more complex and higher forms of films/ poetry/ roles.

VI. Statement A- Film making was an easy task at the time of Subbu

Statement B – It was never easy but Subbu made film making easy with his creative ideas and ready to help attitude.

- a . Statement A is correct b. Statement B is correct
c. Both the statements are wrong d. Both the statements are correct

OR

B. Others usually celebrities who see themselves as its victims,might despise the interview as an unwarranted intrusion into their lives,or feel that it somehow diminishes them,just as in some primitive cultures it is believed that if one takes a photographic portrait of somebody then one is stealing that person's soul V.S. Naipaul feels that some people are wounded by interviews and lose a part of themselves.Lewis Carroll the creator of Alice in Wonderland was said to have had a just horror of the interviewer and he never consented to be interviewed.

I. Choose the appropriate option with reference to the given extract

Most of the celebrities dislike being interviewed because

- (i)It is sheer nonsense (ii)Nobody reveals his/her inner self.
(iii)It is sheer waste of time (iv)It is an unwanted intrusion into their lives

II. Complete the analogy with a word from the extract

Light : darkness : :refused

III. In primitive cultures,being photographed implied.....

IV. From the given extract,we know thatnever agreed to be interviewed.

V. In the given extract,the word diminish most nearly means

- (i)deepens (ii)disappoints (iii)lessens (iv)languishes

VI. In the given extract,the writer indicates that most people.....interviews

- (i)celebrated (ii)read (iii)gave (iv)despised

10. Answer any five of the following six questions in 40 50 words each: 5x2=10

I. Why did the crofter show the thirty kronors to the peddler?

II. What efforts did Douglas make to get over his fear of water and why?

III. What does Gandhi mean by 'conflict of duties'?

IV. What symbol from nature does the poet invoke in 'Keeping Quiet' to say that there can be life under apparent stillness?

V. How are Jansie and Sophie different from each other?

VI. "Will they make them sing in German, even the pigeons? Why does Franz think so?"

11. Answer any two of the following three questions in 40 50 words each: 2x2=4

I. Why Sadao didn't show any interest in knowing the details of the soldier ?

II. Why did the author consider her visit to Antarctica as a 'chilling prospect' ?

III. How Derry and Mr Lamb differed on their views on 'friends' ?

12. Answer any one of the following two questions, in 120-150 words. 1x5=5

A. 'The Rattrap' focuses on human loneliness and the need to bond with others. Comment.

OR

B. What were the social and cultural reforms initiated by Gandhi in Champaran?

13. Answer any one of the following two questions, in 120-150 words. 1x5=5

A. Derry is a victim of his own complex. He develops a negative attitude towards life and people. Do you find some change in him in the end?

OR

B. Zitkala sa and Bama belonged to two different cultures, yet they faced same kind of problems . What is the commonality of theme found in both of them?

Class : XII
Sub : English Core

Time : 3 hours
Max. Marks: 80

SECTION A

READING SKILLS (22 marks)

SECTION A - READING SKILLS (22)

1. Read the following passage carefully:

12

1. In a quiet village in the heart of India, there stood an old house with walls made of mud and a roof of red clay tiles. The house had seen many seasons come and go, but it remained strong, standing tall under the shade of a giant peepal tree. Every morning, as the first rays of the sun touched the village, the house glowed softly in the golden light. The fragrance of jasmine flowers filled the air, carried by the gentle breeze from the garden where they bloomed next to marigolds and hibiscus.

2. The house belonged to the Verma family, who had lived there for generations. Grandfather Verma, now old and wise, often sat in the front courtyard under the shade of the peepal tree, telling stories to the village children. The stories were about brave kings, ancient battles, and forgotten legends of the land. His voice was slow and steady, and the children sat in a circle around him, listening with wide eyes. Even the adults would sometimes pause in their daily work to hear a story they had known since their childhood, yet never tired of.

3. The courtyard was always alive with activity. In the mornings, birds chirped from the tree branches, and the soft mooing of cows could be heard from the nearby fields. Grandmother Verma would be busy in the kitchen, preparing food for the family—chapatis on the clay stove, dal bubbling in a brass pot, and vegetables freshly plucked from the garden. The smell of spices, ginger, and coriander filled the air, and it seemed to mix with the earthiness of the mud walls.

4. As the sun began to set, casting a warm orange glow over the village, the quietness settled in. The sky turned from blue to pink, and the only sounds were the distant laughter of children and the low hum of crickets. The Verma house, with its familiar rhythms of life, stood quietly, a symbol of simplicity, tradition, and the passage of time.

5. For the villagers, the house was more than just a structure—it was a reminder of their roots. It was a place where stories were passed down, where life slowed down, and where the traditions of their ancestors lived on. Even as the world outside changed, the Verma house remained, standing strong in the heart of the village, untouched by time.

Answer the following questions, based on the passage above.

i. According to paragraph 1, what natural feature provides shade to the old Verma house?

1

ii. How does the author describe the role of Grandfather Verma in the village, as mentioned in paragraph 2?

1

iii. Read and complete the following sentence suitably.

1

The phrase “a symbol of simplicity, tradition, and the passage of time” in paragraph 4 suggests that the Verma house is more than just a building; it represents the village’s connection to its past and a simple way of life.

Choose the correct response from the two options to complete the sentence.

The Verma house symbolizes -----

(A) the traditions and history of the village

(B) the changing times and modern life

iv. Complete the following with ONE example, with reference to paragraph 3: 1

The Verma family kitchen was filled with the aroma of -----

v. Why does the writer describe the courtyard as “alive with activity” in paragraph 3? 1

Because

(A) The village children gather to listen to stories.

(B) Birds, cows, and the preparation of food make the courtyard lively.

(C) It is where the family gathers for important discussions.

(D) It represents the heart of the village’s social life.

vi. Provide ONE textual evidence with reference to paragraph 4, to support the following :

1

The Verma house stands as a reminder of the village’s traditions.

vii. In the line, ‘the quietness settled in...’ (Paragraph 4), what does the phrase ‘quietness settled in’ suggest about the mood as the evening approaches? 2

viii. Complete the analogy with ONE word from paragraph 3: 1

chapatis: stove :: dal: -----

(A) brass pot

(B) garden

(C) mud walls

(D) courtyard

ix. Why is it fair to say that the statement ‘the Verma house was more than just a structure’ in paragraph 5 uses figurative language? 1

(A) It emphasizes the symbolic importance of the house.

(B) It compares the house to a living entity.

(C) It reflects the emotional connection of the villagers to the house.

(D) It personifies the house as something alive and active.

x. Assess the potential challenges or benefits of maintaining the old Verma house, as suggested in paragraph 5. 2

2. Read the following carefully. 10

1. Urbanization has resulted in significant changes in global land use patterns. As more people migrate to cities, the need for housing, infrastructure, and resources has grown. ‘This demand often leads to the destruction of natural ecosystems. The case study looks into how urbanization has impacted land use and the environmental consequences that follow.

2. Data from the United Nations shows that over 55% of the world’s population currently resides in urban areas, and this is expected to rise to 68% by 2050. Urbanization has been responsible for the loss of 30% of the world’s

forests over the past century. Furthermore, around 3 million hectares of agricultural land are being converted into urban areas each year, raising concerns about food security.

3. The study found that urban growth significantly increases the consumption of natural resources, especially in cities:

60% of the total energy is consumed by the industrial and transportation sectors in urban areas.

Urban regions are responsible for 75% of global CO₂ emissions, which contributes heavily to climate change and worsening air quality.

This shows that cities, while being hubs of economic activity, are also major contributors to environmental degradation through their high levels of resource consumption.

4. Urban sprawl has fragmented natural ecosystems, with habitats being divided by roads, buildings, and other infrastructure. 'The loss of habitats has led to a decline in biodiversity, particularly in densely populated regions. The study highlights that 40% of species in urban areas face extinction due to habitat loss.

5. Efforts to reduce the environmental impacts of urbanization include promoting sustainable city planning and integrating green infrastructure. Investments in public transportation can also help minimize the carbon footprint. It is projected that curbing urban sprawl could reduce CO₂ emissions by 15% globally by 2050.

6. The case study emphasizes the need to balance urban development with environmental preservation. By integrating nature-based solutions into urban planning, cities can accommodate population growth while reducing environmental damage.

Answer the following questions, based on given passage.

- i. Complete the following suitably.
In the introduction, the researcher links urbanization with land use changes to highlight -----
- ii. What would the following be classified as? 1
To examine the effects of urbanization on global land use and the environmental consequences that follow.
Select the appropriate response.
(A) Secondary objective
(B) Research outcome
(C) Method of analysis
(D) Primary objective
- iii. Give two points to support why habitat fragmentation was included as a focus in the study on urbanization. 2
- iv. Paragraph 3 includes words — 'energy consumption' and 'biodiversity loss.' 1
Classify the following sentences as 'energy consumption' or 'biodiversity loss':
Sentence 1: The expansion of cities has caused habitat loss for many species, reducing their populations.
Sentence 2: Industries and transportation in urban areas are the largest consumers of energy.
- v. Read the following : 1
Arun works in the transportation sector in a large city, where most energy is consumed by transportation and industries. His neighbor, Suresh prefers living on the city outskirts, where he enjoys a quiet lifestyle surrounded by forests. Meanwhile, Rina lives in a rapidly expanding suburb where urban sprawl is leading to habitat fragmentation.
Select the option that identifies the correct demographic Arun, Suresh, and Rina belong to.
(A) Arun — urban resident; Suresh — rural dweller; Rina — suburban resident

- (B) Arun — suburban resident; Suresh — urban resident; Rina — rural dweller
 (C) Arun — rural dweller; Suresh — urban resident; Rina — suburban resident
 (D) Arun — urban resident; Suresh — suburban resident; Rina — rural dweller

- vi. Although both rural and urban areas face environmental challenges, why is biodiversity loss more prevalent in urban regions? 1
- vii. Analyse how integrating green infrastructure into city planning can help mitigate the environmental impacts of urbanization. (Paragraph 5) 2
- viii. What is the ultimate goal for stakeholders, based on the insights from the study? 1
- (A) To promote urban growth at the expense of natural ecosystems
 (B) To reduce global food production for urban development
 (C) To balance urbanization with environmental conservation
 (D) To limit urbanization to rural regions

SECTION B - CREATIVE WRITING SKILLS (18)

3. Attempt ANY ONE of the two, (A) or (B), in about 50 words. 1x 4=4

A. You are Sahil Sagar, the President of Nehru Yuva Club, Delhi. You have planned to take a trekking trip for 15 days to Rohtang Pass next month. Write a notice giving all necessary information to invite participants for trekking programme.

OR

B. As the Director, Primary Section, write a notice in about 50 words for the children announcing the programme for the Children's Day.

4. Attempt ANY ONE of the two, (A) or (B), in about 50 words. 1x 4=4 A. You are the secretary of the Alumni Club, S.K. International School, Roshan Road, Raipur. Using the information given below, write an invitation letter to all the old students of the school on the Alumni Meet.

Alumni Meet on 25th December-Dinner-DJ Mahek Hotel-Raipur-6 PM to 10 PM-confirm your seats.

OR

B. Write an invitation to your friend inviting him on the inauguration ceremony of your new house. Use the information given below.

Inauguration of home - Hawan ceremony - Lunch

5. Attempt ANY ONE of the two, (A) or (B), in 120-150 words. 1x5=5

You are Raj/Rati, 115, Ram Nagar, Noida. Read the advertisement given below and write a letter to the advertiser, applying for the job. Also give your detailed resume, which you would send along with your letter of application for the job. (120- 150 words)

Wanted experienced Post Graduate Teacher in Chemistry to teach Classes XI and XII in a reputed ICSE affiliated residential school. Fluency in English is a must. Working knowledge of computers is preferable; salary commensurate with experience and expertise. Please apply to : Box No. 205, C/O The Hindu, Noida.

OR

You have realised the necessity of education and financial independence of women for their family, society and in turn for the nation. Write a letter to the Editor, 'The National Times' highlighting your ideas on the importance

of education of women leading to a better status for them. You are Tarun/Taruna, B-7/9, Mall Road, Delhi (120-150 words).

6. Attempt ANY ONE of the two, (A) or (B) in 120- 150 words. 1x5=5

A. After class 12, students are apprehensive about choosing the course and the college. 'The 'Mission Admissions' organized by the Times of India is a great platform for college aspirants. It would help them to get knowledge about emerging opportunities in various streams. Write an article in 120-150 words emphasizing the need of career counselling to help students with the admission process.

OR

You are a press reporter. Write a report in 120- 150 words on the recent cattle catching drive launched by MCD to clear stray cattle from Delhi roads.

SECTION C- LITERATURE (40)

7. Read the following extracts and answer the questions for any one of the given two - (A) or (B). 1 x6= 6

A. When Aunt is dead, her terrified hands will lie

Still ringed with ordeals she was mastered by.

The tigers in the panel that she made

Will go on prancing, proud and unafraid (Aunt Jennifer's Tigers)

i. Which of the following best captures the symbolism of tigers created by Aunt Jennifer?

(A) They represent just art on cloth, nothing else.

(B) Although Aunt Jennifer has created the tigers, they are the ones who control her.

(C) They reflect the true nature of a woman.

(D) They represent assertiveness, fearlessness and strength which the Aunt lacked.

ii. Read the assertion and the reason below, with reference to the given extract.

Assertion : Aunt Jennifer's tigers will continue to symbolize freedom and strength even after her death.

Reason : The tigers represent Aunt Jennifer's life of courage and confidence, which she displayed through her actions.

Choose the correct option regarding their relationship:

(A) Both the assertion and the reason are true, and the reason is the correct explanation of the assertion.

(B) Both the assertion and the reason are true, but the reason is not the correct explanation of the assertion.

(C) The assertion is true, but the reason is false.

(D) The assertion is false, but the reason is true.

iii. Complete the following suitably.

Aunt Jennifer was stuck to traditional activity like embroidery but the tigers-----

iv. Select the correct option from those given in brackets, to fill in the blank.

When Aunt is dead, her terrified hands will lie. Here, in 'terrified hands' the figure of speech is (alliteration/transferred epithet).

v. Based on the poem rhyme scheme, evident in lines 2-4, of the given extract, which word would rhyme with line 1?

Dry

Die

Try

vi. What is the effect of the figure of speech used in 'Will go on prancing, proud and unafraid'?

OR

B. I saw my mother, beside me, doze, open mouthed,

her face ashen like that of a corpse

And realised with pain that she was as old as she looked

but soon put that thought away (My Mother at Sixty-six)

i. Choose the option that displays the same poetic device as used in the third and fourth lines of the extract.

(A) The dazzling dames comes one by one

(B) Nature is God's gift to us

(C) As quick as a fox

(D) Life is full of ups and downs

ii. What is the cause of pain and ache that the poet feels?

iii. Select the correct option from those given in brackets, to fill in the blank.

"Her face ashen like that of a corpse" means that to the poet's mother's face was----- (pale and lifeless/ bright and lively).

iv. Read the assertion and the reason below, with reference to the given extract.

Assertion : The poet experiences a_ painful realization about her mother's aging and frailty. Reason : The sight of her mother dozing with an ashen, corpse-like face reminds the poet of her mother's old age and mortality.

Choose the correct option regarding their relationship:

(A) Both the assertion and the reason are true, and the reason is the correct explanation of the assertion.

(B) Both the assertion and the reason are true, but the reason is not the correct explanation of the assertion.

(C) The assertion is true, but the reason is false.

(D) The assertion is false, but the reason is true.

v. Why did the poet put the thought away?

vi. Complete the following suitably.

The poet's mother look like a corpse because-----

8. Read the following extracts and answer the questions for any one of the given two, (A) or (B).

4 x1 = 4

- A. It's got nothing to do with my face and what I look like. I don't care about that and it isn't important. It's what I think and feel and what I want to see and find out and hear. And I'm going back there. (On the Face of it)
- Complete sentence appropriately with reference to the extract.,
When Derry goes 'back there', he sees-----
 - What kind of a person has Derry become?
 - What do Mr. Lamb and Derry suffer from?
(A) Burnt face
(B) Burnt leg
(C) Tin leg
(D) Both (A) and (C)
 - What was the reason due to which Derry wanted to return to that place?

OR

B. We must simply tell them that we intend to give him to the police-as indeed we must, Sadao. We must think of the children and your position. It would endanger all of us if we did not give this man over as a prisoner of war" (The Enemy)

- Complete the sentence appropriately.
Dr Sadao will not be arrested on the charge of harbouring an enemy-----
- Who are 'them' being referred to here?
(A) Servants
(B) Friends
(C) Neighbours
(D) Doctors
- Who is the speaker of the above lines and who is the listener?
- What will Sadao and Hana do with the man?

9. Read the following extracts and answer the questions for any one of the given two, (A) or (B).

1 x 6 =6

- A. 'The experience had a deep meaning for me, as only those who have known stark terror and conquered it can appreciate. In death there is peace. There is terror only in the fear of death, as Roosevelt knew when he said, 'All we have to fear is fear itself.'" Because I had experienced both the sensation of dying and the terror that fear of it can produce, the will to live somehow grew in intensity. (Deep Water)
- How had the narrator experienced 'the sensation of dying and the terror that fear of it can produce'?
 - Based on the above extract, choose the statement that is TRUE for the speaker.
(A) Douglas fear kept him away from going fishing.
(B) The fall in the pool at YMCA intensified Douglas fear.
(C) The fear of drowning resulted in Douglas' anxiety and terror.

(D) Douglas decided to practice to overcome his fear.

iii. Complete the sentence with an appropriate explanation, as per the extract.

Roosevelt's opinion on fear is that-----

iv. Identify the textual clue that allows the reader to infer that the writer has himself faced the terror.

v. What was the impact of the 'experience' on the narrator's life?

vi. Select the option that completes the given sentence appropriately.

The 'experience' in the context refers to-----

(A) drowning in the YMCA Pool

(B) swimming perfectly in various lakes

(C) learning how to swim

(D) Both (B) and (c)

OR

B. "The man was evidently used to sleeping with one eye open. He jumped up abruptly and seemed to be quite frightened. "My name is Edla Willmansson," said the young girl. "My father came home and said that you wanted to sleep here in the forge tonight, and then I asked permission to come and bring you home to us. I am so sorry, Captain, that you are having such a hard time." She looked at him compassionately, with her heavy eyes, and then she noticed that the man was afraid. "Either he has stolen something or else he has escaped from jail", she thought, and added quickly, "You may be sure, Captain, that you will be allowed to leave us just as freely as you came." (The Rattrap)

i. What did the man evidently used to?

ii. The line, "Either he has stolen something or else he has escaped from jail" can be best classified as

(A) a truth

(B) an opinion

(C) an assumption

(D) a plot point

iii. Explain any one inference that can be drawn from the line, "Either he has stolen something or else he has escaped from jail."

iv. Identify the line from the text that bears evidence to the fact that Edla felt that the man was frightened.

v. Which is the most likely reason Edla calling him captain?

(A) He was looking like captain.

(B) He was mistaken as a captain.

(C) He was looking like thief.

(D) He had escaped from jail.

vi. Complete the sentence with ONE word.

Edla had two doubts about the man-one is that he was a thief and another is that he had escaped from-----

10. Answer ANY FIVE of the following six questions in 40-50 words each: 5x2=10

I. Who was Rajkumar Shukla? What role did he play at Champaran? (Indigo)

2. How does the poet bring out the images of disharmony between man and nature in 'Keeping Quiet' and how can it be resolved?
3. Why were the old men of the village present in the classroom? (The Last Lesson)
4. What were the options that Sophie was dreaming of? Why does Jansie discourage her from having such dreams? (Going Places)
5. Do we experience things of beauty only for short moments or do they make a lasting impression on us? (A Thing of Beauty)
6. Why did the author appear to be doing nothing at the studios? (Poets and Pancakes)

11. Answer ANY TWO of the following three questions in 40-50 words each: 2x2=4

- A. Why did the Maharaja decide to get married? (The Tiger King)
- B. Describe the difficulties the bangle makers of Firozabad have to face in their lives. (Lost Spring)
- C. What was distinctive about Eco's academic writing style?

12. Answer ANY ONE of the following two questions, in about 120-150 words.

1x 5=5

- A. Describe the difficulties the bangle makers of Firozabad have to face in their lives. (Lost Spring)
- B. Imagine a child from the farmer's family migrates to the city for their education. As the child, write back to your family telling them whether you would or would not want to turn into a city person. Use the context of the poem "A Roadside Stand" in mind to pen down this letter.

You may begin this way :

12, Davidson County

23 January "XX

Dear mom

I have been thinking about the roadside stall lately. Now that I find myself surrounded by city people all the time, I think.....

With love

Jennifer

13. Answer ANY ONE of the following two questions, in about 120-150 words.

1x 5=5

- A. 'The modern world is full of insecurity, fear, war, worry, tension and stress.' Discuss with reference to "The Third Level".

OR

- B. The two accounts that you read in Memories of Childhood are based on two distant cultures. However, there lies the commonality of theme in both of them. Instead of letting it pull them down, they both found a way to overcome it in their own way. You wish to include a cameo of both in your upcoming blog post. (A cameo is a short description that neatly encapsulates someone or something) As a part of the research, compare and contrast the experiences faced by the two and _ their responses to these experiences, in about 120-150 words. (Clue : in the discrimination they faced - their feelings - include similarities and differences determination to overcome - success)

HINDI:

1 . लेखन कार्य

- शिरीष के फूल से जुड़ी एक लघुकथा लिखें।
- लक्ष्मण मूर्छा व राम विलाप – इस पर आधारित एक निबंध लिखें। (120-150 शब्द)
- कैसे बनता है रेडियो नाटक - रेडियो नाटक की विशेषताओं और इसके निर्माण प्रक्रिया को समझाएं।

CS : PM SHRI KV INS KALINGA

COMPUTER SCIENCE HOLIDAY HOME WORK

CLASS-12

1. Rewrite the following code in python after removing all syntax error(s). Underline each correction done in the code. 2

```
30=To
for K in range(0,To)
    IF k%4==0:
        print (K*4)
    Else:
        print (K+3)
```
2. Find and write the output of the following python code: def fun(s): 2

```
k=len(s) m=""
for i in range(0,k): if(s[i].isupper()):
    m=m+s[i].lower()
elif s[i].isalpha():
    m=m+s[i].upper()
else:
    m=m+'bb' print(m)

fun('school2@com')
```
3. What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables FROM and TO. 2

```
import random AR=[20,30,40,50,60,70];
FROM=random.randint(1,3) TO=random.randint(2,4)
for K in range(FROM,TO+1):
    print (AR[K],end="# ")
```


(i) 10#40#70#	(ii) 30#40#50#
(iii) 50#60#70#	(iv) 40#50#70#

- 4 What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name. 2
- 5 Evaluate the following expressions: 2
- a. $8 * 3 + 2 ** 3 // 9 - 4$
- b. $12 > 15$ and $8 > 12$ or not $19 > 4$
- 6 Differentiate between call by value and call by reference with a suitable example for each. 2
- 7 Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. 2
- ```
p=30
for c in range(0,p) If c%4==0:
 print (c*4) Elseif c%5==0:
 print (c+3)
else
 print(c+10)
```
- 8 What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables Lower and Upper. 2
- ```
import random AR=[20,30,40,50,60,70];
Lower =random.randint(1,4) Upper
=random.randint(2,5)
r K in range(Lower, Upper +1): print (AR[K],end=" #")
```
- (i) 40# (ii) 40#50#60# (iii) 50# (iv) All of these
- 9 Evaluate the following expression. 2
- a. $51+4-3**3//19-3$
- b. $17<19$ or $30>18$ and not $19==0$
- 10 What do you mean by keyword argument in python? Describe with example. 2
- 11 Rewrite the following code in python after removing all syntax errors. Underline each correction done in the code: 2
- ```
def func(a): for i in (0,a): if
i%2 =0:
 s=s+1
```

```
else if i%5==0
```

```
 m=m+2 else:
```

```
 n=n+i print(s,m,n)
```

```
func(15)
```

- 12 What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code. Select which option/s is/are correct 2

```
import random print(random.randint(15,25) , end=' ')
```

```
print((100) + random.randint(15,25) , end = ' ') print((100) -random.randint(15,25) ,
end = ' ') print((100) *random.randint(15,25))
```

15 122 84 2500

21 120 76 1500

105 107 105 1800

110 105 105 1900

(i ) (ii) are correct answers.

- 13 What is Constraint ? Give example of any two constraints. 2

- 14 Predict the output of the following code. def swap(P ,Q): 2

```
 P,Q=Q,P
```

```
 print(P,"#",Q) return (P)
```

```
 R=100 S=200
```

```
 R=swap(R,S) print(R,"#",S)
```

- 15 Evaluate the following expressions: 2

a.  $6 * 3 + 4 * 2 // 5 - 8$

b.  $10 > 5$  and  $7 > 12$  or not  $18 > 3$

- 16 Differentiate between actual parameter(s) and a formal parameter(s) with a suitable example for each.

- 17 Explain the use of global key word used in a function with the help of a suitable example.

- 18 Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code.

```
Value=30
```

```
for val in range(0,Value) If val%4==0:
```

```
 print (val*4) Elseif val%5==0: print
 (val+3)
```

```
 Else print(val+10)
```

- 19 What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables Lower and Upper.

```
import random
AR=[20,30,40,50,60,70];
Lower =random.randint(1,3)
Upper =random.randint(2,4)
for K in range(Lower, Upper +1):
 print (AR[K],end="#")
```

- (i) 10#40#70#            (ii) 30#40#50#  
(iii) 50#60#70#        (iv) 40#50#70#

- 20 `simple_interest(p, r, t): return (p*r*t)/100`  
`print (simple_interest(100,5,2))`

Identify the formal and actual parameters in the above code snippet. Define formal and actual parameters in a function.

- 21 `c = 10`  
`def add():`  
    `global c` `c = c + 2`  
    `print("Inside add():", c)`

`add()` `c=15`  
`print("In main:", c)`

output:  
Inside add() : 12 In main: 15

Consider the above program and justify the output. What is the output if “global c” is not written in the function add().

- 22 Consider the following function headers. Identify the correct statement and state reason

1. `def correct(a=1,b=2,c):`
2. `def correct(a=1,b,c=3):`
3. `def correct(a=1,b=2,c=3):`
4. `def correct(a=1,b,c):`

- 23 What possible outputs(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum AND minimum values that can be assigned to the variable Num when P = 7

```
import random as r
val = 35
P = 7
Num = 0
for i in range(1, 5):
 Num = val + r.randint(0, P - 1)
 print(Num, " $ ", end = "")
 P = P - 1
```

- a. 41 \$ 38 \$ 38 \$ 37 \$
- b. 38 \$ 40 \$ 37 \$ 34 \$
- c. 36 \$ 35 \$ 42 \$ 37 \$
- d. 40 \$ 37 \$ 39 \$ 35 \$

- 24 Find the output of the following program; def increment(n):  
 n.append([4]) return n  
 l=[1,2,3]  
 m=increment(l) print(l,m)

- 25 Evaluate the following:
- a.  $45 < 89$  and  $7 > 12$  or not  $18 > 3$
  - b.  $6 * 3 + 2 ** 4 // 5 - 2$

### 3 MARKS QUESTIONS

1. Find and write the output of the following python code: def Change(P ,Q=30):  
 P=P+Q Q=P-Q  
 print( P,"#",Q) return (P)

3

```
R=150 S=100
R=Change(R,S) print(R,"#",S) S=Change(S)
```

2. Write a program in Python, which accepts a list Lst of numbers and n is a numeric value by which all elements of the list are shifted to left.

Sample Input Data of the list : Lst= [

10,20,30,40,12,11], n=2 Output Lst =

[30,40,12,11,10,20]

3. Write a program in Python, which accepts a list Arr of numbers , the function will replace the even number by value 10 and multiply odd number by 5 .

Sample Input Data of the list is:

```
arr=[10,20,23,45]
output : [10, 10, 115, 225]
```

- 4 Write a program in Python, which accepts a list Arr of numbers and n is a  
Sample Input Data of the list : Arr= [10,20,30,40,12,11], n=2  
Output :  
Arr = [30,40,12,11,10,20]
- 5 Write a program to reverse elements in a list where arguments are start and end index of the list part 3  
which is to be reversed. Assume that start<end, start>=0 and end<len(list)  
Sample Input Data of List : my\_list=[1,2,3,4,5,6,7,8,9,10]  
Output is  
my\_list=[1,2,3,7,6,5,4,8,9,10]
- 6 Write program to add those values in the list of NUMBERS, which are odd. Sample Input Data of the List 3  
NUMBERS=[20,40,10,5,12,11] OUTPUT is 16
- 7 Write a program to replaces elements having even values with its half and elements having odd values 3  
with twice its value in a list.  
eg: if the list contains 3, 4, 5, 16, 9  
then rearranged list as 6, 2,10,8, 18
- 8 Write a Python program to find the maximum and minimum elements in the list entered by the user. 3
- 9 Write a program in python to print b power p. 3
- 10 Write a program to print of fibonnaci series upto n. 3  
for example if n is 50 then output will be :  
0  
1  
1  
2  
3  
5  
8  
13  
21  
34

Q. 2. What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name.

Q. 3. What are the differences between parameters and arguments?

Q. 4. What are default arguments?

Q. 5. What are keyword arguments?

Q. 6. What are the advantages of keyword arguments?

- Q. 7. Write a generator function `generatesq ()` that displays the square roots of numbers from 100 to n where n is passed as an argument.
- Q. 8. What are the advantages of dividing a program into modules.
- Q. 9. Differentiate between Built-in functions and user defined functions.
- Q. 10. Differentiate between Built-in functions and functions defined in modules.

#### Long Answer Type Questions - (3 mark for correct answer)

- Q. 1. List a type of arguments and explain any 2 type of arguments.
- Q. 2. Write a method in Python to find and display the prime number between 2 to N. Pass N as argument to the method.
- Q. 3. Write a program that uses a function which take two string arguments and returns the string comparison result of the two passed strings.
- Q. 4. Write definition of a function
1. `OddSum(Numbers)` to add Odd values in the list Numbers.
  2. `EvenSum(Numbers)` to add Even values in the list Numbers.
5. Define a function `overlapping ()` that takes two lists and returns true if they have at least one member in common, False otherwise.
6. Write a program for nth multiple of Fibonacci Series. Also show proper documentation.
- Q. 7. Write a Python program to reverse a string.
- Q.8. A function `checkMain()` defined in module `Allchecks.py` is being used in two different programs
- In program 1 as  
`Allchecks.checkMain(3,'A')` and in  
 program 2 as  
`checkMain(4,'Z')`.
- Why are the functions call statements different in each program?
- Q. 9. Write a python program to find simple interest using a user defined function with parameters and with return value.
- Q. 10. Explain any three string functions with example?

#### FILE HANDLING

**Q6.** Given a file 'data.txt' write a function `atoesidp()` to display the file after replacing 'a' with 'e'.

**Q7.** What is the advantage of saving a file in text form and binary form?

**Q8.** What is the output of following code?

```
fh = open('main.txt','r') size =
len(fh.read()) print(fh.read())
```

**Q9.** Write the output of the following program

```
f = open('data.txt',
'w+') f.write('0123456789abcdef') f.write('xyz1234')
f.seek(0) print(
f.read()) f.close()
```

**Q10.** If a file 'f.txt' contains data 'Good' and then what is the content of the file f.txt then following program in run?

```
f = open('f.txt', 'w')
f.write('Bye') f.close()
```

### Questions – 3 Marks – Long Answer

- Q1.** Differentiate between 'r' and 'w' file open modes and 'w' and 'a' file open mode.
- Q2.** Write a function stats() that accepts a filename and reports the files longest line.
- Q3.** A text file contains alphanumeric text (say an.txt). Write a program that reads this text file and prints only the numbers or digits from the file.
- Q4.** Write a program to read a text file and display the count of lowercase and uppercase letters in the file.
- Q5.** Write a method in python to read lines from a text file INDIA. TXT, to find and display the Occurrence of the word "India".
- Q6.** Write a program that copies a text file "source.txt" onto "target.txt" barring the starting with a "@" sign.
- Q7.** Take a sample text file and find the most commonly occurring word. Also, list the frequencies of words in the text file.
- Q8.** Write a program to read a text file line by line and display each word separated by a #.
- Q9.** Write a function remove\_lowercase() that accepts two filenames, and copies all the lines that do not start with a lowercase letter from the first file into the second.
- Q10.** Write a program to display all the records in a file along with line/record number.
- Q11.** SHRUTHI has to complete her file-based assignment by tonight. She has been given the following text file (Education.txt):

```
Higher education improves quality of life. College
graduates have longer life spans. Education is
birthright.
```

Shruthi has also received the following incomplete code.

```
def fileFunction1 (_____, _____) #Fill_Line5 fi =_(fname,
 _____) #Fill_Line6

 fi._ fi.____ fi.close() print("Done")
 #Fill_Line7 #Fill_Line8

def fileFunction2(fname, N1, N2): fi = open(fname)
 print(fi.read(N1)) fi.readline()
 print(fi.read(N2)) a =
 fi.readlines () print(a)
N1 = 16 #Line1
N2 = 22 #Line2
```

```
String = "India strengthening" #Line3
fileFunction1(____,____) #Fill_Line4 fileFunction2 (
'Education.txt', N1, N2)
```

Help her to complete her assignment as per the following instructions.

- Complete Fill\_Line4 so that the function call to FileFunction1() passes two arguments: First as the filename and the second as the string given in Line 3.
- Complete Fill\_Line5 so that the function header is as per its function call.
- Complete Fill\_Line6 so that the file is opened in a mode that will allow it to write the string at the end of the file without deleting anything from the file.
- Complete Fill\_Line7 and Fill\_Line8 so that the passed string is written on to the file, followed by a newline character.
- What will be the output produced by the complete code?

## 2 Mark Questions

- Write a program in python to write and read structure, dictionary to the binary file.
- BINARY file is unreadable and open and close through a function only so what are the advantages of using binary file
- Write a statement to open a binary file name sample.dat in read mode and the file sample.dat is placed in a folder ( name school) existing in c drive
- When do you think text files should be preferred over binary files?
- Consider a binary file employee.dat containing details such as empno:ename:salary (separator ':') write a python function to display details of those employees who are earning between 20000 and 30000(both values inclusive)
- Differentiate between pickle.load() and pickle.dump() methods with suitable example.
- A binary file "Book.dat" has structure [BookNo, Book\_Name, Author, Price].Write a user defined function CreateFile() to input data for a record and add to Book.dat
- A binary file "STUDENT.DAT" has structure (admission\_number, Name, Percentage). Write a function countrec() in Python that would read contents of the file "STUDENT.DAT" and display the details of those students whose percentage is above 75.
- A binary file "Store.dat" has structure [ItemNo, Item\_Name, Company, Price].  
Write a function CountRec(Company) in Python which accepts the Company name as parameter and count and return number of Items by the given Company are stored in the binary file "Store.dat".
- A binary file "Store.dat" has structure [ItemNo, Item\_Name, Company, Price].  
Write a function AddRecord(<List>) which accepts a List of the record [ItemNo, Item\_Name, Company, Price] and appends in the binary file "Store.Dat"

## 3 mark Questions

- A binary file "Book.dat" has structure [BookNo, Book\_Name, Author, Price].
  - Write a user defined function CreateFile() to input data for a record and add to "Book.dat" .
  - Write a function CountRec(Author) in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat"
- A binary file "SCHOOL.DAT" has structure [Roll\_Num, Name, Percentage]



- i. Write a function `Count_Rec()` in Python that would read contents of the file "SCHOOL.DAT" and display the details of those students whose percentage is below 33 .
- ii. Write a function `Disp_Rec(alphabet)` in Python that would read contents of the file "SCHOOL.DAT" and display the details of those students whose name begin with the alphabet as passed as parameter to the function.
3. A binary file "STOCK.DAT" has structure [ITEMID, ITEMNAME, QUANTITY, PRICE]. Write a user defined function *MakeFile()* to input data for a record and add to Book.dat.
4. Write a function *GetPrice(ITEMID)* in Python which accepts the ITEMID as parameter and return PRICE of the Item stored in Binary file STOCK.DAT.
5. A binary file "EMPLOYEE.DAT" has structure (EMPID, EMPNAME, SALARY). Write a function *CountRec()* in Python that would read contents of the file "EMPLOYEE.DAT" and display the details of those Employees whose Salary is above 20000.
6. A binary file "EMPLOYEE.DAT" has structure (EMPID, EMPNAME, SALARY). Write a function to display number of employees having Salary more than 20000.
7. A binary file named "EMP.dat" has some records of the structure [EmpNo, EName, Post, Salary], Write a user-defined function named *NewEmp()* to input the details of a new employee from the user and store it in EMP.dat.
8. Write a user-defined function named *SumSalary(Post)* that will accept an argument the post of employees & read the contents of EMP.dat and calculate the SUM of salary of all employees of that Post.
9. A binary file named "TEST.dat" has some records of the structure [TestId, Subject, MaxMarks, ScoredMarks] Write a function in Python named *DisplayAvgMarks(Sub)* that will accept a subject as an argument and read the contents of TEST.dat.
10. Write a python program to search and display the record of the student from a binary file "Student.dat" containing students records (Rollno, Name and Marks). Roll number of the student to be searched will be entered by the user.

#### 5 Mark Questions

1. A binary file "student.dat" has structure [rollno, name, marks]. i. Write a user defined function *insertRec()* to input data for a student and add to student.dat.  
ii. Write a function *searchRollNo(r)* in Python which accepts the student's rollno as parameter and searches the record in the file "student.dat" and shows the details of student i.e. rollno, name and marks (if found) otherwise shows the message as 'No record found'.

2. Write a python program to create binary file dvd.dat and write 10 records in it Dvd id,dvd name,qty,price  
Display those dvd details whose dvd price more than 200

3. Write a Python program to implement all basic operations of a Stack, such as adding element, removing element and displaying the Stack elements using lists.

## MATHS:

### CONTINUITY AND DIFFRENTIABILITY

1. For what value of k is the following function continuous at  $x = 2$  ?
2. If  $f(x) = \begin{cases} ax + b & x < 1 \\ x^2 & x \geq 1 \end{cases}$ , continuous at  $x = 1$ , find the values of a and b.
3. If  $f(x)$ , defined by the following is continuous at  $x = 0$ , find the values of a, b, c
4. If  $x = \cos^{-1} \left( \frac{1}{2} \right)$  find at .
5. If  $y = \sin^{-1} \left( \frac{1}{2} \right)$ , find .
6. If  $xy + y^2 = \tan x + y$ , find .
7. If  $y = \tan^{-1} x$ , find .
8. If  $f(x) = a(x - y)$ , prove that  $f'(x) = a$ .
9. Find if  $(\cos x)^y = (\cos y)^x$
10. If .

### APPLICATIONS OF DERIVATIVES

1. Find the point on the curve  $y^2 = 8x$  for which the abscissa and ordinate change at the same rate?
2. A man 2 metre high walks at a uniform speed of 6km /h away from a lamp post 6 metre high. Find the rate at which the length of his shadow increases. Also find the rate at which the tip of the shadow is moving away from the lamp post.
3. A ladder 5m long is leaning against a wall. Bottom of ladder is pulled along the ground away from wall at the rate of 2m/s. How fast is the height on the wall decreasing when the foot of ladder is 4m away from the wall?
4. A particle moves along the curve  $6y = x^3 + 2$ , Find the points on the curve at which y-coordinate is changing 8 times as fast as the x-coordinate.
5. Water is leaking from a conical funnel at the rate of 5 cm<sup>3</sup>/sec. If the radius of the base of the funnel is 10 cm and altitude is 20 cm, Find the rate at which water level is dropping when it is 5 cm from top.
6. Find the intervals in which the function  $f(x) = \sin x - \cos x$ ,  $0 < x < 2\pi$  is increasing or decreasing.
7. Show that the function  $f(x) = \cos x$  is strictly decreasing on  $(0, \pi/2)$
8. Find the intervals in which the function  $f(x) = \sin x$  is increasing or decreasing.
9. Find the interval in which the function  $f(x) = 2x^3 + 9x^2 + 12x + 20$  is (i) increasing (ii) decreasing
10. Find the interval in which the function  $f(x) = (x+1)^3(x-1)^3$
11. Show that the height of cylinder of maximum volume that can be inscribed in a sphere of radius R is  $\frac{2R}{3}$ .

2R3..

12. Show that the semivertical angle of a cone of maximum volume and of given slant height is  $2\pi/3$ .

13. Length of three sides of a trapezium other than base is equal to 10cm each, then find the area of the trapezium when it is maximum ?
14. Find the point on the curve  $y^2 = 2x$  which is at minimum distance from the point (1,4)
15. An open box with a square base is to be made out of a given quantity of card board of area  $c^2$  square units. Show that the maximum volume of the box is cubic units.
16. A window is in the shape of a rectangle surmounted by an equilateral triangle. If the perimeter of the window is 12 m, find the dimensions of the rectangle that will produce the largest area of the window.

## DEFINITE INTEGRALS

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10,
11. (CBSE-2013)
- 12.

## APPLICATIONS OF INTEGRATION

- Q1. Find the area enclosed by curve  $4x^2 + 9y^2 = 36$
- Q2. The area of the region bounded by the curve  $x^2 = 4y$  and the straight line  $x = 4y - 2$  is
- Q3. The area enclosed between the graph of  $y = x^3$  and the lines  $x = 0$ ,  $y = 1$ ,  $y = 8$  is
- Q4. The area of the region bounded by the curve  $y^2 = x$ , the  $y$ -axis and between  $y = 2$  and  $y = 4$  is
- Q5. Area of region bounded by the curve  $y^2 = 4x$ , and its latus rectum above  $x$  axis
- Q7. Area of region bounded by curve  $y = x$  and  $y = x^3$  is
- Q8. The area enclosed by the circle  $x^2 + y^2 = 2$  is equal to:
- Q9. The area of the region bounded by the parabola  $y = x^2$  and  $y = |x|$  is
- Q10. The area of the region enclosed by the parabola  $x^2 = y$ , the line  $y = x + 2$  and the  $x$ -axis, is

**PHYSICS:**

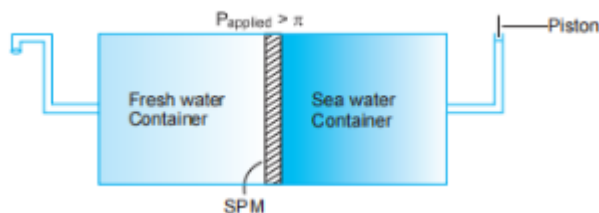
Write answers to all the questions of September monthly test for both SET 1 and SET 2

**CHEMISTRY:**

## CHAPTER -1 (SOLUTIONS)

- 1 (a) Define the following terms : (i) Ideal solution (ii) Osmotic pressure  
(b) Calculate the boiling point elevation for a solution prepared by adding 10 g  $\text{CaCl}_2$  to 200 g of water, assuming that  $\text{CaCl}_2$  is completely dissociated.  
( $K_b$ ) for water =  $0.512 \text{ K kg mol}^{-1}$ ; Molar mass of  $\text{CaCl}_2 = 111 \text{ g mol}^{-1}$  **Ans : 0.69 K**

- 2 (a) What type of deviation is shown by a mixture of ethanol and acetone? Give reason.  
 (b) A solution of glucose (molar mass = 180 g mol<sup>-1</sup>) in water is labelled as 10% (by mass). What would be the molality and molarity of the solution? (Density of solution = 1.2 g mL<sup>-1</sup>)
- 3 (a) Vapour pressure of pure water at 298 K is 23.8 mm Hg. 50 g of urea NH<sub>2</sub>CONH<sub>2</sub>) is dissolved in 850 g of water. Calculate the vapour pressure of water for this solution and its relative lowering. **Ans: 0.0173**  
 (b) Explain types of azeotropes with graph.
- 4.(a) The depression in freezing point of water observed for the same amount of acetic acid, trichloroacetic acid and trifluoroacetic acid increases in the order given above. Explain briefly.  
 (b) Henry's law constant for the molality of methane in benzene at 298 K is 4.27 × 10<sup>5</sup> mm Hg. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg. **Ans :178 × 10<sup>-5</sup>.**



Q5.

- (a) Given alongside is the sketch of a plant for carrying out a process.  
 (i) Name the process occurring in the given plant.  
 (ii) To which container does the net flow of solvent take place?  
 (iii) Name one SPM which can be used in this plant.  
 (iv) Give one practical use of the plant.
- b) A solution containing 15 g urea (molar mass = 60 g mol<sup>-1</sup>) per litre of solution in water has the same osmotic pressure (isotonic) as a solution of glucose (molar mass = 180 g mol<sup>-1</sup>) in water. Calculate the mass of glucose present in one litre of its solution.  
**Ans. b) 45 g**

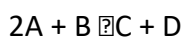
## CHAPTER -2 (ELECTROCHEMISTRY)

- Calculate emf and  $\Delta G$  for the following cell :  
 $\text{Mg(s)}/\text{Mg}^{2+}(0.001\text{M})//\text{Cu}^{2+}(0.0001\text{M})/\text{Cu(s)}$ ;  
 $E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34\text{V}$ ,  $E^\circ_{\text{Mg}^{2+}/\text{Mg}} = -2.37\text{V}$
- Calculate  $\Delta_r G^\circ$  for the reaction at 25°C :  $\text{Au(s)} + \text{Ca}^{+2} (1\text{ M}) \rightleftharpoons \text{Au}^{3+}(1\text{M}) + \text{Ca (s)}$  ,  
 $E^\circ_{\text{Ca}^{2+}/\text{Ca}} = -2.87\text{ V}$ ,  $E^\circ_{\text{Au}^{3+}/\text{Au}} = +1.50\text{V}$ . Predict whether the reaction will be spontaneous or not at 25°C which of the above two half cells will act as an oxidizing agent and which one will be a reducing agent?
- Calculate the emf of the cell . The following chemical reaction is occurring in an electrochemical cell.  $\text{Mg(s)} + 2\text{Ag}^+ (0.0001\text{ M}) \rightleftharpoons \text{Mg}^{2+}(0.10\text{M}) + 2\text{Ag(s)}$  The electrode values are  $\text{Mg}^{2+} / \text{Mg} = -2.36\text{ V}$   $\text{Ag}^+ / \text{Ag} = 0.81\text{ V}$ . For this cell calculate / write (a) (i)  $E^\circ$  value for the electrode  $2\text{Ag}^+ / \text{Ag}$  (ii) Standard cell potential  $E^\circ_{\text{cell}}$ . (b) Cell potential (E)cell (c) (i) Symbolic representation of the above cell. (ii) Will the above cell reaction be spontaneous?
- A voltaic cell is set up at 25°C With the following half cells :  $\text{Al(s)}/\text{Al}^{3+}(0.001\text{M})$  and  $\text{Ni}^{2+}(0.50)/\text{Ni(s)}$  , Write the equation for the cell reaction that occurs when the cell generates an electric current and determine the cell potential (given  $E^\circ_{\text{Ni}^{2+}} = -0.25\text{V}$ ,  $E^\circ_{\text{Al}^{3+}} = -1.66\text{V}$ ).
- One half cell in a voltaic cell is constructed from a silver wire dipped in silver nitrate solution of unknown concentration . The other half cell consists of a zinc electrode in a 0.10M solution of Zinc nitrate. A voltage of 1.48V is measured for this cell. Use this information to calculate the concentration of silver nitrate solution.

$$(E_{O_2^{2+}} = -0.763V, E_{O^+} = +0.80V)$$

### CHAPTER -3 (CHEMICAL KINETICS)

1. The following results have been obtained during the kinetic studies of the reaction :



| Experiment No. | [A] [B]     | Initial rate of formation of D           |
|----------------|-------------|------------------------------------------|
| i              | 0.1 M 0.1 M | $6.0 \times 10^{-3} \text{ M min}^{-1}$  |
| ii             | 0.3 M 0.2 M | $7.2 \times 10^{-2} \text{ M min}^{-1}$  |
| iii            | 0.3 M 0.4 M | $2.88 \times 10^{-1} \text{ M min}^{-1}$ |
| iv             | 0.4 M 0.1 M | $2.40 \times 10^{-2} \text{ M min}^{-1}$ |

Calculate the rate of formation of D when  $[A] = 0.5 \text{ mol L}^{-1}$  and  $[B] = 0.2 \text{ mol L}^{-1}$ .

**Ans : 1  $1.2 \times 10^{-1} \text{ mol L}^{-1} \text{ min}^{-1}$**

2. For the hydrolysis of methyl acetate in aqueous solution, the following results were obtained :

| t/s                                             | 0    | 30   | 60   |
|-------------------------------------------------|------|------|------|
| $[\text{CH}_3\text{COOCH}_3]/\text{mol L}^{-1}$ | 0.60 | 0.30 | 0.15 |

(i) Show that it follows pseudo first order reaction, as the concentration of water remains constant.

(ii) Calculate the average rate of reaction between the time interval 30 to 60 seconds.

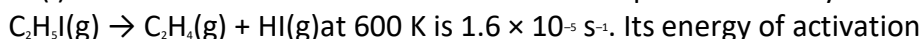
**Ans: (i)  $k = 0.0231 \text{ s}^{-1}$  (ii)  $5 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$**

3. (i) Define half-life of a reaction. Write the expression of half-life for (a) zero order reaction and (b) first order reaction.

(ii) The rate constants of reaction at 500 K and 700 K are  $0.02 \text{ s}^{-1}$  and  $0.07 \text{ s}^{-1}$  respectively.

Calculate the value of activation energy,  $E_a$ . **Ans: (ii)  $E_a = 18228.07 \text{ J mol}^{-1}$**

4. (i) The first order rate constant for the decomposition of ethyl iodide by the reaction :



at 600 K is  $1.6 \times 10^{-5} \text{ s}^{-1}$ . Its energy of activation is  $209 \text{ kJ mol}^{-1}$ . Calculate the rate constant of reaction at 700 K.

(ii) How does a change in temperature affect the rate of a reaction? How can this effect on the rate constant of reaction be represented quantitatively? **Ans : (i)  $6.34 \times 10^{-3} \text{ s}^{-1}$**

5. (i) A first order reaction has a rate constant value of  $0.00510 \text{ min}^{-1}$ . If we begin with  $0.10 \text{ M}$  concentration of the reactant, how much of the reactant will remain after 3.0 hours?

(ii) Explain the difference between the average rate and instantaneous rate of chemical reaction.

**Ans : (i)  $0.04 \text{ M}$**

### CHAPTER -4 (D AND F BLOCK ELEMENTS)

1. What is lanthanoid contraction? Give its cause and consequences.

2. (i) Differentiate between lanthanoids and actinoids.

(ii) What is misch metal? What are its uses?

3 (a) Write the method of preparation of potassium dichromate.

(b) What is the effect of pH on dichromate ion?

4 . Explain giving reasons:

a. Transition metals and many of their compounds show paramagnetic behavior.

b. The enthalpies of atomization of the transition metals are high.

c. The transition metals generally form coloured compounds.

d. Transition metals and their many compounds act as good catalysts.

e. Scandium ( $Z = 21$ ) is a transition element but zinc ( $Z = 30$ ) is not?

5. a). What is the state of hybridization of Mn in  $\text{MnO}_4^-$ ?

b) Write an application of potassium permanganate.

c) What are the products formed after heating potassium permanganate?

d) How many electrons are involved in oxidation by  $\text{KMnO}_4$ , in different mediums?

## **CHAPTER -5 (COORDINATION COMPOUNDS)**

- 1(i) What is crystal field splitting energy? How does the magnitude of  $\Delta_o$  decide the actual configuration of d-orbitals in a coordination entity?
- (ii) Explain the difference between a weak field ligand and a strong field ligand.
- (iii) Predict the number of unpaired electron in  $[\text{Pt}(\text{CN})_4]^{2-}$ .
- 2(i) Aqueous copper sulphate solution (blue in colour) gives: (i) a green precipitate with aqueous potassium fluoride and (ii) a bright green solution with aqueous potassium chloride. Explain these experimental results.
- (ii) Give evidence that  $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$  and  $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$  are ionisable isomers.
- (iii) Why are low spin tetrahedral complexes not formed?
- 3(i) How many geometrical isomers are possible in the following coordination entities?
- (a)  $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$                       (b)  $[\text{CoCl}_3(\text{NH}_3)_3]$                       (c)  $[\text{Pt}(\text{en})_2\text{Cl}_2]$
- (ii). Using IUPAC norms, write the formulae for the following :
- (a) tetrahydroxozincate(II)
- (b) hexaammineplatinum (IV)
- 4(a) Explain with two examples each of the following: coordination entity, ligand, coordination number, coordination polyhedron, homoleptic and heteroleptic.
- a. Draw the figure to show the splitting of d-orbital in an octahedral crystal field.
- b. Calculate the spin only magnetic moment of the complex  $[\text{FeF}_6]^{3-}$ .
- 5(a) Explain the bonding in coordination compounds in terms of Werner's postulates.
- a. what is meant by chelate effect? Give an example.

## **CHAPTER -6 (HALOALKANES AND HALOARENES)**

1. (a) Write the formula of freon.
- (b) Give two uses of chlorofluorocarbons.
- (c) How does freon-12 deplete ozone layer?
- (d) Do you think the use of CFCs should be banned? Give reason.
2. (a) What are ambident nucleophiles? Explain with an example.
- (b) Write the structure of the major organic product for the reaction:
- $$(\text{CH}_3)_3\text{CBr} + \text{KOH}$$
- (c) n-butyl bromide has higher boiling point than tert.-butyl bromide?
- (d) Butan-1-ol is optically inactive but Butan-2-ol is optically active.
- (e) Benzyl chloride undergoes  $\text{S}_{\text{N}}1$  reaction faster than cyclohexyl methyl chloride.
3. (a) Arrange each set of compounds in order of increasing boiling points
- Bromomethane, bromoform, chloromethane, dibromomethane.
- (b) Which of the compounds will react faster in  $\text{S}_{\text{N}}1$  reaction with the  $\text{OH}^-$  ion?
- $$\text{CH}_3-\text{CH}_2-\text{Cl} \text{ or } \text{C}_6\text{H}_5-\text{CH}_2-\text{Cl}$$
- (c) Name the reaction:  $\text{C}_6\text{H}_5\text{ONa} + \text{C}_2\text{H}_5\text{Cl} \rightarrow \text{C}_6\text{H}_5-\text{O}-\text{C}_2\text{H}_5$
- (d) Complete the following analogy
- Same molecular formula but different structures: A
- Non super imposable mirror images: B
- (e) Why iodoform has appreciable antiseptic properties?
4. (a) What is the direction of the polarity of a Carbon Halogen bond?
- (b) Fluorine is the most electronegative of the Halogens, yet Chloromethane has the largest dipole moment of the halomethanes. How is this possible?
- (c) Ethane and Bromomethane have widely different boiling points. Explain.
- (d) What is the stereochemistry of the  $\text{S}_{\text{N}}2$  reaction?
- (e) What is the order of stability of carbocations?
5. (a) How would you convert: (i) Benzene to Biphenyl (ii) Aniline to Chlorobenzene.

(b) Arrange in order of property indicated:

(i)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$ ,  $(\text{CH}_3)_3\text{Br}$ ,  $(\text{CH}_3)_3\text{CHCH}_2\text{Br}$  (Increasing boiling point)

(ii)  $\text{CH}_3\text{F}$ ,  $\text{CH}_3\text{I}$ ,  $\text{CH}_3\text{Cl}$ ,  $\text{CH}_3\text{Br}$  (nucleophilic substitution).

(c) p-Dichlorobenzene has higher melting point and lower solubility than those of o- and m- isomers. Discuss.

## CHAPTER -7 (ALCOHOLS ,PHENOLS AND ETHERS)

1. (a) Write the IUPAC names of the following compounds:

i.  $\text{CH}_3 - \text{C}(\text{CH}_3)_2\text{CH}(\text{OH})\text{CH}_3$

ii.  $\text{CH}_3\text{CH}=\text{CHCH}(\text{Br})\text{CH}_2\text{OH}$

iii.  $\text{CH}_3 - \text{O} - \text{CHC}(\text{CH}_3)_3$

(b) Give simple chemical test to distinguish between the following pairs of compounds:

i. Ethanol and phenol

ii. Propanol and 2-methyl propan-2-ol

2. (a) Arrange the following compounds in increasing order of acidic strength

P-nitrophenol, ethanol, phenol

(b) Arrange the following in increasing order of boiling point

Butanol, 2-methyl propanol, 2,2-dimethyl propanol, propanol

(c) Write the equations involved in following reactions:

i. Oxidation reaction of Phenol

ii. Williamson synthesis

iii. Friedal crafts alkylation of phenol

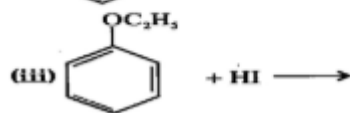
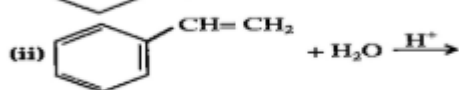
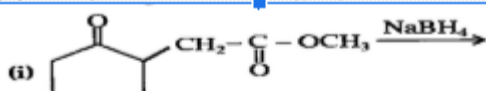
3. (a) Account for the following:

i. Alcohols are soluble in water as compared to hydrocarbons.

ii. Which of the following is more volatile: o-nitrophenol, p-nitrophenol?

(b) Write Lucas test for primary, secondary and tertiary alcohol.

4. (a) Complete the following equations:



(b) Why phenol undergoes electrophilic substitution reactions?

5. (a) Predict the reagent for carrying out the following conversions:

i. Phenol to benzoquinone

ii. Anisole to p-bromoanisole

iii. Phenol to 2, 4, 6-tribromophenol

(b) Write equation for the following reactions:

(a) Kolbe's reaction (b) Reimer-Teimann reaction

### **CHAPTER -8 (ALDEHYDES ,KETONES AND CARBOXYLIC ACIDS)**

1. Which of the following compounds would undergo Aldol condensation, which the Cannizzaro reaction and which neither? Write the structures of the expected products of Aldol condensation and Cannizzaro reaction.

a. Methanal (b) 2-Methylpentanal (c) Benzaldehyde (d) Benzophenone (e) Cyclohexanone (f) 1-Phenylpropanone (g) Phenylacetaldehyde (h) Butan-1-ol (i) 2,2-Dimethylbutanal.

2. Give reasons for the following :

i.  $C_6H_5COOH$  is weaker than formic acid.

ii.  $HCOOH$  and  $CH_3COOH$  are differentiated by Tollen's reagent.

iii.  $R - COOH$  do not give characteristic reaction of  $> C = O$  (Carbonyl group)

iv. Carboxylic acids are stronger acids than phenols.

v. Ethanoic acid does not show Cannizzaro reaction

3. (i) Arrange the following in the property indicated:

a. Acetaldehyde, Acetone, di-tert-butyl ketone, Methyl tert-butyl ketone in  
(increasing reactivity towards  $HCN$ )

$OOH$ ,  $CH_3CHBrCH_2COOH$ ,  $(CH_3)_2CHCOOH$ ,  $CH_3CH_2CH_2COOH$  (in increasing order of acid strength)

(ii) An aliphatic compound 'A' with a molecular formula of  $C_3H_6O$  reacts with phenylhydrazine to give compound 'B'. Reaction of 'A' with  $I_2$  in alkaline medium on warming, gives yellow precipitate 'C'. Identify the compounds A, B and C.

4. What is meant by the following terms? Give an example in each case.

(i) Cyanohydrin (ii) Semicarbazone (iii) Schiff base (iv) Ketal (v) Oxime



