

## CLASS- VI ENGLISH

**B. Identify the following verbs as regular or irregular verbs and write their simple past forms. (0.5×6=3)**

1. begin
2. stay
3. leave
4. carry
5. starve
6. open

**C. Convert the following adjectives into their noun forms. (0.5×6=3)**

1. independent
2. probable
3. honest
4. responsible
5. intelligent
6. brave

### **Project Work: (to be done in an A4 size sheet)**

D. Draw or paste any one of your favourite cartoon characters and describe the character in a few sentences.

Read a few stories/poems by Ruskin Bond/any of your favourite authors/poets during this vacation.

## HINDI AND SANSKRIT

1. 'दृशदृश' के बारे में अनुच्छेद लेखन ।
- 2- सुलेख ।
- 3- पत्रलेख अभ्यास । (२)
- 4 - विलोम शब्द । (२०)
- 5 - पर्यायवाची शब्द । (२०)
- 6 - वचन परिवर्तन - (१०)

### SANSKRIT

1. राषः, रातौ, राते/राषा, राते, रावाः/रावत्, राते, रातानि - सर्वनामप्रयोगः । वाक्य निर्माणम्/प्रश्न-निर्माणम् ।
- 2- परिचयः - अहम्, आवाम्, वयम्/त्वम्, युवाम्, वृषाम्, सर्वनामप्रयोगः ।
- 3- पृष्ठाणां संस्कृतनामानि लेखनम् ।
- 4 - वर्णानां संस्कृतनामलेखनम् ।

# MATHS

1. MAKE/DRAW FIVE OF EACH OF THE FOLLOWING
  - A. LEAF PATTERN
  - B. ODD NUMBER PATTERN
  - C. EVEN NUMBER PATTERN
2. MAKE THE FOLLOWING ANGLES BY PAPER FOLDING (ORIGAMI/ PAPER CRAFT)
  - A. ACUTE ANGLES LIKE -  $30^\circ$ ,  $60^\circ$
  - B. OBTUSE ANGLES LIKE -  $120^\circ$ ,  $150^\circ$

LINK :-<https://cuemath.link/ytd-home>
3. FORM KAPREKAR'S CONSTANT (MINIMUM 5) BY TAKING ANY FOUR DIGIT NUMBER.
4. CHECK WHETHER THE COLLATZ CONJECTURE HOLDS FOR THE FOLLOWING STARTING NUMBERS  
(A) 80 (B) 37 (C) 50 (D) 25
5. WRITE AND LEARN TABLES FROM 2 TO 20 (ONE TIME)

# SOCIAL SCIENCE

- 1) How direction is a important component of map ?
- 2) Draw a compass for measuring direction .
- 3) Draw maps of the earth as seen from above the northern hemisphere and seen above the southern hemisphere .
- 4) Define the terms that given below
  - I) Geologist
  - II) Palaeontologists
  - III) Anthropology
  - IV) Archaeologists
- 5) Describe role of the community to make a healthy society.
- 6) What is your understanding about value addition through representation of drawing?

# SCIENCE

1. Pick the odd one out and give reasons:
  - (i) Jowar, Bajra, Ragi, Chana
  - (ii) Kidney beans, Green gram, Soya bean, Rice
2. Reshma bought three identical metal bars from the market. Out of these bars, two were magnets and one was just a piece of iron. How will she identify which two amongst the three could be magnets (without using any other material)?
3. You are given a magnet which does not have the poles marked. How can you find its poles with the help of another magnet which has its poles marked?
4. A bar magnet has no markings to indicate its poles. How would you find out near which end its North pole is using another magnet?
5. If the earth is itself a magnet, can you guess the poles of earth's magnetic compass ?
6. While a mechanic was repairing a gadget using a screw driver, the steel screws kept falling down. Suggest a way to solve the problem of the mechanic on the basis of what you have learnt in this chapter.
7. Measure the height of your friend and express it in metres centimetres and millimetres. ?

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# CLASS-VII

## ENGLISH

1. Read the following stories in the book 'An Alien Hand' and write their summaries in your words:  
The Cop and the Anthem, Golu Grows a Nose
2. You are Ravi Kumar, a student of XII C in Delhi Public School, Ranchi. You have found a purse containing cash in your school. Write a notice for the school notice board about it in not more than 50 words.
3. Read the following hints/cues and write a readable story. Also write a suitable title.  
A farmer \_\_\_\_\_ five sons \_\_\_\_\_ were strong \_\_\_\_\_ always quarrelled \_\_\_\_\_ the farmer wanted them to stop quarrelling \_\_\_\_\_ wanted to live in peace \_\_\_\_\_ gave advice \_\_\_\_\_ not have much effect \_\_\_\_\_ called all his sons \_\_\_\_\_ bundle of sticks \_\_\_\_\_ break these sticks without separating \_\_\_\_\_ each tried one by one \_\_\_\_\_ used their full strength \_\_\_\_\_ the old man separated the sticks \_\_\_\_\_ they could break the sticks easily \_\_\_\_\_ farmer said \_\_\_\_\_ strong as long as it is tied up \_\_\_\_\_ will be weak if you are divided.
4. Change the following into Indirect Speech.
  - i. He said to me, "You are a kind person"
  - ii. Radha said to Mohan, "I am going to Delhi today."
  - iii. I said to him' "What are you doing here?"
  - iv. The teacher said to us, "The sun rises in the east."
  - v. My mother said to me, "I have prepared breakfast for you."
5. Write 5 sentences of each of the following tenses:
  - i. Simple Present Tense
  - ii. Simple Past Tense
  - iii. Present Continuous Tense
  - iv. Past Continuous Tense
  - v. Present Perfect Tense
  - vi. Past Perfect Tense

## HINDI & SANSKRIT

- 1) पंथी के स्वतंत्रता पर एक निबंध लिखिए।
- 2) 20 दूंद - समास के उदाहरण लिखिए।
- 3) आनेवाले न्यौदार पर दो मित्रों के बीच सवाद लिखिए।
- 4) 'बाला' प्रत्यय का प्रयोग करते हुए 20 शब्द लिखिए।

CLASS- VII  
AUTUMN BREAK वसंत

Holiday Homework

1. 'पितृ', 'गर्भ' तथा 'मधु' शब्दरूप लिखिए व शब्द अर्थ लिखिए।
2. तीन धातुरूप लिखिए।
3. '२' से 200 तक संख्या शब्द कीजिए।
4. 'हमारे तीरंगा ने होने वाले तीन शब्द तथा अशोक चक्र का महत्व लिखिए।

# MATHS

1. Find three equivalent fractions of  $\frac{2}{6}$
2. Classify the following fractions as proper, improper and mixed fractions.  
 $\frac{1}{2}, \frac{3}{7}, 6\frac{1}{3}, \frac{7}{2}, 1\frac{3}{4}, \frac{9}{5}$
3. Ramesh solve  $\frac{2}{7}$  part of an exercise while Sima solved  $\frac{4}{5}$  of it. Who solved lesser part and by how much ?
4. Suman studies for  $5\frac{3}{2}$  hours daily. She devotes  $2\frac{4}{5}$  hours of her time for science and mathematics. How much time does she devotes for other subjects ?
5. A rectangular sheet of paper is  $12\frac{1}{2}$  cm long and  $10\frac{2}{3}$  cm wide find its perimeter.
6. Lipika reads a book for  $1\frac{3}{4}$  hours everyday. She reads the entire book in 6 days how many hours in all were required by her to read the book ?

# SOCIAL SCIENCE

- 1) **Discuss the structure of the atmosphere.**
- 2) **Draw pressure belt on model earth.**
- 3) **How was the administration consolidated under Delhi Sultanate?**
- 4) **When persons are treated unequally, their dignity is violated. How?**
- 5) **What are the responsibilities of the chief minister and other ministers?**

# SCIENCE

- (1) Write two activities from each chapter.
- (2) Draw diagram of digestive system heart, kidney, parts of a flower, amoeba
- (3) Prepare 10 ppt from any chapter of Science
- (4) Prepare one project on renewable energy (innovative)

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# CLASS-VIII

## ENGLISH

(Complete the holidays homework in your English copy. Must mention Autumn break holidays homework.)

1- Write down an article on "Internet- connecting and dividing people"

2- Develop a story in about 100/120 words with the following beginning-

" It was Saturday night and I was all alone at home. Suddenly....."

3- Today is your birthday and your father has gifted you a laptop. You are very happy to own it as you wanted to have it for a long time. Before going to bed, you intend to share your joy with your diary. Write a diary entry in 100/120 words expressing your feeling.

Art Integrated learning Project

4- Make a poster on any one of the following topics. (A4 paper) Write an appropriate slogan or tagline for your poster.

a) Road safety    b) Stop child labour

NB- Complete the questions and answers of all chapters taught to you. Must submit on 18/10/2024. This will be taken for internal assessment.

## HINDI

सभी प्रश्नों के उत्तर गृह कार्य नोट बुक में लिखना है।

- 1-अपनी पाठ्य पुस्तक पाठ 8,9,10,11 को पढ़ना है और उन पाठों का सारांश लिखना है।
- 2-कारक की परिभाषा और उसके प्रकार लिखो।
- 3-भारत की खोज पाठ 5 ,6 को पढ़ो और उसका सारांश लिखो।
- 4-कोई कविता जो आपको सर्वाधिक पसंद हो, कंठस्थ कर सुलेख में लिखो
- 5-हिंदी दिनों और महीनों के नाम याद कर लिखो?
- 6- समास के सभी प्रकारों का नाम व 3,3 उदहारण लिखो।
- 7-किसी 1 विषय पर निबन्ध लिखो जो 250 शब्दों से कम न हो,

1 अनुशासन का महत्व।

2 ऑनलाइन गेमिंग का नुकसान

## SANSKRIT

1- राम और रमा शब्द के रूप दो बार लिखिए व याद कीजिए।  
2- 'खाद्' धातु रूप पांचों लकारों में लिखिए व याद कीजिए।  
3- कारक लिखिए व याद कीजिए।  
4- पाठ संख्या 9-10 व 11 को राम बार पढ़िए व अभ्यास कीजिए।

# MATHS

- 1) Write multiplication tables from 2 to 20 one time each.
- 2) Paste Half yearly Maths question paper in your C/W notebook and do its corrections.
- 3) Tabulate marks scored in half yearly exams and draw its Pie Chart and Bar Graph.
- 4) Find the square root of and cube root of 10 numbers by your own example.
- 5) Find the rate of discount given on a shirt whose selling price is ₹1092 after deducting a discount of ₹208 on its marked price.
- 6) A scooter was bought at the cost of ₹ 42,000. Its value drops down to the rate of 8% per annum. Find its value after one year.
- 7) Compute the amount and compound interest on the principal amount ₹ 10,800 for 3 years at 12½ % per annum compounded annually.
- 8) Find the smallest whole number from which 1008 should be multiplied in order to obtain a perfect square number. Also, find out the square root of the square number so obtained.

# SOCIAL SCIENCE

- 1) What are the main step taken for soil degradation ?
- 2) Mention important dates of the chapter from trade to territory.
- 3) Describe about the composition of Lok Sabha and Rajya Sabha.
- 4) What judiciary system ? How it is work in India.

# SCIENCE

1. Solve all the questions from the Mid-term exam in your notebook.
2. Read the chapter **REPRODUCTION IN ANIMALS** and complete the exercise questions.
3. Draw the following diagram and label it.
  - Different Zones of a candle flame
  - Male reproductive organs in humans
  - Female reproductive organs in humans
  - Binary fission in Amoeba
4. Make a model for RAJYA STARIYA BAL VAIGYANIK PRADARSHNI (RSBVP).

THEME: SCIENCE AND TECHNOLOGY FOR SUSTAINABLE FUTURE

SUB THEME:

I.	Food, Health & Hygiene
II.	Transport & Communication
III.	Natural Farming
IV.	Disaster management
V.	Mathematical modeling & Computational thinking
VI.	Waste Management
VII.	Resource Management

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# **AUTUMN BREAK HOLIDAYS HOMEWORK**

## **CLASS-IX** **SCIENCE (BIOLOGY)**

Roll no 1-6 make a project on NATURAL FARMING, it includes

- project synopsis (not more than 1000 word)
- Project model
- Chart for explain the project

Details of theme provided in class group.

All student must complete the following question:

### **CBQ**

1. A student observed two cells under a microscope and noticed that one cell had a well-defined nucleus and membrane-bound organelles, while the other cell did not have a well-defined nucleus and lacked membrane-bound organelles. Based on this observation, explain how the student can determine whether the cells are prokaryotic or eukaryotic.
2. An experiment was conducted to study the movement of materials across a cell membrane. The experiment involved placing a cell in a solution and observing changes in the cell's volume over time. Based on the results of the experiment, explain how the student can determine whether the cell membrane is selectively permeable.
3. A student observed two types of tissues under a microscope: one with densely packed cells and no intercellular spaces, and the other with loosely packed cells and abundant intercellular spaces. Based on this observation, explain how the student can determine the types of tissues and their functions.
4. During a field trip, a student collected samples of plant tissues from different parts of a tree. The student observed that the tissues from the growing tips of the tree were different from those in the mature stem. Based on this observation, explain how the student can determine the types of tissues and their roles in plant growth and development.

**Direction: In each of the following questions, a statement of Assertion is given followed by a corresponding statement of Reason. Of the statements, mark the correct answer as (a) Both assertion and reason are true and reason is the correct explanation of assertion. (b) Both assertion and reason are true but reason is not the correct explanation of assertion.**

**(c) Assertion is true but reason is false.**

**(d) Assertion is false but reason is true.**

1. Assertion (A): The cell membrane is selectively permeable. Reason (R): The cell membrane allows only certain substances to pass through it while restricting others.
2. Assertion (A): Mitochondria are known as the powerhouses of the cell. Reason (R): Mitochondria are the sites of photosynthesis in plant cells.
3. Assertion (A): Vacuoles are storage sacs found in animal cells. Reason (R): Vacuoles store water, nutrients, and waste materials.
4. Assertion (A): The cell wall is found in both plant and animal cells. Reason (R): The cell wall provides structural support and protection to the cell.
5. Assertion (A): Epithelial tissues are tightly packed and form a protective barrier. Reason (R): Epithelial tissues have a high rate of cell division to replace damaged cells.
2. Assertion (A): Connective tissues provide structural support to organs and tissues. Reason (R): Connective tissues are mainly composed of cells that can contract and relax.

3. Assertion (A): Muscular tissues are specialized for contraction and movement. Reason (R): Muscular tissues are composed of cells that can change shape and size.
4. Assertion (A): Nervous tissues are responsible for transmitting electrical impulses. Reason (R): Nervous tissues are composed of cells called neurons.
5. Assertion (A): Meristematic tissues are found in the regions of the plant that grow. Reason (R): Meristematic cells are specialized and have lost the ability to divide.

## SCIENCE (PHYSICS)

- (1) Write experiments in your practical record.
- (2) Complete questions-answers of ncert exercise gravitation
- (3) Prepare 10 ppts from any chapter of Physics
- (4) Prepare one project on gravitation. (innovative)

## SCIENCE (CHEMISTRY)

1. When we dissolve sugar in water, the level of water does not rise. Why?
2. Which of the following are matter? Chair, air, love, smell, hate, almonds, thought, cold, cold-drink, smell of perfume.
3. Explain an activity to show that matter is made up of particles.
4. What are the characteristics of particles of matter?
5. Give two examples to show particles of matter are very small.
6. Define 'diffusion' giving examples.

## ENGLISH

- 1- You are Alia/ Ajay. Write a letter to your uncle/aunt describing how your exams went and what are your plans for the upcoming exams. (120 words)
- 2- Write a paragraph on " Failure is the stepping stone to success." (120 words)

Or

- Write a paragraph on " Action speaks louder than words." (120 words)
- 3- Prepare mind map of any one fiction of your literature reader textbook. (A4 paper)  
Art integrated learning Project
  - 4- Work on one of the topics mentioned in B.7.(a)-(g). Research your topic by collecting relevant articles from print and electronic media (like the National Geographic). Make a power point presentation of 4/5 slides. You can also use film clippings to enrich your presentation. (Refer to page no 67/68 of your MCB textbook for more details)

**NB- Must complete the questions and answers of the chapters taught. Submit the notebook and portfolio on 18/10/2024. These will be taken for internal assessment.**

## SOCIAL SCIENCE

- 1) Draw major rivers on blank India map.
- 2) Important dates of France Revolution.
- 3) First step taken by constituent assembly for making constitution.
- 4) Describe some poverty eradication programme and their features.
- 5) What are the school of Nazism?



# ARTIFICIAL INTELLIGENCE

1. Explain the following:

a) Machine Learning b) Artificial Intelligence c) Computer Vision d) Natural Language Processing

2. 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.

3. Ramesh wants to develop AI based solution using Smart cameras at traffic signals to record and report traffic violations.

i) Write a statement about the problem to be solved

ii) Give any reason to solve this problem

iii) Identify the location/context where solution is to be used

iv) Identify who are the stack holders for the above AI issue.

4. Write about the different stages of AI project cycle. What is the aim of each stage of AI project cycle.

Explain following terms:

i) Face recognition

ii) Smart Assistant

iii) Chatbot

iv) Robotics

5. What are the elements of communication? Explain.

## HINDI

(अंक 20 / ग्रेड्स )

सभी प्रश्नों के उत्तर गृह कार्य नोट बुक में लिखना है।

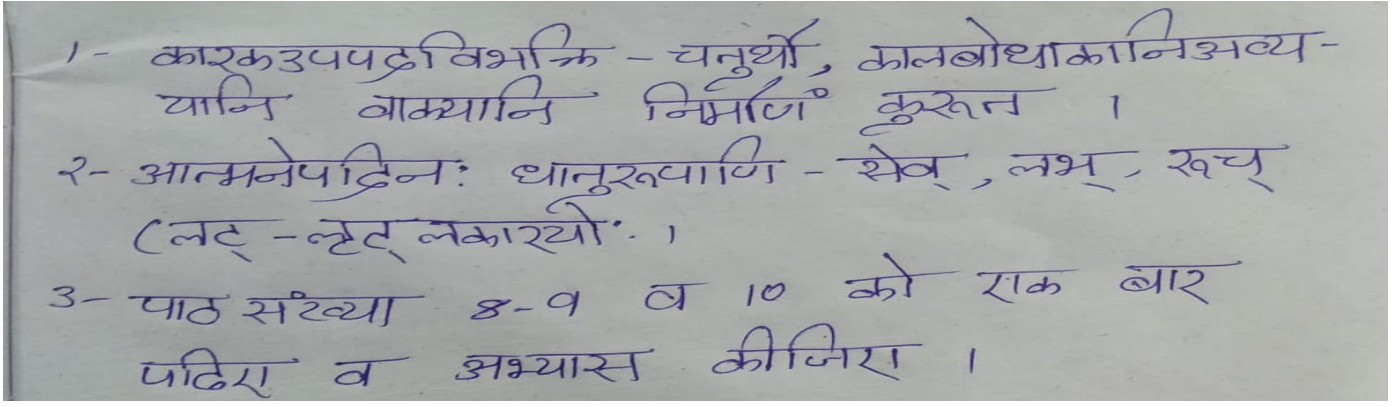
निम्नांकित निम्नलिखित प्रश्नों को अपनी अभ्यास पुस्तिका में लिखिए और याद कीजिए

1. किस घटना ने सलीम अली के जीवन की दिशा को बदल दिया और उन्हें पक्षी प्रेमी बना दिया था?
2. सालिम अली ने पर्यावरण के किन संभावित खतरों को पूर्व प्रधानमंत्री चौधरी चरण सिंह के सामने रखा होगा? जिसे उनकी आंखें नम हो गईं।
3. 'सांवले सपनों की याद' शीर्षक की सार्थकता पर टिप्पणी कीजिए।
4. रसखान द्वारा रचित अध्याय में दिए गए सवैयों का अर्थ लिखिए।
5. किस शासन की तुलना तम के प्रभाव से की गई और क्यों?
6. अर्द्धरात्रि में कोकिल की चीख से कवि को क्या अंदेशा है?
7. कविता में 'काला' शब्द किस-किस जगह पर और किस अर्थ के प्रयोग में लिया गया है?
8. रीड की हड्डी अध्याय के आधार पर किस मानसिक विकृति (बुराई) की ओर इशारा किया गया है?
9. अर्थ के आधार पर वाक्य के कितने भेद हैं प्रत्येक भेद का एक उदाहरण लिखिए
10. अलंकार कितने प्रकार के होते हैं? उदाहरण सहित लिखिए।
11. किसी एक पर्यटक स्थल की सचित्र यात्रा 'लघु कथा' के रूप में लिखिए
12. अपने मित्र को कोरोना से बचाव संबंधी निर्देश देते हुए पत्र लिखिए।
13. किसी एक विषय पर निबंध लिखिए।

क) बेरोजगारी: एक महान समस्या

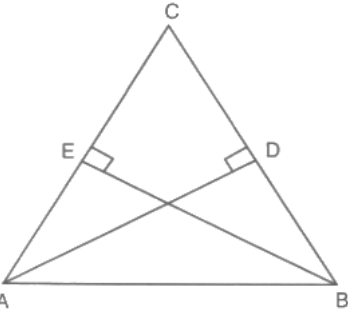
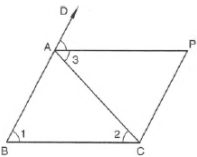
ख) कोरोना: एक महामारी

## SANSKRIT



## MATH

Do all questions in MATHS C.W. Copy.	
1	Rationalise: $\frac{1}{\sqrt{7}+\sqrt{3}-\sqrt{2}}$ .
2	If $a = \frac{3+\sqrt{5}}{2}$ , then find the value of $a^2 + \frac{1}{a^2}$ .
3	Factorise: $ab(x^2 + y^2) - xy(a^2 + b^2)$
4	Using remainder theorem factorise: $x^3 - 3x^2 - x + 3$
5	Verify that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
6	Name the quadrant in which the following points lie: (i) A(2, 9) (ii) B(-3, 5) (iii) C(-4, -7) (iv) D(3, -2)
7	Write the coordinates of the vertices of a rectangle whose length and breadth are 5 and 3 units respectively, one vertex at the origin, the longer side lies on the x - axis and one of the vertices lies in the III quadrant.
8	Find at least 3 solutions for the linear equation $2x - 3y + 7 = 0$ .
9	Find five different solutions of the equation: $3y = 4x$
10	If P, Q, and R are three points on a line and Q is between P and R, then prove that $PR - QR = PQ$ .
11	In the given figure, if $OX = \frac{1}{2}XY$ , $PX = \frac{1}{2}XZ$ and $OX = PX$ , show that $XY = XZ$ .
12	Find the angle whose complement is one third of its supplement.
13	In Fig. $\angle AOC$ and $\angle BOC$ form a linear pair. If $a - b = 20^\circ$ , find the values of a and b.

14	<p>In given figure, AD and BE are respectively altitudes of a triangle ABC such that AE = BD. Prove that AD = BE.</p> 	
15	<p>Line segment joining the mid - points M and N of parallel sides AB and DC, respectively of a trapezium ABCD is perpendicular to both the sides AB and DC. Prove that AD = BC.</p>	
16	<p>In the figure, ABC is an isosceles triangle in which AB = AC. CP    AB and AP is the bisector of exterior <math>\angle CAD</math> of <math>\triangle ABC</math>. Prove that (i) <math>\angle PAC = \angle BCA</math> and (ii) ABCP is a parallelogram.</p> 	
17	<p>In the adjoining figure, ABCD is a parallelogram in which <math>\angle DAB = 80^\circ</math> and <math>\angle DBC = 60^\circ</math>. Calculate <math>\angle CDB</math> and <math>\angle</math></p>	

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# CLASS-X

## SCIENCE(PHYSICS)

- (1) Write experiments in your practical record.
- (2) Complete questions-answers of ncert exercises of charge electricity.
- (3) Prepare 10 ppts from any chapter of Physics
- (4) Prepare one project on electrical energy. (innovative)

## SCIENCE(BIOLOGY)

**Roll no 1-6 make a project on NATURAL FARMING, it include**

- **project synopsis (not more than 1000 word)**
- **Project model**
- **Chart for explain the project**

**Details of theme provided in class group.**

**All student must complete the following question**

### CBQ

1. Read the given passage and related study concepts answer the following questions. Lung cancer is the most widely known and most harmful effect of smoking :98% of cases are associated with cigarette smoking. The damaging components of cigarette smoke include tar, carbon monoxide, nitrogen dioxide, and nitric oxide. Many of these harmful chemicals occur in greater concentrations in side-stream smoke (passive smoking) than in mainstream smoke (inhaled) due to the presence of a filter in the cigarette.

A) Why is passive smoking more dangerous than active smoking?

b) What are the consequences if the membranes of alveoli tear off due to chain smoking?

C) Is lungs become weak making the person more susceptible to infections like pneumonia?

Q2. Read the given passage and related study concepts answer the following questions This transport of soluble products of photosynthesis is called translocation and it occurs in the part of the vascular tissue known as phloem. Besides the products of photo-synthesis, the phloem transports amino acids and other substances. These substances are especially delivered to the storage organs of roots, fruits and seeds and to growing organs. The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions. Unlike transport in xylem which can be largely explained by simple physical forces, the translocation in phloem is achieved by utilising energy, Material like sucrose is transferred into phloem tissue using energy from ATP. This increases the osmotic pressure of the tissue causing water to move into it. This pressure moves the material in the phloem to tissues which have less pressure. This allows the phloem to move material according to the plant's needs. For example, in the spring, sugar stored in root or stem tissue would be transported to the buds which need energy to grow.

2.1. The translocation of food in plants takes place in which direction?

2.2. What is the term given for the transportation of food in plants by phloem elements?

2.3. Which main components of phloem help in the translocation process in plants?

3. Read the text below and answer the given questions The heart is a muscular organ which is as big as our fist. Because both oxygen and carbon dioxide have to be transported by the blood, the heart has

different chambers to prevent the oxygen-rich blood from mixing with the blood containing carbon dioxide. The carbon dioxide-rich blood has to reach the lungs for the carbon dioxide to be removed, and the oxygenated blood from the lungs has to be brought back to the heart. This oxygen-rich blood is then pumped to the rest of the body.

3.1. How many chambers are present in the heart of mammals and reptiles?

3.2. Name the device that measures blood pressure?

3.3 What is hypertension? Give two reasons which can cause it.

### From chemical Co-ordination

Q1. Read the following passage and answer the questions followed

Some plants like the pea plant climb up other plants or fences by means of tendrils. These tendrils are sensitive to touch. When they come in contact with any support, the part of the tendril in contact with the object does not grow as rapidly as the part of the tendril away from the object. This causes the tendril to circle around the object and thus cling to it. More commonly, plants respond to stimuli slowly by growing in a particular direction. Because this growth is directional, it appears as if the plant is moving.

1.1 Name different types of tropism are shown by plants?

1.2 The movement of 'touch me not' plant is different from growth of shoot in the response to light What is the difference?

1.3 Give one example of chemotropism?

1.4 Name the plants hormones which promote and inhibit cell division in plants.

Q2. Read the following passage and answer the questions followed:-

The term neurodegeneration is a combination of two words - "neuro," referring to nerve cells and "degeneration," referring to progressive damage. The term "neurodegeneration" can be applied to several conditions that result in the loss of nerve structure and function. This deterioration gradually causes a loss of cognitive abilities such as memory and decision making. Neurodegeneration is a key aspect of a large number of diseases that come under the umbrella of "neurodegenerative diseases." Of these hundreds of different disorders, so far attention has been mainly focused on only a handful, with the most notable being Parkinson's disease, Huntington's disease and Alzheimer's disease. A large proportion of the less publicized diseases have essentially been ignored.

2.1 Name any two diseases that are caused due to neurodegeneration.

2.2 Neurodegenerative diseases are cause of concern. Give reason.

### Assertion reason question

Answer these questions selecting the appropriate option given below:

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

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

(c) A is true but R is false.

(d) A is false but R is true.



Q1. Assertion (A): All reflex actions are involuntary actions but only some involuntary actions are reflex actions. Reason (R): Reflex actions take the shortest route from the receptor (detector of stimulus) to the effector (producer of response).

Q2. Assertion (A): Blood cells do not receive or pass information to the rest of the human body. Reason (R): Blood cells are not directly connected with neurons.

Q3. Assertion: Cytokinins are present in highest concentration in seeds. Reason: Cytokinins are a responsible for promoting cell division.

Q4. Assertion: It is advised to have iodised salt in our diet. Reason: It prevents us from goitre.

Q5. Assertion(A): A receptor is a specialized group of cells in a sense organ that perceive a particular type of stimulus. Reason (R): Different sense organs have different receptors for detecting stimuli.

Q6. Assertion(A): The spinal nerves are 31 in number. Reason (R): The spinal nerves assist the spinal cord to function.

Q7. Assertion(A): Walking, riding a bicycle are involuntary actions controlled by hind brain. Reason (R): Walking, riding a bicycle are controlled by cerebellum.

## ARTIFICIAL INTELLIGENCE

1. Create a 4W Project Canvas for the following:

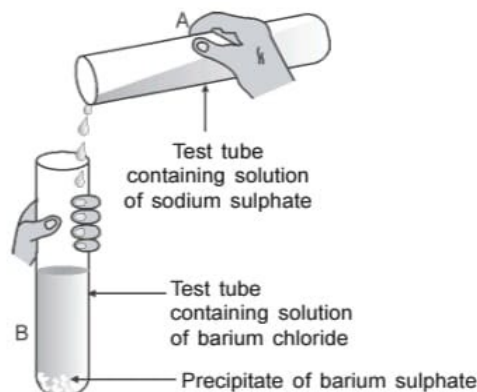
As more and more new technologies get into play, risks will get more concentrated into a common network. Cybersecurity becomes extremely complicated in such scenarios and goes beyond the control of firewalls. It will not be able to detect unusual activity and patterns including the movement of data.

Think how AI algorithms can scrape through vast amounts of logs to identify susceptible user behaviour. Use an AI project cycle to clearly identify the scope, how you will collect data, model and evaluation parameters.

2. What are the stages of AI project cycle in Data Science? Explain briefly with example.
3. Samay 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.
4. Explain the following:
  - a) Machine Learning
  - b) Artificial Intelligence
  - c) Computer Vision
  - d) Natural Language Processing
  - e) Deep Learning
  - f) Data Science
5. Differentiate between classification and regression.
6. Differentiate between supervised learning and semi-supervised learning.

## SCIENCE(CHEMISTRY)

- Q.1.** Observe the given figure and answer the following questions.
- Write the complete balanced reaction for the above.
  - Type of reaction involved.
  - Is there any precipitate formed?
  - If any precipitate formed, write the colour of the precipitate.



- Q.2.** (a) Can we stir silver nitrate solution with a copper spoon? Why or why not? Support your answer with reason.
- (b) Why a brown coating is formed on the iron rod when iron rod is kept dipped in copper sulphate solution for sometime? What change will be observed in the colour of the solution?
- Q.3.** (a) Balance the following chemical equations :
- $\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
  - $\text{PbO} + \text{C} \longrightarrow \text{Pb} + \text{CO}_2$
  - $\text{Fe}_2\text{O}_3 + \text{Al} \longrightarrow \text{Al}_2\text{O}_3 + \text{Fe} + \text{Heat}$
- (b) Write the balanced chemical equations for the following reactions.
- Barium chloride + Potassium sulphate  $\longrightarrow$  Barium sulphate + Potassium Chloride
  - Zinc metal + silver nitrate  $\longrightarrow$  zinc nitrate + silver metal
- Q.4.** (a) Define a balanced chemical equation. Why should an equation be balanced?
- (b) Write the balanced chemical equation for the following reason :
- Phosphorus burns in presence of chlorine to form phosphorus pentachloride.
  - Burning of natural gas
  - The process of respiration.

## ENGLISH

1- Your school has decided to introduce Mass Media Studies as a subject under the vocational stream. This is going to help students who want to pursue a career in films , its production and other attached fields. Write a notice for your school notice board informing all students who are studying in class X regarding the course. (50words)

2- On the occasion of World Health Day, write an article in about 150 words for the school newsletter on the topic, 'Importance of Physical Health in Our Lives', using the clues given below.

Hints:

- A healthy mind lives in a healthy body.
- Lack of time for physical activity because of the demands of modern lives.

- Ignoring health increases the risk of many diseases.
- Discipline is the key to resolving these concerns.

3-You intend to join coaching classes at Success Coaching Centre situated in Chennai. The institute specializes in teaching science to classes XI – XII. Write a letter of enquiry in 100 – 120 words addressed to the Administrator in – charge of the institute seeking clarification about the timing, duration, staff, transport and other necessary details for joining the institute. You are Sonia / Shiv of 2, Murthi Road, Chennai.

Art integrated learning Project

4- Prepare mind map of any two fictions of your literature reader textbook. (A4 paper)

**NB- Must complete the questions and answers of the chapters taught. Submit the notebook, art integrated learning projects and portfolio on 18/10/2024. These will be taken for internal assessment.**

## HINDI

(गृह कार्य / शरद कालीन छुट्टियां 2024-25) अंक 20 / ग्रेड्स कक्षा -10 अ  
सभी प्रश्नों के उत्तर गृह कार्य नोट बुक में लिखना है।

निम्नलिखित प्रश्नों को अपनी अभ्यास पुस्तिका में लिखिए और याद कीजिए

1. बालगोबिन भगत के चरित्र की किन विशेषताओं के कारण उन्हें गृहस्थ साधु के नाम से जाना जाता था?
2. बाल गोबिन भगत किस प्रकार अपने बेटे की मृत्यु पर अपनी भावनाओं को अभिव्यक्त करता है?
3. भगत की मधुर गायन की विशेषताएं लिखिए।
4. 'लखनवी अंदाज़' अध्याय के आधार पर नवाबी सनक और शौक किस प्रकार सामन्ती व्यवस्था के पतन के कारण बने, समझाइए।
5. बिना विचार, घटना और पात्रों के क्या कोई कहानी लिखी जा सकती है? यशपाल जी के विचारों से आप कहां तक सहमत हैं?
6. फादर बुल्के के जीवन को समझाते हुए बताइए कि उनकी तुलना देवदार के वृक्ष से क्यों की गई?
7. 'फादर बुल्के भारतीय संस्कृति के अभिन्न अंग है।' यह किस आधार पर कहा गया है ?
8. गंतोक को मेहनतकश बादशाहों का शहर क्यों कहा जाता है? समझाइए।
9. वाच्य के कितने भेद हैं प्रत्येक भेद का दो उदाहरण लिखिए
10. रस कितने हैं? प्रत्येक रस का एक उदाहरण लिखिए।
11. 'मोहन बाजार से सब्जियां और फल लेकर आया।' वाक्य के पदों का परिचय दीजिए
12. अपने मित्र को कोरोना से बचाव संबंधी निर्देश देते हुए पत्र लिखिए।
13. किसी एक विषय पर निबंध लिखिए। त निम्नलिखित प्रश्नों को अपनी अभ्यास पुस्तिका में लिखिए और याद कीजिए

## SANSKRIT

1- "रक्तः पञ्च" पद्य "पद्यन्तम् शब्दस्वपाणि निबन्धत ,  
2- अव्ययानि - इति, कदा, क्वः, मा, यत्र, - तत्र,  
यद्वा - क्वदा, यावत् - तावत्, अः, इयः, बहिः -  
वाम्यानि निर्माणं कूर्वन्तु ,  
3- पाठ संख्या 8-9 व 10 को रक्त बार  
पठिए व अभ्यास कीजिए ।

# SOCIAL SCIENCE

1. Briefly describe about 7 national party in India.
2. What are the main reason of civil disobedience movement ?
3. Describe about 3 features of major crops in India.
4. What are the functions of Bank ?

## MATH

### A. NUMBER SYSTEM

1. Use prime factorisation to find the HCF of: (i) 135 and 225 (ii) 196 and 38220 (iii) 867 and 255.  
[3+3+3]
2. Consider the numbers  $4^n$ , where n is a natural number. Check whether there is any value of n for which  $4^n$  ends with the digit zero. [3]
3. Find the LCM and HCF of 6 and 20 by the prime factorization method. [2]
4. Find the HCF and LCM of 6, 72 and 120, using the prime factorization method. [2]
5. Given that  $\text{HCF}(306, 657) = 9$ , find  $\text{LCM}(306, 657)$ . [2]
6. Check whether  $6^n$  can end with the digit 0 for any natural number n. [3]
7. Explain why  $7 \times 11 \times 13 + 13$  is composite number. [2]
8. Prove that  $\sqrt{5}$  is irrational. [3]
9. Prove that  $3 - 2\sqrt{5}$  is irrational. (2)

### B. POLYNOMIALS

1. Find the zeroes of the quadratic polynomial  $x^2 + 7x + 10$ , and verify the relationship between the zeroes and the coefficients. [3]
2. Find the zeroes of the polynomial  $x^2 - 3$  and verify the relationship between the zeroes and the coefficients. [2]
3. Find a quadratic polynomial, the sum and product of whose zeroes are  $-3/2$  and  $3/5$  respectively. [2]
4. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.  
(i)  $x^2 - 2x - 8$       (ii)  $4s^2 - 4s + 1$       (iii)  $6x^2 - 3 - 7x$       [3+3+3]
5. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.  
(i) 0,  $5/2$       (ii) 1, -1      (iii) -4,  $1/3$       [2+2+2]

### C. PAIR OF LINEAR EQUATION IN TWO VARIABLES

1. Check whether the pair of equations  
 $x + 3y = 6$  and  $2x - 3y = 12$  is consistent. If so, solve them graphically. [3]
2. Half the perimeter of a rectangular garden, whose length is 4 m more than its width, is 36 m. Find the dimensions of the garden. [3]

3. Draw the graphs of the equations  $x - y + 1 = 0$  and  $3x + 2y - 12 = 0$ . Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis, and shade the triangular region. [3]
4. Solve the following pair of equations by substitution method:  
 $7x - 15y = 2$  and  $x + 2y = 3$  [2]
5. Solve  $2x + 3y = 11$  and  $2x - 4y = -24$  and hence find the value of 'm' for which  $y = mx + 3$ . [2]
6. Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages? [3]
7. Use elimination method to find solutions of the following pair of linear equations :  
 $2x + 3y = 8$  and  $4x - 6y = 7$  [2]
8. A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid Rs 27 for a book kept for seven days, while Susy paid Rs 21 for the book she kept for five days. Find the fixed charge and the charge for each extra day. [4]
9. Solve the following pair of equations :  
 $6x + 3y = 6$  and  $2x + 4y = 5$  [2]

#### D. QUADRATIC EQUATIONS

1. The area of a rectangular plot is  $528 \text{ m}^2$ . The length of the plot (in metres) is one more than twice its breadth. We need to find the length and breadth of the plot. [3]
2. The product of two consecutive positive integers is 306. We need to find the integers. [3]
3. Rohan's mother is 26 years older than him. The product of their ages (in years) 3 years from now will be 360. We would like to find Rohan's present age. [3]
4. Find the roots of the quadratic equation  $6x^2 - x - 2 = 0$ . [2]
5. Find two numbers whose sum is 27 and product is 182. [2]
6. Find two consecutive positive integers, sum of whose squares is 365. [2]
7. Find the roots of the equation  $5x^2 - 6x - 2 = 0$  by the method of quadratic formula. [3]
8. Find the roots of the following quadratic equations, if they exist, using the quadratic formula:  
(i)  $3x^2 - 5x + 2 = 0$  (ii)  $x^2 + 4x + 5 = 0$  (iii)  $2x^2 - 2\sqrt{2}x + 1 = 0$  [2+2+2]
9. In a class test, the sum of Shefali's marks in Mathematics and English is 30. Had she got 2 marks more in Mathematics and 3 marks less in English, the product of their marks would have been 210. Find her marks in the two subjects. [3]
10. Find the values of k for each of the following quadratic equations, so that they have two equal roots.  
(i)  $2x^2 + kx + 3 = 0$  (ii)  $kx(x - 2) + 6 = 0$  [2+2]
11. Sum of the areas of two squares is  $468 \text{ m}^2$ . If the difference of their perimeters is 24 m, find the sides of the two squares. [3]

#### E. ARITHMETIC PROGRESSION

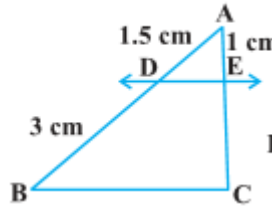
1. Find the 10th term of the AP : 2, 7, 12, ... [2]
2. Which term of the AP : 21, 18, 15, ... is  $-81$ ? Also, is any term 0? Give reason for your answer. [3]
3. Determine the AP whose 3rd term is 5 and the 7th term is 9. [2]
4. Check whether  $-150$  is a term of the AP : 11, 8, 5, 2, ... [2]
5. The 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.



11. Find the sum of the first 40 positive integers divisible by 6. [3]  
 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]

### F. TRIANGLES

Q.1: In the given figure,  $DE \parallel BC$ . Find EC. (1)



Q.2 State and prove Basic Proportionality Theorem. (4)

### G. 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.3: 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.4: Find the coordinates of the point which divides the join of  $(-1, 7)$  and  $(4, -3)$  in the ratio  $2 : 3$ . (2)  
 Q.5: Find the point on the x-axis which is equidistant from  $(2, -5)$  and  $(-2, 9)$ . (3)  
 Q.6: 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.7: Show that the points  $(1, 7)$ ,  $(4, 2)$ ,  $(-1, -1)$  and  $(-4, 4)$  are the vertices of a square. (3)  
 Q.8: 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)

### H. INTRODUCTION TO TRIGONOMETRY

- Q.1: In  $\Delta ABC$ , 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.5: 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.6: Prove that  $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$  (3)  
 Q.7: Prove that :  
 $\sec A (1 - \sin A)(\sec A + \tan A) = 1$ . (3)  
 Q.8: Prove that :  
 $(\operatorname{cosec} \theta - \cot \theta)^2 = 1 - \cos \theta / 1 + \cos \theta$  (3)

### I. 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  $60^\circ$ . 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  $30^\circ$ . (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  $30^\circ$  than when it is  $60^\circ$ . 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  $45^\circ$  and  $60^\circ$  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  $30^\circ$  and the angle of elevation of the top of the tower from the foot of the building is  $60^\circ$ . 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  $60^\circ$  and the angle of depression of its foot is  $45^\circ$ . 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  $45^\circ$  and  $30^\circ$ . If the ships are 200 m apart, find the height of the lighthouse. (4)

### J. CIRCLES

Q.1: Prove that the parallelogram circumscribing a circle is a rhombus. (3)

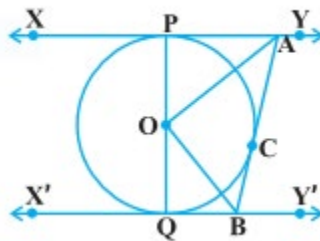
Q.2: A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q so that  $OQ = 12$  cm. Find PQ. (1)

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)

### K. AREAS RELATED TO CIRCLES

- 1) Find the area covered by the minute hand 7 cm long when it moves from 2 to 5.
- 2) Find the area of the quadrant of a circle of diameter 14cm.
- 3) Find the area of minor segment of quadrant of a circle of radius 7cm.
- 4) The area of a circle is  $154\text{cm}^2$ . Find the length of arc making an angle  $60^\circ$  at the centre.
- 5) Find the area of the sector of a circle with radius 14cm and angle  $30^\circ$ .

### L. SURFACE AREAS AND VOLUMES

1. 2 cubes each of volume  $64\text{ cm}^3$  are joined end to end. Find the surface area of the resulting cuboid.
2. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest  $\text{cm}^2$ .
3. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1 cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of  $\pi$ .

- A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.
- A container shaped like a right circular cylinder having diameter 12 cm and height 15 cm is full of ice cream. The ice cream is to be filled into cones of height 12 cm and diameter 6 cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice cream.

## M. STATISTICS

- A survey was conducted by a group of students as a part of their environment awareness programmed in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

No. of plants	100-150	150-200	200-250	250-300	300-350
No. of houses	4	5	12	2	2

- The following table shows the ages of the patients admitted in a hospital during a year:

Age (in years)	5-15	15-25	25-35	35-45	45-55	55-65
No. of participants	6	11	21	23	14	5

Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.

- The distribution below gives the weights of 30 students of a class. Find the median weight of the students.

Weight in kg	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of students	2	3	8	6	6	3	2

- The following distribution gives the daily income of 50 workers of a factory.

Daily income (in Rs.)	100-120	120-140	140-160	160-180	180-200
No. of workers	12	14	8	6	10

Find mean, median and mode.

- The following table gives production yield per hectare of wheat of 100 farms of a village.

Production yield (in kg/ha)	50-55	55-60	60-65	65-70	70-75	75-80
No. of farms	2	8	12	24	38	16

Find mean, median and mode.

## N.PROBABILITY

1. A box contains 3 blue, 2 white, and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be (i) white? (ii) blue? (iii) red?
2. If  $P(E) = 0.05$ , what is the probability of 'not E'?
3. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. What is the probability that the ball drawn is (i) red ?(ii) not red?
4. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i) red ? (ii) white ? (iii) not green?
6. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting:  
(i) a king of red colour                      (ii) a face card                      (iii) a red face card  
(iv) the jack of hearts                      (v) a spade                      (vi) the queen of diamonds
5. One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting:  
(i) a queen of blackcolour                      (ii) a face card                      (iii) a red face card  
(iv) the jack of hearts                      (v) a spade                      (vi) the queen of diamonds
6. A die is thrown twice. What is the probability that  
(i) 5 will not come up either time? (ii) 5 will come up at least once?
8. A lot of 20 bulbs contain 4 defective ones. One bulb is drawn at random from the lot. What is the probability that this bulb is defective?

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# CLASS – XI

## PHYSICS

- (1) Write experiments in your practical record.
- (2) Complete questions-answers of ncert exercises of charge 4,5
- (3) Prepare 10 ppts from any chapter of Physics
- (4) Prepare one project on transport. (innovative)

Q 1. A man stands in a lift going downward with uniform velocity. He experiences a loss of weight at the start but not when lift is in uniform motion. Explain why?

Q 2. In a tug of war, the team that pushes harder against the ground wins. Why?

Q 3. How does friction help us in walking?

Q 4. A block of mass 2 kg is placed on a plane surface. The coefficient of static friction is .4. When a 2.8 N force is applied on the block parallel to the surface, find the force of friction between the block and surface ?

Q 5. The coefficient of friction between the two contact plane is  $\sqrt{3}$  what is the angle of friction between those two planes?

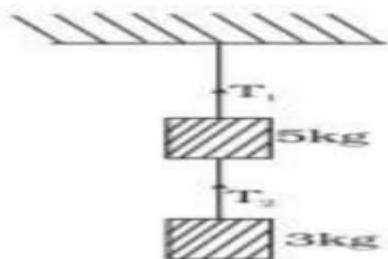
Q 6. A block of mass 10 kg is sliding downwards on a inclined plane of angle  $30^\circ$  with horizontal. The coefficient of kinetic friction between the block and surface is .5. Find the acceleration of the block (take  $g=9.8 \text{ m/s}^2$ )

Q 7. . A 75 Kg man stands in a lift.what force does the floor exert on him when the elevator starts moving upwards with an acceleration of  $2.0 \text{ m/s}^2$  . Take  $g=10 \text{ m/s}^2$ .

Q 8. The driver of a car travelling at speed  $v$  suddenly sees a wall at a distance  $d$  directly in front of him. To avoid collision should he apply the brakes or turn the car sharply away from the wall? .Give reason

Q 9. What is the need of banking a circular road?

Q 10. Two masses of 5 kg and 3 kg are suspended with help of massless inextensible strings as shown in below figure. Calculate  $T_1$  and  $T_2$  when whole system is going upwards with acceleration =  $2 \text{ m/s}^2$  (use  $g =9.8 \text{ m/s}^2$ ).



Q 11. Two bodies of masses  $m_1$  and  $m_2$  have equal kinetic energies . What is the ratio of their linear momenta?

Q 12. State Work Energy theorem. Prove it for a variable force.

Q 13. Define elastic collision and discuss it for two bodies in one dimension.

Q 14. A particle performing uniform circular motion has angular momentum  $L$ . What will be the new angular momentum , if its angular frequency is doubled and its kinetic energy is halved?

Q 15. How does a ballet dancer vary her angular speed by outstretching her arms and legs?

Q 16. Show that angular momentum is constant for zero torque. Also derive the relation between angular momentum & torque.

Q 17. Derive expression for potential energy of a spring .Also draw graph of Force VS displacement.



# BIOLOGY

Roll no 1-6 make a project on NATURAL FARMING for Vaigyanik Pradarshani it include

- project synopsis (not more than 1000 word).
- Project model.
- Chart for explain the project.

Details of theme provided in class group.

All student must complete the following question

## CBQ

1 Read the following and answer any four questions from (a) to (b) given below: Classification is not a single-step process, but involves a hierarchy of steps, in which each step represents a rank or category. Each category, a unit of classification, represents a taxon. Taxonomical studies of all the known organisms have led to the development of certain common categories.

(a) Name and arrange the common categories in proper sequence in a hierarchy, from the lowest to the highest category. (2marks)

(b) Name the following: (2marks)

- (i) The family that includes lion, tiger and leopard, all belonging to the genus Panthera.
- (ii) The order that includes the plant families Convolvulaceae and Solanaceae.

2. Read the following and answer any four questions from (a) to (b) given below.

scientist discovers a single-celled organism in a hot spring. The organism has a nucleus and other membrane-bound organelles, but it also has a cell wall made of cellulose. It can obtain food by absorbing nutrients from the environment, but it can also capture sunlight for energy production.

a) Based on the characteristics described, to which kingdom would this organism most likely belong according to the five-kingdom classification? Briefly explain your answer. (2marks)

b) Name an organism which shows mixotrophic mode of nutrition and how it is significant? (2marks)

## ASSERTION AND REASON QUESTIONS

These questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses. A. If both Assertion and Reason are true and the Reason is correct explanation of the Assertion. B. If both Assertion and Reason are true but the Reason is not a correct explanation of the Assertion. C. If Assertion is true but the Reason is false. D. If both Assertion and Reason are false

1. Assertion: Phycomycetes are generally called algal fungi Reason: It is believed that phycomycetes have evolved from algae.

2. Assertion: Viruses are readily killed by antibiotics. Reason: Antibiotics are the antigens secreted by the host.

3. Assertion: A virus attaching a bacterium is called bacteriophage. Reason: A virus attaching a blue green alga is called cyanophage.

4. Assertion: There is no change of transmission of malaria to man on the bite of a male Anopheles mosquito. Reason: It carries a non-virulent strain of Plasmodium.

5. Assertion: Gram-negative bacteria do not retain the stain when washed with alcohol. Reason: The outer face of the outer membrane of Gram-negative bacteria contains lipopolysaccharides, a part of which is integrated into the membrane lipids.
6. Assertion: Chlorella could be utilised to keep the air pure in space vehicles. Reason: The space travellers feed on Chlorella soup.
7. Assertion: Red algae contribute in producing coral reef. Reason: Some red algae secrete and deposit calcium carbonate on their walls.
8. Assertion: Gymnosperms do not produce fruit. Reason: Ovules of gymnosperms are enclosed within the ovaries.
9. Assertion: Bryophyte has an independent embryo. Reason: The zygote of thallophyte is dependent.
10. Assertion: All living species of Cycas are dioecious. Reason: Cycas contains male and female cones on the separate plant
11. Assertion: There is no chance of malaria to a man by the bite of male Anopheles mosquito. Reason: It carries a virulent strain of Plasmodium..
12. Assertion: Tapeworm, roundworm and pinworm are endo-parasites of human intestine. Reason: Improperly cooked food is the source of intestinal infections.
13. Assertion: In ctenophores, digestion is chiefly extracellular. Reason: Digestive tract is incomplete in ctenophores.
- 14 Assertion: Arthropods are able to survive in adverse conditions. Reason: Arthropods have developed sense organs, compound eyes and taste receptors.
15. Assertion: Water vascular system is the characteristic of echinoderms. Reason: Main function of water vascular system is locomotion.

### CBQ

The veins are not only the conducting channels for water, minerals and organic food, they also provide firmness to the lamina and keep it expanded. They give rise to lateral veins, which traverse the entire lamina. Venation is of two main types: Reticulate and parallel. When the veinlets form a network, the venation is termed as reticulate venation. for e.g., leaves of dicot plants. When the veins arising from mid rib or main veins, run parallel to each other towards the margin or the apex of the lamina, venation is termed as parallel venation, present in the leaves of monocot plants. (i) Venation is a term used to describe the pattern of arrangement of: (a) Floral organs. (b) Flower in inflorescence. (c) Veins and veinlets in a lamina. (d) All of them. (ii) Pinnately compound leaf is found in (a) Neem (b) Silk cotton (c) Papaya (d) Cucurbita (iii) Parallel venation is not a characteristic in: (a) Hibiscus (b) Grass (c) Rice (d) Maize (iv) Reticulate venation is found in: (a) Mango (b) Rice (c) Canna (d) Musa

## CHEMISTRY

Top ten question per day(for half yearly exam)

<b>DAY 1(8/10/2024)</b>	
<b>1</b>	Calculate the mass of sodium acetate ( $\text{CH}_3\text{COONa}$ ) required to make 500 mL of 0.375 molar aqueous solution. Molar mass of sodium acetate is $82.0245 \text{ g mol}^{-1}$
<b>2</b>	Zinc and hydrochloric acid react and produce hydrogen gas. If 0.30 mol of Zn are added to hydrochloric acid containing 0.52 mol of HCl, how many moles of hydrogen are produced ?
<b>3</b>	$2.49 \times 10^{-18} \text{ g}$ of an element X contains $2.0 \times 10^4$ atoms. What is the atomic mass of the element X ?
<b>4</b>	What is the concentration of sugar ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ ) in $\text{mol L}^{-1}$ if its 20 g are dissolved in enough water to make a final volume up to 2 L?

5	Calcium carbonate reacts with aqueous HCl to give CaCl <sub>2</sub> and CO <sub>2</sub> according to the reaction, CaCO <sub>3</sub> (s) + 2 HCl (aq) → CaCl <sub>2</sub> (aq) + CO <sub>2</sub> (g) + H <sub>2</sub> O(l) What mass of CaCO <sub>3</sub> is required to react completely with 25 mL of 0.75 M HCl? (3M)
6	Chlorine is prepared in the laboratory by treating manganese dioxide (MnO <sub>2</sub> ) with aqueous hydrochloric acid according to the reaction 4 HCl (aq) + MnO <sub>2</sub> (s) → 2H <sub>2</sub> O (l) + MnCl <sub>2</sub> (aq) + Cl <sub>2</sub> (g) How many grams of HCl react with 5.0 g of manganese dioxide?
7	A solution of glucose in water is labelled as 10% w/w, what would be the molality and mole fraction of each component in the solution? If the density of solution is 1.2 g mL <sup>-1</sup> , then what shall be the molarity of the solution?
8	Concentrated aq. Sulphuric acid is 98% H <sub>2</sub> SO <sub>4</sub> by mass and has a density of 1.84 g/ml .What volume of concentrated acid is required to make 5.0 L of 0.50 M H <sub>2</sub> SO <sub>4</sub> solution.. (3M)
9	Calculate mole fraction of ethanol and water in a sample of rectified spirit containing 46% ethyl alcohol by mass
10	How are 0.50 mol Na <sub>2</sub> CO <sub>3</sub> and 0.50 M Na <sub>2</sub> CO <sub>3</sub> different ? (1M) Calculate the mass of CO <sub>2</sub> which contains the same number of molecules as are contained in 40 gm of oxygen.(2M) How <i>precision</i> is different from <i>accuracy</i> .(1M ) Mention the function of (i) Azydothymidine (ii) Cisplatin (1M)
<b>DAY 2(9/10/2024)</b>	
1	(i) How many electrons in an atom may have the following quantum numbers? (a) n = 4, m <sub>s</sub> = - ½ (b) n = 3, l = 0 (ii) What is the wavelength of light emitted when the electron in a hydrogen atom undergoes transition from an energy level with n = 4 to an energy level with n = 2?
2	State Hund's Rule and Pauli Exclusion Principle
3	Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength 6800 Å. Calculate threshold frequency (ν <sub>0</sub> ) and work function (W <sub>0</sub> ) of the metal.
4	State Heisenberg Uncertainty Principle A microscope using suitable photons is employed to locate an electron in an atom within a distance of 0.1 Å. What is the uncertainty involved in the measurement of its velocity? (2+1)
5	(i) The energy associated with the first orbit in the hydrogen atom is -2.18 × 10 <sup>-18</sup> J atom <sup>-1</sup> . What is the energy associated with the fifth orbit? (ii) Calculate the radius of Bohr's fifth orbit for hydrogen atom
6	# (a) How many radial nodes are present in 4d <sub>xy</sub> orbital . (b) Draw the shape of 3P <sub>x</sub> orbital .

	(c) which series of Hydrogen spectra appears in visible region of sunlight ? (1) (d) Write the Einstein equation for photoelectric Effect with proper notation .(1) (e) Give one important limitations of Rutherford Model .(1)
7	(a) Which quantum number determines (i) orientation of the orbitals (ii) energy of electron? (1/2 +1/2) (b) Which is more paramagnetic and why ?( Fe <sup>2+</sup> and Mn <sup>2+</sup> ) (1) (c) How many electrons will be present in the sub-shells having m <sub>s</sub> value of -1/2 for n = 5 ? (1) (d) A microscope using suitable photons is employed to locate an electron in an atom within a distance of 0.1 Å. What is the uncertainty involved in the measurement of its velocity?

8	(a) what is the physical significance of $\psi^2$ ? (1) (b) What is the value of Bohr's radius of second orbit of Hydrogen ? (1) (c) How many radial nodes are present in 4s orbital ? (1) (d) A 100 watt bulb emits monochromatic light of wavelength 400 nm . calculate the number of photons emitted per second by the bulb.
9	(a) Write the electronic configuration of the element having atomic number 24 . (1) (b) Draw the boundary surface diagram of $3d_{x^2-y^2}$
10	(a) Arrange the following in order of increasing energy— (1) ( X-rays , IR , Microwave, UV, Visible) (b)Mention two shortcomings of Bohr's Model (1)
<b>DAY 3(10/10/2024)</b>	
1	i) Write the atomic number of the element present in the 4 <sup>th</sup> period and 16 <sup>th</sup> group of the periodic table . (ii) Considering the atomic number and position in the periodic table, arrange the following elements in the increasing order of metallic character : Si ,Be , Mg ,Na ,P (1+1)
2	Explain why ? (3) (a) Be has higher $\Delta_f H$ than B (b) Why Zn,Cd and Hg are not regarded as transition metals (c) $[\text{AlF}_6]^{3-}$ is formed but $[\text{BF}_6]^{3-}$ is not formed
3	(a) What is the basic difference between the terms electron gain enthalpy and electronegativity? (b) What is the basic difference in approach between the Mendeleev's Periodic Law and the Modern Periodic Law?
4	Which of the following will have the most negative electron gain enthalpy and which the least negative? ( P , S , Cl , F ) . Explain your answer.
5	The elements $Z = 117$ and $120$ have not yet been discovered. In which family / group would you place these elements ?
6	Write the general outer electronic configuration of d- block elements. Write two unique characteristics of d- block elements .(2)
7	What is the cause of anomalous behavior of elements in a given group
8	Write the name and symbol of the elements whose value is ; $Z = 117$
9	Show by a chemical reaction with water that $\text{Na}_2\text{O}$ is a basic oxide and $\text{Cl}_2\text{O}_7$ is an acidic oxide.
10	Consider the following species : $\text{N}^{3-}$ , $\text{O}^{2-}$ , $\text{F}^-$ , $\text{Na}^+$ , $\text{Mg}^{2+}$ and $\text{Al}^{3+}$ (a) What is common in them?(b) Arrange them in the order of increasing ionic radii.
<b>DAY 4(11/10/2024)</b>	
1	Predict the shape and draw the structure of following :- (a) $\text{SF}_4$ (b) $\text{BrF}_5$ (c) $\text{ClF}_3$ (d) $\text{XeF}_4$
2	What is meant by the term Bond Order ? Which is more stable $\text{O}_2$ or $\text{O}_2^+$ ,and why ?

3	a) Describe —Hydrogen Bond   .Mention the cause of formation of H-Bond . (2) b) Explain with illustration why $\text{BF}_3$ molecule has zero dipole moment although B—F bonds are polar . (2) c) How many sigma and Pi bonds are present in a molecule of Acetic acid . (1)
4	a) What do you understand by the —concept of resonance  . Write the resonance structures for $\text{NO}_3^-$ . (2) b) Which out of $\text{NH}_3$ and $\text{NF}_3$ has higher dipole moment and why ? (2)

	c) Mention one example each of Inter- and intra molecular H-Bonding .(1)
5	Describe the hybridization in case of $\text{PCl}_5$ with proper illustration . Why are the axial bonds longer as compared to equatorial bonds .
6	Give the hybridization treatment for the molecule , $\text{C}_2\text{H}_4$ with proper illustration of hybrid orbitals and bond angles
7	. Explain why $\text{CCl}_4$ molecule has zero dipole moment although C—Cl bonds are polar . Write two limitations of Octet Rule .(1)
8	Is there any change in the hybridisation of B and N atoms as a result of the following reaction ? $\text{BF}_3 + \text{NH}_3 \rightarrow \text{F}_3\text{B} \cdot \text{NH}_3$
9	Why is ortho-nitrophenol steam volatile whereas para- nitrophenol is not.
10	Explain why the bond order of $\text{N}_2$ is greater than $\text{N}_2^+$ , but the bond order of $\text{O}_2$ is less than that of $\text{O}_2^+$ ?
	<b>DAY 5(12/10/2024)</b>
1	(a) State and explain Hess's law of constant heat summation with suitable example . (2) (b) How intensive properties are different from extensive properties
2	(a) Mention two limitations of First Law Of Thermodynamics. (1) (b) Predict the sign of entropy change ( $\Delta S$ ) in each of the following : (i) $\text{H}_2(\text{at } 298\text{K}, 1 \text{ atm}) \rightarrow \text{H}_2(\text{at } 298\text{K}, 10 \text{ atm})$ (ii) $\text{H}_2\text{O}(\text{at } 298\text{K}, 1 \text{ atm}) \rightarrow \text{H}_2\text{O}(\text{at } 330\text{K}, 1 \text{ atm})$
3	Define standard enthalpy of formation? Calculate the standard enthalpy of formation of $\text{CH}_3\text{OH}(\text{l})$ from the following data: $\text{CH}_3\text{OH}(\text{l}) + 3/2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l}) ; \Delta_r H^\circ = -726 \text{ kJ mol}^{-1}$ $\text{C}(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) ; \Delta_c H^\circ = -393 \text{ kJ mol}^{-1}$ $\text{H}_2(\text{g}) + 1/2\text{O}_2(\text{g}) \rightarrow \text{H}_2\text{O}(\text{l}) ; \Delta_f H^\circ = -286 \text{ kJ mol}^{-1}$
4	Enthalpies of formation of $\text{CO}(\text{g})$ , $\text{CO}_2(\text{g})$ , $\text{N}_2\text{O}(\text{g})$ and $\text{N}_2\text{O}_4(\text{g})$ are $-110$ , $-393$ , $81$ and $9.7 \text{ kJ mol}^{-1}$ respectively. Find the value of $\Delta_r H$ for the reaction: $\text{N}_2\text{O}_4(\text{g}) + 3\text{CO}(\text{g}) \rightarrow \text{N}_2\text{O}(\text{g}) + 3\text{CO}_2(\text{g})$
5	(a) State Le-Chatelier principle . For the given reaction $\text{N}_2(\text{g}) + 3 \text{H}_2(\text{g}) \rightleftharpoons 2 \text{NH}_3(\text{g})$ , $\Delta_c H = -46 \text{ KJ/mol}$ How will the value of $K_p$ be affected by increasing the temperature . (b) The value of $K_p$ for the above equation is 41 at 400K , then find out the value of $K_p$ for $2 \text{N}_2(\text{g}) + 6 \text{H}_2(\text{g}) \rightleftharpoons 4 \text{NH}_3(\text{g})$ (c) Calculate the hydrogen ion concentration of human blood whose pH is 7.38 .
6	Define (a) specific heat capacity (b) Reversible process (c) Enthalpy of solution
7	Predict the sign of entropy change ( $\Delta S$ ) in each of the following : (2) (a) $2 \text{NaHCO}_3(\text{s}) \rightarrow \text{Na}_2\text{CO}_3(\text{s}) + \text{H}_2\text{O}(\text{g}) + \text{CO}_2(\text{g})$ (b) $\text{H}_2(\text{at } 298\text{K}, 1 \text{ atm}) \rightarrow \text{H}_2(\text{at } 298\text{K}, 10 \text{ atm})$ (c) $\text{H}_2\text{O}(\text{at } 298\text{K}, 1 \text{ atm}) \rightarrow \text{H}_2\text{O}(\text{at } 330\text{K}, 1 \text{ atm})$ (d) $2 \text{NH}_4\text{NO}_3(\text{s}) \xrightarrow{\text{at } 1 \text{ atm \& } 373\text{K}} 2 \text{N}_2(\text{g}) + 4 \text{H}_2\text{O} + \text{O}_2(\text{g})$
8	Assuming the thermodynamic relationship $\Delta_r G = \Delta H - T\Delta S$ , derive the relationship $\Delta_r G = -T\Delta S_{\text{total}}$ for a system.
9	The enthalpy change( $\Delta H$ ) for the reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ is $-92.3 \text{ KJ}$ at 298K . Calculate $\Delta U$ at 298K . (given: $R=8.314 \text{ J/K/mol}$ ) (2)

10	. (a) Mention two limitations of First Law of Thermodynamics. (1) (b) The equilibrium constant for a reaction is 10 .What will be the value of $\Delta G^0$ ? $R= 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$ , $T =300\text{K}$
	<b>DAY 6(13/10/2024)</b>
1	(a) If the equilibrium constant for the reaction $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$ is 57 then what will be the equilibrium constant for the reverse reaction at the same temperature . (1) (b) Define ionic product of water .(1) (d) State Le –Chatelier’s Principle (1)
2	a) Describe Buffer Solution (1) (b) Predict if the solutions of following salts are neutral , acidic or basic : ( NaCN , NaCl , $\text{NH}_4\text{NO}_3$ , $\text{CH}_3\text{COONa}$ )
3	.(a) The ionization constant of acetic acid is $1.74 \times 10^{-5}$ . Calculate the degree of dissociation of acetic acid in its 0.05M solution . Calculate the $\text{H}^+$ ion concentration and its $\text{P}^{\text{H}}$ . Describe the effect of (i) addition of $\text{H}_2$ and (ii) increase of pressure on the equilibrium of the reaction . Mention whether change will cause the following equilibrium reaction will move in forward or backward direction $2\text{H}_2(\text{g}) + \text{CO}(\text{g}) \rightleftharpoons \text{CH}_3\text{OH}(\text{g})$ .
4	i) Describe (a) ionic product of water (b) Common ion effect . (2) (ii) Predict if the solutions of following salts are neutral , acidic or basic : ( NaCN , $\text{CH}_3\text{COONa}$ )
5	<b>For the following equilibrium,</b> $K_c = 6.3 \times 10^{14}$ at 1000K  $\text{NO}(\text{g}) + \text{O}_3(\text{g}) \rightleftharpoons \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$ <b>Both the forward and reverse reactions in the equilibrium are elementary bimolecular reactions.</b> <b>What is <math>K_c</math> for the reverse reaction?</b>
6	<b>Does the number of moles of reaction products increase, decrease or remain same when each of the following equilibria is subjected to a decrease in pressure by increasing the volume?</b> (a) $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$ (b) $\text{CaO}(\text{s}) + \text{CO}_2(\text{g}) \rightleftharpoons \text{CaCO}_3(\text{s})$ (c) $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightleftharpoons \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$
7	<b>What will be the conjugate bases for the Brönsted acids: HF, <math>\text{H}_2\text{SO}_4</math> and <math>\text{HCO}_3^-</math>?</b>
8	<b>At 473 K, equilibrium constant <math>K_c</math> for decomposition of phosphorus pentachloride, <math>\text{PCl}_5</math> is <math>8.3 \times 10^{-3}</math>. If decomposition is depicted as,</b> $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$ $\Delta_r H^\circ = 124.0 \text{ kJmol}^{-1}$ a) Write an expression for $K_c$ for the reaction. b) What is the value of $K_c$ for the reverse reaction at the same temperature? c) What would be the effect on $K_c$ if (i) more $\text{PCl}_5$ is added (ii) pressure is increased? (iii) The temperature is increased?
9	<b>Write the conjugate acids for the following Brönsted bases: <math>\text{NH}_2^-</math>, <math>\text{NH}_3</math> and <math>\text{HCOO}^-</math>.</b>
10	<b>The pH of a sample of vinegar is 3.76. Calculate the concentration of hydrogen ion in it.</b>
	<b>DAY 7 8 9 (14/15/16/10/2024)</b>
	<b>Practicals</b>
	<b>Exp 1</b>

EXERIMENT NO – 3 (A)

**Aim:** To prepare the standard solution M/10 of oxalic acids.

**Theory:** Hydrated oxalic acid =  $C_2H_2O_4 \cdot 2H_2O$

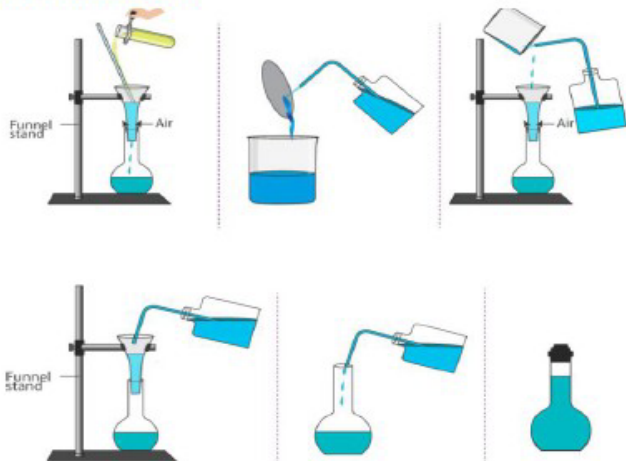
Molecular mass of Oxalic Acid = 126.

12.6 g of oxalic acid per litre of the solution should be dissolved to prepare M/10 oxalic acid solution.

On the other hand,  $12.6 / 4 = 3.15$  g of crystals of oxalic acid should be dissolved in water and precisely 250 ml of the solution should be produced.

**Materials Required:** Chemical balance ,Watch glass ,Weight box, 250ml beaker, Glass rod 250ml measuring flask , Wash bottle, Weighing tube, Oxalic acid, Funnel Funnel stand , Distilled water

**Apparatus Setup:**



Step by Step Laboratory Preparation of Standard Solution of Oxalic Acid

**Procedure:**

1. Take a watch glass, wash it with distilled water and dry it.

2. Weigh the exact amount of clean and dried watch glass and record its weight in the notebook.
3. Weigh correctly on the watch glass 3.15 g of oxalic acid and record this weight in the notebook.
4. Using a funnel, transfer oxalic acid softly and carefully from the watch glass into a clean and dry measuring flask.
5. Wash the watch glass with distilled water to move the particles that stick to it into the flask with the assistance of a wash bottle.
6. For this purpose, the volume of distilled water should not exceed 50 ml.
7. Wash funnels several times with distilled water to move the sticking particles into the measuring flask using a wash bottle. Add water in tiny quantities while washing the funnel. The distilled water quantity used for this purpose should not exceed 50 mL.
8. Using a wash bottle, wash the funnel carefully with distilled water to pass the solution attached to the funnel into the measuring flask
9. Turn the flask of measurement until the oxalic acid dissolves.
10. Using a wash bottle, thoroughly add enough distilled water to the measuring flask just below the etched mark on it.
11. Add the last few mL of distilled water drop into the measuring flask until the reduced meniscus level just touches the mark.
12. Put the stopper on the mouth of the flask and shake softly to make the entire solution uniform. Calculate it as a solution of oxalic acid M/10.

**Observation:**

Weight of the watch glass	W <sub>1</sub> g
Weight of the watch glass + Oxalic acid	W <sub>1</sub> + 3.15g
Weight of Oxalic acid	3.150g
Volume of distilled water	250cm <sup>3</sup>

**Results:** 250cm<sup>3</sup> of decimolar or (M/10) solution of oxalic acid is prepared.

**Precautions:**

1. Weighing of oxalic acid crystals need weights of 2g + 1g + 100mg + 5mg.
2. Wash the watch glass carefully so that even a single crystal of oxalic acid is not left on the watch glass.
3. Last few drops should be added using a pipette to avoid extra addition of distilled water above the mark on the neck of the measuring cylinder.
4. If it is necessary to titrate oxalic acid or oxalate, add the required dilute H<sub>2</sub>SO<sub>4</sub>, amount and heat the flask to 60 °-70 ° C.

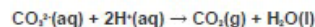
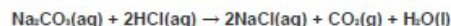
**Exp 2**

### EXERIMENT NO – 3 (D)

**Aim** - Determination of strength of a given solution of dilute Hydrochloric acid by titrating it against standard solution of Sodium Carbonate solution (M/10).

**Theory** - Hydrochloric acid solution may be titrated against sodium carbonate solution using methyl orange indicator. When weak base is titrated with a strong acid, solution will be slightly acidic at end point. If a weak acid is titrated with a strong base the solution is slightly basic because the salt formed will be hydrolysed to a certain extent.

The chemical reactions involved in this titration are given below.



In acid base titrations at the end point the amount of the acid becomes chemically equivalent to the amount of base present. In case of a strong acid and a strong base titration at the end point of solution the solution becomes neutral.

**Materials Required** – Burette, Pipette, Conical flask, Burette stand, Funnel, Measuring flask, Hydrochloric acid, Sodium carbonate, Methyl orange

### Procedure

#### (a) Preparation of standard solution of sodium carbonate

1. Molecular weight of sodium carbonate = 106
2. Amount of sodium carbonate required to prepare solution of 250ml = 1.325g
3. Dissolve 1.325g of sodium carbonate in distilled water and prepare the standard solution in 250ml of measuring flask by adding the required amount of water.

#### (b) Titration of HCl and sodium carbonate solution

1. Wash, rinse and fill the burette with M/10  $\text{Na}_2\text{CO}_3$  solution. Note the initial reading.
2. Take 10 $\text{cm}^3$  of HCl solution with the help of a pipette and transfer it into a clean washed titration flask.
3. Add 2 drops of methyl orange into the titration flask.
4. Add M/10 sodium carbonate solution to the titration flask till the colour changes to the light pink.
- 5.
6. Note the final reading and find out the volume of sodium carbonate solution used to neutralize HCl solution.
7. Repeat the experiment till you get concordant readings.

### Observations

Volume of HCl solution = 10 $\text{cm}^3$

Volume of sodium carbonate solution used = V  $\text{cm}^3$

S.No	Initial reading of the burette	Final reading of the burette	Volume of Sodium carbonate solution used.
1			
2			
3			

### Calculations

### Results and Discussion

The strength of hydrochloric acid solution is \_\_\_\_\_ g/L.

### Precautions-

1. While weighing do not spill the substance on balance pan.
2. Rotate the knob of balance gently.
3. Keep the weights in weights box at proper places after weighing
4. Wash the watch glass carefully so that even a single crystal is not left on the watch glass.
5. Bring the watch glass close to funnel while transferring weighed substance and transfer it gently. Wash it repeatedly with distilled water.
6. Wash the burette with water after titration is over.
7. Last few drops should be added using pipette to avoid extra addition of distilled water above the mark on the neck of the measuring cylinder.

**Exp3**



## EXERIMENT NO – 3 (B)

**Aim** - To determine the strength of a given solution of sodium hydroxide solution by titrating it against a standard solution of oxalic acid.

**Theory** - This estimation involves titration of a weak acid that is oxalic acid against a strong base sodium hydroxide and phenolphthalein is the indicator of choice. The reaction between oxalic acid and sodium hydroxide is  $(\text{COOH})_2 + 2\text{NaOH} \rightarrow (\text{COONa})_2 + 2\text{H}_2\text{O}$

Since sodium hydroxide is not a primary standard a standard solution of oxalic acid is prepared and used for standardisation of sodium hydroxide.

In acid-base titration at the end point the amount of acid becomes chemically equivalent to the amount of base present. In case of strong acid and strong base titration at the end point of solution the solution becomes neutral.

**Materials Required** – Burette, Pipette, Conical flask, Burette stand, Funnel, Stirrer, White glazed tile, Measuring flask, Oxalic acid (solid), Oxalic acid (as per needed), Sodium hydroxide solution (as per needed), Phenolphthalein indicator (as per needed)

**Apparatus Setup** – Directed by TEACHER

**Procedure**

### (a) Preparation of 0.1M Standard Oxalic Acid Solution

1. Take a watch glass, wash it with distilled water and dry it.
2. Weigh the exact amount of clean and dried watch glass and record its weight in the notebook.
3. Weigh 3.15 g of oxalic acid on the watch glass correctly and record this weight in the notebook.
4. Using a funnel, transfer oxalic acid softly and carefully from the watch glass into a clean and dry measuring flask.
5. Wash the watch glass with distilled water to move the particles that stick to it into the foam with the assistance of a wash bottle.
6. For this purpose, the volume of distilled water should not exceed 50 ml.
7. Wash the funnel several times with distilled water to move the sticking particles into the measuring flask using a wash bottle. Add water in tiny quantities while washing the funnel. The distilled water quantity used for this purpose should not exceed 50 mL.
8. Using a wash bottle, wash the funnel carefully with distilled water to pass the solution attached to the funnel into the measuring flask.
9. Turn the flask of measurement until the oxalic acid dissolves.
10. Using a wash bottle, thoroughly add enough distilled water to the measuring flask just below the etched mark on it.

11. Add the last few mL of distilled water drop into the measuring flask until the reduced meniscus level just touches the mark.
12. Put the stopper on the mouth of the flask and shake softly to make the entire solution uniform. Calculate it as a solution of oxalic acid M/10.

### (b) Titration of Sodium Hydroxide and Oxalic Acid Solution

1. Rinse the burette with the standard oxalic acid solution.
2. Take 10cm<sup>3</sup> of oxalic acid solution in a titration flask. Fill the burette with sodium hydroxide solution.
3. Remove the air gap if any, from the burette by running the solution forcefully from the burette nozzle and note the initial reading
4. Pipette out 20ml of NaOH solution in a conical flask. Add 2-3 drops of phenolphthalein indicator to it.
5. Titrate the base with oxalic acid solution until the pink colour disappears.
6. Repeat the titration till three concordant readings are obtained.

### Observations

1. Molarity of oxalic acid solution=M10
2. Molarity of sodium hydroxide solution = x
3. Volume of oxalic acid solution = 10cm<sup>3</sup>
4. Indicator = Phenolphthalein
5. End point = Light pink colour

S.No	Initial Reading of the Burette	Final Reading of the Burette	Volume of NaOH solution used	Concordant Reading
1	a cm <sup>3</sup>	b cm <sup>3</sup>	(b-a) cm <sup>3</sup>	V cm <sup>3</sup>
2	b cm <sup>3</sup>	c cm <sup>3</sup>	(c-b) cm <sup>3</sup>	V cm <sup>3</sup>
3	c cm <sup>3</sup>	d cm <sup>3</sup>	(d-c) cm <sup>3</sup>	V cm <sup>3</sup>

## Calculations

Mass of oxalic acid dissolved in 100ml of standard solution = y g

Strength of oxalic acid =  $y \times 10$  g/L

Normality (N) of standard oxalic acid =  $\frac{\text{Strength}}{\text{Eq. wt}} = \frac{y \times 10}{63.04} = N$

Normality ( $N_1$ ) of sodium hydroxide solution

$$N_1 \times V_1 = N \times V$$

Therefore,

$$N_1 = \frac{N \times V}{V_1}$$

Normality ( $N_2$ ) of given oxalic acid solution

$$N_2 \times V_2 = N_1 \times V_1$$

$$N_2 = \frac{N_1 \times V_1}{V_2}$$

Strength of given oxalic acid =  $N_2 \times 63.04$  g/L

## Results and Discussion

The strength of the given sodium hydroxide solution is \_\_\_\_\_ g/L.

## Precautions

1. Weighing of oxalic acid crystals need weights of 2g + 1g + 100mg + 50mg.
2. While weighing, do not spill the substance on the balance pan.
3. Rotate the knob of balance gently.
4. Keep the weights in the weights box at the proper places after weighing
5. Wash the watch glass carefully so that even a single crystal is not left on the watch glass.
6. Bring the watch glass close to the funnel while transferring weighed substance and transfer it gently. Wash it repeatedly with distilled water.
7. Wash the burette with water after titration is over.
8. The last few drops should be added using a pipette to avoid extra addition of distilled water above the mark on the neck of the measuring cylinder.

Exp 4

## MATHS

1. (i)  $i^{-435} = \dots\dots\dots ?$
2. The conjugate of the complex number  $\frac{1-i}{1+i} = \dots\dots\dots ?$
3. Write the formula of  $\cot(x-y) =$
4. Find the value of  $\sin 15^\circ$
5. Find the value of  $\tan \frac{13\pi}{12} ?$
6. evaluate  $:(1+i)^6 + (1-i)^3$
7. Find the domain and the range of the real function f defined by  $f(x) = \sqrt{x-1}$ .
8. find the modulus of  $2+3i ?$
9.  $\sin 2x + 2 \sin 4x + \sin 6x = 4 \cos^2 x \sin 4x$
10.  $\frac{(\sin 7x + \sin 5x) + (\sin 9x + \sin 3x)}{(\cos 7x + \cos 5x) + (\cos 9x + \cos 3x)} = \tan 6x$
11. Let  $A = \{1, 2, 3, 4, 5, 6\}$ ,  $B = \{2, 4, 6, 8\}$ . Find  $A - B$  and  $B - A$ .

12.) A class teacher Mamta Sharma of class XI write three sets A, B and C are such that  $A = \{1, 3, 5, 7, 9\}$ ,  $B = \{2, 4, 6, 8\}$  and  $C = \{2, 3, 5, 7, 11\}$ .

Answer the following questions which are based on above sets. (8 mark)

(i) Find  $A \cap B$  ?

(a)  $\{3, 5, 7\}$  (b)  $\phi$  (c)  $\{1, 5, 7\}$  (d)  $\{2, 5, 7\}$

(ii) Find  $A \cap C$

(a)  $\{3, 5, 7\}$  (b)  $\phi$  (c)  $\{1, 5, 7\}$  (d)  $\{3, 4, 7\}$

(iii) Which of the following is correct for two sets A and B to be disjoint?

(a)  $A \cap B = \phi$  (b)  $A \cap B \neq \phi$  (c)  $A \cup B = \phi$  (d)  $A \cup B \neq \phi$

(iv) Which of the following is correct for two sets A and C to be intersecting?

(a)  $A \cap C = \phi$  (b)  $A \cap C \neq \phi$  (c)  $A \cup C = \phi$  (d)  $A \cup C \neq \phi$

13) explain modulus function with graph? (4 mark)

14. Find the radian measures corresponding to the following degree measures (4 mark)

(i)  $25^\circ$  (ii)  $240^\circ$

## HINDI अंक 20 / ग्रेड्स

सभी प्रश्नों के उत्तर गृह कार्य नोट बुक में लिखना है।

निम्नलिखित प्रश्नों को अपनी अभ्यास पुस्तिका में लिखिए और याद कीजिए

1. पटकथा से आप क्या समझते हैं? पटकथा लेखन में किन बातों का ध्यान रखना चाहिए।
2. डायरी लेखन आप क्या समझते हैं? डायरी लेखन में किन बातों का ध्यान रखना चाहिए।
3. बहुराष्ट्रीय कंपनी में नौकरी के लिए आवेदन हेतु एक स्ववृत्त लिखिए।
4. जनसंचार के कौन कौन से माध्यम आज प्रचलित हैं? उदाहरण देकर बताईए।
5. संपादक का मुख्य कार्य क्या होता है? वह किस प्रकार से समाचारों को प्रभावित कर सकता है ?
6. मियां नसीरुद्दीन पाठ में नानबाई वाले का चित्रण किस प्रकार से किया गया है?
7. कबीर के अनुसार ईश्वर एक ही है। तर्क पूर्ण रूप से सिद्ध कीजिए।
8. गलता लोहा पाठ में एक जाति का व्यक्ति कैसे अपने जाति के बच्चे का शोषण करता है? उदाहरण देकर बताईए।
9. लार्ड कर्जन पर लेखक ने किन किन बातों का जिक्र करते हुए व्यंग्य किया है?
10. वो कौन से कारण हैं जिसके वजह से मोहन जैसा होशियार छात्र शहर में जा कर पढ़ने लिखने में कमजोर हो गया?
11. घर की याद कविता का मूल संवेदना अपने शब्दों में लिखिए
12. निम्नलिखित शीर्षकों में से किसी एक पर रचनात्मक लेख 200 शब्दों में लिखें ।

1. मेंटल हेल्थ आज की आवश्यकता

2. बेरोज़गारी एक महा समस्या

3. जलवायु परिवर्तन का नकारात्मक प्रभाव

# ENGLISH

Q: 1 Solve the Half Yearly Examination -2023 Papers of English and draft model answers with reference to the answer key shared (Shared in Class WhatsApp Group also -Paper of Shift-1 & Shift-2)

(Note- write answers of all the questions given in the paper, even both the questions given in alternatives)

Q: 3 Write following answers in 150- 200 words-

(A) Topics for debate- (write either in favour or against the motion)

(i) Democracy is the best form of government.

(ii) Girls face more peer pressure than boys.

(iii) On the Face of it & Memories of childhood.

(b) Topics for Speech writing-

(i) War and Terrorism.

(ii) E-waste management.

(iii) G-20- One Earth, One Family, One nation

Q: 4 Write book review in 700-800 words on any book of English literature (Stories/Novel/Drama) and prepare portfolio on it. Format mentioned below/shared in WhatsApp group.

# COMPUTER SCIENCE

1. State De Morgan's law.
2. Draw the truth table of XOR gate.
3. Draw a logic circuit of AND gate using NAND gate.
4. Differentiate between interpreter and compiler.
5. Explain the following:  
a) algorithm b) Pseudo Code c) Flowchart
6. draw a flowchart to determine the larger of two numbers, along with algorithm in simple English.
7. Draw a flow chart to calculate  $2^4$  using a loop approach, along with algorithm in simple English.
8. Write an algorithm and flowchart to find out the factorial of given number.

\*\*\*\*\*

# CLASS-XII

## PHYSICS

- (1) Complete Physics practicals in your Practical records along with activities and projects.
- (2) Prepare one AIL project on any chapter in Physics. Here you will make 10 pts.
- (3) Complete ncert exercise of Alternating current.

## HINDI

अंक 20 / ग्रेड्स

**सभी प्रश्नों के उत्तर गृह कार्य नोट बुक में लिखना है।**

कक्षा 12वीं शरद कालीन गृहकार्य

निम्नलिखित प्रश्नों को अपनी अभ्यास पुस्तिका में लिखिए और याद कीजिए।

- 1 दिन जल्दी जल्दी ढलता है कविता में कवि किस प्रकार से मनुष्यों और पक्षियों पर इसके प्रभाव की बात किया है?
  - 2 छोटा मेरा खेत कविता में कवि ने किस प्रकार से प्रकृति चित्रण को उकेरा है?
  - 3 पतंग कविता की यह पंक्ति कि खरगोश के आंख के जैसा लाल सवेरा हुआ का निहितार्थ क्या है?
  - 4 काले मेघा पानी दे में किस प्रकार से प्राचीन विश्वासों और आधुनिक वैज्ञानिकता में द्वंद्व दिखाया गया है? तर्कपूर्ण विश्लेषण करें।
  - 5 बादल राग कविता में कवि ने शोषकों के अत्याचार को समाप्त करने के लिए बादल से गुहार क्यों लगाया है?
  - 6 अप्रत्याशित लेखन कार्य क्या होता है?
  - 7 फीचर लेखन से आप क्या समझे हैं?
  - 8 रेडियो नाटक कैसे बनाए जाते हैं?
  - 9 कहानी का रेडियो नाट्य रूपांतर किस प्रकार से किया जाता है?
  - 10 फ्रीलांसिंग पत्रकारिता क्या होती है और परंपरागत पत्रकारों से किस प्रकार से अलग है?
- निम्नलिखित किस एक शीर्षक पर रचनात्मक लेखन कार्य कीजिए। शब्द सीमा 250 शब्द।
- 1 साइबर सिक्युरिटी आज के दौर में।
  - 2 स्वच्छता ही सेवा है
  - 3 जल संरक्षण कल का भविष्य

## BIOLOGY

1. Complete Investigatory project of Biology.
2. One CBQ question from each chapter (upto Biotechnology application Total 10) from students support material provided in WhatsApp group.
3. Practice the following diagram
  - i) T.S of another
  - ii) structure of ovule
  - iii) Embryo development in Dicot plant
  - iv) structure of Dicot and monocot seed.
  - v) HISTONE OCTAMER
  - Vi) Replication frok



## Sub: English

1. Read at least two short reports in any English newspaper. Cut and paste them in your note-book. On the basis of your reading of these reports, make notes on them in points only, using headings and sub-headings. Use recognizable abbreviations wherever necessary.
  
2. K.P.Mitraof 354, Shivaji Nagar , Hyderabad seeks full time job in a reputed software company. Draft a suitable advertisement to be published in the Situation Wanted column of a national daily giving necessary details. Invent other details yourself.
  
3. Write a formal reply to Mrs. and Mr. Chawla regretting your inability to attend the birthday function of their son due to a prior engagement.
  
4. During the Autumn break, a team of school students from Kendriya Vidyalaya, Khammam visited a village named RaghunathaPuram. The team was much worried on noticing the most pitiable insanitary conditions prevailing there. The team collected the villagers and its leader Mr. Yadav and gave a short speech on the necessity and benefits of remaining clean. Write the speech in about 200 words.
  
5. You are the President of your school Drama Club. Your club is organizing a play '**The Invisible Man**' to help the victims of floods in Kashmir. Design a poster informing the students about this play. Invent necessary details.
  
6. You are Pawan/ Parkhi, the librarian of the school library. You have been asked to place an order for children's story books for the age group 10 - 16. Write a letter to Modern Book Depot, NaiSarak, Delhi placing an order for the books. Invent the necessary details.
  
7. Solve any three (recent ) Board Examination question papers.
  
8. Read novel : Invisible Man By H G WELLS

## COMPUTER SCIENCE

1. Differentiate between text file and binary file.
2. Explain the following:  
a) read()    b) readline()    c) readlines()    d) write()    e) writelines()
3. Write a Python program to read the text file abc.txt and print only the lines that start with 's'
4. Write a function in Python to read lines from a text file book.txt, to find and display the occurrence of the word 'are'. For example, if the content of the file is:  
Books are referred to as a man's best friend. They are very beneficial for mankind and have helped it evolve. Books leave a deep impact on us and are responsible for uplifting our mood.  
The output should be 3.
5. Explain the given string manipulation methods with example.  
i) capitalize ()    ii) isalnum ()    iii) upper ()    iv) title ()    v) count()
6. WAP to count the words "to" and "the" present in a text file "poem.txt".

# Holiday Home Work

Class - XII

Subject - Math

- ① If  $y = \cos^{-1}x$ , Find  $\frac{d^2y}{dx^2}$  in terms of  $y$  alone
- ② Find the second order derivatives of the functions given.
- i)  $\log(\log x)$       ii)  $e^x \sin 5x$       iii)  $\sin(\log x)$
- ③ If  $y = (\tan^{-1}x)^2$ , show that  $(x^2+1)^2 y_2 + 2x(x^2+1)y_1 = 2$
- ④ If  $x = \sqrt{a \sin^{-1}t}$ ,  $y = \sqrt{a \cos^{-1}t}$ , show that  $\frac{dy}{dx} = -\frac{y}{x}$
- ⑤ If  $x = \frac{\sin^3 t}{\sqrt{\cos t}}$ ,  $y = \frac{\cos^3 t}{\sqrt{\cos t}}$   
then find  $\frac{dy}{dx}$
- ⑥ Find  $\frac{dy}{dx}$  if  $(\cos x)^y = (\cos y)^x$
- ⑦ Differentiate  $x^{\sin x} + (\sin x)^{\cos x}$  w.r.t  $x$
- ⑧ Solve system of Linear Equations using matrix method.
- $$\begin{aligned}x - y + 2z &= 7 \\ 3x + 4y - 5z &= -5 \\ 2x - y + 3z &= 12\end{aligned}$$

(9) Express the matrix  $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$  as the sum of a symmetric and a skew symmetric matrix.

(10) Find all points of discontinuity of  $f$ , where  $f$  is defined by

$$f(x) = \begin{cases} \frac{\sin x}{x}, & \text{if } x < 0 \\ x+1 & \text{if } x > 0 \end{cases}$$

(11) Find the values of  $a$  and  $b$  such that the function defined by

$$f(x) = \begin{cases} 5, & \text{if } x \leq 2 \\ ax+1, & \text{if } 2 < x < 10 \\ 21, & \text{if } x \geq 10 \end{cases}$$

(12) Prove that  $y = \frac{4 \sin \alpha}{2 + \cos \alpha} - \alpha$  is an increasing function of  $\alpha$  in  $[0, \pi/2]$

(13) Find the intervals in which the function  $f$  given by  $f(x) = (x+1)^3 (x-3)^3$  is strictly increasing or decreasing.



## Unit: Haloalkanes and Haloarenes

Time: 90 minutes

!7/10/2024

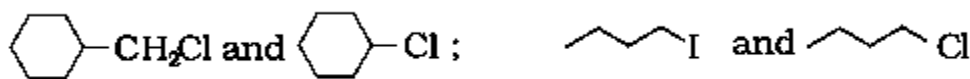
M.M. 40.

### Section –A(1marks)

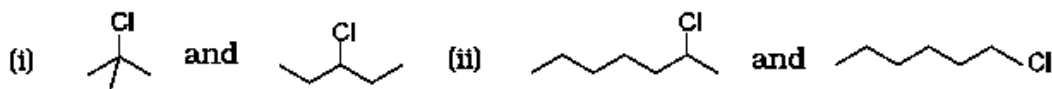
1. Name the  $\text{ClCH}_2\text{C}\equiv\text{CCH}_2\text{Br}$  according to IUPAC system
2. Write the structures of 1,4-Dibromobut-2-ene?

### Section –B(2marks)

3. Write the mechanism of the following reaction: nBuBr  
$$+\text{KCN} \xrightarrow{\text{EtOH}-\text{H}_2\text{O}} \text{nBuCN}$$
4. Predict all the alkenes that would be formed by dehydrohalogenation of the following halides with sodium ethoxide in ethanol and identify the major alkene: (i) 1-Bromo-1-methylcyclohexane (ii) 2-Chloro-2-methylbutane.
5. The treatment of alkyl chlorides with aqueous KOH leads to the formation of alcohols but in the presence of alcoholic KOH, alkenes are major products. Explain. giving reactions.
6. Haloalkanes react with KCN to form alkyl cyanides as main product while AgCN forms isocyanides as main product. Explain giving reactions.
7. (a) In the following pairs of halogen compounds, which would undergo  $\text{S}_{\text{N}}2$  reaction faster? (b)



- (b) In the following pairs of halogen compounds, which compound undergoes faster  $\text{S}_{\text{N}}1$  reaction?



### Section –C(3marks)

8. Explain the following : (a) Swarts Reaction (b) Finkelstein reaction
9. How the following conversions can be carried out? (a) Chloroethane to butane (b) Benzene to diphenyl (c) 2-Bromopropane to 1-bromopropane
10. Explain why
  - a) the dipole moment of chlorobenzene is lower than that of cyclohexyl chloride
  - b) alkyl halides, though polar, are immiscible with water
  - c) Grignard reagents should be prepared under anhydrous conditions.
11. Write the structure of the major organic product in each of the following reactions:
  - a)  $\text{CH}_3\text{CH}=\text{C}(\text{CH}_3)_2 + \text{HBr} \longrightarrow$
  - b)  $\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2 + \text{HBr} \xrightarrow{\text{peroxide}} \longrightarrow$
  - c)  $\text{CH}_3\text{CH}(\text{Br})\text{CH}_2\text{CH}_3 + \text{NaOH} \xrightarrow{\text{water}} \longrightarrow$
12. Give reasons: (a) Aryl halides are extremely less reactive towards Nucleophilic Substitution reactions. (b) P-Dichlorobenzene has higher m.p and solubility than those of o- and m- isomers.
13. Give reasons: (a) Allyl chloride is more reactive than n-propyl chloride towards nucleophilic substitution reaction. (b) p-nitro chlorobenzene undergoes nucleophilic substitution faster than chlorobenzene..

### Section –D(5marks)

14. Primary alkyl halide  $\text{C}_4\text{H}_9\text{Br}$  (a) reacted with alcoholic KOH to give compound (b). Compound (b) is reacted with HBr to give (c) which is an isomer of (a). When (a) is reacted with sodium metal it gives compound (d),  $\text{C}_8\text{H}_{18}$  which is different from the compound formed when n-butyl bromide is reacted with sodium. Give the structural formula of (a) and write the equations for all the reactions.
- 15 (a) How the following conversions can be carried out? (i) 2-Chlorobutane to 3, 4-dimethylhexane (ii) Ethanol to propanenitrile (b) What happens when (i) n-butyl chloride is treated with alcoholic KOH (ii) bromobenzene is treated with Mg in the presence of dry ether,