

**KENDRIYA VIDYALAYA CV RAMAN NAGAR CLASS 6 STD WINTER  
BREAK HOLIDAY HOMEWORK**

1. Draw a neat and well-labelled diagram showing the stages of the water cycle. (A3 sheet or chart paper)
2. Explain the different properties of material.
3. What is the normal temperature of the human body? Write the differences between clinical and laboratory thermometers
4. Explain the cooling effect with a diagram.

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MERRY CHRISTMAS TO ALL & WISH YOU ALL IN ADVANCE HAPPY NEW YEAR 2025  
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WINTER BREAK HOLIDAY HOMEWORK - SCIENCE( VII)

1. On an A4 sheet ,with the help of Ray Diagrams, show Reflection of Light and mention the laws of reflection. Also make a Kaleidoscope to understand laws of reflection and multiple reflections.
2. Write the Latin Names/Scientific Names of any 15 elements along with their Chemical Symbols/Formulae
3. Write about any 2 Largest Forests in the World including information such as : Their Name, Their Location in the World, Types of Flora and Fauna Found, Special Features .
4. Explain: - Water cycle with a neat colored diagram

### **Science Poster**

5. Using either acrylic or poster colours, on an sheet of white chart paper, create a poster of conservation of forests. It should be creative.

# KENDRIYA VIDYALAYA DRDO

## HOLIDAY HOMEWORK

2024-2025

CLASS: VIII

SUBJECT: SCIENCE

Q1. Make a Simple Electromagnet:

Wrap a copper wire around a nail and connect the ends to a battery. Test the magnetism of the nail by picking up small metal objects like paper clips.

Q2. Draw a flow chart to summarize the Human reproductive system.

Note: Take the following terms as key points to draw. . Pre-fertilization (formation of gamete)

a. Fertilization, (if fertilized or not) b. Post-fertilization.

Q3. Draft a notice by using sub points given below to display in your classroom to create Awareness regarding personal hygiene.

[ Personal hygiene- \* importance of personal hygiene, \* step to clean yourself, \* routine to be followed, etc.]

Q4. It is known that vibration is necessary for producing sound. But why is the sound produced by every vibrating body not heard by us? (Such as tremors during an earthquake) What is the name of those sounds which have a frequency more than 20000 Hz?

Q5. Suhaas out of curiosity added a small amount of sugar in distilled water. Can you predict whether the resulting solution will be a good or bad conductor of electricity? On what basis you have come to conclusion.

Q6. Akshara is a very keen observer and seen her mother using some special jewellery during family functions that are very shiny but not precious. Analyse the reason as to why electroplated jewellery are in demand?

Q7. Compare the advantages and disadvantages of electroplating?

Q8. You are provided with two metal clips, cardboard pieces, a glass container and a charged metal rod. Design an activity using the above items to make an electroscope.

Q9. Draw a well-labelled diagram of female reproductive organ.

Q10. What is the necessity of a balanced diet for adolescents?

Q11. We should avoid taking medicines/drugs unless prescribed by the doctor. Give reasons.

Q12. Explain why the voices of men, women, and children are different.

Q13. Is it safe for the electrician to do electrical repairs outdoors during heavy downpours? Explain.

Q14. Describe the functioning of a LED.

Q15. Write a short note on AIDS

**KENDRIYA VIDYALAYA DRDO**  
**HOLIDAY HOMEWORK (DEC-2045-25)**  
**CLASS-IX**  
**SUBJECT - SCIENCE**

1. Verification of the laws of reflection of sound.
2. Determination of the density of a solid (denser than water) by using a spring balance and a measuring cylinder.
3. **Establishing the relation between the loss in weight of a solid when fully immersed in**
  - a. (i) Tap water
  - b. (ii) Strongly salty water with the weight of water displaced by it by taking at least two different solids
4. Determination of the speed of a pulse propagated through a stretched string/slinky (helical spring).
5. Verification of the law of conservation of mass in a chemical reaction.

❖ **Question no 1 to 5 should be written in Practical Record File. (In continuation)**

**6. Revise the syllabus and prepare for PT-3 Exam**

**7. Solve the following modal test paper in your notebook.**

**Modal Test Paper**

**Time Allowed: 3 hours**

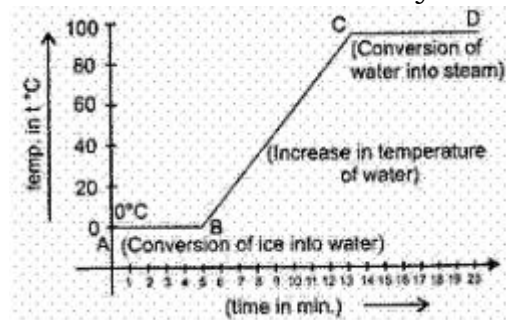
**Maximum Marks: 80**

**General Instructions:**

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. The inferences drawn by the temperature versus time graph are



- A. During the melting, temperature of substance does not change.
- B. Temperature rises after all amount of ice melts.
- C. At a specific temperature water starts boiling and temperature remains the same during the conversion of water into steam.

Which statement is correct regarding graph?[1]

- a) Only (C) is correct
- b) All (A), (B) and (C) are correct
- c) Only (B) is correct
- d) Only (A) is correct

2. The functional units of the Golgi apparatus are:[1]

- a) cisternae
- b) vacuoles
- c) vesicles
- d) cytoplasm

3. If a moving body comes to rest, then it's acceleration is: [1]

- a) Negative
- b) Positive
- c) Constant
- d) Zero

4. Bee pasturage refers to [1]

- a) the flowers available for nectar collection by the bees
- b) the trees where bees make the hives
- c) the hives where honeybees live and deposit honey
- d) the worker bees in a hive, who collect honey

5. Which of the following is not a function of the epidermis? [1]

- a) Transpiration
- b) Conduction of food
- c) Exchange of gases
- d) Protection

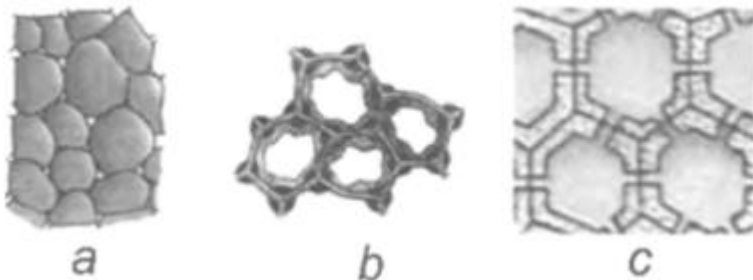
6. The energy currency of the cell is: [1]

- a) AMP
- b) GTP
- c) ATP
- d) ADP

7. Which of the following gives both direction and magnitude?

- A) Scalar
- b) Vector
- c) both Vector and scaler
- d) None of these

8. Observe the given figures of three different plant tissues and select the correct statement.[1]



- a) Cell walls of a, b and c bear uniform thickening of suberin.
- b) a provides mechanical strength to the plant while b and c serve as storage tissues.
- c) Cytoplasm is present in cells of a while it is absent in cells of b and c.
- d) a and b consist of living cells while c consists of dead cells.

9. In the experiment to establish the relation between loss in weight of an immersed solid with the weight of water displaced by it, the upthrust experience by the object in tap water and in salty water are  $U_w$  and  $U_s$  respectively, then:[1]

- a)  $U_w < U_s$
- b)  $U_w > U_s$
- c)  $U_w = U_s$
- d)  $U_s = 2U_w$

10. A train starts from a station P and travels some distance with a uniform acceleration  $a_1$ , then it goes with uniform retardation  $a_2$  for some more distance and come to rest at the station Q. If the distance between the stations P and Q is 4 km and the train takes 4 minutes to complete this journey, then  $1/a_1 + 1/a_2 =$  [1]  
a)  $4 \text{ m}^{-1}\text{S}^2$       b)  $2 \text{ m}^{-1} \text{ S}^2$     c)  $72 \text{ m}^{-1} \text{ S}^2$       d)  $7.2 \text{ m}^{-1} \text{ S}^2$

11. Which of the following are isotopes and which are isobars? [1]  
Argon (Ar), Deuterium (D), Calcium (Ca), Tritium (T), Protium (P)  
a) Ar, Ca are isotopes and D, T, P are isobars    b) D, P are isotopes  
c) Ar, Ca are isobars and D, T, P are isotopes  
d) Ar, P, T are isobars

12. Which is the most widely distributed connective tissue? [1]  
a) Blood      b) Lymph    c) Adipose connective tissue    d) Areolar connective tissue

13. Lysosomes arises from [1]  
a) Nucleus    b) Golgi apparatus      c) Endoplasmic reticulum      d) Mitochondria

14. Which one of the following will result in the formation of a mixture? [1]  
a) Breaking of ice cubes into small pieces  
b) Adding sodium metal to water  
c) Agitating a detergent with water in a washing machine  
d) Crushing of a marble tile into small particles

15. The particles of the colloidal solution are: [1]  
a) visible with a powerful microscope  
b) not visible with a powerful microscope  
c) visible with the naked eye  
d) visible with a simple microscope

16. Using fertilizers in farming is an example of [1]  
a) High cost production      b) Low cost production    c) Moderate cost production    d) No cost production

17. Assertion (A): If a particle is moving with constant velocity, then the average velocity for any time interval is equal to instantaneous velocity.  
Reason (R): If average velocity of a particle moving on a straight line is zero for a given time interval, then instantaneous velocity at some instant within this interval may be zero. [1]  
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.

18. Assertion (A): An iron almirah is a solid at room temperature.  
Reason (R): Water can flow and it assumes the shape of the containing vessel. [1]  
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.

19. Assertion (A): Parenchyma tissue consists of relatively unspecialized cells with thin cell walls and is usually loosely packed.

Reason (R): They do not have spaces between them. [1]

- 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.

20. Assertion (A): Cathode rays get deflected towards the positive plate of electric field.

Reason (R): Cathode rays consist of negatively charged particles known as electrons. [1]

- 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.

### **SECTION B**

21. A body moves along a circular path. How much work is done in doing so? Explain. [2]

OR

Why will a sheet of paper fall slower than one that is crumpled into a ball?

22. Give reasons for the following observation:

The smell of hot sizzling food reaches you several metres away, but to get the smell from cold food you have to go close. [2]

23. Why do we see light first and hear the sound later during thunderstorm? [2]

24. Why is ice at 273 K more effective in cooling than water at the same temperature? [2]

25. Using second law of motion, derive the relation between force and acceleration. A bullet of mass 10 g strikes a sand bag with a velocity of  $10^3 \text{ ms}^{-1}$  and gets embedded after travelling 5 cm. Calculate

- i. the resistive force exerted by the sand bag on the bullet.
- ii. the time taken by the bullet to come to rest. [2]

OR

When a force of 40 N is applied on a body it moves with an acceleration of  $5 \text{ ms}^{-2}$ . Calculate the mass of the body.

26. List any two distinguishing features between the models of an atom proposed by J.J. Thomson and Ernest Rutherford. [2]

### **SECTION C**

27. (i) Sound is produced when your school bell is struck with a hammer. Why?  
(ii) Draw a curve showing density or pressure variations with respect to distance for a disturbance produced by sound. Mark the position of compression and rarefaction on this curve. [3]

28. Compare the properties of electrons, protons and neutrons. [3]

29. Give reason for the following: [3]

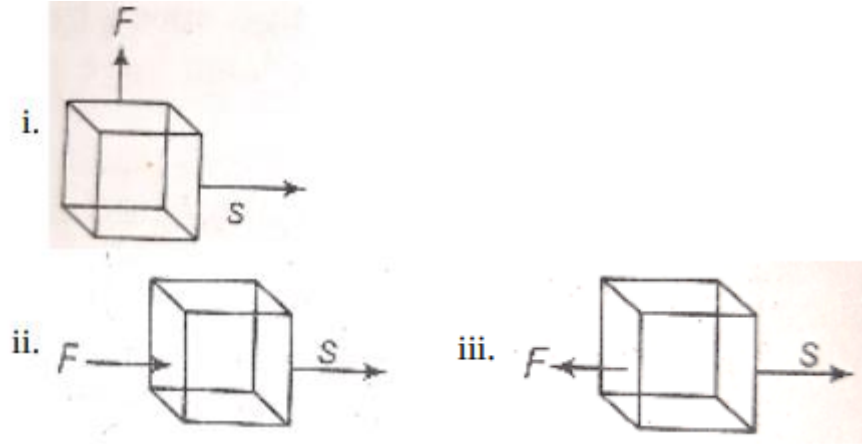
- i. Road accidents occurring due to high speeds are much worse than accidents due to low speeds of vehicles.
- ii. When a motorcar makes a sharp turn at a high-speed, passenger tends to get thrown to one side.



OR

Starting from a stationary position, Rahul paddles his bicycle to attain a velocity of  $6 \text{ ms}^{-1}$  in 30 s. Then he applies brakes such that the velocity of the bicycle comes down to  $4 \text{ ms}^{-1}$  in the next 5 s. Calculate the acceleration of the bicycle in both cases.

30. In each of the following, a force  $F$  is acting on an object of mass  $m$ . The direction of displacement is from West to east shown by the longer arrow. Observe the figure carefully and state whether the work done by the force is negative, positive or zero. [3]



31. i. Explain, why is it difficult to walk on sand?

ii. Why is the recoil of a heavy gun, on firing, not so strong as that of a light gun using the same cartridge?[3]

32. There would be no plant life if chloroplasts did not exist. Justify. [3]

OR

Who discovered cells, and how?

33. Differentiate between various types of muscular tissues. Draw appropriate diagrams. [3]

#### SECTION D

34. i. Suppose the mass of the earth somehow increases by 10% without any change in its size. What would happen to your weight?

ii. Suppose the radius of the earth becomes twice of its present radius without any change in its mass. What will happen to your weight? [5]

OR

i. Write the formula to find the magnitude of the gravitational force between the earth and an object on the earth's surface.

ii. Derive how does the value of gravitational force  $F$  between two objects change when

a. distance between them is reduced to half and

b. mass of an object is increased four times.

35. Write the main functions of at least ten cell components. [5]

OR

Differentiate between

i. Cell wall and cell membrane.

ii. Nuclear region of a bacterial cell and nuclear region of an animal cell.

iii. Prokaryotic cell & eukaryotic cell.

36. i. To make a saturated solution, 36 g of sodium chloride is dissolved in 100 g of water at 293K. Find its concentration at this temperature.

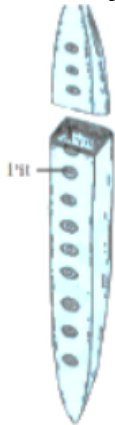
ii. Calculate the mass of glucose and mass of water required to make 200g of 25% solution of glucose. [5]

### SECTION E

**37. Read the following text carefully and answer the questions that follow:[4]**

The process of taking up a permanent shape, size, and a function is called differentiation. Differentiation leads to the development of various types of permanent tissues. A few layers of cells beneath the epidermis are generally simple permanent tissue. another type of permanent tissue is complex tissue. Complex tissues are made of more than one type of cells. All these cells coordinate to perform a common function. Xylem and phloem are examples of such complex tissues. Xylem consists of tracheids, vessels, xylem parenchyma and xylem fibres. Phloem is made up of five types of cells: sieve cells, sieve tubes, companion cells, phloem fibres and the phloem parenchyma.

i. Identify the type of cell in the given figure (1)



ii. Which part of desert plants reduces the loss of water? (1)

iii. What is the dead element present in the phloem? (2)

OR

Is cardiac muscles involuntary muscle? (2)

**38. Read the following text carefully and answer the questions that follow:[4]**

A bee colony consists of a single queen and a large number of worker bees. Drones are present in the early stages but do not occur later on. All the functions of the colony are performed by worker bees. They build the hive, collect food, feed themselves as well as the queen, store food and protect the hive. Genetically, a worker bee does not differ from a queen bee and can even become a laying worker bee, but in most species will produce only male (drone) offspring.

i. Why are drones absent in the mature bee colony? (1)

ii. When and how are drones produced? (1)

iii. What is bee bread? (2)

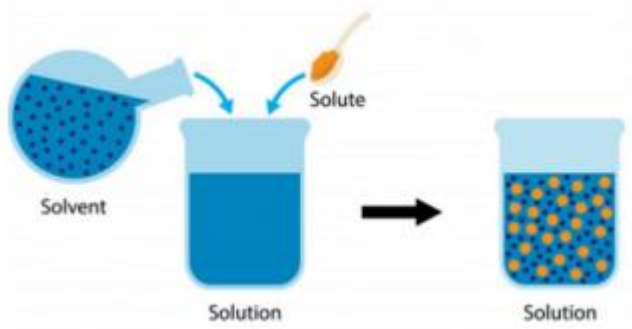
OR

Why worker bees are females but they do not lay eggs? (2)

**39. Read the following text carefully and answer the questions that follow:[4]**

Mixtures are constituted by more than one kind of pure form of matter. Sodium chloride is itself a pure substance matter. The solution is a homogeneous mixture of two or more substances. Lemonade, soda water etc. are all examples of solutions. Alloys are mixtures of two or more metals or a metal and a non-metal and cannot be separated into their components by physical methods. A solution has a solvent and a solute as its components. The component of the solution that dissolves the other component in it (usually the component present in a larger amount) is called the solvent. The component of the solution that is dissolved in the solvent (Usually present in lesser quantity) is called the solute.

SOLUTE+ SOLVENT= SOLUTION



i. In a water-sugar solution: Identify solute and solvent? (1)

ii. What is the size of the particles of a solution? (1)

iii. What is pure substance? (2)

OR

What do you mean by Alloy? (2)

**KV DRDO  
CLASS 10<sup>th</sup>  
SCIENCE  
WINTER BREAK HHW**

- 1. Revise the syllabus for PB2 Exam**
- 2. Solve the following two sample papers in your notebooks.**

- ❖ This question paper contains 10 printed pages.
- ❖ This question paper contains 39 questions.
- ❖ Write down the question number before attempting.
- ❖ An additional reading time of 15 minutes will be given.

***General Instructions***

- i. This question paper consists of 39 questions in 5 sections.*
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*
- iii. Section A consists of 20 objective type questions*

**SAMPLE PAPER  
Class-10 SET-1  
Science (086)**

***Time Allowed: 3 hours***

***Maximum Marks:80***

***Roll No.:***

***Date: --/--/----***

**SECTION – A**

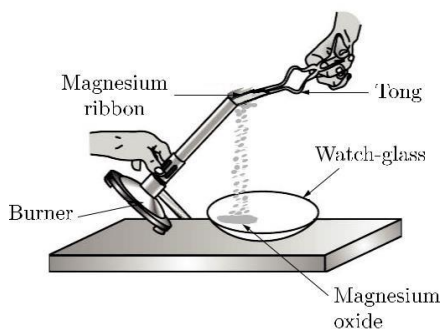
**20 x 1 = 20**

**Select and write one most appropriate option out of the four options given for each of the questions**

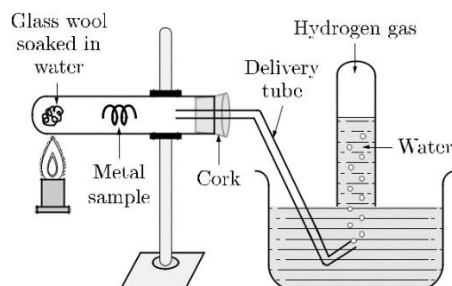
- Which of the following is/are correct for diluting acid?
  - Water by stirring.
  - Water to acid by stirring.
    - Only 1
    - Only 2
    - Both 1 and 2
    - Neither 1 nor
- Which of the following statements is correct about an aqueous solution of an acid and of base?
  - Higher the pH, stronger the acid
  - Higher the pH, weaker the acid

- iii) Lower the pH, stronger the base
- iv) Lower the pH, weaker the base
- a) 1 and 3
- b) 2 and 3
- c) 1 and
- d) d) 2 and 4

3. In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate?
- a) Lead sulphate (insoluble)
  - b) Lead acetate
  - c) Ammonium nitrate
  - d) Sulphate
4. Magnesium ribbon is rubbed with sand paper before making it to burn. The reason of rubbing the ribbon is to:



- (a) Remove moisture condensed over the surface of ribbon.
  - (b) Generate heat due to exothermic reaction.
  - (c) Remove magnesium oxide formed over the surface of magnesium.
  - (d) Mix silicon from sand paper (silicon dioxide) with magnesium for lowering ignition temperature of the ribbon.
5. Which one the following properties is not generally exhibited by ionic compound?
- (a) Solubility in water
  - (b) Electrical conductivity in solid state
  - (c) high melting and boiling point
  - (d) (d)Electrical conductivity in molten state.
6. Which of the following oxide(s) of iron would be obtained on prolonged reaction of iron with steam?



- a) FeO
- b) Fe<sub>2</sub> O<sub>3</sub>
- c) Fe<sub>3</sub> O<sub>4</sub>
- d) Fe<sub>2</sub> O<sub>3</sub> and Fe<sub>3</sub> O<sub>4</sub>

7. Mineral acids stronger acids than carboxylic acids because

- (i) Mineral acids are completely ionized.
- (ii) Carboxylic acids are completely ionized
- (iii) Mineral acids are partially ionized
- (iv) Carboxylic acids are partially ionized

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

8. When we touch the leaves of “touch-me-not” plant, they begin to fold up and droop. How does the plant communicate the information of touch?

- (a) The plant uses electrical signals to transfer information from the external environment to cells.
- (b) The plant uses electrical- chemical signals to transfer information from cell to cell.
- (c) The plant uses electrical- chemical signals to transfer information from tissue to specialized cells.
- (d) The plant uses electrical signals to transfer information from cell to specialized tissues.

9. After our nose senses a smell, which option shows the mechanism of the travelling of sense in our body?

- (a) Olfactory receptors → dendritic tip of a nerve cell → axon → nerve ending → release of signal dendritic tip of other nerve cell
- (b) Olfactory receptors → dendritic tip of a nerve cell → axon → cell body → release of signal → dendritic tip of other nerve cell
- (c) Gustatory receptors → dendritic tip of a nerve cell → cell body → axon → release of signal dendritic tip of other nerve cell
- (d) Gustatory receptors → dendritic tip of a nerve cell → axon → cell body → release of signal dendritic tip of other nerve cell

10. Which of the following is an example of genetic variation?

- (a) One person has a scar but his friend doesn't
- (b) One person is older than the other
- (c) Eats meat but her sister Geeta is a vegetarian
- (d) Two children have different eye color

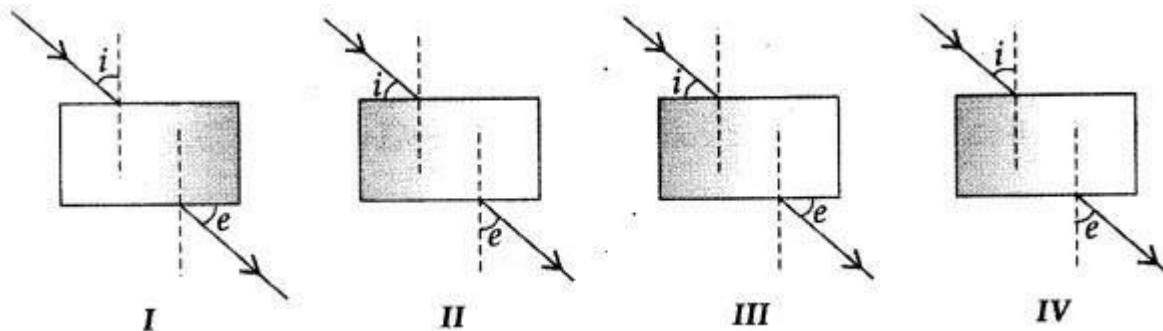
11. Two plants one with round green seeds (RRyy) and another with wrinkled yellow (rrYY) seeds produce F1 progeny that have round yellow (RrYy) seeds. When F1 plants are self-pollinated, the F2 progeny will have a new combination of characters. Choose the new combinations from the following:

- (i) Round, yellow
- (ii) Round, green
- (iii) Wrinkled, Yellow
- (iv) Wrinkled, green
- (a) (i) and (ii)
- (b) (i) and (iv)
- (c) (ii) and (iii)
- (d) (i) and (iii)

12. Which of the following is a contraceptive?

- A) Copper T
- B) Condom
- C) Diaphragm
- D) All of these

13. A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure:



glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure:

- a) I
- b) II
- c) III
- d) IV

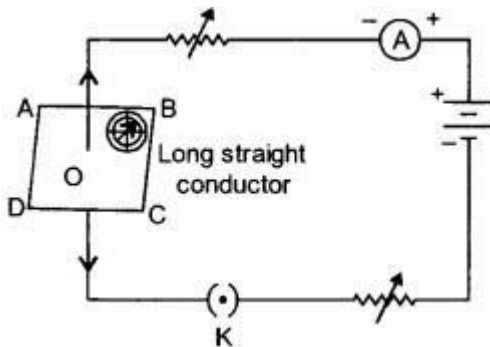
14. At a particular minimum value of angle of deviation, the refracted ray becomes:

- a) Parallel to base of prism
- b) Perpendicular to base of prism
- c) Inclined at 45degrees w.r.t base of prism
- d) None

15. The resistance of hot filament of the bulb is about 10 times the cold resistance. What will be the resistance of 100 W-220 V lamp, when not in use?

- a)  $48 \Omega$
- b)  $400 \Omega$
- c)  $484 \Omega$
- d)  $48.4 \Omega$

16. If the key in the given arrangement is taken out (the circuit is made open) and magnetic field lines are drawn over the horizontal plane ABCD, the lines are



- a) Concentric circles
- b) Elliptical in shape
- c) straight lines parallel to each other
- d) Concentric circles near the point O but of elliptical shapes as we go away from it

**Qn. no 17 to 20 Reason and assertion**

The following questions consist of two statements – Assertion (A) and Reason ®. Answer these questions selecting the appropriate option given below:

- i. Both A and R are true and R is the correct explanation of A.
- ii. Both A and R are true but R is not the correct explanation of A.
- iii. A is true but R is false.
- iv. A is false but R is true.

17. Assertion: photosynthesis is considered as an endothermic reaction

Reason: energy gets released in the process of photosynthesis

18. Assertion(A): The offspring produced by sexual reproduction is likely to adjust better in environmental fluctuation.

Reason ®: During the fusion of gametes there is mixing of genetic material from two parents.

19. Assertion: females, the egg is carried from the ovary to the womb through a thin oviduct or fallopian tube.

Reason ®: The uterus opens into the vagina through the cervix.



20. Assertion (A): When the resistances are connected between the same two points, they are said to be connected in parallel.

Reason (R): In case the total resistance is to be decreased, then the individual resistances are connected in parallel.

### SECTION – B

6 x 2 = 12

**Q. no. 21 to 26 are very short answer question**

21. What is meant by galvanisation? Why is it done?

**OR**

Why do ionic compounds conduct electricity in molten state?

22. A. Give the basic features of the mechanism of inheritance.

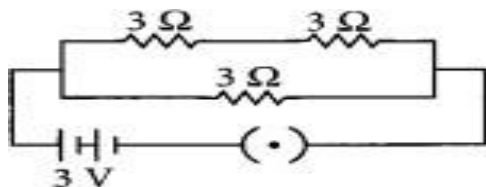
B. How can pregnancy be prevented surgically?

23. Which compounds are responsible for the depletion of ozone layer?

24. What are the various steps in a food chain called?

25. What are enzymes? Name any one enzyme of the digestive system and write its function.

26. Three resistors of  $3\ \Omega$  each are connected to a battery of  $3\ \text{V}$  as shown. Calculate the current drawn from the battery.



**OR**

Draw a labelled diagram to explain the formation of a rainbow in the sky.

### SECTION C

**Qn. No 27 to 33 (Short answer)**

7 x 3 = 21

27. An element A react with water to form a compound B which is used in white washing. The compound B on heating forms an oxide which on treatment with water gives back B. identify A, B and C and give reason involved?

28. What is meant by skeletal type chemical equation? What does it present? using the equation for electrolytic decomposition of water, differentiate between a skeletal equation and balanced equation?

29. Can you justify the statement that “Human males are responsible for determining the sex of the baby and not females”?

**OR**

- a. Define Glycolysis.
  - b. What is saliva? State its role in the digestion of food.
30. a) With the help of labelled ray diagram show the path followed by a narrow beam of monochromatic light when it passes through a glass prism.
- b) What would happen if this beam is replaced by a narrow beam of white light?
31. Wire has a resistance of  $16 \Omega$ . It is melted and drawn into a wire of half its original length. Calculate the resistance of the new wire. What is the percentage change in its resistance?
32. Give reason for the following
- (i) There is either a convergence or a divergence of magnetic field lines near the ends of a current carrying straight solenoid.
  - (ii) The current carrying solenoid when suspended freely rests along a particular direction.

**OR**

- a) State three factors on which the strength of magnetic field produced by a current carrying solenoid depends.
  - b) Draw circuit diagram of a solenoid to prepare an electromagnet.
33. Distinguish between biodegradable and non-biodegradable wastes?

## **SECTION – D**

**Long answer questions**

**3 x 5 = 15**

34) Write the next homologue of each of the following:

- a) (i)  $C_2H_4$
- (ii)  $C_4H_6$

b) What is meant by isomers? Draw the structures of two isomers of butane,  $C_4H_{10}$ . Explain why we cannot have isomers of first three members of alkane series.

c) State two properties of carbon which lead to huge number of carbon compounds we see around us.

**OR**

Answer the following questions:

- (a) Describe a chemical test to distinguish between ethanol and ethanoic acid.
- (b) Give reason for the following:
  - (i) Ethanol is used in the preparation of tincture iodine.
  - (ii) acid is used in the preservation of pickles.

35. Write the main functions of the following:

- (a) Sensory neuron
- (b) Cranium

- (c) vertebral column
- (d) Motor neuron

**OR**

a) State the role played by the following in the process of digestion:

- (i) Enzyme trypsin
- (ii) Enzyme lipase-

b) List two functions of finger-like projections present in the small intestine

36. The rainbow is a natural spectrum appearing in the sky after a rain Shower.

- a. Is it correct to say that a rainbow is always formed in a direction opposite to sun? (1m)
- b. Can it be seen on a sunny day? (1m)
- c. Arrange the sequence in correct sequential order Refraction, Internal Reflection, Refraction & Dispersion. (1m)
- d. Explain why the planets do not twinkle. (2m)

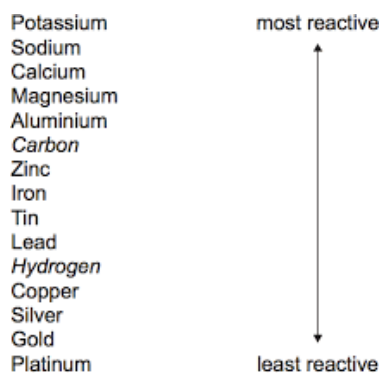
**SECTION – E**

**QN. NO.37 to 39 case study questions**

**3 x 4 = 12**

37. Activity series

Relative reactivities of metals



1. What happens when iron nail is added to copper sulphate solution? What is the colour change?
2. Identify the metal which reacts with very dilute nitric acid to evolve hydrogen gas. Name one more metal not given in the above series which reacts in the same way with dilute nitric acid.
3. Name one important ore of copper with its chemical formula.
4. a) Which method is used to extract sodium from molten sodium chloride

**OR**

b) Which metal is used in the galvanization of iron?

38. An ecosystem may be defined as a structural and functional unit of the biosphere comprising living organisms and their non-living environment which interact by means of food chains and biogeochemical cycles resulting in energy flow, biotic diversity, and material cycling to form a stable, self-supporting system.

1. The two basic processes involved in an ecosystem are:
  - a) Cycling of materials and food chains
  - b) Energy flow and self-sustainability
  - c) carbon cycle and biotic diversity
  - d) Cycling of materials and flow of energy
2. Which among the following is not an artificial ecosystem?
  - a) Orchard
  - b) Lake
  - c) Aquarium
  - d) Cropland
3. The role of fungi and bacteria in an ecosystem is to:
  - a) Increase the supply of nutrients
  - b) Increase the supply of energy
  - c) release nutrients from dead organic matter
  - d) Increase the amount of carbon dioxide in the atmosphere
4. Which of the following holds true for an ecosystem?
  - a) Animals can live without plants.
  - b) Plants can live without animals.
  - c) Animals can survive for long without plants.
  - d) Plants can survive for long without animals.

39. An insulated copper wire wound on a cylindrical cardboard tube such that its length is greater than its diameter is called a solenoid. When an electric current is passed through the solenoid, it produces a magnetic field around it. The magnetic field produced by a current-carrying solenoid is similar to the magnetic field produced by a bar magnet. The field lines inside the solenoid are in the form of parallel straight lines. The strong magnetic field produced inside a current-carrying solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the solenoid. The strength of magnetic field produced by a current carrying solenoid is directly proportional to the number of turns and strength of current in the solenoid.

- (i) The strength of magnetic field inside a long current -carrying straight solenoid is
  - (a) More at the ends than at the centre
  - (b) Minimum in the middle
  - (c) same at all points
  - (d) Found to increase from one end to the other.
- (ii) The north-south polarities of an electromagnet can be found easily by using
  - (a) Fleming's right-hand rule

- (b) Fleming's left-hand rule
- (c) Clock face rule
- (d) Left-hand thumb rule

(iii) For a current in a long straight solenoid N- and S-poles are created at the two ends.

Among the following statements, the incorrect statement is

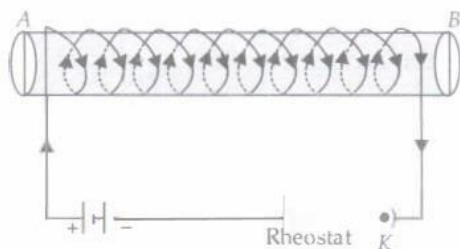
- (a) The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid.
- (b) The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil.
- (c) The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet.
- (d) The N- and S-poles exchange position when the direction of current through the solenoid is reversed.

(iv) long solenoid carrying a current produces a magnetic field  $B$  along its axis. If the current is double and the number of turns per cm is halved, then new value of magnetic field is

- a)  $B$     (b)  $2B$     (c)  $4B$     (d)  $B/2$

**OR**

(iv) A soft iron bar is enclosed by a coil of insulated copper wire as shown in figure. When the plug



of the key is closed, the face B of the iron bar marked as

- a) N-pole
- b) S-pole
- c) N-pole if current is large
- d) S-pole if current is small

**Class-10 (set 2)**

**Science (086)**

**Time Allowed: 3 hours**

**Maximum Marks:80**

**Roll No.:**

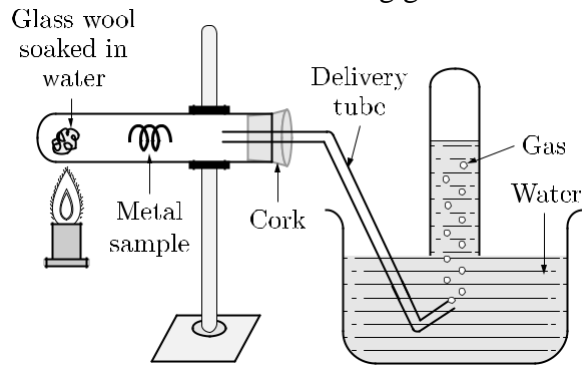
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**SECTION – A**

**1 X 20 = 20**

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1. In the following practical set which of the following gas is emitted?



- (a) Hydrogen
- (b) Carbon monoxide
- (c) Carbon dioxide
- (d) Nitrogen

2. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of-

- (a) a combination reaction
  - (b) a displacement reaction
  - (c) a decomposition reaction
  - (d) a double decomposition reaction
3. Consider the following table:

Substance	pH
Lemon	2.3
Battery acid	$x$
Sea water	8.5
Apple	3.1

The value of  $x$  in above table is:

- (a) 0
  - (b) 1.3
  - (c) 2.5
  - (d) 1.9
4. The soap molecule has a
- (a) hydrophilic head and a hydrophobic tail
  - (b) hydrophobic head and a hydrophilic tail
  - (c) hydrophobic head and a hydrophobic tail
  - (d) hydrophilic head and a hydrophilic tail
5. Which of the following statements about the reaction given below are incorrect?
- $$2\text{PbO}(s) + \text{C}(s) \rightarrow 2\text{Pb}(s) + \text{CO}_2(g)$$
- 1. Lead is getting reduced.
  - 2. Carbon dioxide is getting oxidised.
  - 3. Carbon is getting oxidised.
  - 4. Lead oxide is getting reduced.
- (a) 1 and 2
  - (b) 3 and 4
  - (c) 1 and 3
  - (d) 2 and 4
6. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be
- (a) Calcium
  - (b) Carbon
  - (c) Silicon
  - (d) iron
7. Identify the basic salt from the following salt?
- (a)  $\text{Na}_2\text{CO}_3$
  - (b)  $\text{NH}_4\text{Cl}$
  - (c)  $\text{NaNO}$
  - (d)  $\text{KCl}$

8. In peas, a pure tall (TT) is crossed with a pure short plant(tt). The ratio of pure tall plants to pure short plants in F2 generation is:



- (a) 1:3
- (b) 3:1
- (c) 1:1
- (d) 2:1

9. Which of the following statements is correct about receptors?

- (a) Gustatory receptors detect taste while olfactory receptors detect smell
- (b) Both gustatory and olfactory receptors detect smell
- (c) Auditory receptors detect smell and olfactory receptors detect taste
- (d) Olfactory receptors detect taste and gustatory receptors smell

10. The characteristic processes observed in anaerobic respiration are

- i) presence of oxygen
- ii) release of carbon dioxide
- iii) release of energy
- iv) release of lactic acid

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

11. Which of the following is an example of genetic variation?

- (a) One person has a scar but his friend doesn't
- (b) One person is older than the other
- (c) Reeta eats meat but her sister Geeta is a vegetarian
- (d) Two children have different eye colour

12. The manufacturing of Chlorofluorocarbons free refrigerators is mandatory throughout the world. How does this help prevent ozone depletion?

- a) This will help convert oxygen molecules into ozone.
- b) This will help convert the CFCs into ozone molecules.
- c) This will reduce the production of CFC from oxygen molecules.
- d) This will reduce the release of CFCs that reacts with ozone molecules

13. A person cannot see distinctly objects kept beyond 2 m. This defect can be corrected by using a lens of power:

- (a) + 0.5 D
- (b) - 0.5 D
- (c) + 0.2 D
- (d) - 0.2 D

14. If we place the magnetic compass near the north pole of the magnet, which pole of the needle will point towards it?

- (a) North pole
- (b) South pole
- (c) Keep deflecting
- (d) None of these

15. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then in parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be:

- (a) 1 : 2
- (b) 2 : 1
- (c) 1 : 4
- (d) 4 : 1

16. In an experiment to trace the path of a ray of light through a triangular glass prism, a student would observe that the emergent ray:

- (a) is parallel to the incident ray.

(b) is along the same direction of incident ray.

- (c) gets deviated and bends towards the thinner part of the prism.  
(d) gets deviated and bends towards the thicker part (base) of the prism.

**Q. no 17 to 20 are Assertion - Reasoning based questions.**

**These consist of two statements – Assertion (A) and Reason (R). 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 and R is not the correct explanation of A  
(c) A is true but R is false  
(d) A is False but R is true

17. Assertion (A): An equation is the shorthand representation of a chemical reaction.

Reason (R): A chemical reaction is a process in which a chemical substance is transformed into another chemical substance

18. Assertion(A): A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny.

Reason (R): One plant was heterozygous tall and the other was dwarf.

19. Assertion(A): The effect of Auxin hormone on the growth of root is exactly opposite to that on a stem.

Reason(R): Auxin hormone increase the rate of growth in root and decrease rate of growth in stem.

20. Assertion: In a series circuit, the current is constant throughout the electric circuit.

Reason: All electric devices do not need equal currents to operate properly.

#### **SECTION – B**

Q. no. 21 to 26 are very short answer questions

**6 X 2 = 12**

21. A metal A, which is used in thermit process, when heated with oxygen gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reactions of oxide B with HCl and NaOH.

#### **OR**

Aluminium occurs in combined state whereas gold is found in free state. Why?

22. (a) Name the various factors which affect the rate of photosynthesis.

(b) what are peristaltic movements?

23. Name the various cells through which water moves upward to reach the leaves.

24. In which chamber of heart is oxygenated and deoxygenated blood found?

25. Genes and chromosomes have similar behaviour. Justify this Statement.

26. Differentiate lens and mirror

#### **OR**

Differentiate reflection and refraction of light

#### **SECTION - C**

Q.no. 27 to 33 are short answer questions

**7 X 3 = 21**

27. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, the colour of the solution fades and a black precipitate is obtained.

a) Name the type of reaction mentioned above.

b) Why does the colour of the solution fade away?

c) Write the chemical name of the black precipitate formed.

28. (a) Arrange the metals Zn, Mg, Al, Cu and Fe in decreasing order of reactivity.

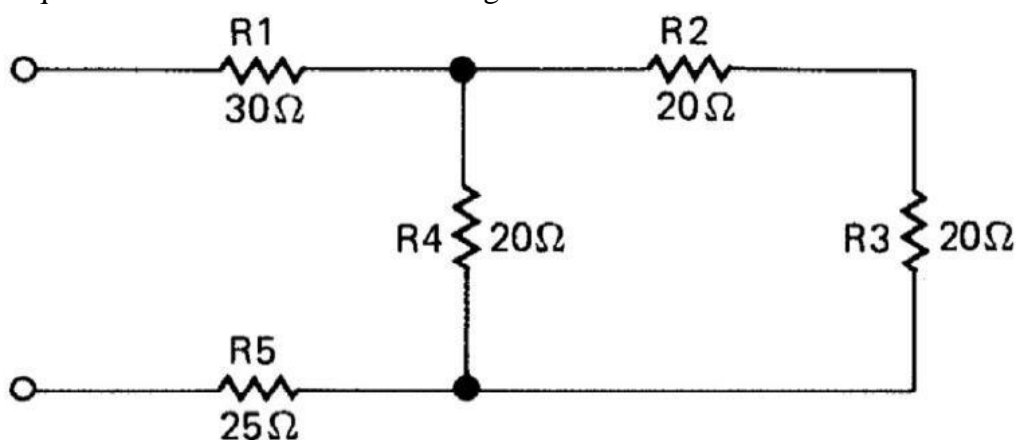
(b) What would you observe when you put

(i) Some zinc pieces into blue copper sulphate solution?

(ii) Some copper pieces into green ferrous sulphate solution.

(c) Name a metal which combines with hydrogen gas. Name the compound formed.

29. A. Draw the longitudinal section of flower and mention the parts.  
 B. Explain process of digestion in amoeba with diagram  
 or  
 C. List the two types of reproduction. Which one of the two is responsible for bringing in more variations in its progeny and how?
30. What is fragmentation in organisms? Name a multicellular organism which reproduces by this method.
31. i) Name the mirror that can give an erect and enlarged image of an object and write its uses.  
 ii) An object is placed at 20cm in front of a concave mirror of focal length 10cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image?
32. A 14-year-old student is not able to see clearly the questions written on the blackboard placed at a distance of 5m from him.  
 a) Name the defect of vision he is suffering from.  
 b) With the help of labelled ray diagrams show how this defect can be corrected  
 c) Name the type of lens used to correct this defect.
33. Find the equivalent resistance of the following circuit:



**SECTION - D**

Q.no. 34 to 36 are long answer questions.

**3 X 5 = 15**

34. The formula of four organic compounds are given below:

A            B            C            D



- Which one of these compounds A, B, C or D is a saturated hydrocarbon?
- Identify the organic acid and give its structural formula.
- Which of the above compounds when heated at 443K in the presence of concentrated  $H_2SO_4$  forms ethene as the major product? What is the role played by concentrated  $H_2SO_4$  in this reaction? Also write the chemical equation involved.
- Give a chemical equation when B and C react with each other in presence of concentrated  $H_2SO_4$ . Name the major product formed and mention one of its important uses.

**OR**

- Carry out the following conversions giving complete conditions for the reaction to take place in each case:
  - Ethanoic acid from Ethanol
  - Ethane from Ethene
  - Ester from Ethanoic acid and ethanol
- Detergents are preferred over soaps. Why? (Give one reason)

35. A.(a) How does Mendel's experiment show that traits may be dominant or recessive?  
 (b) How traits get expressed from parents to offsprings? Explain with an example.

**OR**

B.(a) What is ovulation?

(b) How is it beneficial for the foetus to have a circulatory system that is not directly attached to the circulatory system of mother?

(c) What changes occur at the time of birth?

36. i) State one main difference between A.C and D.C. Why A.C is preferred over D.C for long range transmission of electric power? Name one source each of D.C and A.C

ii) When does an electric short circuit occur?

**SECTION - E**

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts. 3 X 4 = 12

37. A metal carbonate  $X$  on heating with an acid gives a gas which when passed through a solution  $Y$  gives the carbonate back. On the other hand, a gas  $G$  that is obtained at anode during electrolysis of brine is passed on dry  $Y$ , it gives a compound  $Z$ , used for disinfecting drinking water.

(i) Identify  $X$ ,  $Y$ ,  $G$  and  $Z$ .

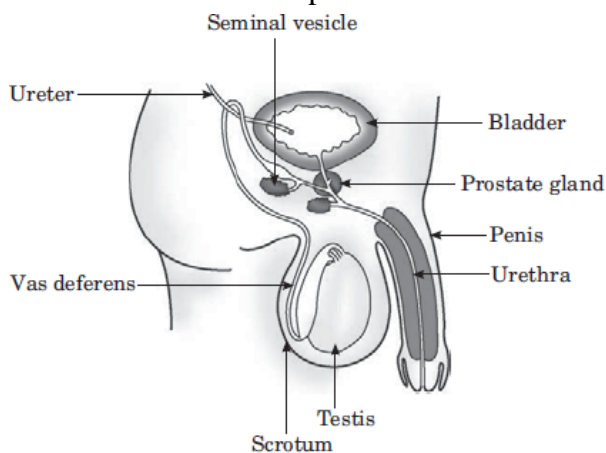
(ii) What is the nature of the gas evolved when  $X$  is heated?

(iii) Write the reaction involved in the formation of  $G$ ?

**OR**

(iv) Write the reaction involved when  $G$  reacts with  $Y$ .

38. The male reproductive system consists of portions which produce the germ-cells and other portions that deliver the germ-cells to the site of fertilisation. Testes are located outside the abdominal cavity in scrotum because sperm formation requires a lower temperature than normal body temperature. It also has a role of secretion of male sex hormone which brings changes in appearance seen in boys at the time of puberty. Vas deferens unites with a tube coming from urinary bladder. Urethra is a common passage for sperms and urine. Prostate gland and seminal vesicles add their secretions so that sperms are now in fluid.



**Human-male reproductive system**

i) Name the sex hormone associated with males.

(a) Testosterone

(b) Progesterone

(c) Oestrogen

(d) None of these

ii) Which of the following statements is incorrect?

(a) Sperms are present in a fluid

(b) Fluid provides nutrition to sperms

(c) Fluid makes easier transportation of sperms

(d) Fluid helps to bind the sperms together

- iii) Testes are located outside the abdominal cavity in scrotum because
- sperms formation requires higher temperature than body temperature
  - sperms formation requires lower temperature than body temperature
  - it is easier to transport sperms from the scrotum
  - None of these

(iv) Which of the following statement is incorrect?

- Sperms and urine has a common passage from urethra.
- Sperms have long tail that helps them to move forward.
- Sperms contain genetic material.
- Sperms formation requires 1–3°C higher temperature than normal body temperature.

39. White light is a mixture of seven colours is violet, indigo, blue, green, yellow, orange and red. Every colour has its own characteristic wavelength. Different colours with their wavelengths are given below in the table.

S.No	Colour	Wavelength
1	Red	7900 Å
2	Orange	6000 Å
3	Yellow	5800 Å
4	Green	5400 Å
5	Blue	4800 Å
6	Indigo	4500 Å
7	Violet	4000 Å

The phenomenon of splitting white light into seven colours when it passes through a glass prism is called dispersion of white light.

- Name the phenomenon occurring in nature due to dispersion of light.
- Light of two colours A and B pass through a glass prism. 'A' deviate more than B from its path of incidence. Which colour has a higher speed in the prism?
- Choose the correct option.
  - Each colour of light travels with same speeds in a given medium.
  - Each colour of light travels with different speeds in a given medium.
  - Only red colour of light travels with fast speed in a given medium.
  - All of the above.
- The speed of light depends upon:
  - frequency
  - wavelength
  - density
  - none of the above

\_\_\_\_ The End \_\_\_\_\_