Navi

ITL PUBLIC SCHOOL
PERIODIC TEST 2 (2025-26)

Date: 18.09.25

Class: X – B

SCIENCE (086) SET B

Time: 3 hrs.

M.M: 80

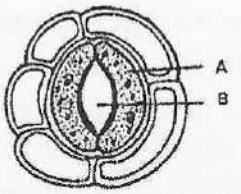
General Instructions:

(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

(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.

SECTION - A

1 Identify parts 'A' and 'B' in the given diagram 1



(a) A= guard cell ,B= Stomatal pore
(b) A= Epidermal cell ,B= Stomatal pore
(c) A= Epidermal cell ,B= guard cell
(d) A= Stomatal Pore ,B= guard cell

2 When a few drops of iodine solution are added to rice water, the solution turns blue- black in color. This indicates that rice water contains: 1

(a) fats (b) complex proteins (c) starch (d) simple proteins

3 Which is the correct sequence of body parts in the human alimentary canal? 1

a) Mouth → stomach → small intestine → large intestine → oesophagus
b) Mouth → oesophagus → stomach → small intestine → large intestine
c) Mouth → stomach → oesophagus → small intestine → large intestine
d) Mouth → oesophagus → stomach → large intestine → small intestine

4 The hind brain is made up of three parts Identify the part that controls the involuntary activities of the body - 1

(a) Pons (b) Medulla oblongata (c) Cerebellum (d) Cerebrum

5 The main function of abscisic acid in plants is 1

(a) promote cell division (b) inhibit growth
(c) breaking seed dormancy (d) promote seed germination

6 Water and minerals in plants are transported by- 1

(a) Xylem parenchyma (b) Xylem vessels c) Phloem parenchyma (d) Sieve tubes of phloem

7 A diabetic patient suffers from deficiency of which hormone? 1

(a) Thyroxine (b) Testosterone (c) Oestrogen (d) Insulin

The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

8 **Assertion(A)**: Pituitary gland is the master gland of the body. 1

Reason(R): Pituitary gland regulates the growth and development of the body through growth Hormone.

9 **Assertion (A)** : Pancreatic juice digests starch, proteins and fats. 1

Reason (A): Pancreatic juice contains digestive enzymes like amylase, trypsin and lipase

10 How is the Brain protected in human body? Discuss two ways 2

11 Justify the following: 2

a) Fish heart is called as venous heart.

b) Lungs always have numerous alveoli.

OR

Explain how Feedback Control mechanism works to maintain the hormone levels in the body.

12 Name the correct substrates for the following enzymes - 2

(a) Trypsin (b) Amylase (c) Pepsin (d) Lipase

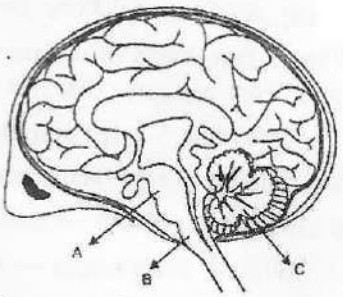
13 Name the hormone 'X' involved in movement of shoot tip towards sunlight .Explain with the help of a diagram the role of hormone 'X' in this type of plant movement. 3

14 Observe the given diagram and answer the questions that follow: 3

(a) Label the parts A,B,C

(b) Write the collective name given to parts A,B,C

(c) What is the function of part C ?



15 **Read the following paragraph and answer the questions based upon related concepts-** 4

The kidneys eliminate the body's metabolic wastes. However, the kidneys may fail eventually due to some underlying illness or senility. In these cases, dialysis means the difference between life and death. Dialysis functions on the filtration of fluid through a semipermeable membrane and concept of the dissipation of solutes. Diffusion is a characteristic of materials in water that has the tendency to flow against a concentration gradient.

a) What are the two main steps of filtration of blood in human kidneys?

b) How is the process of dialysis different than that of human kidneys ?

c) Ravi's brother is suffering from chronic kidney disease. He has to undergo dialysis every week. Doctors have suggested a kidney transplant to him. Who could be the preferred donor –his grandmother or Ravi. Give reason.

OR

Name any 2 other excretory organs in human beings apart from kidneys and their excretory products.

16 (a) How is the movement of sensitive plant (Touch me not) different from the movement of shoot towards light? (give 2 points) 5

(b) Draw a neat diagram of Reflex Action and label the parts-sensory neuron ,motor neuron and spinal cord

OR

(a) Name the types of tropic movement shown in the given fig A and B

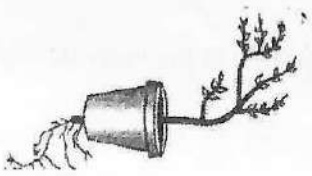


Fig A

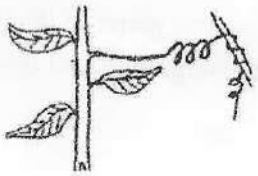


Fig B

(b) Draw a neat diagram of a neuron and label the part- Cyton , Axon and dendrites

SECTION B

17 The following reaction is used for the preparation of oxygen gas in the laboratory 1

$$2KClO_3(s) \xrightarrow[catalyst]{heat} 2KCl(s) + 3O_2(g)$$

Which of the following statement(s) is(are) correct about the reaction?

a) It is a decomposition reaction and endothermic in nature

b) It is a combination reaction

c) It is a decomposition reaction and accompanied by release of heat

d) It is a photochemical decomposition reaction and exothermic in nature

18 10mL of a solution of NaOH is found to be completely neutralized by 8mL of a given solution of HCl. If we take 20mL of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralize it will be: 1

a) 12mL b) 8mL c) 16mL d) 4mL

19 Lead nitrate powder is heated in a boiling tube, we observe: 1

a) Brown fumes of nitrogen dioxide

b) Brown fumes of lead oxide

c) Yellow fumes of nitrogen dioxide

d) Brown fumes of nitric oxide

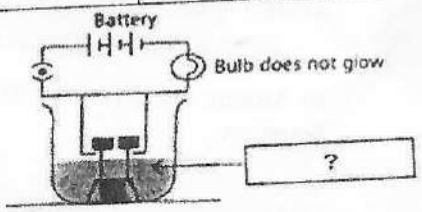
20 Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is: 1

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

21 Study the following table and choose the correct option: 1

Salt	*Parent acid*	*Parent base*	*Nature of salt*
a) Potassium sulphate	H_2SO_4	KOH	Basic
b) Potassium nitrate	HNO_3	KOH	Acidic
c) Potassium acetate	CH_3COOH	KOH	Basic
d) Potassium carbonate	H_2CO_3	KOH	Neutral

22 The solution in the given figure is likely to be: 1



a) HNO_3

b) C_2H_5OH

c) H_2SO_4

d) CO_2 in water

23 Anita added a drop each of diluted acetic acid and diluted hydrochloric acid on pH paper and compared the colours. Which of the following is the correct conclusion? 1

a) pH of acetic acid is more than that of hydrochloric acid.

b) pH of acetic acid is less than that of hydrochloric acid.

c) Acetic acid dissociates completely in aqueous solution.

d) Acetic acid is a strong acid

The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

24 **Assertion (A):** Tooth decay starts when the pH of the mouth is lower than 5.5. 1

Reason (R): Bee sting leaves an acid which causes pain and irritation.

25 Balance the following chemical equations: 2

a) $MnO_2 + HCl \rightarrow MnCl_2 + H_2O + Cl_2$

b) $CH_4 + O_2 \rightarrow CO_2 + H_2O$

26 a) A milkman adds a very small amount of baking soda to fresh milk. 3

i) Why does he shift the pH of the fresh milk from 6 to slightly alkaline?

ii) Why does this milk take a long time to set as curd?

b) What effect does the concentration of H^+ (aq) ions have on the nature of the solution?

OR

During electrolysis of brine, a gas G is liberated at anode. When this G is passed through slaked lime, a compound C is formed Which is used for disinfecting drinking water.

a) Write the formula of G and C.

b) State the chemical equation involved.

c) What is the common name of compound C? Give its chemical name.

27 a) Identify the substances that are oxidised and the substances that are reduced in the following reactions: 3

i) $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$

ii) $2PbO + C \rightarrow 2Pb + CO_2$

b) What happens when silver bromide is kept in sunlight for some time?

28 *Study the reactions given below and answer the following questions:* 4

(i) Fe + (P) → FeSO4 + (Q) ↑

(ii) (R) + heat → KCl + (S) ↑

(iii) (Q) + (S) ↑ → X

a) Derive the names of P, Q, R, and X. Write the equation represented by (iii).

Attempt either subpart (B) or (C):

b) Among the given reactions, point out which is displacement reaction? Write its balanced equation.

OR

c) Among the given reactions, point out which is decomposition reaction? Write its balanced equation.

29 a) Comment on the following statements: 5

i) On strong heating, blue coloured copper sulphate crystals turn white.

ii) Farmers treat soil with quicklime when tilling.

b) Why does dry HCl gas not change the colour of the dry litmus paper?

c) Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11, 7 and 9 respectively. Which solution is:

i) neutral? ii) strongly alkaline? iii) weakly alkaline? iv) strongly acidic?

OR

a) A student dropped a few pieces of marble in dilute hydrochloric acid contained in a test tube. The evolved gas was passed through lime water. What change would be observed in lime water?

b) Write balanced chemical equations for both the changes observed in part (a).

c) State the chemical property in each case on which the following uses of baking soda are based:

i) as an antacid
ii) as a constituent of baking powder.

SECTION C

30 A current through a horizontal power line flows in west to east direction. The direction of magnetic field at a point directly below it is from 1
a) North to South b) South to North c) West to East d) North to West

31 According to colour coding in a wire 1
a) live is red, neutral is black and earth is green
b) live is brown, neutral is blue and earth is green
c) Live is brown, neutral is green and earth is black
d) Live is red, neutral is yellow and earth is blue

The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by 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.

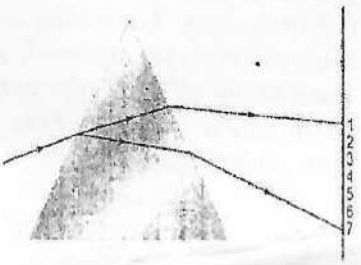
C. A is true but R is false.

D. A is false but R is true.

32 **Assertion (A)**: Blue colour of sky appears due to dispersion of blue colour. 1

Reason (R) : Red colour has the longest wavelength.

33 A beam of light falling on a glass prism gets split up into seven colours marked 1 to 7 as shown in the diagram. 2



a) Which number represents the colour having maximum speed in glass prism?
b) Which number represents the colour close to danger signal lights?
c) Which number represents the colour of leaves?
d) Which colour is at no.2?

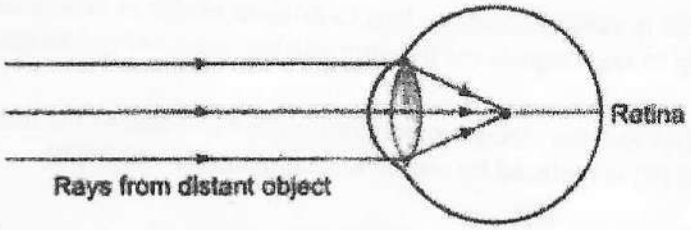
34 Refractive index of water with respect to air is 1.33 and that of diamond is 2.42. 2
a) In which medium does the light move faster, water or diamond?
b) What is the refractive index of diamond with respect to water?

OR

State Snell's law. If angle of incidence is 30° and angle of refraction is 45° for a ray of light while entering from medium 1 to medium 2. Calculate the refractive index of medium 2w.r.t. medium 1.

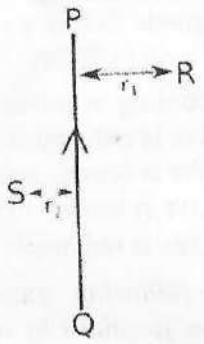
35 An object is placed at a distance of 30 cm from the optical centre of a convex lens of focal length 15 cm. Use lens formula to determine the distance of the image from the optical centre of the lens. Draw a ray diagram to show the above mentioned case. 3

36 Study the diagram given below and anwer the questions that follow: 3



a) Name the defect of vision represented in the diagram. Give reason.
b) List two causes of this defect.
c) With the help of diagram show how this defect of vision is corrected?

37 PQ is a current carrying conductor in the plane of the paper as shown in the figure below. 3



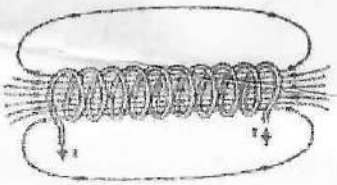
(i) Find the directions of the magnetic fields produced by it at points R and S?

(ii) If the polarity of the battery connected to the wire is reversed, how would the direction of the magnetic field be changed?

(iii) State the rule that is used to find the direction of the magnetic field for a straight current carrying conductor.

38 ***As shown in the figure a solenoid where the wire is coiled around a cylinder, each wire loop in this coil acts as if it was a separate circular wire carrying the same current I, the current in the coiled wire and dense enough array of such loops may be approximated by a cylindrical current sheet with the current density.*** 4

For simplicity let's assume a long solenoid (length >> diameter) which we approximate as infinitely long. For a long solenoid, the magnetic field inside a solenoid is approximately uniform and approximately parallel to the axis, except near the ends of the solenoid. Outside the solenoid, the magnetic field looks like the field of a physical dipole, with the north pole at one end of the solenoid and the South pole at the other end and is approximately negligible.



1. Name the type of magnet with which the magnetic field pattern of a current carrying solenoid resembles.
2. On what factors does the magnetic field produced by a current carrying solenoid depends?
3. Magnetic field produced in a region is uniform. Draw magnetic field lines to represent such region.
4. If magnetic field lines intersect each other at a point, what will this indicate? Is it possible under any circumstance?

39 (i) Rohit claims to have obtained an image twice the size of object with a concave lens. Is he correct? Give reason for your answer. 5

(ii) Where should an object be placed in case of a convex lens to form an image of same size as of the object? Show with the help of ray diagram the position and the nature of the image formed.

(ii) With the help of ray diagram, illustrate the change in position, nature and size of the image formed if the convex lens in case of (ii) is replaced by concave lens of same focal length.

OR

(i) Define Power of lens. What is its S.I. unit?

(ii) Calculate the focal length and power of the combination of a convex lens of power + 4 D and a concave lens of power -2 D?

(iii) How is a virtual image formed by a convex lens different from that formed by a concave lens? Under what conditions do a convex and a concave lens form virtual images?