

O. P. JINDAL SCHOOL, SAVITRI NAGAR

Set-B

कक्षा दसवीं प्री-बोर्ड I परीक्षा 2025-26

Pre Board I Examination 2025-26 for Class X

Subject: SCIENCE (086)

M.M.: 80

Time: 3 HRS.

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.

Q. NO.		MARKS
Section – A		
1.	The substance that triggers the fall of mature leaves and fruits from plants is due to (A) auxin (B) gibberellin (C) abscisic acid (D) cytokinin	1
2.	Select from the following, a food chain in which the organism of the second trophic level is missing : (A) small fish, zooplankton, phytoplankton, large fish (B) frog, snake, grass, grasshopper, eagle (C) grass, frog, tiger, snake (D) grass, goat, lion	1
3.	Which is the correct sequence of the components of a reflex arc? (A) Receptors→ Muscles→ Sensory neuron→ Motor neuron→ Spinal cord (B) Receptors→ Motor neuron → Spinal cord → Sensory neuron → Muscle (C) Receptors → Spinal cord → Sensory neuron → Motor neuron → Muscle (D) Receptors → Sensory neuron → Spinal cord → Motor neuron → Muscle	1
4.	In the following groups of materials, which group (s) contains only non-biodegradable items? (i) Wood, paper, leather (ii) Polythene, detergent, PVC (iii) Plastic, detergent, grass (iv) Plastic, bakelite, DDT (a) (iii) (b) (iv) (c) (i) and (iii) (d) (ii) and (iv)	1
5.	A cross made between two pea plants produces 50% tall and 50% short pea plants. The gene combination of the parental pea plants must be : (A) TT and tt (B) Tt and Tt (C) Tt and tt (D) TT and Tt	1
6.	In the human alimentary canal, when the process of digestion is completed, the (i) carbohydrates, (ii) fats, and (iii) proteins get converted respectively into : (A) (i) glucose, (ii) fatty acids and (iii) amino acids	1

- (B) (i) glucose, (ii) fatty acids and glycerol and (iii) amino acids
 (C) (i) fatty acids and glycerol, (ii) amino acids and (iii) glucose
 (D) (i) amino acids, (ii) fatty acids and glycerol and (iii) sugars

7. A sportsman, after a long break of his routine exercise, suffered muscular cramps during a heavy exercise session. This happened due to: 1
 (A) lack of carbon dioxide and formation of pyruvate.
 (B) presence of oxygen and formation of ethanol.
 (C) lack of oxygen and formation of lactic acid.
 (D) lack of oxygen and formation of carbon dioxide.

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)** : Biodegradable substances result in the formation of compost and natural replenishment. 1

Reason(R) : It is due to breakdown of complex organic substances into simple inorganic substances.

9. **Assertion (A)** : Each human trait is influenced by both paternal and maternal DNA. 1

Reason (R) : As compared to the father, the mother contributes more amount of genetic material to the child.

10. What is the purpose of making urine in the human body? Name the organs that stores and releases the urine. 2

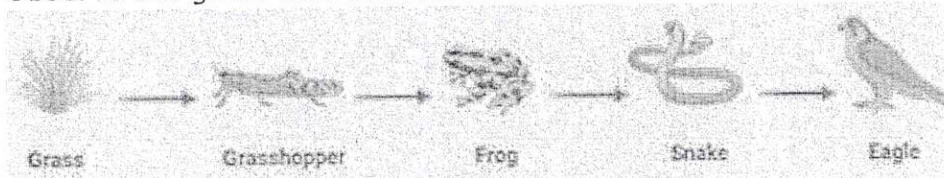
11. Attempt either option A or B. 2

A. Oxygen, mostly, is carried by a pigment in our blood whereas carbon dioxide is transported in dissolved form in our blood. Give TWO reasons that make the above statement correct.

OR

B. Photosynthesis takes place in the leaves of a plant and the food prepared by the leaves reaches other parts of the plant. Name and explain the process involved in the phenomenon.

12. Observe the given food chain and answer the following questions 2



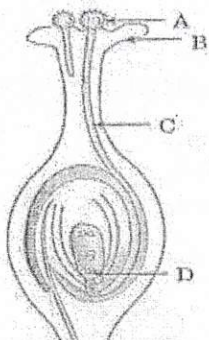
- (a) Name the organism present at second and fourth trophic level.
 (b) If energy available to frog is 5KJ , how much energy is available for grass hopper and eagle?

13. (a) List two constituents of Central Nervous System (CNS). How are these components protected ? 3

- (b) Write two limitations of the use of electrical impulses.
14. If two pea plants having round and green seeds (RRGg) are crossed, identify the percentage of the following with respect to the F₁ generation: 3
- gametes having both the round and yellow seed traits
 - offspring having the same genotype as the parents
 - offspring having the same phenotype as the parents
15. Besides heart, the human circulatory system consists of a network of closed branching blood vessels and the blood that circulates continuously in all parts of the human body. The human heart is a muscular organ which is as big as our fist. It has four chambers two upper chambers called atria and two lower chambers called ventricles. The right side of the human heart is separated from the left side by a dividing wall, which is known as septum. 4
- Name the smallest blood vessel and state its role in the circulation of blood.
 - Write the importance of platelets in the human blood.
 - (i) Write in tabular form, two differences between an artery and a vein.

OR

- (ii) Why is blood circulation in the human heart called double circulation? Explain.
16. Attempt either option A or B. 5
- (i) Explain by giving one example of each- unisexual and bisexual flowers.
 - (ii) Name the labelled parts A, B, C and D in the diagram given below.



(iii) Mention the post-fertilisation changes that occur in (i) Ovary and (ii) Ovule in the flower.

OR

- (B)(i) What is regeneration? Name two organisms which exhibit this process.
- (ii) State one function of each of the following parts of the human male reproductive system: (a) Vas deferens (b) Testes (c) Prostate glands

Section – B

17. Select the correct statement from the following about the reaction: 1
- $$\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$$
- CuO is getting oxidised and H₂ is getting reduced.
 - H₂ is getting oxidised and CuO is getting reduced.
 - CuO is a reducing agent.
 - H₂ is an oxidising agent.
18. In the reaction of aqueous solution of lead nitrate with aqueous solution of potassium iodide, the aqueous solution formed will be: 1

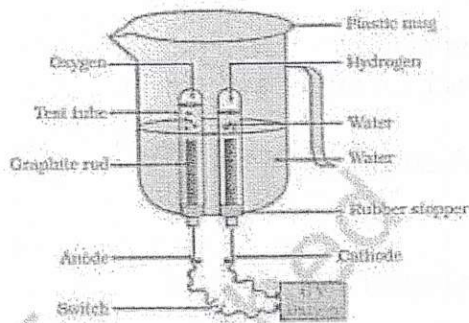
A. PbI_2 B. KNO_3 C. PbNO_3

D. KI

19. With the reference to four gases CO_2 , CO , Cl_2 and O_2 , which one of the options in the table is correct? 1

Option	Acidic oxide	Used in treatment of water	Product of respiration	Product of incomplete combustion
(a)	CO	Cl_2	O_2	CO
(b)	CO_2	Cl_2	CO_2	CO
(c)	CO_2	O_2	O_2	CO_2
(d)	CO	O_2	CO_2	CO_2

20. In the electrolysis of water 1



If the mass of the gas collected at the anode is m_a and the mass of the gas collected at the cathode is m_c , the value of (m_c/m_a) is :

- (A) 8 (B) 16 (C) $1/16$ (D) $1/8$

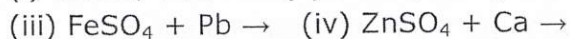
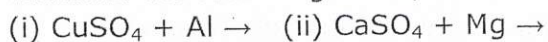
21. The aqueous solution of which one of the following salts will have pH more than seven? 1

(A) NH_4Cl (B) NaCl (C) NaNO_3 (D) Na_2CO_3

22. 8 A few drops of turmeric solution are added to a colourless liquid. If the liquid becomes red, the liquid may be : 1

- (A) Hydrochloric acid water (B) Distilled water
(C) Ammonium hydroxide (D) Lemon juice

23. Consider the following cases/reactions : 1



The cases/reactions in which new products will form are :

- (A) (i) and (iv) (B) (i) and (ii)
(C) (ii) and (iii) (D) (i), (ii) and (iv)

The following question consists of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below:

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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)** : Soaps do not form lather (foam) with hard water. 1

Reason (R) : Hard water has calcium and magnesium salts dissolved in it

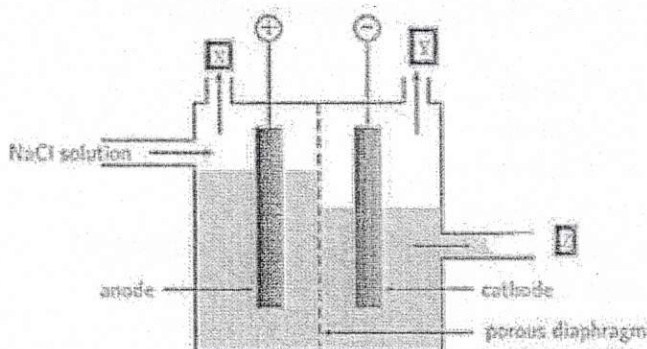
which on reacting with soap form scum.

25. Give reasons for the following : 2
- (i) Certain metals are used for making cooking utensils.
 - (ii) Hydrogen gas does not evolve when certain metals except Mg & Mn react with nitric acid.

26. Attempt either option A or B. 3
- (A) What is meant by the term pH of a solution? The pH of rain water collected from two cities 'A' and 'B' was found to be 6.1 and 5.3 respectively. The water of which city is more acidic? Justify your answer.
- State with reason what would happen to the aquatic life of a pond in which the rain water of city 'B' flows.

OR

- (B) (i) Identify the acid and the base from which the following salts are obtained :
- (a) Sodium chloride (b) Ammonium sulphate
- (ii) Write the nature, acidic/basic/neutral, of each of the above-mentioned salts, giving reason for your answer.
27. A metal X is obtained from its chloride salt by exposure to sunlight. 3
- (a) In which section of the reactivity series of metals- top, middle or bottom, is it likely to be placed? Justify your answer.
- (b) Identify the type of reaction the chloride salt of metal X undergoes on exposure to sunlight. Also write the balanced chemical equation involved.
28. In the diagram given below when electricity is passed through an aqueous solution of a common salt, A substance 'Z' is produced along with the evolution of gases 'X' and 'Y'. When a burning matchstick is brought near the gas 'Y' it burns with a pop sound, whereas X is used for disinfecting drinking water. When gas 'X' is passed through a solution of slaked lime, an insoluble substance 'A' is produced. 4



- (a) Write the name of gases 'X' and 'Y'.
- (b) What is aqueous solution of salt A used above is called?
- (c) Write your observations:
- (i) if a drop of blue litmus solution is added to the aqueous solution of substance 'Z'
 - (ii) if methyl orange is added to substance 'Z'

OR

Write a balanced chemical reaction that takes place when 'X' and 'Y' react with each other.

The product so produced will turn blue litmus red only when wet, why?

29. Attempt either option A or B.

5

(A) Write the chemical name and the formula of a carbon compound having two carbon atoms in its molecule and belongs to a family of functional group – OH.

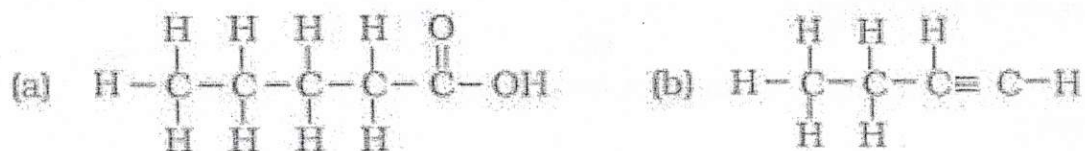
What happens when this compound reacts with the following ? (Give chemical equation and the name of main product formed in each case)

(i) Excess conc. sulphuric acid (H_2SO_4) at 443 K

(ii) Ethanoic acid in the presence of an acid

OR

(B) (i) Write the IUPAC names of the following compounds:



(ii) What is homologous series of carbon compounds? Write name and formula of the first member of ketone group.

(iii) Write general formula for alkyne. Name first member of homologous series alkyne and draw its electron dot structure.

Section – C

30. When a narrow beam of white light passes through a glass prism it splits into its component colours ? This phenomenon is called : 1

(A) Diffusion of light
light

(B) Total reflection of

(C) Scattering of light

(D) Dispersion of

31. For a convex mirror the image distance (v) = 5 cm, focal length (f) = 10 cm and height of the image (h) = 7.5 cm. The correct representation according to sign conventions is: 1

(A) $v = -5$ cm, $f = -10$ cm and $h_i = -7.5$ cm

(B) $v = -5$ cm, $f = +10$ cm and $h_i = -7.5$ cm

(C) $v = +5$ cm, $f = -10$ cm and $h_i = +7.5$ cm

(D) $v = +5$ cm, $f = +10$ cm and $h_i = +7.5$ cm

The following question consists 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)** : The magnification of the virtual images produced by concave mirrors is always more than +1. 1

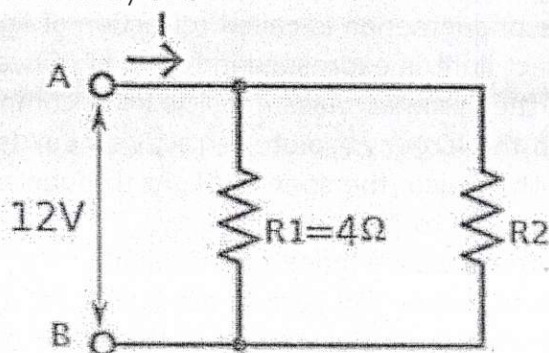
Reason (R) : The virtual images formed by concave mirrors are erect and magnified.

33. Draw a labelled ray diagram for the image formation by a concave mirror when an object is placed between its centre of curvature and focus. 2

34. Attempt either option A or B. 2

(A) A student has two resistors- $2\ \Omega$ and $3\ \Omega$. She has to put one of them in

place of R_2 as shown in the circuit. The current that she needs in the entire circuit is exactly 9A.



Show by calculation which of the two resistors she should choose.

OR

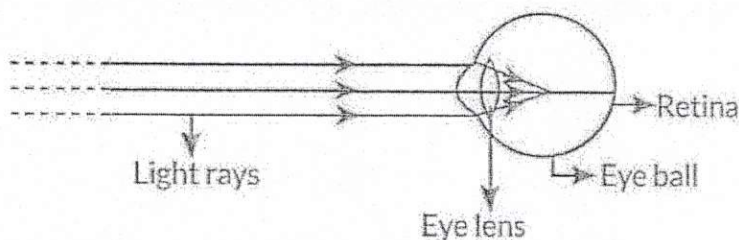
(B) A current of 10 A flows through a conductor for two minutes.

(i) Calculate the amount of charge passing through the conductor.

(ii) If the charge of an electron is 1.6×10^{-19} C, then calculate the total number of electrons flowing through the conductor.

35. Observe the following diagram and answer the questions following it :

3



(i) Identify the defect of vision shown.

(ii) List its two causes.

(iii) Name the type of lens used for the correction of this defect.

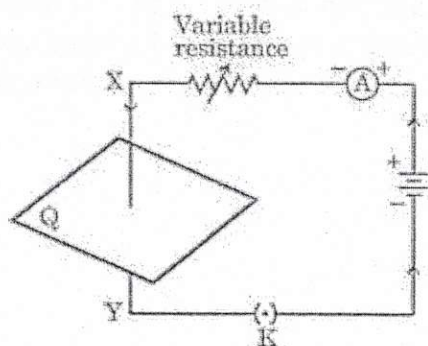
36 (i) Consider a conductor of resistance ' R ', length ' L ', thickness ' d ' and resistivity ' ρ '. Now this conductor is cut into four equal parts. What will be the new resistivity of each of these parts? Why?

3

(ii) Find the resistance if all of these parts are connected in: (a) Parallel (b) Series

37 The given figure shows the current passing through the straight conductor XY.

3



(i) Copy the diagram and draw the magnetic field lines when current flows from conductor X to Y.

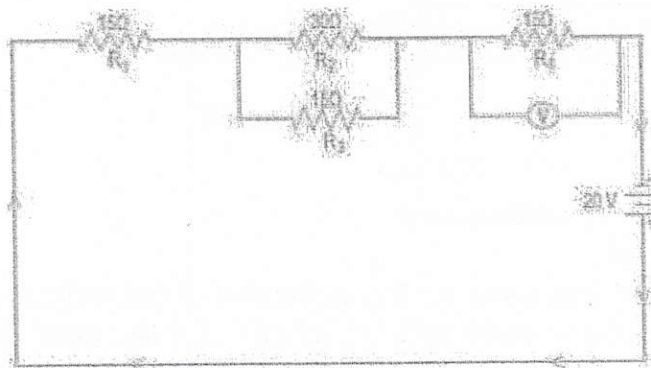
(ii) Name and state the rule used in determining the direction of the magnetic

fieldlines in the situation given above.

38. When a ray of light moving in a medium enters obliquely in another medium, it bends from its path. This phenomenon is called refraction of light. The ability of a medium to refract light is expressed in terms of optical density. The term optical density is not the same as mass density. If we compare two optical media, the one with the larger absolute refractive index is an optically denser medium than the other. Also, the speed of light through a given medium is inversely proportional to its optical density. 4
- (a) Define the term absolute refractive index of a medium.
- (b) Refractive indices of glass, water and carbon disulphide are 1.50, 1.33 and 1.62 respectively. In which one of these media is the speed of light (i) highest, and (ii) lowest ?
- (c) The absolute refractive indices of glass and water are $\frac{3}{2}$ and $\frac{4}{3}$ respectively. If the speed of light in water is 2.25×10^8 m/s, find the speed of light in (I) vacuum, and (II) glass.

OR

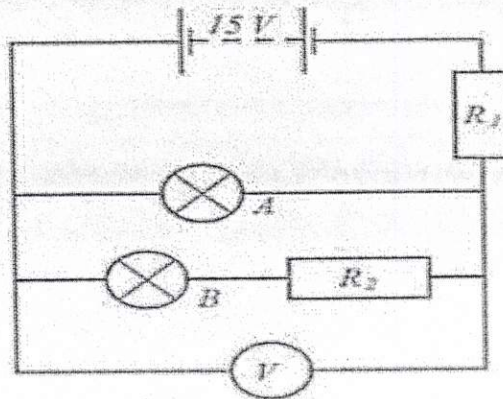
- (c) The absolute refractive indices of glass and water are $\frac{3}{2}$ and $\frac{4}{3}$ respectively. Find the refractive index of water with respect to glass.
39. Four resistors, a voltmeter and a battery are connected in a circuit as shown below. 5



- (a) What is the net resistance in the circuit?
- (b) How much potential difference will the voltmeter connected across the resistor R_4 measure?
- (c) What is the power dissipated by the resistor R_1 ?

OR

As shown in the figure below A and B are two lamps. Lamp A is rated at 12 V, 24W. Lamp B is rated at 6.0 V. When lamp B operates at its rated voltage, the current in it is 3.0 A. The values of R_1 and R_2 are chosen so that both lamps operate at their rated voltages.



Based on the information given, answer the following.

- (i) Calculate the current in Lamp A.
- (ii) State and give reason for the reading of the Voltmeter.
- (iii) Calculate the resistance of R_2 .
- (iv) Find the value of the resistance R_1 .
