Sample Paper 25

Class X 2025-26

Science (086)

Time: 3 Hours **Max. Marks: 80**

General Instructions:

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

SECTION-A

1. What are the final, simple, and absorbable products after the complete digestion of carbohydrates, proteins, and fats, respectively?
(a) Starch, Peptides, and Fatty acids
(b) Glucose, Peptides, and Glycerol
(c) Glucose, Amino acids, and Fatty acids & Glycerol
(d) Sucrose, Amino acids, and Fats

2. The blooming of a dandelion flower during the day and its closing at night is a plant movement that is a response to the intensity of light, not its direction. This type of movement is known as a:
(a) Tropic movement (b) Nastic movement
(c) Reflex action (d) Geotropic movement

3. The bread mould fungus, Rhizopus, reproduces asexually by producing microscopic reproductive units that are protected by a thick wall and can survive harsh conditions. These units are called:
(a) Buds (b) Gametes
(c) Spores (d) Fragments

4. According to Mendel's Law of Dominance, when two different alleles for a character are present, the trait that is expressed in the F1 generation is known as the:
(a) Recessive trait (b) Dominant trait
(c) Hybrid trait (d) Parental trait

5. Which of the following organisms acts as a producer in its ecosystem?
(a) A wolf (b) A mushroom
(c) A grasshopper (d) A mango tree

6. Consider the following statements about the human heart and circulation:
(i) The heart is a four-chambered organ that acts as a muscular pump.
(ii) The right side of the heart handles deoxygenated blood, and the left side handles oxygenated blood.
(iii) The septum is a muscular wall that prevents blood from mixing between the atria and ventricles.
(iv) The pulmonary vein is the only vein that carries oxygenated blood.
Which of the above statements are correct?
(a) (i), (ii), and (iv) (b) (ii) and (iii) only
(c) (i) and (iv) only (d) All are correct.

7. Which part of the forebrain links the nervous system to the endocrine system and regulates essential functions like body temperature, hunger, and thirst?
(a) Cerebrum
(b) Cerebellum
(c) Medulla
(d) Hypothalamus

8. **Assertion (A) :** In humans, fertilization typically occurs in the oviduct.
Reason (R) : The oviduct is the site that receives the egg from the ovary and where sperm can travel to meet it.
(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.

9. **Assertion (A) :** The exchange of gases in the lungs happens across the walls of the alveoli.
Reason (R) : The walls of the alveoli are very thick to prevent the collapse of the air sacs.
(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.

10. What do the terms 'systolic pressure' and 'diastolic pressure' represent? State the normal values for a healthy adult.

11. Student to attempt either option A or B.
A. State the functions of xylem and phloem in plants.

OR

B. List two key differences between aerobic and anaerobic respiration.

12. What is ozone, and how does it protect living organisms on Earth?

13. Name the part of the human brain that is responsible for the following functions:
(i) Voluntary actions and intelligence.
(ii) Maintaining posture and balance.
(iii) Controlling involuntary actions like blood pressure.

14. What are homologous organs? How do they provide evidence in favour of evolution? Give one example.

15. A person consumes a breakfast of boiled eggs and toast. The following questions about the digestion of this meal.
A. The digestion of which component (egg or toast) begins in the mouth? Name the enzyme involved.

OR

B. Eggs are rich in protein. Where does the digestion of protein start in the alimentary canal? Name the enzyme and the required condition for its action.
C. What is the role of villi in the small intestine?

16. Attempt either option A or B.

A. (i) Describe the process of regeneration with a suitable example.
(ii) How is it different from reproduction?
(iii) Why can't complex multicellular organisms regenerate into new individuals?

OR

B. (i) What are the functions of the testes and ovaries in the human reproductive system?
(ii) Name two surgical methods of contraception. How do they work?
(iii) What is the role of the placenta?

SECTION-B

17. In the reaction $2H_2S + SO_2 \rightarrow 3S + 2H_2O$, which substance acts as the reducing agent?
(a) H_2S (b) SO_2
(c) S (d) H_2O

18. Which of the following substances is used in soda-acid fire extinguishers?
(a) Sodium carbonate
(b) Sodium hydrogencarbonate
(c) Sodium chloride
(d) Calcium hydroxide

19. An element 'X' is a solid at room temperature, is very soft, and reacts vigorously with water. 'X' is likely to be:
(a) Copper (b) Sodium
(c) Sulphur (d) Carbon

20. In which of the following hydrocarbons is the carbon-carbon bond length the longest?
(a) Ethane (C_2H_6) (b) Ethene (C_2H_4)
(c) Ethyne (C_2H_2) (d) Benzene (C_6H_6)

21. An aqueous solution with a pH value of 0 would be considered:
(a) Strongly acidic
(b) Strongly basic
(c) Neutral
(d) Weakly acidic

22. The most abundant metal in the Earth's crust is:
(a) Iron
(b) Copper
(c) Aluminium
(d) Zinc

23. The reaction of magnesium burning in air ($2Mg + O_2 \rightarrow 2MgO$) is an example of a/an:
(a) Decomposition reaction
(b) Displacement reaction
(c) Double displacement reaction
(d) Combination reaction

24. **Assertion (A) :** Carbon forms covalent bonds with other atoms.
Reason (R) : Carbon has four valence electrons and can achieve a stable noble gas configuration by sharing these electrons.
(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.

25. Differentiate between exothermic and endothermic reactions. Give one example for each.

26. Attempt either option A or B.
A. Give a scientific reason for each of the following:
(i) Most metal oxides are basic in nature.
(ii) Copper is used to make electrical wires.
(iii) Reactive metals like sodium are found in nature as compounds, not as free elements.

OR

B. (i) What is corrosion?
(ii) Name two factors that promote the corrosion of iron.
(iii) Suggest one method to prevent corrosion.

27. An organic acid 'X' is a liquid which often freezes during winter in cold climates. It has the chemical formula $C_2H_4O_2$.
(a) Identify the compound 'X'.
(b) What is the common name given to its pure, frozen form?
(c) Draw the electron-dot structure for a molecule of 'X'.

28. Salts can be classified as acidic, basic, or neutral based on the strength of the acid and base from which they are derived.
A. (a) What is the nature of the salt formed from a strong acid and a strong base? What would its approximate pH value be?
(b) Give an example of a salt that forms a basic aqueous solution. Name the parent acid and base that would form this salt.

OR

B. (c) What will be the nature of an aqueous solution of ammonium chloride (NH_4Cl)?
(d) Explain why an aqueous solution of sodium carbonate (Na_2CO_3) is basic in nature.

29. Attempt either option A or B.
A. (a) What is the main difference between roasting and calcination in metallurgy?
(b) Which of these two methods would you use for a zinc sulphide ore and which for a zinc carbonate ore?
(c) How is the zinc oxide obtained from these processes converted to zinc metal? Write the chemical equation for the reaction.

OR

B. (a) What are hydrocarbons?
(b) What is a homologous series?
(c) Write the name and chemical formula for the first two members of the alkene homologous series.
(d) How can ethene be converted to ethane? Name the reaction.

SECTION-C

30. A student is studying the formation of images by a convex lens and makes the following statements:

I. When the object is at infinity, the image is formed at the focus.

II. The image formed is always real and inverted.

III. The lens can form a virtual, erect, and magnified image.

Choose from the following the correct option that lists the correct statements.

(a) I and II (b) I and III

(c) I, II and III (d) II and III

31. What happens to a light ray when it passes from air into water at an angle?

(a) It speeds up and bends towards the normal.

(b) It slows down and bends away from the normal.

(c) It slows down and bends towards the normal.

(d) It speeds up and bends away from the normal.

32. **Assertion (A) :** The twinkling of stars is caused by atmospheric refraction.

Reason (R) : As starlight enters the Earth's atmosphere, it travels through air layers of varying refractive indices, causing its path to fluctuate.

(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.

33. What is meant by refractive index of a medium?

A. Define refractive index in terms of speed of light.

B. Give the formula.

C. State SI unit.

34. Attempt either option A or B.

A. (a) What precaution should be taken to avoid the overloading of domestic electric circuits?

(b) An electric oven of 2 kW power rating is operated in a domestic electric circuit (220 V), that has a current rating 5 A. What result do you expect ? Explain.

OR

B. Two resistors with resistances $10\,\Omega$ and $15\,\Omega$ are to be connected to emf 12 V so as to obtain :

(i) minimum current

(ii) maximum current. How will you connect the resistance in each case ? Calculate the strength of the total current in the circuit in the two cases.

35. Draw a schematic diagram of a circuit consisting of a battery of six 2 V cells, a $6\,\Omega$resistor, a $12\,\Omega$ resistor and a $18\,\Omega$ resistor and a plug key all connected in series. Calculate the following (when key is closed):

(i) Electric current flowing in the circuit.

(ii) Potential difference across $18\,\Omega$ resistor.

(iii) Electric power consumed in $18\,\Omega$ resistor.

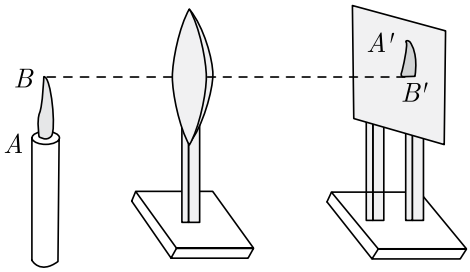
36. Write some precautions in the use of electricity.

37. (i) What is the function of earth wire in electrical instruments?
(ii) Explain what is short circuiting an electric supply.
(iii) What is the usual current rating of the fuse wire in the line to feed
(a) Lights and fans?
(b) Appliances of 2kW or more power?

38. Aditya and his friend Manoj placed a candle flame in front of a convex lens at various distances from it and obtained the image of the candle flame on a white screen.
He noted down the position of the candle, screen and the lens as under
Position of candle = 20 cm

Position of convex lens = 50 cm

Position of the screen = 80 cm

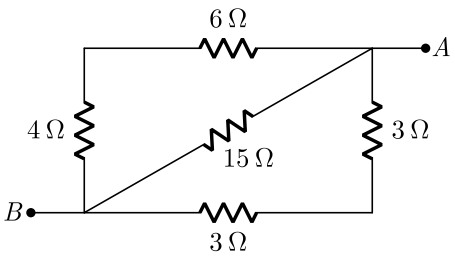


(i) What is the position of the image formed from the convex Lens?
(ii) What is the focal length of the convex tens?
Attempt either subpart C or D.
(iii) Where will the image be formed, if he shifts the candle towards the lens at a position of 35 cm?

OR

(iv) What is the nature of the image formed if Aditya shifts the candle towards the lens to 36m?

39. Attempt either option A or B.
A. (i) List two disadvantages of using a series circuit in homes.
(ii) Calculate the effective resistance between A and B in the circuit given below:



OR

B. A wire of resistance 6 Ω is bent to form a closed square. What is the resistance across a diagonal of the square ?

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