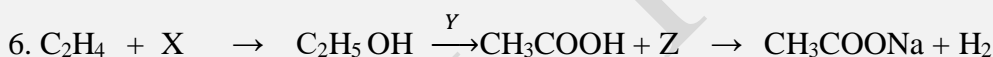


General Instructions

- (1) Question numbers 1 and 2 in Section-A are one mark question.
- (2) Question numbers 3 to 5 in Section - A are two marks questions.
- (3) Question numbers 6 to 15 in Section - A are three marks questions.
- (4) Question numbers 16 to 21 in Section - A are 5 marks questions.
- (5) Question numbers 22 to 27 in Section - B are based on practical skills.
- (6) There is no overall choice. However, there is an internal choice in two questions of three marks each and one question of five marks.

Section-A

1. Name the carbon compound which on heating with excess of conc.H₂SO₄ at 443K gives Ethene.
2. Forests are biodiversity spots'. Justify the statement.
3. The absolute refractive index of water is 3/2. Calculate the speed of light in water.
4. Give reasons:
 - (i) Sodium, Potassium and Lithium are stored under oil.
 - (ii) Carbonate and Sulphide ores are usually converted into oxides during the process of extraction
5. How is tooth decay related to pH? How can it be protected?



Identify X, Y and Z.

Or

Write balanced chemical equation for the reactions that takes place during respiration. Identify the type of chemical reaction that takes place during this process and justify the name. Give one more example of this type of reaction.

7. An element 'X' belongs to 3rd period and group 16 of the modern periodic table.
 - (i) Determine the number of valence electrons and valency of 'X'.
 - (ii) Name the compound formed when X element reacts with hydrogen.
 - (iii) Is 'X' a metal or non-metal?
8. Write three events which occur during the process of photosynthesis.
9. Answer the following:-
 - i) Which gland secretes digestive enzymes as well as hormones?
 - ii) Which endocrine gland is present in females, but absent in males?
 - iii) Name the hormone essential for carbohydrate, protein and fat metabolism
10. Draw longitudinal section of a bisexual flower and label any four parts in it.

OR

Distinguish between the reproduction in Hydra and Amoeba.

11. An image of an object formed by a lens is real and inverted and of same size as the object. If the image is at distance of 40 cm from lens, what is the nature and power of the lens? Draw ray diagram to justify
12. Three resistors of 2Ω , 5Ω , 10Ω are connected in parallel with battery of 6V. Calculate
- Total effective resistance of circuit
 - Total current in the circuit
 - Current through 2Ω and 10Ω resistance.
13. Answer the following:
- Why do magnetic field lines do not intersect each other?
 - What does straight magnetic field lines inside the solenoid indicate?
 - What will be the effect on magnetic field if number of turns in current carrying solenoid is increased?
14. (i) What is biogas and what is the principle of biogas plant for production of biogas?
- (ii) Write two advantages of using biogas as domestic fuel.
- OR
- Name the process responsible for energy production in nuclear reactor.
 - Give two advantages and disadvantages of nuclear energy.
15. "Damage to the ozone layer is the cause for concern." Justify this statement. Suggest any two steps to limit this damage.
16. A student is unable to see clearly the words written on the blackboard, placed at a distance of approximately 4m from him. Name the defect of vision the boy is suffering from. Explain the cause and method of correcting this defect. Draw ray diagram for
- (a) Defect of vision (b) For its correction
17. (i) Name the electric device that converts mechanical energy into electrical energy. Draw a labelled diagram and explain the principle involved in this device.
- State the rule that is used to find the direction of an induced current.
 - What is the role of commutator?
- OR
- What is the function of earth wire in electrical instruments?
 - Explain what is short circuiting and write any two preventive measures to prevent short circuiting.
 - Differentiate between alternating current and direct current.
18. An organic compound 'A' is widely used as preservative in pickles and has a molecular formula $C_2H_4O_2$. The compound reacts with ethanol to form a sweet smelling compound 'B'. 5
- Identify the compound 'A'.
 - Write the chemical equations for its reaction with ethanol to form compound 'B'.
 - How can we get sodium compound of 'A' back from 'B'?
 - Name the process and write the corresponding chemical equation.
 - Which gas is produced when compound 'A' reacts with washing soda? Write the chemical equation.
19. (i) Write the electron dot structure for potassium and chlorine. 5
- (ii) Show the formation of KCl by transfer of electrons.

(iii) Name the ions present in the compound, KCl.

(iv) Why are ionic compounds usually hard?

(v) How is that ionic compounds in solid state do not conduct electricity but they do so in molten state?

20. a). Distinguish between acquired traits and inherited traits by giving one example of each. 5

b). Explain the mechanism of sex determination in humans

21. a) Define 'reflex action'. 5

b) Draw a schematic diagram to depict reflex arc

c) Differentiate between sensory and motor nerves.

OR

What are plant hormones? Give four different types of plant hormones and state their functions briefly.

22. A student takes 2ml acetic acid, in a dry test tube and add a pinch of sodium hydrogen carbonate to it. Write down the observation made by the students. 2

23. A solution 'X' gives orange colour when a pH paper is dipped into it. On the other hand another solution 'Y' gives light blue colour when pH paper is added to it. Identify the nature of solutions X and Y, give reason. 2

24. A student confirms binary fission process in a unicellular organisms after observing a slide under microscope. What he might have observed in that slide to reach to this conclusion. 2

25. Explain how we connect an ammeter and a voltmeter in a circuit while performing an experiment for studying the dependence of current (I) on potential difference (V) across a resistor? 2

26. In an experiment to prepare the temporary mount of a leaf peel to show stomata, why glycerin and safranin are used? 2

OR,

Draw a well labelled diagram of a dicot seed with the embryo.

27. If an object is placed at infinity, where is the image formed in case of convex lens? What is the nature of image? 2