

# FULL SYLLABUS TEST

**Class: X CBSE**

**SCIENCE (086)**

**Full Marks: 80**

**Time: 3 hours**

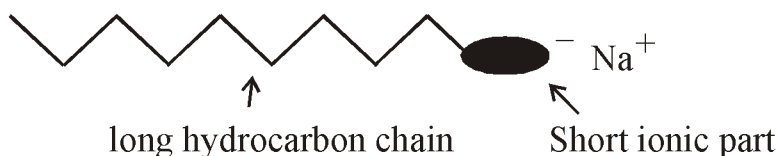
## General Instructions:

- All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.
- Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.
- Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.
- Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.
- Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.
- Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1/2/3 marks

## SECTION- A

**Question 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.**

- The compounds used to prepare  $\text{NaHCO}_3$  are  
 (a)  $\text{Na}_2\text{CO}_3$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{O}_2$  (b)  $\text{NaCl}$ ,  $\text{NH}_3$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$   
 (c)  $\text{NaCl}$ ,  $\text{NaOH}$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$  (d)  $\text{NaCl}$ ,  $\text{Ca}(\text{OH})_2$ ,  $\text{H}_2\text{O}$ ,  $\text{CO}_2$
- The total number of electrons shared in the formation of ethyne molecules are  
 (a) 10 (b) 5 (c) 6 (d) 3
- The metal that reacts with steam to give metal oxide is  
 (a) Aluminium (b) Sodium (c) Calcium (d) Potassium
- Select the correct option true for below structure



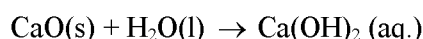
**long hydrocarbon chain**

**Short ionic part**

- Hydrophilic
- Water soluble
- oil soluble
- Hydrophobic

- Hydrophobic
- oil soluble
- hydrophobic
- hydrophilic

5. Avishek added water to calcium oxide and observed that calcium oxide reacts vigorously with water to produce slaked lime, as represented by the following reaction.

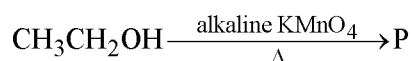


This reaction can be classified as

- (i) Combination reaction
- (ii) Exothermic reaction
- (iii) Endothermic reaction
- (iv) Oxidation reaction

Which of the following is the correct option?

- (a) (i) and (iii)                      (b) (ii) and (iv)                      (c) (i) and (ii)                      (d) (i), (ii) and (iv)
6. In the given reaction, select and write the name of 'p'.



- (a) Ethyne                      (b) Acetic acid                      (c) Ethane                      (d) Ethylethanoate
7. Sumanta went to his kitchen garden on terrace where bee sting his hand. In which of the following solutions should he apply on his hand for instant relief from pain?
- (a) Baking soda                      (b) lime juice                      (c) Vinegar                      (d) Ethanol

8. Which of the following statements is True about the uptake of water in plants?

- (a) It occurs all the time due to diffusion.
- (b) Water enters the roots due to osmosis.
- (c) At night when transpiration is low, roots do not take up water.
- (d) The movement of water from roots to leaves is bidirectional

9. Receptors are usually located in sense organs. Gustatory receptors are present in

- (a) tongue                      (b) nose                      (c) eye                      (d) ear

10. Which of the following is the correct sequence of events of sexual reproduction in a flower?

- (a) Pollination, fertilisation, seedling, embryo
- (b) Seedling, embryo, fertilisation, pollination
- (c) Pollination, fertilisation, embryo, seedling
- (d) Embryo, seedling, pollination, fertilisation

11. Which of the following constitute a food chain?

- (a) Grass, wheat and mango
- (b) Grass, goat and human
- (c) Goat, cow and elephant
- (d) Grass, fish and goat

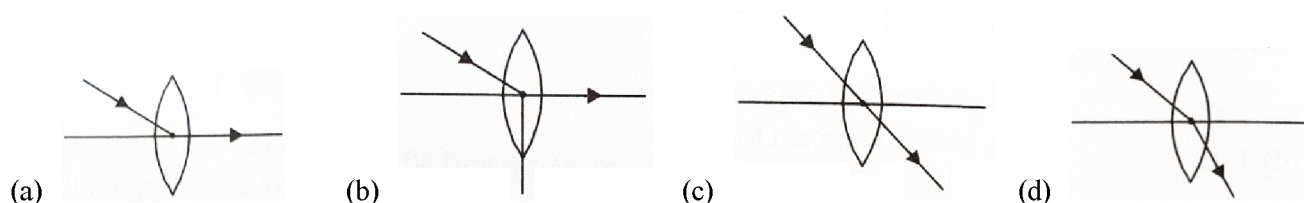
12. A total of 300 tall heterozygous plants were self pollinated. What would be the number of short homozygous plants in the next generation?

- (a) 225                      (b) 150                      (c) 75                      (d) 300

13. Near point of normal human eye is

- (a) 25 cm                      (b) 25 mm                      (c) 25 m                      (d) not fixed

14. Which of the following diagram correctly represents the ray of light passing through the optical centre?



15. During pollination, plants ensure that the pollen grain from a species germinates on the stigma of the same species. Which of the following ensure this

- (a) Hydrotropism                      (b) Chemotropism                      (c) Geotropism                      (d) Phototropism

16. The translocation of food and other substances takes place in both upward and downward directions. Which of the following elements helps in the translocation of food and other materials?

- (a) Sieve tubes and phloem parenchyma of phloem
- (b) Vessels and tracheids of xylem
- (c) Xylem parenchyma and vessels of xylem
- (d) Sieve tubes and companion cells of phloem

**Question No. 17 to 20 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, 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

17. **Assertion (A):** Decomposition of vegetable matter into compost is an example of exothermic reactions.

**Reason (R):** Exothermic reaction are those reactions in which heat is evolved.

18. **Assertion (A):** Warm-blooded animals have their left and right side of the heart separated for more efficient supply of oxygen to the body.

**Reason (R):** Warm-blooded animals need high-energy to maintain their body temperatures.

19. **Assertion (A):** The magnetic field produced by a current carrying solenoid is independent of its length and cross sectional area.

**Reason (R):** The magnetic field inside the solenoid is uniform.

20. **Assertion (A):** Biodegradable substances result in the formation of compost and natural replenishment.

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

## SECTION B

**Question No. 21 to 26 are very short answer questions**

21. Puspendu added a solution of sodium sulphate to a barium chloride taken in a test tube. Write equation for the chemical reaction mentioning physical state and name the type of reaction.

22. Mrs. Seghal's family was very happy after the birth of their second child. Her friend, Mrs. Raman, suggested her to undergo tubectomy.

- (a) What is tubectomy?
- (b) Why is there a need of adopting contraceptive methods?

23. **Attempt either option A or B**

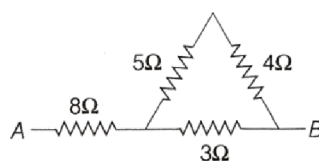
A. Jeet's mother often complains about indigestion and hyper acidity in the stomach. She takes antacid to get relief from the pain.

- (a) Overproduction of which substance is the possible reason for such complaint?
- (b) Why is the production of this substance necessary.

**OR**

B. What would happen if platelets were absent in the blood?

24. Calculate the effective resistance across AB.



25. (i) To which wire of a cable in a power circuit, should the metal case of a geyser be connected?

(ii) To which wire, should the fuse be connected?

26. What is involuntary action? Which part of the brain generally controls these movements?

### SECTION C

**Question No. 27 to 33 are short answer questions**

27. Write the isomers of a saturated hydrocarbon having five carbon atoms and also write their IUPAC name.
28. Describe three chemical reactions to show that chemical reactions are characterised by
- change in colour
  - Formation of precipitate
  - Evolution of heat

**OR,**

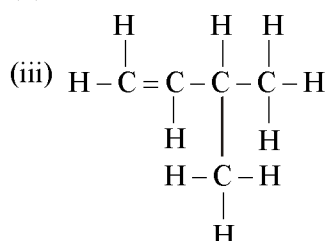
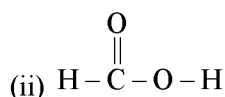
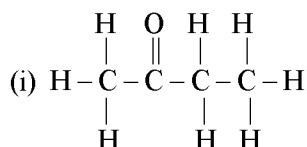
Write the balanced equation for the chemical reactions involved when

- Chlorine is passed over dry slaked lime.
  - Sodium bicarbonate reacts with hydrochloric acid.
  - Lead nitrate is heated.
29.
  - Name the parts of a bisexual flower that are not directly involved in reproduction.
  - Differentiate between self and cross pollination.
  - What is the fate of ovule and ovary after fertilization in a flower? [1+1+1]
30.
  - Construct a terrestrial food chain comprising of four trophic levels.
  - Calculate the amount of energy available to the organisms at the fourth trophic level if the energy available to the organisms at the second trophic level is 2000 J. [1+2]
31. An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focussed image can be obtained? Find the size and the nature of the image.
32.
  - Write a relationship between angle of incidence and angle of refraction for a given pair of media.
  - When a ray of light enters from one medium to another having different optical densities it bends. Why does this phenomenon occur?
  - Write one condition, where ray of light does not bend when entering a medium of different optical density.
33. The relationship between the potential difference and the current in a conductor is stated in the form of a law.
- Name the law.
  - What does the slope of V-I graph for a conductor represent?
  - Name the material used for making the connecting wire.

### SECTION D

**Question No. 34 to 36 are long answer questions.**

34. (a) Write IUPAC name of the following compounds



(b) Name one metal each which is extracted by

- (i) reduction with carbon
- (ii) electrolytic reduction
- (iii) reduction with aluminium
- (iv) reduction with heat alone

**OR,**

An organic compound A (molecular formula  $C_2H_4O_2$ ) reacts with sodium metal to form a compound B and evolves a gas which burns with pop sound. Compound 'A' on treatment with an alcohol C in the presence of a little of concentrated sulphuric acid forms a sweet-smelling compound D (molecular formula  $C_3H_6O_2$ ). Compound D on treatment with NaOH solution gives back B and C. Identify A, B, C and D and give the chemical reaction involved.

35. (i) Two tall pea plants are used to produce a progeny of 20 pea plants. The two parent plants have a genotype of TT and Tt respectively.  
How many short pea plants will be found in the progeny in the  $F_1$  generation?
- (ii) Pea plants can have green or yellow seeds. One of the phenotypes shows dominance over the other. A farmer decides to pollinate a flower of a plant with green seeds using pollen from a flower of a plant with yellow seeds. The resulting pod has all green seeds.
- (a) What should be the genotype of the parent plants to give green and yellow seeds in equal proportions?
  - (b) The farmer crosses two heterozygous green seeded plants and obtains 100 plants in the  $F_1$  generation. What would be the number of green and yellow seeds respectively in the  $F_1$  generation?

**[3+2]**

**OR**

- (i) Write in tabular form the location and function of the hormones secreted by each of the following glands present in the human body:
    - (a) Pituitary gland
    - (b) Thyroid gland
    - (c) Pancreas
  - (ii) Which hormone is secreted into the blood when you are under stress? Name the gland that secretes this hormone.
  - (iii) How does it help the body to cope up in an emergency situation?
36. (i) The resistance of two conductors in series is  $40\Omega$  and their resistance becomes  $6.4\Omega$ , when connected in parallel. Find the resistance of individual conductors. **[3]**
- (ii) A radio set of 60 watts runs for 50 hours. How much electrical energy is consumed? **[2]**

### SECTION-E

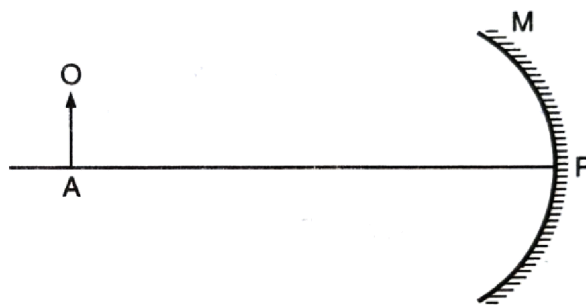
**Question No. 37 to 39 are case-based/data -based questions.**

37. Metal A burns in air, on heating, to form an oxide  $A_2O_3$  whereas another metal B burns in air only on strong heating to form an oxide BO. The two oxides  $A_2O_3$  and BO can react with hydrochloric acid as well as sodium hydroxide solution to form the corresponding salts and water. And an element E forms an oxide  $E_2O$ . An aqueous solution of  $E_2O$  turns red litmus blue.
- (a) (i) What is the type or nature of oxide BO and  $A_2O_3$ ? Give the reason for the same.
  - (ii) What is the type or nature of oxide  $E_2O$ ? Give reason for the same.
  - (b) (i) Name one metal like A and write its oxide.
  - (ii) Name one metal like B and write its oxide.

**OR,**

Give an example of an oxide like  $E_2O$ . Write the type or nature of oxide.

38. A. In the process of respiration, state the functions of alveoli.  
 B. (i) Due to the availability of less water, how does the plant cope up with lack of water in desert conditions.  
 (ii) If there were no algae, there would be no fish. Do you agree with the statement? Give reason to explain.  
 C. Complete the following pathway showing the breakdown of glucose:
- Glucose  $\xrightarrow{\text{in cytoplasm}}$  (i)  $\xrightarrow{\text{?}}$   $\xrightarrow[\text{in mitochondria}]{\text{Presence of O}_2}$  (ii)  $\xrightarrow{\text{?}}$   $\text{+H}_2\text{O} + \text{Energy}$   
 (6-carbon molecule)                      (3-carbon molecule energy)
39. In the diagram below, M is a concave mirror and A is a point on its principal axis. If an object O is kept at A, the image is formed at A itself.



- (i) What is the distance PA called? [1]  
 (ii) Mark a point B on the principal axis at which if a point source of light is kept, the rays travel parallel to the principal axis after reflection from M. What is the distance PB called? [1]  
 (iii) Draw ray diagram to show the image in diagram. [2]

**OR**

At what distance from a concave mirror of focal length 25 cm should an object be placed so that the size of image is equal to the size of the object. Find the distance using mirror formula.