

ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ

ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು - 560 003

**KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD**  
Mallechwaram, Bengaluru - 560 003

**2024-25ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ-4**  
**S.S.L.C. MODEL QUESTION PAPER-4 - 2024-25**

ವಿಷಯ : ವಿಜ್ಞಾನ

**Subject : SCIENCE**

( ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / Physics, Chemistry & Biology )

( ಅಂಗ್ಲ ಮಾಧ್ಯಮ / English Medium )

ವಿಷಯ ಸಂಕೇತ : **83-E**

**Subject Code : 83-E**

ಸಮಯ : 3 ಗಂಟೆ 15 ನಿಮಿಷಗಳು ]

[ Time : 3 Hours 15 Minutes

ಗರಿಷ್ಠ ಅಂಕಗಳು : **80** ]

[ Max. Marks : **80**

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**General Instructions to the Candidate :**

1. There are *three* parts in the question paper :

**Part A : Physics, Part B : Chemistry, Part C : Biology.**

2. This question paper consists of 38 questions.

3. Follow the instructions given against the questions.

4. Figures in the right hand margin indicate maximum marks for the questions.

5. The maximum time to answer the paper is given at the top of the question paper.

It includes 15 minutes for reading the question paper.

[ Turn over

**PART - A**  
**( PHYSICS )**

- I. Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.  $3 \times 1 = 3$**

1. The magnification of the image produced by a mirror is  $-1.73$ . Then the nature of this image is

- (A) Real and magnified
- (B) Real and diminished
- (C) Virtual and magnified
- (D) Virtual and diminished

2. A person clearly sees the objects placed at the distance of 40 cm to 80 cm only. This defect of the eye and a measure to rectify this defect are

- (A) Myopia, use of suitable concave lens
- (B) Hypermetropia, use of suitable convex lens
- (C) Presbyopia, use of suitable bifocal lens
- (D) Cataract, surgical treatment

3. A beam of white light is passed through two transparent media *A* and *B*. The colour of the scattered light from the medium *A* is blue and the colour of the scattered light from the medium *B* is white. The correct statement related to this phenomenon is
- (A) size of the particles in medium *A* is more than that of *B* medium
  - (B) size of the particles in medium *B* is more than that of *A* medium
  - (C) sizes of the particles in both *A* and *B* media are the same
  - (D) densities of both *A* and *B* media are the same

**II. Answer the following questions :**

**2 × 1 = 2**

4. Draw the diagrams of circuit symbols of 'wires crossing without joining' and 'rheostat'.
5. "The absolute refractive index of a medium cannot be less than 1." Justify this statement.

**III. Answer the following questions :**

**2 × 2 = 4**

6. State the laws of reflection of light.

**OR**

What is power of lens ? Write its SI unit.

[ Turn over

7. Explain the method of preparing an electromagnet.

**OR**

How can the strength of magnetic field generated by a circular coil of wire be increased ? Explain.

**IV. Answer the following questions :**

**3 × 3 = 9**

8. What is magnetic field ? List any four properties of magnetic field lines.

**OR**

What is short circuiting ? Write any two measures that can be followed to prevent the possible damage due to short circuit.

9. An object is placed between  $F_1$  and  $2F_1$  of convex lens. Draw the ray diagram to show the image formation.

[  $F_1$  : Principal focus of a lens ]

10. Resistance of a metal wire of length 2 m is  $28 \Omega$  at  $20^\circ\text{C}$ . If the diameter of the wire is 0.04 mm then what will be the resistivity of the metal at that temperature ?

**V. Answer the following question :**

**1 × 4 = 4**

11. Explain the following phenomena :

- i) Formation of rainbow in the atmosphere
- ii) Twinkling of stars.

**VI. Answer the following question :****1 × 5 = 5**

12. a) Connecting resistors in parallel in a circuit is better than connecting them in series. Why ? Explain.
- b) State Joule's law of heating. Explain how an electric bulb works on the basis of this law.

**PART - B****( CHEMISTRY )**

**VII. Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.**

**3 × 1 = 3**

13. The property of carbon atoms to form bonds with other carbon atoms to give large molecules is
- (A) Isomerism                      (B) Allotropism
- (C) Catenation                      (D) Addition
14.  $\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$  ; the reactants that are oxidised and reduced in this chemical reaction respectively are
- (A) ZnO and C                      (B) C and ZnO
- (C) Zn and CO                      (D) Co and Zn

[ Turn over

15. When excess of sodium hydroxide is dissolved in the same basic solution then
- (A) the concentration of  $\text{OH}^-$  ions increases
- (B) the concentration of  $\text{H}_3\text{O}^+$  ions increases
- (C) the pH value of the solution decreases
- (D) the concentration of  $\text{OH}^-$  ions decreases.

**VIII. Answer the following questions :**

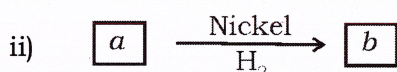
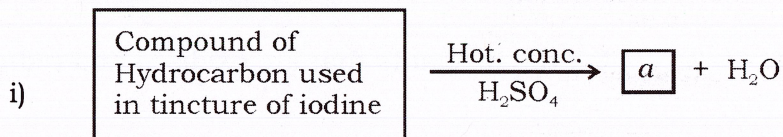
**3 × 1 = 3**

16. Mention any two methods of preventing rancidity.
17. Write the structural formula of the ketone having three carbon atoms.
18. Aqueous solution of  $\text{HNO}_3$  shows acidic character but the solution of alcohol does not show this character. Why ?

**IX. Answer the following questions :**

**3 × 2 = 6**

19. Observe the following chemical reactions. Answer the question asked.



Name 'a' and 'b' products. Identify saturated and unsaturated product in 'a' and 'b'.

20. Write the balanced chemical equation for the chemical reaction given below and identify the type of this reaction.

Lead nitrate + Potassium iodide  $\rightarrow$  Lead iodide + Potassium nitrate.

21. Give reason for the following uses of baking soda :

- i) As an ingredient in antacids
- ii) As baking powder in bakeries.

**X. Answer the following questions :**

**3 × 3 = 9**

22. Draw the diagram of arrangement of apparatus to show the action of steam on a metal and label the following parts :

- i) Metal sample
- ii) Hydrogen gas

23. a) While diluting an acid, water should not be added to the acid but acid should be added to water. Why ? Explain.
- b) Among one molar of hydrochloric acid and acetic acid, which of the acid is strong acid and which of the acid is weak acid ? Give reason for your answer.

**OR**

One test tube has distilled water and other two test tubes have acidic and basic solutions. How can the nature of these three solutions be identified using red and blue litmus paper ?

[ Turn over

24. Define the following :

- i) Structural isomers
- ii) Esterification
- iii) Micelles.

**OR**

- a) What are substitution reactions ?
- b) Name the simplest hydrocarbon and write its molecular formula.
- c) What are oxidising agents ?

**XI. Answer the following question :**

**1 × 4 = 4**

25. a) Show the formation of magnesium chloride by the transfer of electrons.
- b) Differentiate between calcination and roasting.
- c) What are the constituent metals present in solder metal ? Why is solder metal used for welding electrical wires ?

**PART - C**

**( BIOLOGY )**

**XII. Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.**

**2 × 1 = 2**

26. The second trophic level of a food chain consists of

- (A) Producers
- (B) Herbivores
- (C) Secondary consumer
- (D) Primary carnivores



27. If a trait is appeared in the progenies of many generations, then the trait must be

- (A) dominant trait                      (B) recessive trait  
(C) acquired trait                      (D) intermediate trait

**XIII. Answer the following questions :**

**3 × 1 = 3**

28. 'Stomata of leaves facilitate the transportation of water through xylem.'

Justify.

29. 'Vegetative propagation can be considered as a boon to the farmers.' How ?

30. Father alone is responsible to determine the sex of a child. Why ?

**XIV. Answer the following questions :**

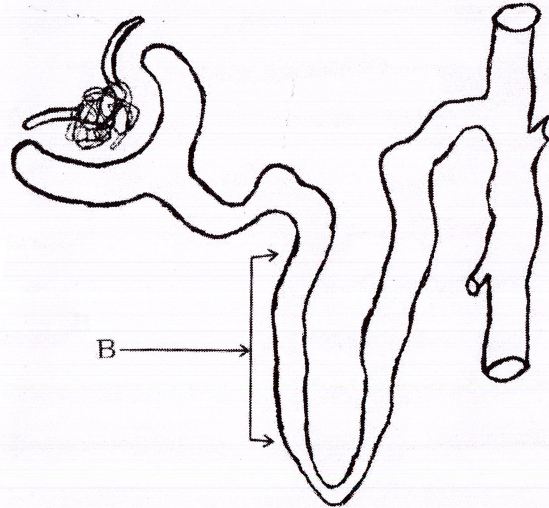
**3 × 2 = 6**

31. Mention the needs for the separation of non-biodegradable wastes in the waste management.

32. Draw the diagram to show the germination of pollen on stigma and label 'pollen tube'.

[ Turn over

33. Name the process that takes place in the part labelled as *B* in the structure given below. What is the significance of this process ?



**XV. Answer the following questions :**

**3 × 3 = 9**

34. Draw the diagram to show the structure of the human brain and label the following parts :

i) Cerebellum

ii) Pons.

35. Round, yellow seeds ( *RRYY* ) producing pea plant is crossed with wrinkled, green seeds ( *rryy* ) producing pea plant. Write the checker board to show the results obtained in the  $F_2$  generation of this cross. What is the phenotypic ratio of the plants produced in  $F_2$  generation ?

**OR**

Tall pea plant (  $TT$  ) is crossed with dwarf pea plant (  $tt$  ). What kind of plants will be produced in  $F_1$  generation ? Draw a checker board to show the results obtained in  $F_2$  generation when pea plants of  $F_1$  generation are self pollinated. What is the phenotypic ratio of the plants produced here ?

36. a) 'Reflex arcs are considered as more efficient for quick responses.' Justify.
- b) When a plant receives light from one direction then the plant appears to bend towards the direction of light. Analyse the reason for this response.

**XVI. Answer the following questions :**

**2 × 4 = 8**

37. a) Mention the types of blood vessels in the human body and write one function of each.
- b) What is double circulation ?
38. a) What is the role of testes and prostate gland in human male reproductive system ?
- b) How does an embryo get nutrition from the mother's blood ? Explain.

**OR**

- a) What are the different methods of contraception followed in human beings ?
- b) Mention one difference between fragmentation and regeneration.
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