

ಕರ್ನಾಟಕ ಶಾಲಾ ಪರೀಕ್ಷೆ ಮತ್ತು ಮೌಲ್ಯನಿರ್ಣಯ ಮಂಡಲಿ
ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು - 560 003

KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD
Malleshwaram, Bengaluru - 560 003

2025-26ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ - 4
S.S.L.C. MODEL QUESTION PAPER - 4 : 2025-26

ವಿಷಯ : ವಿಜ್ಞಾನ

Subject: SCIENCE

(ಭೌತ ವಿಜ್ಞಾನ, ರಸಾಯನ ವಿಜ್ಞಾನ ಮತ್ತು ಜೀವ ವಿಜ್ಞಾನ / **Physics, Chemistry and Biology**)
(ಆಂಗ್ಲ 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

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.**

 $2 \times 1 = 2$

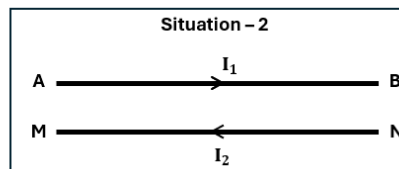
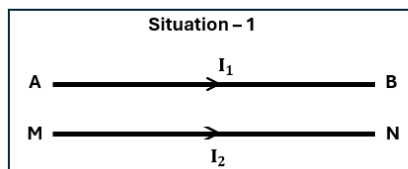
- 1.** The diameter of the reflecting surface of a spherical mirror is
- (A) pole of the mirror
 - (B) centre of curvature
 - (C) principal axis
 - (D) aperture
- 2.** When three resistors of different resistance are connected in parallel in an electric circuit and switched on, then the quantity that remains the same in all the resistors is
- (A) current
 - (B) potential difference
 - (C) resistance
 - (D) resistivity

- II. Answer the following questions:**

 $2 \times 1 = 2$

- 3.** What are the reasons for overload in an electric circuit?

4. Two situations of freely suspended parallel copper wires carrying current are shown in the figure given below.



In which of these situations, the wires attract each other? Justify your answer.

III. Answer the following questions:

3 × 2 = 6

5. What is the colour of danger signal lights? Why is that colour preferred?
6. Among nichrome and copper wires, which of the wires is used in electric fan and in the coils of electric heater? Why?
7. Draw the diagram indicating the field lines of the magnetic field around a current-carrying straight conductor.

IV. Answer the following questions :

3 × 3 = 9

8. Draw the ray diagram to show the image formation when an object is kept between 'C' and 'F' of a concave mirror. Write the nature and size of the image formed. [C = Centre of curvature, F = Principal Focus]
9. Explain an experiment to demonstrate that a current carrying conductor placed in a magnetic field experiences a force.

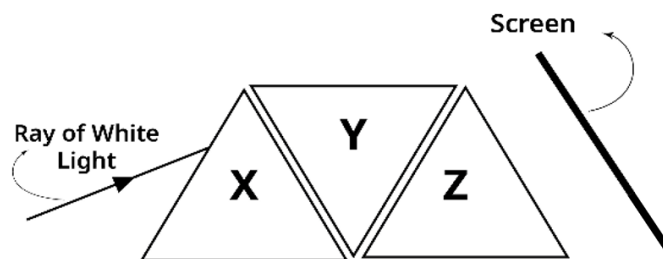
OR

Explain an activity to draw the magnetic field lines around a bar magnet using a compass needle.

10. a) A student clearly reads letters of a textbook only when the book is kept at a distance more than 50 cm from his eyes without difficulty. Then,
- identify this defect of the eye.
 - suggest a remedy for this defect.
- b) When sunlight passes through the trees of a dense forest on a foggy morning then the path of the beam of light appears between the trees.
- What is this phenomenon called?
 - The same phenomenon is not normally visible in an open field. Why? Write your analysis.

OR

- a) The position of the stars changes apparently in the clear sky. Why? Explain.
- b) White light is passed through the given arrangement of three glass prisms (X, Y, and Z) as shown in the figure given below.



- Is spectrum of light seen on the screen?
- What is the role of prism Z?

V. Answer the following questions:

2 × 4 = 8

11. a) What is magnification? Write the formula to calculate magnification of the image produced by a lens.

- b) State the laws of reflection of light.

12.

- a) Two resistors of resistance 10Ω and 40Ω are connected in series and connected to a 12V battery. Calculate the equivalent resistance in the electric circuit and the total current flowing in the circuit.
- b) A washing machine rated 500W is used for 2 hours a day for 30 days. Calculate the cost of using this appliance at 3 Rs per 1 kWh.

OR

- a) Resistance of a metal wire of length 2 m is 28Ω at 20°C . If the diameter of the wire is 0.04 mm then, what will be the resistivity of the metal at that temperature?
- b) 1000 J of heat is produced each 2 seconds in a 5Ω resistor. Find the potential difference across the resistor.

PART – B

(CHEMISTRY)

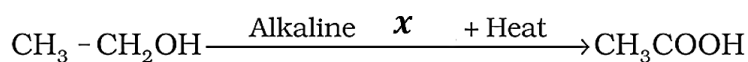
VI. *Four alternatives are given for each of the following questions / incomplete statements. Choose the correct alternative and write the complete answer along with its letter of alphabet.*

3 × 1 = 3

13. As the pH value of a neutral solution increases,

- (A) basic property decreases and number of OH^- ions increases.
- (B) acidic property increases and number of H^+ ions decreases.
- (C) basic property increases and number of OH^- ions increases.
- (D) acidic property decreases and number of H^+ ions increases.

14. The ' x ' in the following reaction represents,



- (A) $\text{K}_2\text{Cr}_2\text{O}_7$
- (B) KMnO_4
- (C) NaOH
- (D) KOH

15. To make pure iron hard and strong, the substance that is to be added to it is

(A) carbon

(B) zinc

(C) nickel

(D) tin

VII. Answer the following questions:

3 × 1 = 3

16. What is rancidity?

17. Write the structural formula of the compound obtained when one atom of hydrogen in 'ethane' is replaced by –CHO group.

18. Aluminium articles do not corrode easily like iron articles. Justify.

VIII. Answer the following questions:

3 × 2 = 6

19. Analyze the list of experiments in the table given below. In which of the experiments the following salts will be produced?

(i) An acidic salt

(ii) A neutral salt

Experiment No	Acid and base combination
1	Strong acid + Weak Base
2	Weak Acid + Strong Base
3	Strong Acid + Strong Base
4	Weak Acid + Weak Base

20. Name the catalyst used and the product obtained in the hydrogenation of ethene.

OR

The molecular formula of the first member of a homologous series of carbon compounds is CH_2O (HCHO). Determine the name and the molecular formula of the third member of this group. Mention the general name of this group.

21. Draw the diagram to show the action of steam on metals.

IX. Answer the following questions:

3 × 3 = 9

22. Write the balanced chemical equations for the following reactions.

- a) Calcium carbonate → Calcium oxide + carbon dioxide
- b) Hydrogen + chlorine → Hydrogen chloride
- c) Magnesium + hydrochloric acid → Magnesium chloride + Hydrogen

23. a) What is neutralization?

- b) Name the acid present in the following substances.

- i) Curd
- ii) Gastric juice

24. Explain the formation of ionic bond between sodium and chlorine atoms.

OR

- a) Write the chemical reactions to prove that aluminium oxide is an amphoteric oxide.
- b) How calcination differs from roasting?

X. Answer the following question:

1 × 4 = 4

25. a) Give reasons:

- i) Carbon atoms neither form C^{4-} anion nor form C^{4+} cation.
- ii) Ethanoic acid known as glacial acetic acid.

b) Write the structural formula of the following carbon compounds:

- i) Butyne
- ii) Cyclohexane

OR

- a) Explain the mechanism of cleansing action of soaps.
- b) Write the differences between saturated and unsaturated carbon compounds.

PART – C

(BIOLOGY)

XI. 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

26. The process of producing new individuals in rhizopus is

- (A) spore formation
- (B) fragmentation
- (C) budding
- (D) regeneration

27. Part of flower that develops into fruit and part of the seed that develops into root respectively are

- (A) Ovary and Plumule
- (B) Plumule and radicle
- (C) Ovary and radicle
- (D) Ovary and ovule

28. Organisms that reproduce sexually are more likely to survive in their environment. Because in sexual reproduction these organisms,
- (A) do not produce any variations.
 - (B) will not have any errors during DNA replication.
 - (C) will have the same body structure in all generations.
 - (D) will have the maximum number of successful variations in the subsequent generations.

XII. Answer the following questions:

3 × 1 = 3

29. What is the function of synapse?
30. Is self-pollination possible in flowers that have only stamens? Justify your answer.
31. The respiration rate of aquatic animals is faster than that is found in terrestrial animals. Why?

XIII. Answer the following questions:

2 × 2 = 4

32. What is geotropism? Name the plant part that is positively geotropic.

OR

Name the hormones that perform the following functions in humans.

- i) Controlling the level of sugar in the blood.
- ii) Preparing the body to face the emergency situation.

- 33.** The approximate lengths of the small intestine of the animals A and B are given in the below table. Observe the data in the table and answer the question.

Animals	Length of small intestine
A	20 to 40 feet
B	5 to 8 feet

Identify the herbivorous and carnivorous animal among A and B. Support your conclusion.

XV. Answer the following questions:

3 × 3 = 9

- 34.** a) Define the following:
- i) Food chain
 - ii) Biomagnification
- b) Mention the function of ozone. Name the chemical responsible for ozone depletion.
- 35.** a) A short pea plant (tt) is crossed with a tall pea plant (TT). Express the result obtained in the F₂ generation with the help of checkerboard.
- b) How is the baby girl sex will be determined?

OR

Round and yellow seeds (RrYy) producing pea plants are self-pollinated. Express the result obtained in this crossing with the help of a checkerboard. Mention the types of the plants obtained.

- 36.** In a situation where we withdraw our leg when stepped on thorn unknowingly,
- i) Write the sequences of events that occur to give the response in this situation.
 - ii) Which part of human nervous system controls this action?

XVI. Answer the following question:

1 × 4 = 4

37. Draw the diagram showing the structure of the human heart. Label the following parts:

- i) Superior vena cava
- ii) Left ventricle

XVII. Answer the following question :

1 × 5 = 5

- 38.**
- a) What happens if egg does not fertilize in human female reproductive system? Explain briefly.
 - b) List any four advantages of vegetative propagation.
 - c) Write two examples for the organisms that reproduce by binary fission.

OR

- a) In women, how does a fertilized egg develop into an embryo in the uterus?
- b) Is surgical contraception a better method of contraception than physical contraception? Justify your answer.
- c) Write the function of testes in human male reproductive system.
