



ANGEL'S PUBLIC SCHOOL

HALF YEARLY EXAMINATION

(SAMPLE PAPER)

SESSION 2026 – 27
SUBJECT : SCIENCE

TIME : 03 HRS

GRADE – X

M.M:80

GENERAL INSTRUCTIONS:

Read the following instructions carefully and follow them:

- (i) This question paper contains 39 questions. All questions are compulsory.
- (ii) Question paper is divided into THREE sections – A, B and C.
 - Section A : Biology (30 Marks)
 - Section B : Chemistry (25 Marks)
 - Section C : Physics (25 Marks)
- (iii) The question paper has MCQs, VSAs, SAs, LAs and C/S(case study) . Marks are given against each question.
- (iv) There are case based questions (CBQs) with three sub-questions and are of 4 marks each.
- (v) Divide your answer sheet into three sections as per question paper – Section A (Biology), Section B (Chemistry) and Section C (Physics). It is compulsory to answer each question in its respective section. Do not mix answers of one section into the other section.
- (vi) Instructions are given with each section and question, wherever necessary.
- (vii) There is no overall choice in the question paper. However, an internal choice has been provided in few questions. Only one of the choices in such questions must be attempted.

SECTION A : BIOLOGY

Multiple Choice Questions

(9 × 1 = 9)

1. What is the phenotypic ratio obtained in the F₂ generation of a classic Mendelian monohybrid cross?
(a) 1:2:1 (b) 3:1 (c) 9:3:3:1 (d) 1:2:1:2:1:2
2. Which blood vessel carries oxygenated blood from the lungs to the heart?
(a) Pulmonary artery (b) Pulmonary vein (c) Aorta (d) Vena cava
3. During photosynthesis, oxygen is released from:
(a) Carbon dioxide (b) Water (c) Glucose (d) Chlorophyll
4. The movement of food in plants takes place through:
(a) Xylem (b) Phloem (c) Cortex (d) Epidermis

5. Assertion (A): Insulin regulates blood glucose level.

Reason (R): Insulin is secreted by the pancreas.

- (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.
- (c) A is true but R is false.
- (d) A is false but R is true.

6. Which part of the brain controls balance and posture?

- (a) Cerebrum
- (b) Cerebellum
- (c) Medulla
- (d) Hypothalamus

7. Which hormone causes the shoot to bend towards light?

- (a) Cytokinin
- (b) Auxin
- (c) Ethylene
- (d) Absciscic acid

8. Which of the following is an involuntary action?

- (a) Writing
- (b) Speaking
- (c) Withdrawal of hand from a hot object
- (d) Reading

9. The exchange of gases in human lungs occurs in:

- (a) Bronchi
- (b) Trachea
- (c) Alveoli
- (d) Larynx

Very Short Answer Questions

(3 × 2 = 6)

10. State any two differences between xylem and phloem.

11. Why are alveoli numerous and thin-walled? Give two reasons.

12. Name the three components of a reflex arc.

Short Answer Questions

(2 × 3 = 6)

13. "The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it". Justify this statement with a flowchart..

14. Explain how insulin and adrenaline help in maintaining body functions.

Case-Based Question

(4)

A student observed that after climbing four floors rapidly, his breathing became faster and his heartbeat increased. After resting for a few minutes, both returned to normal.

Answer the following:

a) Why does the breathing rate increase after exercise?

(1)

- b) Which gas is required by body cells in larger quantity during exercise? (1)
- c) Name the blood vessel that carries oxygenated blood from the lungs to the heart. (1)
- d) Why does the heartbeat increase during exercise? (1)

Long Answer Question (5)

16. A pea plant with round green seeds (RRyy) is crossed with a pea plant having wrinkled yellow seeds (rrYY).

- (a) What changes will you observe in their F1 progeny, and why?
- (b) Write the phenotypic ratio of the F2 progeny obtained by self-pollinating F1 plants.
- (c) State the law of inheritance derived from this cross.

OR

Name the hormone released and the gland which secretes it in human beings during scary situations. How does the body respond to enable it to deal with the situation?

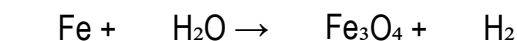
SECTION B: CHEMISTRY

Multiple Choice Questions (8 × 1 = 8)

17. Which of the following is a balanced chemical equation?

- (a) $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ (b) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
- (c) $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}_2$ (d) $\text{H}_2 + 2\text{O}_2 \rightarrow \text{H}_2\text{O}$

18. Balance the following equation and identify the coefficient of Fe:



- (a) 2 (b) 3 (c) 4 (d) 5

19. Which indicator turns pink in a basic solution?

- (a) Blue litmus (b) Red litmus
- (c) Phenolphthalein (d) Methyl orange

20. The pH of lemon juice is approximately:

- (a) 2 (b) 7 (c) 9 (d) 12

21. Baking soda is chemically known as:

- (a) Sodium carbonate (b) Sodium bicarbonate
(c) Calcium carbonate (d) Sodium chloride

22. Which gas is evolved when zinc reacts with dilute hydrochloric acid?

- (a) Oxygen (b) Carbon dioxide
(c) Hydrogen (d) Chlorine

23. Tooth enamel starts corroding when the pH falls below:

- (a) 5.5 (b) 7.0 (c) 8.5 (d) 10.0

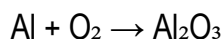
24. The process of adding water to quicklime is called:

- (a) Neutralisation (b) Hydration
(c) Oxidation (d) Decomposition

Short Answer

(1 × 2 = 2)

25. Balance the following chemical equation:



Short Answer

(2 × 3 = 6)

26. Write balanced chemical equations for:

1. Magnesium burns in oxygen.
2. Zinc reacts with dilute sulphuric acid.
3. Calcium carbonate is heated strongly.

27. (a) Define an acid and a base according to the Arrhenius concept.

(b) What is neutralisation? Write one balanced chemical equation for a neutralisation reaction.

Case Study

(1 × 4 = 4)

28. Case Study:

Riya was suffering from acidity after eating spicy food. The doctor advised her to take an antacid containing magnesium hydroxide. Her younger brother tested the antacid solution with red litmus paper, which turned blue.

Answer the following:

1. Why is magnesium hydroxide used as an antacid? (1)
2. What is the nature of magnesium hydroxide solution? (1)
3. Name the process that occurs when the antacid reacts with excess stomach acid. (1)
4. Write the balanced chemical equation for the reaction between magnesium hydroxide and hydrochloric acid. (1)

Long Answer

(1 × 5 = 5)

- 29.(a) Explain the steps involved in balancing a chemical equation with a suitable example. (3)
- (b) Distinguish between strong acids and weak acids by giving one example of each. (2)

SECTION C: PHYSICS

30. A parallel beam of light after reflection from a mirror converges to a point. The mirror is.

- (a) Concave (b) Convex (c) plane (d) None

31. The focal length of an eye lens is changed due to the action of.

- (a) Pupil (b) Retina (c) Ciliary muscle (d) Cornea

32. **Assertion** : Apparent depth of the swimming pool is less than the actual depth.

Reason :- This is due to phenomenon of reflection of light.

Very Short Answer

(2 × 2= 4)

33. Complete the ray diagram as shown. Also marks its incident, refracted and reflected angle.

34. A concave mirror produces three time magnified real Image of an object placed at 10 cm in front of it. Where is Image located?

Short Answer

(3× 3 = 9)

35. Find the position, nature and size of the Image formed by a convex lens of focal length 20cm of an object 4 cm high placed at a distance of 30 cm from it.

36. (a) A man standing in front of spherical mirror find his Image having small face, big tummy and legs of normal size. Why does it happen using different mirrors.

(b) Draw the ray diagram for rectangular glass slab which shows lateral displacement.

37. (a) What is power of lens? Write its S.I unit.

(b) A convex lens of power 3D is held in contact with a convex lens of power – 1 D. A parallel beam of light is made to fall on the combination. At what distance from the combination with the beam get focused?

Case Study:

(1×4=4)

38. Nooper, a 15-year-old student, noticed that she was unable to read the writing on the classroom board clearly while sitting in the last few rows. However, she could easily read books and use her mobile phone without any difficulty. During her eye examination, the ophthalmologist found that she required a **concave lens of power –4.5 D** to correct her vision. The doctor explained that the lens would help her see distant objects clearly by forming the image on the retina. He also advised her to take regular breaks while using digital devices and maintain proper eye care.

Based on the above case, answer the following questions:

- (a) What kind of defect in vision is she suffering from.
- (b) What is the focal length and nature of corrective lens?
- (c) Draw the ray diagram showing the defected eye and correction of the defect?
- (d) What are the causes of this defect?

Long Answer

(1 × 5 = 5)

39. We wish to option an equal size inverted Image of a candle flame on a screen kept at a distance of 4 m from the candle flame.

- (a) The type of lens that should be used in
 - (i) concave
 - (ii) convex
 - (iii) both a & b
 - (iv) plane
- (b) The distance of candle from the lens is.
 - (i) 1m
 - (ii) 2 m
 - (iii) 3 m
 - (iv) 4 m
- (c) The distance of Image of candle flame from the lens is
 - (i) 4m
 - (ii) 2m
 - (iii) 3 m
 - (iv) 1 m
- (d) Focal length of lens is.
 - (i) 1 m
 - (ii) 2 m
 - (iii) 3 m
 - (iv) 4 m