

SAMPLE PAPER 3

Class 10 - Science

Time Allowed: 3 hours

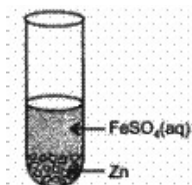
Maximum Marks: 80

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective-type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. On adding zinc granules to freshly prepared ferrous sulphate solution, a student observes that [1]



- a) a dull brown coating is formed b) a greyish black coating is formed
- c) a white coating is formed d) no coating is formed
2. Decomposition of vegetable matter into compost is an example of: [1]
- a) Exothermic reaction b) Endothermic reaction
- c) Redox reaction d) Combination reaction
3. Toothpastes are generally [1]
- a) natural b) acidic
- c) basic d) neutral
4. If 10 mL of H_2SO_4 is mixed with 10 mL of $\text{Mg}(\text{OH})_2$ of the same concentration, the resultant solution will give [1]
the following colour with universal indicator:

- a) Blue
c) Green
- b) Red
d) Yellow

5. The slag obtained during the extraction of copper pyrites is composed mainly of: [1]



- a) Cu_2S
c) CuSiO_3
- b) SiO_2
d) FeSiO_3

6. Which of the following property is generally shown by metals? [1]

- A. Electrical conduction
B. Sonorous in nature
C. Dullness
D. Ductility

- a) A and B
c) All of these
- b) A and C
d) A, B and D

7. Which of the following does not belong to the same homologous series? [1]

- a) C_3H_8
c) C_2H_6
- b) CH_4
d) C_4H_8

8. The internal (cellular) energy reserve in autotrophs is [1]

- a) Glycogen
c) Protein
- b) Starch
d) Fatty acid

9. Cretinism results due to: [1]

- a) Excess secretion of adrenaline
c) Under secretion of thyroxin
- b) Excess secretion of growth hormone
d) Under secretion of growth hormone

10. Which of the following is the correct sequence of events of sexual reproduction in a flower? [1]

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

11. Name the chromosomes that possess the gene for maleness and femaleness in humans. [1]

- a) Sex chromosomes
c) Somatic ctromosomes
- b) None of these
d) Autosomes

12. Before setting up an experiment to show that seeds release carbon dioxide during respiration, the seeds should be [1]

- a) boiled to make them soft
c) soaked in vinegar
- b) kept moist till they germinate
d) dried completely

13. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is [1]

Section B

21. Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid (CH_3COOH) is added to test tube B. Amount and concentration taken for both the acids are same. In which test tube will the fizzing occur more vigorously and why? [2]
22. What is the difference between internal & external fertilization? [2]
23. Why does food not enter the wind pipe? [2]

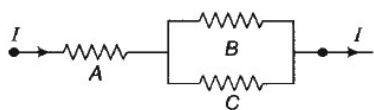
OR

What are the functions of human respiratory system?

24. Draw ray diagrams showing the image formation by a convex mirror when an object is placed at finite distance from the mirror. [2]
25. What are hazards of electricity ? [2]

OR

Three 2Ω resistors, A, B and C are connected as shown in figure. Each of them dissipates energy and can withstand a maximum power of 18 W without melting. Find the maximum current that can flow through the three resistors.



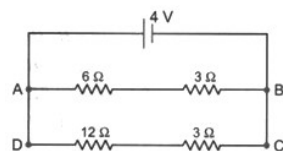
26. Write the harmful effects of ozone depletion. [2]

Section C

27. (i) Name a metal for each case: [3]
- (a) It does not react with cold as well as hot water but reacts with steam.
- (b) It does not react with any physical state of water.
- (ii) When calcium metal is added to water the gas evolved does not catch fire but the same gas evolved on adding sodium metal to water catches fire. Why is it so?
28. Discuss the important properties of ionic compounds. [3]

OR

- i. Give differences between roasting and calcination with suitable examples.
- ii. Explain how the following metals are obtained from their compounds by the reduction process. Give one example of each type.
- a. Metal M which is in the middle of the reactivity series.
- b. Metal N which is high up in the reactivity series.
29. Explain the three pathways of breakdown in living organisms. [3]
30. Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants? Write the ratio he obtained in F_2 generation plants. [3]
31. One-half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object? Verify your answer experimentally. Explain your observations. [3]
32. For the circuit shown in the given diagram: [3]



What is the value of

- i. current through 6Ω resistor?

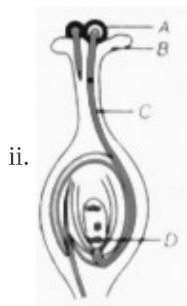
- ii. potential difference across 12Ω resistor?
33. A battery of 9 V is connected in series with resistors of 0.2Ω , 0.3Ω , 0.4Ω , 0.5Ω and 12Ω respectively. How much current would flow through the 12Ω resistor? [3]

Section D

34. An organic compound A having the molecular formula C_3H_8O is a liquid at room temperature. The organic liquid A reacts with sodium metal to evolve a gas which burns causing a little explosion. When the organic liquid A is heated with concentrated sulphuric acid at $170^\circ C$, it forms a compound B which decolorises bromine water. Compound B adds on one molecule of hydrogen in the presence of Ni as catalyst to form compound C which gives substitution reactions with chlorine. [5]
- What is compound A?
 - What is compound B?
 - What type of reaction occurs when A is converted into B?
 - What is compound C?
 - What type of reaction takes place when B is converted into C?

OR

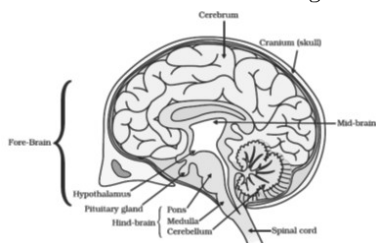
- Why does carbon form large number of compounds?
 - Why are some of these called saturated and others are called unsaturated compounds?
 - Which of these two is more reactive?
 - Write the names of the following compounds:
 $CH_3 - CH_2 - Br$; $CH_3 - CH_2 - CH_2 - CH_2 - C \equiv CH$
35. i. List two reasons for the appearance of variations among the progeny formed by sexual reproduction. [5]



- Name the part marked A in the diagram.
- How does A reach part B?
- State the importance of the part C.
- What happens to the part marked D after fertilisation is over?

OR

Given below is a labelled diagram of the human brain.



Using the given diagram, answer the following questions:

- Which part of the brain controls reflex movements of the head, neck, and trunk?
- Name the part of the human brain which contains a vital centre for controlling blood pressure.

- iii. Which part of the hindbrain regulates respiration?
iv. How is the brain protected from injuries and shock?
v. Which part of the human brain is the main thinking region?
36. A student wants to project the image of a candle flame on the walls of the school laboratory by using a mirror. [5]
- i. Which type of mirror should he use and why?
ii. At what distance, in terms of focal length f of the mirror, should he place the candle flame to get the magnified image on the wall?
iii. Draw a ray diagram to show the formation of the image in this case.
iv. Can he use this mirror to project a diminished image of the candle flame on the same wall State 'how', if your answer is 'yes' and why not', if your answer is 'no'.

OR

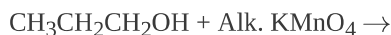
- i. Draw a labelled ray diagram to show the path of a ray of light incident obliquely on one face of a glass slab.
ii. Calculate the refractive index of the material of a glass slab. Given that the speed of light through the glass slab is 2×10^8 m/s and in air is 3×10^8 m/s.
iii. Calculate the focal length of a lens, if its power is - 2.5 D.

Section E

37. **Read the text carefully and answer the questions:** [4]

Carbon compounds can be easily oxidised on combustion. In addition to this complete oxidation, we have reactions in which alcohols are converted to carboxylic acids. We see that some substances are capable of adding oxygen to others. These substances are known as oxidising agents. Also some compounds are capable of adding hydrogen. These substances are known as reducing agents.

- (i) Give any two examples of good oxidising agent.
(ii) Complete the reaction:



OR

Give some uses of Alcohol.

38. **Read the text carefully and answer the questions:** [4]

Mendel blended his knowledge of Science and mathematics to keep the count of the individuals exhibiting a particular trait in each generation. He observed a number of contrasting visible characters controlled in pea plants in a field. He conducted many experiments to arrive at the laws of inheritance.

- (i) What do the F1 progeny of tall plants with round seeds and short plants with wrinkled seeds look like?
(ii) Name the recessive traits in above case.
(iii) Mention the type of the new combinations of plants obtained in F2 progeny along with their ratio, if F1 progeny was allowed to self pollinate.

OR

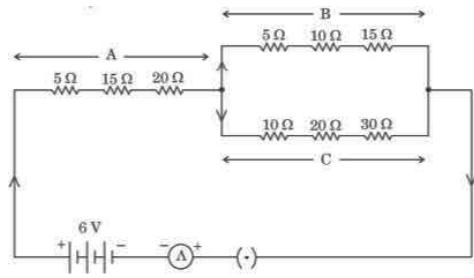
If 1600 plants were obtained in F2 progeny, write the number of plants having traits:

- a. Tall with round seeds
b. Short with wrinkled seeds

Write the conclusion of the above experiment.

39. **Read the text carefully and answer the questions:** [4]

Study the following electric circuit in which the resistors are arranged in three arms A, B and C :



- (i) Find the equivalent resistance of arm C.
- (ii) Calculate the equivalent resistance of the parallel combination of the arms B and C.
- (iii) Determine the current that flows through the ammeter.

OR

Determine the current that flows in the ammeter when the arm B is withdrawn from the circuit.

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