

123

(New Syllabus)

III

Total No. of Questions - 21

Regd.
No.

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Total No. of Printed Pages - 2

Part - III

CHEMISTRY, Paper - I
(English Version)

Time : 3 hours

Max. Marks : 60

Note : Read the following instructions carefully.

- 1) Answer all questions of Section 'A'. Answer any six questions in Section 'B' and any two questions in Section 'C'.
- 2) In Section 'A', questions from Sr. Nos. 1 to 10 are of "Very short answer type". Each question carries two marks. Every answer may be limited to 2 or 3 sentences. Answer all these questions at one place in the same order.
- 3) In Section 'B', questions from Sr. Nos. 11 to 18 are of "Short answer type". Each question carries four marks. Every answer may be limited to 75 words.
- 4) In Section 'C' questions from Sr. Nos. 19 to 21 are of "Long answer type". Each question carries eight marks. Every answer may be limited to 300 words.
- 5) Draw labelled diagrams wherever necessary for questions in Section 'B' and 'C'.

SECTION A

Answer all questions.

10 × 2 = 20

1. Define 'receptor' and 'sink'.
2. Which oxides cause acid rain? What is its pH value?
3. Write about the biological importance of calcium.
4. The empirical formula of a compound is CH_2O . Its molecular weight is 90. Calculate the molecular formula of the compound.
5. What is allotropy? Give the crystalline allotropes of carbon.
6. Calculate kinetic energy of 5 moles of nitrogen at 27°C .
7. Why is carbon monoxide poisonous?

8. Calculate the pH of 0.05 M NaOH solution.
9. Why are alkali metals not found in a free state in nature?
10. Write the structural formulae of the following compounds :
- a) Trichloroethanoic acid b) Neo-pentane

SECTION B

Answer any six questions.

6 × 4 = 24

11. Write any four postulates of the kinetic molecular theory of gases.
12. Calculate the molarity of sodium carbonate in a solution prepared by dissolving 5.3 g in enough water to form 250 ml of the solution.
13. State Hess' law of constant heat summation. Explain with one example.
14. Derive the relation between K_p and K_c for the equilibrium reaction
- $$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$$
15. Write few lines on the utility of hydrogen as a fuel.
16. What is borax? Explain the borax bead test with a suitable example.
17. Explain Wurtz reaction and Friedel Crafts alkylation with one example for each.
18. Write about position isomerism and functional group isomerism.

SECTION C

Answer any two questions.

2 × 8 = 16

19. What are the postulates of Bohr's model of a hydrogen atom? Write any two limitations of Bohr's model of an atom.
20. Define first ionization energy and second ionization energy. Why is the second ionization energy greater than the first ionization energy for a given atom? Discuss any four factors that affect the ionization energy of an element.
21. What do you understand by hybridization? Explain the different types of hybridizations involving 's' and 'p' orbitals.