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II

Total No. of Questions – 21
Total No. of Printed Pages – 3

Regd. No.

Part – III
CHEMISTRY, Paper-II
(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 from Section – 'B' and any two questions from 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 two or three 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 Section – 'C'.

SECTION – A

$10 \times 2 = 20$

Note : Answer all questions :

1. What are artificial sweetening agents ? Give example.
2. What is Zeigler-Natta Catalyst ?
3. Name two most familiar antioxidants used as food additives.
4. Write names of the monomers used for getting the polymers
   (a) Bakelite
   (b) Glyptal
5. What are colligative properties ? Give any one.

6. Identify the reaction order from each of the following rate constants :
   (a) $K = 2.3 \times 10^{-5}\ L\ mol^{-1}\ s^{-1}$
   (b) $K = 3 \times 10^{-4}\ s^{-1}$

7. What is the role of cryolite in the metallurgy of aluminium ?

8. Why Zn^{2+} is diamagnetic whereas Mn^{2+} is paramagnetic ?

9. Complete the following :
   (a) $XeF_4 + O_2F_2 \rightarrow$
   (b) $XeF_2 + H_2O \rightarrow$

10. Give the hybridization of sulphur in the following :
   (a) SO_2
   (b) SO_3
   (c) SF_4
   (d) SF_6

SECTION – B

$6 \times 4 = 24$

Note : Answer any six questions :

11. (a) What are amino acids ? Give two examples.
   (b) Write any two differences between Globular and fibrous proteins.

12. Explain the following with one example for each :
   (a) Wurtz reaction
   (b) Fittig reaction

13. Explain Werner's theory of co-ordination compounds with suitable examples. https://www.apboardonline.com

14. How does PCl_5 react with the following :
   (a) Water
   (b) C_2H_5OH
   (c) CH_3COOH
   (d) Ag

15. Define the following with suitable examples :
   (a) Anti-ferromagnetism
   (b) Frenkel defect

16. State Henry's law. Calculate the mass of a non-volatile solute (molar mass 40 g mol^{-1}) which should be dissolved in 114 g of octane to reduce its vapour pressure to 80%.

17. What is catalysis ? How is catalysis classified ? Give one example for each of catalysis.

18. Write any two ores of the following metals :
    (a) Aluminium
    (b) Zinc
    (c) Iron
    (d) Copper

SECTION - C

$2 \times 8 = 16$

Note : Answer any two questions :

19. (i) Explain the following with suitable examples :
        (a) Conversion of alkylhalide to ether.
        (b) Conversion of phenol to salicylic acid.
    (ii) (a) How do you prepare carboxylic acid and alcohols from Grignard's reagent ? Give example.
        (b) What is carbylamine reaction ? Give example.

20. (i) State Faraday's first and second laws of electrolysis. A solution of $CuSO_4$ is electrolysed for 10 minutes with a current of 1.5 amperes. What is the mass of copper deposited at the cathode ?
    (ii) What is molecularity of a reaction ? How is it different from the order of a reaction ? Name one bimolecular and one trimolecular gaseous reactions.

21. (i) How does chlorine react with
        (a) acidified $FeSO_4$?
        (b) dry slaked lime ?
    (ii) Describe the manufacture of H_2SO_4 by contact process.