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II

Total No. of Questions – 21

Regd.

Total No. of Printed Pages – 2

No.

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## 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 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 × 2 = 20

Note : Answer **all** questions :

1. What is Bio-chemical oxygen demand [BOD] ?
2. Write names of the any four gases which causes green-house effect.
3. Why does the solubility of alkaline earth metal hydroxides in water increase down the group.
4. Describe the important uses of sodium carbonate.
5. On a ship sailing in pacific ocean where temperature is 23.4 °C. a ballon is filled with 2 litre air. What will be the volume of the ballon when the ship reaches Indian Ocean where temperature is 26.1 °C ?
6. Calculate the normality of oxalic acid solution containing 6.3 gm of  $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$  in 500 ml solution.

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7. Give two chemical equilibrium reactions for which  $k_p > k_c$ .
8. What is allotropy? Give the crystalline allotropes of carbon.
9. What is 'synthesis' gas? How is it prepared?

10. Write the IUPAC name of



### SECTION - B

6 × 4 = 24

Note : Answer any six questions :

11. Define Dipole moment. Write its applications.
12. Explain the hybridisation involved in  $PCl_5$  molecule.
13. Deduce :
  - (a) Graham's law and
  - (b) Daltons law from kinetic gas equation.
14. Balance the following redox reaction by ion - electron method in basic medium.
 
$$MnO_4^- (aq) + Br^- (aq) \longrightarrow MnO_2 (s) + BrO_3^- (aq)$$
15. State and explain the Hess's law of constant heat summation.
16. Write the conjugate acid and conjugate base of each of the following :
  - (a)  $OH^-$
  - (b)  $H_2O$
  - (c)  $HCO_3^-$
  - (d)  $H_2O_2$
17. Discuss the position of hydrogen in the periodic table on the basis of its electronic configuration.
18. Explain borax bead test with suitable example.

### SECTION - C

2 × 8 = 16

Note : Answer any two questions :

19. What are the postulates of Bohr's model of hydrogen atom? Discuss the importance of this model to explain various series of line spectra in hydrogen atom.
20. Write an essay on s, p, d and f block elements.
21. Give two methods of preparation of acetylene. How does it react with water and ozone?