

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

10. Write the IUPAC name of



### SECTION - B

6 × 4 = 24

Note : Answer any six questions :

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

### SECTION - C

2 × 8 = 16

Note : Answer any two questions :

- 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.
- Write an essay on s, p, d and f block elements.
- Give two methods of preparation of acetylene. How does it react with water and ozone?