

## CBSE-2003 CLASS XII CHEMISTRY

### General Instructions:

1. All questions are compulsory.
2. Marks for each question are indicated against it.
3. Question numbers **1 to 10** are very short-answer questions each of **1 mark**. Answer them in about one sentence each.
4. Question numbers **11 to 26** are short-answer questions of **2 marks** each. Answer them in not more than 30 words each.
5. Question numbers **27 to 32** are short-answer questions of **3 marks** each. Answer them in not more than 40 words each.
6. Question numbers **33 and 34** are long-answer questions of **5 marks** each. Answer them in not more than 70 words each.
7. Use Log Tables, If necessary.

**Note:** Except for the following questions, all the remaining questions, all the remaining questions have been asked in [Set I](#).

**Q. 1.** Give an example of a solution containing a solid solute in a solid solvent. **1**

**Q. 5.** What is the effect of Frenkel defect on electrical conductivity of the solid? **1**

**Q. 8.** Which quantum number will express the difference in two electrons in K-shell? **1**

**Q. 12.** A 5 litre cylinder contained 10 moles of oxygen gas at  $27^{\circ}\text{C}$ . Due to sudden leakage through the hole, all the gas escaped into the atmosphere and the cylinder got empty. If the atmospheric pressure is 1,0 atm, calculate the work done by the gas.

$[R = 0.0821 \text{ L atm K}^{-1} \text{ mol}^{-1}, 1 \text{ L atm} = 101.3\text{J}]$

**Q. 14.** The rate constant for a first order reaction becomes six times when the temperature is raised from 350 K to 400 K. Calculate the activation energy for the reaction. **2**

$[R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}]$

**Q. 15.** Calculate the standard electrode potential of  $\text{Ni}^{2+} | \text{Ni}$  electrode if the cell potential of the cell **2**

$\text{Ni} | \text{Ni}^{2+} (0.01 \text{ M}) || \text{Cu}^{2+} (0.1 \text{ M}) | \text{Cu}$  is  $0.59 \text{ V}$  at  $25^{\circ}\text{C}$ .

**Q. 24.** Blue colour of copper sulphate solution is slowly discharged (disappears) when an iron-rod is dipped into it Explain this by  $\Delta G^0$  with the help of the following data: **2**  
[ $E^0_{\text{Cu}^{2+}/\text{Cu}} = 0.34\text{V}$ ;  $E^0_{\text{Fe}^{2+}/\text{Fe}} = -0.44\text{V}$  and  $1\text{F} = 96500\text{C mol}^{-1}$ ]

**Q. 27.** How are organometallic compounds classified Draw the structure of Zeise's salt. State two important applications of coordination complexes in qualitative analysis of cations. **3**

**Q. 29.** (a) Name any two projectiles commonly used in artificial transmutation of elements.

(b) Half-life period of a radioactive element is 100 seconds. Calculate the disintegration constant. How much time will the element take for 90% of its decay?

**Q. 31.** Describe the following: **3**

(i) Functions of carbohydrates in plants

(ii) Replication

(iii) Protein synthesis of nucleic acids