

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.

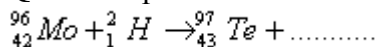
Note: Except for the following questions, all the remaining questions have been asked in [Set I](#).

Q. 4. Why is the equilibrium constant K related to only E°_{cell} and not E_{cell} ? **1**

Q. 6. Write IUPAC name of the complex $[Cr(H_2O)_5Cl]Cl_2$. **1**

Q. 7. How is ammonia molecule a good ligand? **1**

Q. 8. Complete the nuclear equation: **1**



Q. 15. A piece of wood was found to have $^{14}\text{C}/^{12}\text{C}$ ratio 0.7 times than that in the living plant. Calculate the period when the piece of wood separated from the living plant. **2**
[$t_{1/2}$ for ^{14}C = 5760 years]

Q. 21. Using the valence bond approach, predict the shape and magnetic character of **2**
 $[Fe(CN)_6]^{3-}$ - ion. [At. no. of = 26]

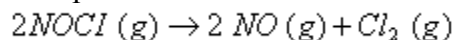
Q. 22. Write one chemical reaction each to exemplify the following:

- (i) Cannizzaro reaction
- (ii) Williamson's synthesis **2**

Q. 25. Account for the following:

- (a) Zirconium and Hafnium exhibit almost similar properties.
- (b) Zinc salts are white while Cu^{2+} salts are coloured. [At. nos. Zn = 30, Cu = 29] **2**

Q. 29. How is the third law of thermodynamics useful in calculation of the absolute entropies? Calculate the value of ΔS^0 for the following reaction at 400 K:

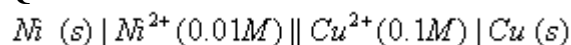


If the value of equilibrium constant for the reaction at 400 K is 1.958×10^{-4} and $\Delta H^0 = 77.2 \text{ kJ mol}^{-1}$. [$R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$]

Q. 30. Write chemical tests to distinguish between: **3**

- (i) Acetaldehyde and Acetone
- (ii) Acetic acid and Acetaldehyde
- (iii) Phenol and Propanoic acid

Q. 31. Calculate the cell emf at 25° C for the following cell:



[Given $E^0_{\text{Ni}^{2+}/\text{Ni}} = -0.25 \text{ V}$, $E^0_{\text{Cu}^{2+}/\text{Cu}} = +0.34 \text{ V}$, $1 F = 96,500 \text{ C mol}^{-1}$]

Calculate the maximum work that can be accomplished by the operation of this cell. **3**