# MODEL TEST PAPERS

### For
### (Revision & Practice)

## *New Style* MODEL TEST PAPER—1

### CLASS—XII (H.P.)
## CHEMISTRY

**Time Allowed : 3 Hours]**                      **[Maximum Marks : 60**

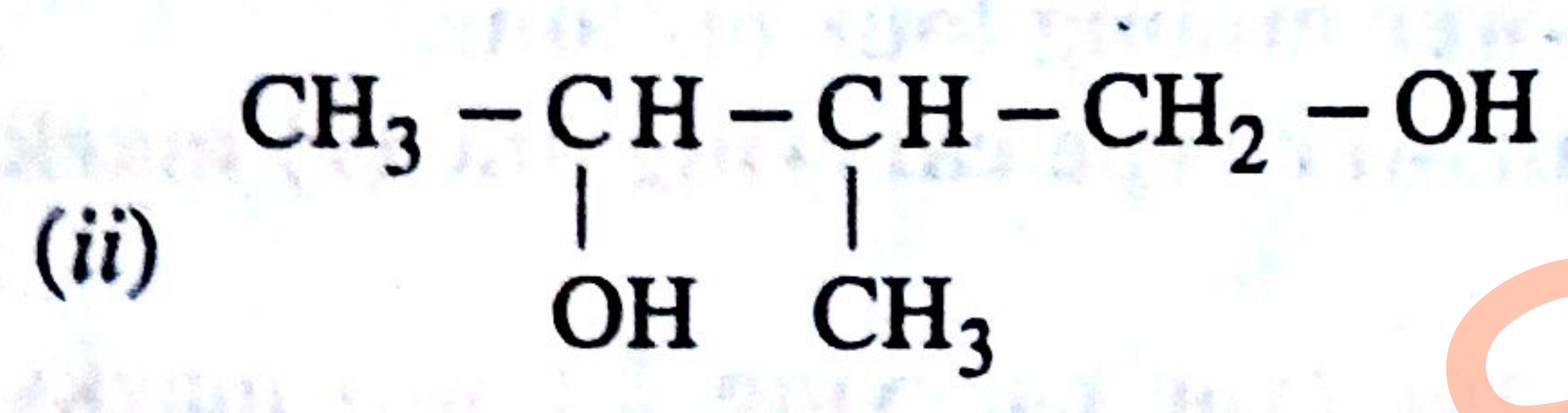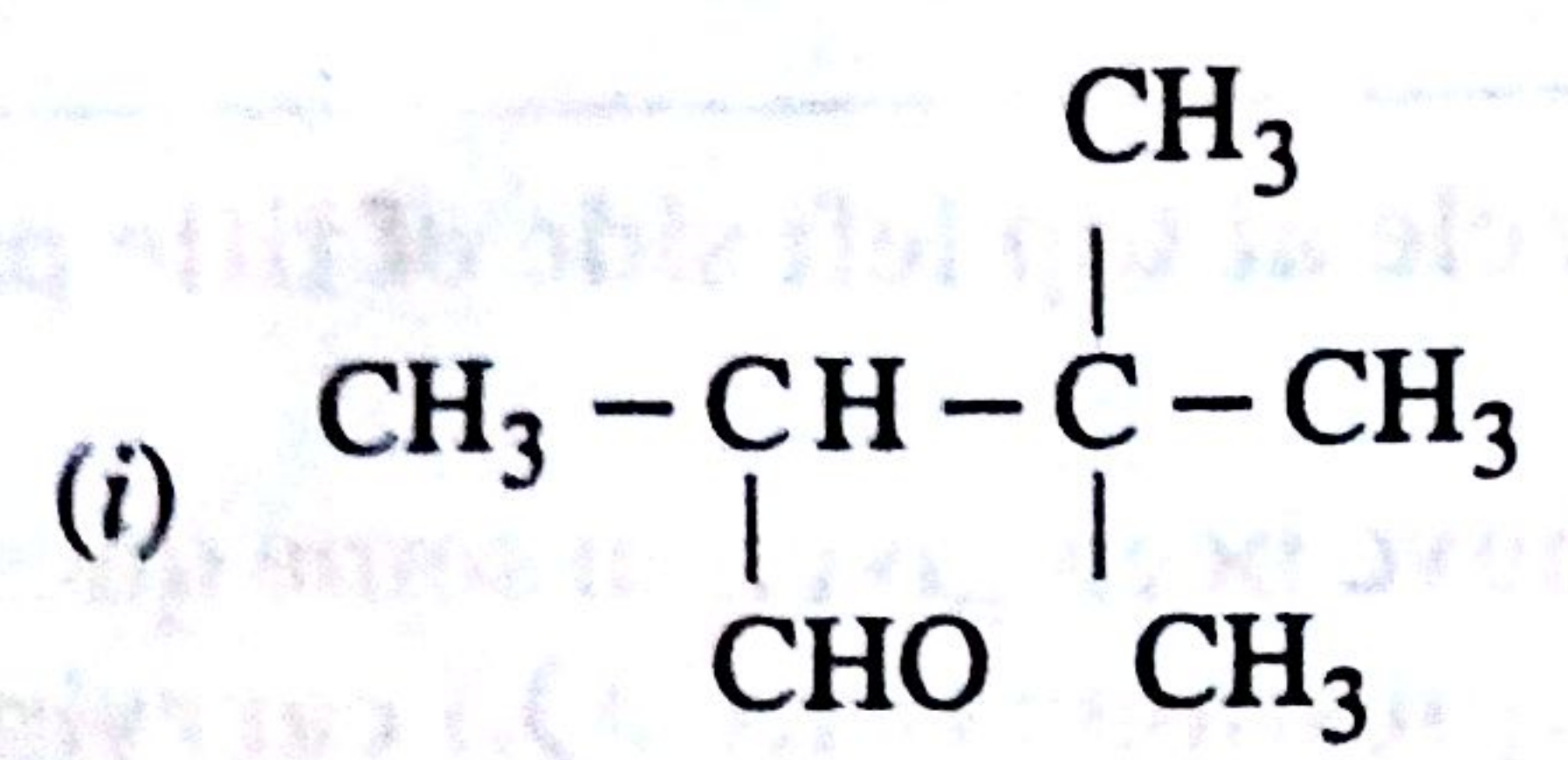Candidates are required to give their answers in their own words as far as practicable.

**Special Instructions :**

1. You must write question paper series in the circle at top left side of title page of your answer-sheet.
2. All questions are compulsory. Internal choices have been given in some questions.
3. Question Nos. 1 to 6 are multiple choice type questions (M.C.Q.) carrying one (1) mark each. Choose one correct answer among four options.
4. Question Nos. 7 to 10 are very short answer type carrying one (1) mark each. Answer in one word or one line.
5. Question Nos. 11 to 17 are short answer type carrying 2 (two) marks each. Answer these in about 30 words each.
6. Question Nos. 18 to 25 are short answer type carrying 3 (three) marks each. Answer these questions in about 40 words each.
7. Question Nos. 26 to 28 are long answer type carrying 4 (four) marks each. Answer these questions in about 50 words each.
8. Do not leave blank pages in your answer book.

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1. The quantity of electricity needed to liberate 1 g equivalent of an element is :
   - (a) 1 ampere
   - (b) 96,500 amperes
   - (c) 96,500 coulombs
   - (d) 96,500 Faradays.

2. The oxidation number of iron in $K_4[Fe(CN)_6]$ is :
   - (a) + 1
   - (b) + 2
   - (c) + 3
   - (d) zero.

3. The coordination number in bcc packing is :
   - (a) 8
   - (b) 6
   - (c) 12
   - (d) 4.

4. Galvanised iron sheets are coated with :
   - (a) Cu
   - (b) Zn
   - (c) Co
   - (d) Ni.

5. The rate constant of a reaction is $10^{-5}$ s$^{-1}$. The order of the reaction will be :
   - (a) 1
   - (b) 2
   - (c) 0
   - (d) 3.

6. The osmotic pressure of a solution at 0°C is 4 atmospheres. What will be its osmotic pressure at 546°C under similar conditions ?

(a) 4 atm          (b) 2 atm

(c) 8 atm          (d) 1 atm.

7. Define mutarotation.

8. Define antifreeze.

9. Give the IUPAC name of $[Co(NH_3)_5Br]SO_4$.

10. Give one example of second order reaction.

11. Write the general electronic configuration of transition metals. Why do these metals generally act as catalysts ?

12. An element (atomic mass = 60) having face centred cubic structure has a cell edge of 400 pm. What is its density ?($N_A = 6.02 \times 10^{23}$)

13. Write the IUPAC names of :

$$(i) \quad CH_3 - \underset{\underset{CHO}{|}}{CH} - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$$

$$(ii) \quad CH_3 - \underset{\underset{OH}{|}}{CH} - \underset{\underset{CH_3}{|}}{CH} - CH_2 - OH$$

14. How will you distinguish in the following pairs of compounds by colour test ? Ethyl alcohol and phenol. Or acetaldehyde and acetone.

15. Arrange the following in order of increasing basic strength and give reason :
   (i) Aniline
   (ii) Ethyl benzene
   (iii) N-Methyl aniline.

16. How will you convert :
   (i) Ethyl alcohol into acetone
   (ii) Phenol into Phenolphthalein.

17. What are condensation polymers ? Give one example along with the use.

*Or*

Define (i) Genetic code        (ii) Replication in DNA.

18. What are antibiotics ? How do they control infection ? Give one example of a broad spectrum antibiotic.

*Or*

Distinguish between electrorefining and electrometallurgy.

19. Calculate the emf of the cell at 25° C.
   $Mg \mid Mg^{2+}$ (0.10 M) $\parallel Ag^+$ (1.0 × 10$^{-4}$ M) $\mid$ Ag.
   Given that $E°_{Cell}$ = 3.17 V.

20. Define order of reaction. Calculate the ratio of the time taken to complete 99.9% of the reaction to the time taken to complete half of the reaction.

21. In an Arrhenius equation for certain reaction, the value of A and $E_a$ are 4 × 10$^{-3}$ sec$^{-1}$ and 98.6 kJ mol$^{-1}$ respectively. If the reaction is of the first order, at what temperature will its half life-period be 10 minutes ?

complexes ? Give one oxidising reaction of $KMnO_4$ in acidic medium.

*Or*

(a) Write the IUPAC name of $[Co(en)_2Cl_2]SO_4$.

(b) Using valence bond theory of complexes, explain the geometry and diamagnetic nature of the complex $[Co(NH_3)_6]^{3+}$. (Atomic number of Co = 27)

23. A radioactive substance is half disintegrated in 40 minutes. What is the time required for the decay of 75% of the element, if it follows first order kinetics ?
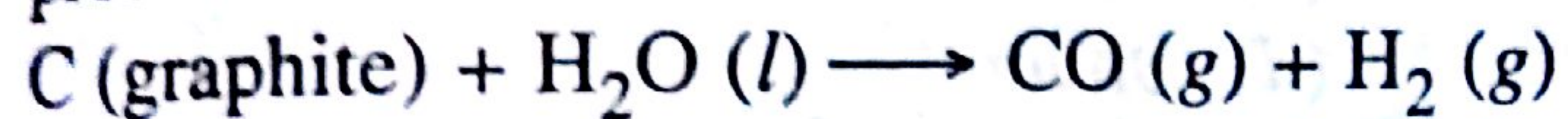
24. How will you distinguish between :

(i) Sol and gel

(ii) Emulsion and true solution.

How will you protect the colloidal solution of Lyophobic sol ?

25. Calculate the equilibrium constant for the following reaction at 298 K and 1 atmospheric pressure.

$$C \text{ (graphite)} + H_2O \text{ (l)} \longrightarrow CO \text{ (g)} + H_2 \text{ (g)}$$

Given $\Delta H°_f$ at 298 K for $H_2O$ (l) – 286.0 kJ mol$^{-1}$; for CO (g) = – 110.5 kJ mol$^{-1}$ ; $\Delta S°$ at 298 K for reaction = 252.6 JK$^{-1}$mol$^{-1}$; Universal gas constant (R) = 8.314 JK$^{-1}$ mol$^{-1}$.

26. (a) Define molality and molarity of solution with suitable examples. Why is molality preferred in expressing the concentration of a solution ?

(b) Osmotic pressure of 100 cm$^3$ of a solution containing 3.002 g of an unidentified solute is 2.55 atmospheres at 298 K. What is the molecular mass of the solute ? (R = 0.0821 L atm K$^{-1}$ mol$^{-1}$)

27. Explain the following :

(i) $HClO_4$ is a stronger acid than $HClO_3$.

(ii) The compounds of xenon with oxygen and fluorine are known while those of argon are not known.

(iii) Halogens are coloured.

(iv) $H_2O$ is a liquid but $H_2S$ is a gas at room temperature, why ?

28. (a) How do primary, secondary and tertiary amines differ in their reactions towards nitrous acid ?

(b) Aryl halides are less reactive than alkyl halides towards nucleophilic substitution reactions, why ?

*Or*

(a) Distinguish between primary, secondary and tertiary alcohols.

(b) How will you convert phenol into

(i) Aspirin

(ii) Phenolphthalein

(iii) Picric acid ?