MODEL QUESTION PAPER

CHEMISTRY
XII – STANDARD (CBSE)

Time: 3 Hours **Max. Marks: 70**

Read the following instructions carefully.

(a) There are 33 questions in this question paper with internal choice.
(b) SECTION A consists of 16 multiple-choice questions carrying 1 mark each.
(c) SECTION B consists of 5 short answer questions carrying 2 marks each.
(d) SECTION C consists of 7 short answer questions carrying 3 marks each.
(e) SECTION D consists of 2 case-based questions carrying 4 marks each.
(f) SECTION E consists of 3 long answer questions carrying 5 marks each.
(g) All questions are compulsory.
(h) Use of log tables and calculators is not allowed.

SECTION – A **16x1=16**

Note: The following questions are multiple -choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1	Which of the following solutions will have the highest conductivity at 298 K? (a) 0.01 M HCl solution (b) 0.1 M HCl solution (c) 0.01 M CH_3COOH solution (d) 0.1 M CH_3COOH solution	1
2	Which of the following is not considered a transition element? (a) Scandium (b) Silver (c) Vanadium (d) Zinc	1
3	Which of the following cells is not rechargeable? (a) Dry cell (b) Lead storage battery (c) Ni-Cd battery (d) Fuel cell	1
4	In which of the following solvents, the $C_4H_8NH_3^+X^-$ is soluble; (a) ether (b) acetone (c) water (d) bromine water	1
5	The vitamins which can be stored in our body are: (a) Vitamin A, B, D and E (b) Vitamin A, C, D and K (c) Vitamin A, B, C and D (d) Vitamin A, D, E and K	1
6	Which of the following is affected by catalyst? (a) ΔH (b) ΔG (c) E_a (d) ΔS	1
7	A Compound $CaCl_2.6H_2O$ undergoes complete dissociation in water. The Van't Hoff factor 'I' is (a) 9 (b) 6 (c) 3 (d) 4	1
8	The colligative property used for the determination of molar mass of polymers and proteins is (a) Osmotic pressure (b) Depression in freezing point (c) Relative lowering in vapor pressure (d) Elevation is the boiling point	1

TAMILNADU UNIVERSITY

9	Which of the following alkenes on acid-catalyzed hydration gives a tertiary alcohol? (a) 2-Butene (b) 2-Methylpropane (c) Propane (d) 1-Butene	1
10	On hydrolysis, which of the following carbohydrates gives glucose and galactose? (a) Sucrose (b) Lactose (c) Maltose (d) Cellulose	1
11	The synthesis of alkyl fluoride is best obtained from (a) Free radicals (b) Swartz reaction (c) Sandmeyer reaction (d) Finkelstein reaction	1
12	The deficiency of which of the following vitamins causes 'Rickets' (a) Vitamin A (b) Vitamin D (c) Vitamin B (d) Vitamin C	1
13	Vitamin B12 is also called: (a) Riboflavin (b) Thiamine (c) Pyridoxine (d) Cyanocobalamine	1
14	Corrosion of iron is (a) a decomposition process (b) a photochemical process (c) an electrochemical process (d) a reduction process	1
15	The reaction of 1-phenyl – 2- chloropropane with alcoholic KOH gives mainly (a) 1-phenylpropane (b) 3-phenylpropene (c) 1-phenylpropan-3-ol (d) 1-phenylpropan-2-ol	1
16	Assertion: Vanadium had the ability to exhibit a wide range of oxidation states. Reason: The standard potentials of Vanadium are rather small, making a switch between oxidation states relatively easy. a) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion. b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion. c) Assertion is fake but Reason is true. d) Assertion is true but Reason is fake.	1

SECTION - B **5×2=10**

This section contains 5 questions with internal choice in one question. The following questions are very short answer type and carry 2 marks each.

17	Write the mechanism of acid dehydration of ethanol to yield ethane.	2
18	Do the following conversions in not more than two steps? (i) Toluene to Benzoic acid. (ii) Benzaldehyde to 1-Phenylethanol	2
19	What type of deviation from Raoult's law is shown by a mixture of ethanol and acetone? Give reason.	2
20	Define Azeotrope. What type of azeotrope is formed by negative deviation from Raoult's law? Give an example.	2
21	What type of linkage is responsible for the formation of protein?	2

SECTION – C **7x3=21**

TAKSHASHILA UNIVERSITY

This section contains 7 questions with internal choice in one question. The following questions are short answer type and carry 3 marks each.

22	Account for the following: (a) Benzyl chloride is highly reactive towards $S_N1$reaction. (b) (±)-Butan-2-ol is optically inactive, through it contains a chiral carbon atom. (c) Chloroform is stored in closed dark coloured bottles.	3
23	How do you convert the following? (a) Phenol to picric acid (b) Phenol to anisole (c) Propene to Propan – 1- ol	3
24	What happens when phenol reacts with (a) Conc.HNO_3 (b) $CHCl_3$ in the presence of aqueous NaOH followed by acidification. Write equation only.	3
25	What are the hydrolysis products of (a) Lactose and (b) Maltose	3
26	Answer the following questions: (a) Explain the type of hybridization in $[Fe(CN)_6]^{3-}$ on the basis of valence bond theory. (b) Draw the geometrical isomers of $[PtCl2(en)_2^{2+}$ ion. (c) Name the types of isomerism when ambidentate ligands are attached to central metal ion. Give one example of ambidentate ligand.	3
27	Give the basic structural difference between starch and cellulose.	3
28	If benzoic acid (M=122g Mol^{-1}) is associated into a dimer when dissolved in benzene and the osmotic pressure of a solution of 6.1g of benzoic acid in 100ml benzene is 6.5atm at 27°C, then what is the percentage association of benzoic acid? (Given: R=0.0821 Latm K^{-1} mol^{-1})	3

SECTION – D **2x4=8**

The following questions are case -based questions. Each question has an internal choice and carries 4 (1+1+2) marks each. Read the passage carefully and answer the questions that follow.

29	(a) How do you convert the following: (i) Phenol to Anisole (ii) Ethanol to Propan-2-ol (b) Define the following with a suitable example in each: (i) Oligosaccharides (ii) Denaturation of protein	4
30	(a) Account for the following: (i) o-nitrophenol is more steam volatile than p-nitrophenol. (b) Write the reaction involved in the following: (i) Reimer-Tiemann reaction (ii) Friedal-Crafts Alkylation of Phenol	4

TAKSHASHILA UNIVERSITY

SECTION – E **3x5=15**

The following questions are long answer type and carry 5 marks each. All questions have an internal choice.

31	(a) Give reasons for the following: (i) Sulphur in vapor state shows paramagnetic behavior. (ii) N-N bond is weaker than P-P bond. (iii) Ozone is thermodynamically less stable than oxygen. (b) Write the name of gas released when Cu is added to (i) dilute HNO_3 and (ii) conc. HNO_3	5
32	(i) Define lanthanoid contraction. Write its two consequences. Why is actinoid contraction greater than lanthanoid contraction? (ii) Write the preparation of $Na_2Cr_2O_7$ from chromite ore.	5
33	(a) (i) Write the disproportionation reaction of H_3PO_3. (ii) Draw the structure of XeF_4 (b) Account for the following: (i) Although Fluorine has less negative electron gain enthalpy yet F_2 is strong oxidizing agent. (ii) Acidic character decreases from N_2O_3 to Bi_2O_3 in group 15. (c) Write a chemical reaction to test sulphur dioxide gas. Write the chemical equation involved.	5

TAKSHASHILA UNIVERSITY