2 ½ Hours

Total Marks: 75

Note:

1. Attempt **all** questions.
2. **All questions** carry **equal marks.**
3. Draw **neat labelled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator** is allowed.
5. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q.1 Do as directed: (Any fifteen) **15**

Give IUPAC names for the following compounds:

1. $CH_3 - NH_2$
2. $C_3H_7 - COOH$
3. $CH_3 - CHO$
4. CH_4
5. $CH_3 - CO - CH_3$
6. $CH_3 - O - CH_3$
7. CH_3OH

Explain the terms:

8. Atomic radii.
9. Formula unit.
10. Lewis Base.
11. Acidic solutions.
12. Buffer action.
13. Solute.
14. pH.
15. Molality.
16. ppm.
17. Ionic product of water.

Give one example for:

18. Compound exhibiting covalent bond
19. Compound exhibiting ionic bond:
20. Salts derived from weak acids and weak bases

Q 2 A	Draw structures of the following compounds:- i. 3-Pentanol ii. Methyl chloride iii. Propane dioic acid iv. 2-Butanone	08
Q 2 B	State basic rules of IUPAC nomenclature in Amines	07
	OR	
Q 2 C	Draw structures of the following compounds:- i. 1-Butanol ii. Ethyl bromide iii. Butanedioic acid iv. 2,3 – Hexanedione	08
Q 2 D	Discuss IUPAC nomenclature of Alkenes. Give suitable examples.	07
Q 3 A	Explain the term Van der Waals forces? Justify gaseous nature of ethane.	08
Q 3 B	Draw electron dot structure of any three ionic compounds and state features of ionic bond.	07
	OR	
Q 3 C	Explain the nature of Coordinate bond using suitable examples.	08
Q 3 D	Describe the shapes of $BeCl_2$ and BF_3	07

Q 4 A	i) What are the requirements for a substance to be used as a primary standard.	04
	ii) 10 grams of sodium hydroxide was dissolved in water to give a solution with a volume of exactly 0.2 dm^3. What is the molarity of the solution? (Molar mass of NaOH= 40).	04
Q 4 B	Explain the structure of a water molecule.	07

OR

Q 4 C	i) Explain hydrolysis of weak acids and strong bases.	04
	ii) Calculate pH of 0.015M HCl solution.	04
Q 4 D	Derive Henderson-Hasselbalch equation for acidic buffer.	07

Q 5 Write short notes on: (<u>Any three</u>) **15**

a. Cyclic hydrocarbons.

b. Dicarboxylic acids.

c. Hydrogen bond.

d. Applications of buffers.

e. Hydrophobic effect.
