**Time: 3 hours** **Max. Marks: 80**

N.B:
1. Question.No.1 is compulsory.
2. Attempt any three questions from Q.No.2 to Q.No.6
3. Assume suitable data.
4. Figures to the right indicate full marks

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| Q1 | Solve any Four out of Six (5 Marks each) | (20 Marks) |
| A | Write a short note on Electroosmosis. | |
| B | Describe acid base catalysis in detail. | |
| C | Write short note on Differential Thermal Analysis (DTA). | |
| D | Write any 2 preparations and properties of Malonic ester. | |
| E | Explain the importance of non-aqueous solvents with 2 examples. | |
| F | Explain GC-MS spectroscopy. | |
| Q2 | | (20 Marks) |
| A | Give the basic requirement of IR radiation absorption. Give any two applications of IR spectroscopy. | |
| B | Explain Paper chromatography in detail. | |
| C | Define non aqueous solvents. What are advantages & disadvantages of liquid ammonia as a solvent? | |
| D | Give the Mechanism of Reformatasky Reaction, with one example. | |
| Q3 | | (20 Marks) |
| A | Write Intermediate compound formation theory for catalysts. | |
| B | What are Auxochrome & chromophores? Give 2 applications of UV spectroscopy. | |
| C | Explain emulsions & their types. | |
| D | What do you mean by aromatic character? Explain it for Pyridine with any 2 reactions. | |
| Q4 | | (20 Marks) |
| A | Give a note on Donnan membrane equilibrium & its significance. | |
| B | Explain in detail column chromatography. | |
| C | What are surfactants? Explain their role as a colloids. | |
| D | Explain Acid base reactions & Redox reactions in case of Liq.SO2. | |
| Q5 | | (20 Marks) |
| A | Explain concept of electrical double layer with Helmholtz & Stern model. | |
| B | Write one preparation & two applications of Acetoacetic ester. | |
| C | Write Principle of NMR spectroscopy. Explain Shielding & Deshielding of protons. | |
| D | Write a note on Gas solid chromatography. | |
| Q6 | | (20 Marks) |
| A | What are levelling effects of non-aqueous solvents? | |
| B | Write in detail how to determine purity of given sample using TLC technique | |
| C | What are colloids? Give its importance in Foods. | |
| D | Explain action of promoters & catalytic poisons. | |

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