

**Q.P. Code : 79570**

**( 3 Hours)**

**[ Total Marks : 100**

- N.B. :** (1) All questions are **compulsory**  
(2) **Figures** to the right indicate the **full marks**  
(3) **Draw neat and labelled** diagrams wherever **necessary**

1. Explain in detail basic principle of centrifugation. Add a note on analytical measurements and applications of the same. **20**

**OR**

1. Enumerate on :-  
(a) Preparation and use of ion-exchangers. **10**  
(b) Measurement of components in planar chromatography. **10**

2. Explain the process of ordinary filtration under suction pressure and steam distillation. **20**

**OR**

2. Elucidate :-  
(a) Experimental procedures and applications of affinity chromatography. **10**  
(b) Theory of gel filtration and operation of gel column. **10**

3. Based on the principle of electrophoresis, describe two dimensional electrophoresis and pulse field gel electrophoresis. **20**

**OR**

3. Elaborate on :-  
(a) Principle and applications of mass spectroscopy. **10**  
(b) Applications of ultraviolet and visible spectroscopy. **10**

4. What are the basic objectives of a good research? Comment on types and significance of research. **20**

**OR**

4. Elaborate on :-  
(a) Classification and filing of reprints. **10**  
(b) Characteristics of a proposal and fund seeking. **10**

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5. Write short notes on the following :-

- (a) Technique of confocal scanning microscopy. 5
- (b) Use of isotopes in biological sciences. 5
- (c) Detection of elements using technique of Atomic Absorption spectrophotometry. 5
- (d) General safety measures in laboratory. 5

**OR**

5. Write short notes on the following :-

- (a) Types of ion-exchange resins. 5
- (b) Chemical properties of gel 5
- (c) Applications of HPLC 5
- (d) Method of oral presentation of research work. 5

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