

Please check whether you have got the right question paper.

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

- Q.1** Give the principle of Transmission Electron microscope. Explain the working and image formation in it. **12**
- OR
- Q.1 a)** Comment on the importance of the biological sample preparation in electron microscopy. **06**
- b)** Explain the interaction of electrons with matter. **06**
- Q.2** Give an account of differential centrifugation and its applications. **12**
- OR
- Q.2** Discuss the following :
- a) Isopycnic centrifugation & its applications. **06**
  - b) Swinging bucket rotors & its applications. **06**
- Q.3** Discuss the general principle of chromatography. Add a note on the applications of paper chromatography. **12**
- OR
- Q.3** Briefly describe the following:
- a) Adsorption and partition chromatography. **06**
  - b) Steps involved in the technique of TLC **06**
- Q.4** Explain the principle, working and applications of Geiger Muller counter. **12**
- OR
- Q.4 a)** What are isotopes? Giving examples explain how they are artificially prepared and used in biology? **06**
- b)** Give the characteristic properties of radioactive radiations. **06**
- Q.5** Write short notes on any Three of the following : **12**
- a) Filters of fluorescence microscope.
  - b) Applications of phase contrast microscope.
  - c) Types of gradient in centrifugation.
  - d) Applications of ion exchange chromatography.
  - e) Sedimentation coefficient
  - f) Half life period