



1. Describe the process of spore formation in bacterial cell with well labelled diagram. **16**

**OR**

- a) Explain the contribution of Robert Koch. **8**
- b) Explain Wittakar classification system of microorganism. **8**

2. Describe the principle, working and application of scanning electron microscope. **16**

**OR**

- a) Explain the principle and procedure of gram staining. **8**
- b) Explain procedure and mechanism of negative staining techniques. **8**

3. Describe the various physical & chemical methods of sterilization. **16**

**OR**

- a) Describe bacterial growth. **8**
- b) Explain the basic nutritional requirement of microbes. **8**

4. Describe the lytic cycle of viruses. **16**

**OR**

- a) Explain asexual reproduction in fungi. **8**
- b) Write about general characteristics and application of algae in biotechnology. **8**

5. Write a note on:

- a) Nucleoid
- b) Confocal microscopy.
- c) Chemical method of sterilization.
- d) Symmetry of viruses.

\*\*\*\*\*