



1. Discuss in detail about contributions of Louis Pasteur and Edward Jenner in development of microbiology. **16**

**OR**

- a) Describe in detail about microbial classification. **8**
- b) Give details about concept of prokaryotic and Eukaryotic cell. Add comparison. **8**
2. What is compound microscope? Give details about construction, principle and applications of phase contrast microscope. **16**

**OR**

- a) Add a detailed note on Transmission Electron Microscope (TEM). **8**
- b) Discuss the principle and procedure involved in Gram staining. **8**
3. What is sterilization? Describe in detail about various physical and chemical methods of sterilization. **16**

**OR**

- a) Write a detailed note on measurement of bacterial growth. **8**
- b) Discuss in details about nutritional classification of microorganisms. **8**
4. Discuss in details about reproduction in algae. Add a note on applications of algae in biotechnology. **16**

**OR**

- a) Write a note on general characteristics of fungi. **8**
- b) Discuss in details about lysogenic cycle. **8**
5. Write a note on.
- a) Endospore. **4**
- b) Dark field microscope. **4**
- c) Growth curve. **4**
- d) Lytic cycle. **4**

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