

**S.S. Jain Subodh P.G. (Autonomous) College, Jaipur**  
**M. Sc. Microbiology Semester- II**  
**Assignment April 2024**

**Paper –I**  
**Bacteriology**

*(Attempt any two questions)*

**MM=30**

**UNIT-I**

- Q. 1. Explain briefly Bergey's manual system of bacterial classification. **15**
- Q. 2. Write short note on the following: **7.5 x 2=15**
- a. Composition and functions of cell membrane.
  - b. Endospore Structure and formation.

**UNIT-II**

- Q. 3. Explain brief general characteristics of archael cell membrane and comparison with eubacteria. **15**
- Q. 4. Write short note on the following: **7.5 x 2=15**
- a. Methanogens.
  - b. Thermophiles and extremophiles.

**UNIT-III**

- Q. 5 Describe in detail oxygenic and anoxygenic photosynthetic bacteria with example. **15**
- Q. 6. Write short note on the following: **7.5 x 2=15**
- a. Magnetotactic bacteria and its characteristics.
  - b. Chemolithotrophs.

**UNIT-IV**

- Q. 7. What do you mean by microbial growth? Explain in brief batch culture and continuous culture. **15**
- Q. 8. Write short note on the following: **7.5 x 2=15**
- a. Factors affecting on microbial growth.
  - b. Modes of reproduction in bacteria.

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**Paper –II**  
**Molecular Biology and Microbial Genetics**

*(Attempt any two questions)*

**MM=30**

**UNIT-I**

Q.1. Write in detail structure and biochemistry of DNA. Discuss general properties and forms of DNA. **7.5 +7.5=15**

Q.2. Write short notes on: **7.5 x 2=15**

- a. Telomerase and End Replication Problem in Eukaryotes.
- b. Properties and Replication of Transposons.

**UNIT-II**

Q. 3. Explain process of transcription in Prokaryotes in detail. Give diagrammatic sketches of all the stages. **7.5 +7.5=15**

Q.4. Write notes on: **7.5 x 2=15**

- a. Wobble Hypothesis.
- b. Translation in Eukaryotes.

**UNIT-III**

Q. 5. Explain molecular mechanisms of Mutations in DNA. Describe in detail repair by homologous recombination. **7.5 +7.5=15**

Q.6. Write notes on: **7.5 x 2=15**

- a. Tryptophan Operon.
- b. Post translation modification of proteins.

**UNIT-IV**

Q. 7. Write a note on generalized, specialized and abortive transduction in bacteria with well labeled diagrammatic sketches. **7.5 +7.5=15**

Q.8. Write notes on: **7.5 x 2=15**

- a. Transformation.
- b. Conjugation

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**Paper –III**  
**Microbial Ecology**

*(Attempt any two questions)*

**MM=30**

**UNIT-I**

Q. 1. What is plant succession? Give an account of the sequential stages of a typical hydrosere. **15**

Q. 2. Write notes on: **7.5+7.5=15**  
a. Ecological pyramid  
b. Food chain and food web

**UNIT-II**

Q3. Write notes on: **7.5+7.5=15**  
a. Gause's and Hardin's principles of competition.  
b. Lichens.

Q. 4. Write a detail note on beneficial interaction of microbes with plants. **15**

**UNIT-III**

Q.5. Write notes on: **7.5+7.5=15**  
a. Algal bloom, their effects and toxicity  
b. Nitrogen cycle

Q. 6. What is eutrophication? Write about the causes of eutrophication and microbial changes in eutrophic bodies of water induced by various inorganic pollutants. **15**

**UNIT-IV**

Q7. What are the various water-borne diseases arising due to faecal pollution? Mention the indicator organisms. **15**

Q. 8. Write notes on: **7.5+7.5=15**  
a. Aeroallergy and Aeroallergens  
b. Factors affecting microbial community in soil.

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**Paper –IV**  
**Medical Microbiology**

- Q. 1. Describe the normal microbial flora in human skin and mouth and its roles. **15**
- Q. 2. Write notes on: **7.5+7.5=15**
- a. Toxin and their Mechanism
  - b. Pathogenic Properties of Bacteria.

**UNIT-II**

- Q. 3. Write general characteristics, morphology, pathogenicity, diagnosis and treatment of Neisseria. **15**
- Q. 4. Write general characteristic, morphology, pathogenicity, diagnosis and treatment of Mycobacterium. **15**

**UNIT-III**

- Q. 5. Describe Structure, Reproduction, Pathogenicity, Diagnosis, Therapy and Epidemiology of disease caused by Fungus *Cryptococcus neoformans*. **15**
- Q. 6. Write notes on: **7.5+7.5=15**
- a. *Histoplasma capsulatum*.
  - b. *Candida albicans*.

**UNIT-IV**

- Q7. Write Properties, Pathogenesis, Laboratory diagnosis, Epidemiology, Control and treatment of Herpes virus. **15**
- Q. 8. Write notes on: **7.5+7.5=15**
- a. Oncogene DNA viruses
  - b. Oncogenic RNA viruses