

**Bajaj College of Science, Wardha**

**Practice Sheet During Lockdown**

**M.Sc Sem- IV**

**Subject: Microbiology**

**Paper XIII: - Virology (VIR) MB4-T013**

**Long Questions (16 Marks)**

1. Explain in detail Discovery, origin and evolution of viruses
2. Explain in detail about Morphology and structures of viruses
3. Discuss in detail Life cycle of Lambda phage.
4. Discuss in detail life cycle of T4 bacteriophage.
5. Discuss in detail life cycle of M13 bacteriophage.
6. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Adenovirus .
7. Give detail account on life cycle, pathogenesis and laboratory diagnoses of HIV.
8. Describe in detail various serological methods for diagnosis of viral diseases.
9. Discuss in detail chemical composition of viruses
10. Give detail account on nomenclature and classification of viruses
11. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Rhabdovirus
12. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Hepatitis virus
13. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Pox virus
14. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Tobacco Mosaic Virus
15. Give detail account on life cycle, pathogenesis and laboratory diagnosis of Cauliflower mosaic virus

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### **Short Questions (8 Marks)**

1. Explain about chemical composition of viruses.
2. Differentiate between viruses and prokaryotes.
3. Write detail note on One step growth curve
4. Explain in detail Bacteriophage typing
5. Discuss about Oncogenic viruses
6. Write a note on TMV virus
7. Explain in detail Interferon and its types
8. Discuss on Non-nucleoside RT inhibitor
9. Describe structure and mechanism of action of Acyclovir and Amantadine
10. Describe structure and mechanism of action of Ritonavir and Indinavir.
11. Explain Laboratory diagnosis of HIV.
12. Discuss in detail about Papova virus
13. Discuss in detail about Potato virus
14. Explain in detail about Herpes virus

### **Shortest questions (4 marks)**

1. Comment on Virus assay
2. Write a note on Symmetry of virus
3. Comment on Mu Phage
4. Write a note on Replication of T4 bacteriophage
5. Comment on Rhabdovirus
6. Write a note on Cauliflower mosaic virus
7. Write a note on Epstein barr virus
8. Give a note on Saquinavir
9. Explain about Rimantidine
10. Comment on Lamivudine
11. Comment on classification of viruses
12. Comment on haemagglutination
13. Comment on antiviral drugs
14. Comment on Picorna virus

## **Paper XIV: - Microbial Fermentation Technology (MFT) MB4-T014**

### **Long Questions (16 Marks)**

1. What is Bioreactor? Explain different types of Bioreactors.
2. Discuss in detail the separation and recovery of intracellular products.
3. Elaborate in detail downstream processing.
4. Describe in detail industrial production of ethanol. Write a note on biochemistry involved in it.
5. Describe in detail industrial production of Streptomycin.
6. Give detail account on production and recovery of Penicillin.
7. Explain in detail glutamic acid production
8. Explain the production of Single cell protein.
9. Give detail account on production of biopreservative *Latobacillus sakei* by fermentation process.
10. Explain in detail industrial production of thermostable protease enzyme
11. Describe in detail industrial production of Streptomycin
12. Explain in detail industrial production of Cephalosporin
13. Describe industrial production of Methane with flow sheet diagram
14. Explain in detail industrial production of Hydrogen with flow sheet diagram

### **Short Questions (8 Marks)**

1. Explain Monods model of growth kinetics
2. Explain Rheology of fermentation fluid
3. Write detail note on chemostat process
4. Describe in detail turbidostat process
5. Explain the storage and packaging methods of fermentation products.
6. What is scale up? Describe criteria for scale up process.
7. Discuss the industrial production of Xanthan
8. Discuss the industrial production of Biosurfactant
9. Explain about industrial production of Vitamin B12
10. Explain about industrial production of Riboflavin

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11. Explain about industrial production of Lysine
12. Explain in detail production of Fatty acid - Palmitate

**Shortest questions (4 marks)**

Comment on the following:

1. Immobilized Bioreactor
2. Turbidostat
3. Growth limiting substrate
4. Scale down process
5. Methods of packaging
6. Carotenoids
7. Hydrogen production
8. *Lactobacillus sakei*
9. Vitamin B1
10. SCP
11. Biopreservatives

## **Paper XV: - Microbial Diversity, Evolution and Ecology (MDEE) MB4-T015**

### **Long Questions (16 Marks)**

1. Explain in detail about concept of Population and communities.
2. Explain in detail Homeostasis with suitable example
3. Discuss in detail Diversity indices and dominance indices
4. Discuss in detail theory, tolerance and inhibition patterns of succession.
5. Explain in detail Hardy- Weinberg law
6. Discuss in detail Gause Hypothesis
7. Explain in detail any four negative Microbial interactions
8. Discuss Jaccard coefficient and Rank abundance diagrams
9. Give detail account on lake and river microbiology
10. Explain in detail about Marine Microbiology and Hydrothermal vents.
11. Discuss in detail about genetic structure of population
12. Elaborate in detail different factors affecting gene frequencies
13. Give detail account on concept of sustainable development and add a note on Management and improvement of barren land.
14. Explain in detail about plant- microbe and animal-microbe interactions

### **Short Questions (8 Marks)**

1. Discuss in brief about Marine Microbiology
2. Explain in detail about Biofilms
3. Explain Sorensen coefficients and Brillouin index
4. Explain natural selection and interbreeding
5. Discuss in detail allele frequencies
6. Discuss the Microbial techniques for improvement of barren land
7. Discuss the Microbial techniques for management of petroleum and oil shores
8. Explain how genetic variations can be measured at protein levels

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9. Discuss on role of microbial technology in sustainable development
10. Explain how genetic variation can be measured at DNA level.
11. Write in detail about random genetic drift.
12. Discuss on Community stability and stability hypothesis

**Shortest questions (4 marks)**

Comment on the following

1. Biofilms
2. Hydrothermal vents
3. Shannon index
4. Intermediate disturbance hypothesis
5. Rank abundance diagrams
6. Random genetic drifts
7. Migration
8. Genotype frequency
9. Mutualism
10. Parasitism
11. Co-existence
12. Sustainable development
13. Predation
14. Syntrophy
15. allele frequencies

## **Paper XVI: - Vaccines and delivery system (VD) MB4-T016**

### **Long Questions (16 Marks)**

1. Explain in detail Discovery of vaccine and comment on active and passive prophylactic measures
2. Explain in detail about conventional vaccines, comment on their production and National immunization schedule
3. Give detail account on Hepatitis and Polio vaccines
4. Give detail account on Malaria and HIV vaccines
5. Give detail account on various advanced vaccines. Comment on development of cytomegalovirus vaccine.
6. Describe in detail Drug and vaccine delivery system
7. Discuss in detail about drug designing
8. Explain in detail about subunit vaccines
9. Explain in detail about DNA vaccines
10. Give detail account on Influenza vaccine
11. Explain in detail about Epstein Barr virus vaccine.
12. Elaborate in detail about Non-automated in vitro drug susceptibility testing.

### **Short Questions (8 Marks)**

1. Discuss about DNA vaccines
2. Explain the concept of exhalation and attenuation
3. Comment on role of vaccines in public health
4. Explain subunit vaccine
5. Explain in brief BCG vaccine
6. Discuss about influenza vaccine
7. Write detail note on DPT vaccine
8. Write detail note on MMR vaccine
9. Explain in brief Herpes simplex vaccine
10. Discuss about Epstein Barr virus vaccine
11. Describe Rapid tests for susceptibility testing of drug

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12. Explain about contents and immunization schedule of conventional vaccines
13. Discuss about antibiotic assay in body fluid
14. Explain the role of rDNA technology in vaccine production

**Short questions (4 marks)**

Write a note on the following:

1. Adjuvants
2. Passive prophylactic measures
3. Live attenuated vaccine
4. Polio vaccine
5. Advanced vaccine
6. Cytomegalovirus vaccine
7. Rapid test for susceptibility testing
8. Drug designing
9. Antibiotic assay
10. BCG vaccine
11. Immunization schedule
12. Advanced vaccines
13. DNA vaccines
14. Contribution of Edward Jenner

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