QUESTION BANK
Academic Year 2019-2020

Class	: M. Sc. I (Semester- I)
Paper Code	: **MICRO4201**
Paper	: II
Title of Paper	: **Virology**
Credit	: 4
No. of lectures	: 60

Questions for 2 marks:

1. WhatarePrions?
2. Whatareprimarycelllines?
3. Enlistimmunodiagnostictestsusedindetectionofviruses.
4. Enlisttypesofantiviralagents.
5. Whatareadjutants?
6. Enlisttypesofantiviralagents.
7. What are viroids?
8. Enlist types of symmetries?
9. What are the structural components of virus?
10. What is Phagocytosis?
11. What is Pinocytosis?
12. What is receptor-mediated Endocytosis?
13. Give any two names of Enveloped viruses.
14. Give any two names of Non-Enveloped viruses.
15. Give the applications of cell culture techniques.
16. What are semi-continuous cell cultures?
17. What are continuous cell cultures?
18. What are the various routes of inoculation of virus in egg?
19. Amniotic rout of egg is used for the isolation of which viruses?
20. Chorioallantoic rout of egg is used for the isolation of which viruses?
21. allantoic rout of egg is used for the isolation of which viruses?
22. Yolk sac rout of egg is used for the isolation of which viruses?
23. What are the various routes of inoculation of virus in Animal?
24. Define $TCID_{50}$.
25. What is plaque assay?
26. Give the names of prion diseases.

27. Give the advantages of phage therapy.
28. What are the bacteriophages?
29. What is temperate phage?
30. What is lytic cycle?
31. What is lysogenic cycle?
32. Enlist different types of phage?
33. What is prophage?
34. Give the examples of edible vaccine.

Questions for 4 marks:

1. Giveacomparativeaccountofdifferentformsof NucleicAcidsfound inviruses.
2. Describeicosahedralsymmetryinviralstructure.
3. Howareplantvirusescultivated?
4. Comparekilledandattenuatedviralvaccines.
5. Elaboratemodernvaccineswithsuitableexamples.
6. Explain mechanism of action of nucleotide analogues for controlling viruses.
7. WhatarePrions?Howaretheyspread?
8. GivethefateofviruscontainingpositivesensessRNA.
9. Explain the significance of non-envelope proteinswith examples.
10. Whatisthesignificanceofcapsidsymmetryinviralstructure determination?
11. Explaintheuseofmicroarrayfordiagnosisofviralinfection.
12. Explain*Inovo*techniqueforcultivationofviruses.
13. Explain*Invitro* techniqueforcultivationofviruses using various cell cultures.
14. Explainhemagglutinationtestusedin detectionofviralinfection
15. Explaincomplement fixationtestusedin detectionofviralinfection
16. Explain neutralization test used in detection of viral infection.
17. Write short note on bacteriophage therapy for control of bacterial poultry diseases.
18. Explainthemechanismofactionofantiviralnucleotideanalogues.
19. Explainthemechanismofactionofantiviralnucleosideanalogues.

20. Explainconceptofpeptidevaccineswithexample.
21. Explainthemechanismofactionofantiretroviralagents.
22. Diagramaticallyillustrateanytwocapsidsymmetriesinviruses.
23. Diagramatically illustrate and explain icosahedral capsidsymmetry in viruses.
24. DescribemorphologyinphageMl3.
25. Give short note onDNAvaccines.
26. Write a short note on translation from bicistronic mRNAs.

Questions for 6 marks:

1. WhatarePrions?Howdotheyresemblewithviruses?
2. Explain interactionbetween proteins and nucleic acid during replication of avirus.
3. Givesignificanceofusingexperimentalanimalsincultivationofanimal viruses.
4. Commenton:westernblottingasadiagnostictoolinvirology.
5. Justify:bacteriophageastherapeuticagent.
6. Explainswitchingoflysogeniccycletolyticcycleinbacteriophage lambda.
7. Explain*Invivo*techniqueforcultivationofviruses.
8. Explainhemagglutinationandhemagglutinationinhibitiontestsusedin detectionofviralinfection.
9. Explaingenomeorganizationandlifecycle of T_7phage.
10. Explainmorphologyandgenomeorganizationof Ml3phage.
11. Explainthemechanismofactionanddrugresistanceforanyone antiretroviral.
12. Commenton-envelopeproteinsasstructuralcomponentsofviruses.
13. Elaboratemechanismsofadsorptionofvirusesonhostcells.
14. Justifyviralcapsidshavedifferentsymmetries.
15. Whatareprimarycelllines?Howaretheyusedincultivatinganimal viruses?
16. Enlistimmunodiagnostictestsusedindetectionofviruses.Commenton Western blottechnique.
17. Explainhalfleafassaymethodinstudyinginfectivityofplantviruses.
18. Elaboratevariousroutesofinoculationofembryonatedchickeneggin cultivation ofviruses.
19. How does genome organization of bacteriophage lambda helps it in determiningitslifecycle?
20. Explainlyticcycleof bacteriophage T_4.
21. GivecomparativeaccountofToddandTevenphage.
22. Whatareadjutants?Explaintheirroleinformulatingavaccine.

23. Explainmodernvaccineswithsuitableexamples.
24. Explaintheprocessoftranslationintheproductionofviralproteins.
25. Commenton:TypesofViralgenomes.
26. Explaintheprocessofreplicationandpackagingofviralgenomein infectedcells.
27. Justifyspecificsites areusedtocultivatevirusesinembryonatedchicken egg.
28. Explainhowvirionstructurecontributesinviralclassification.
29. HowdoesbacteriophageLambdashiftfromlysogenictolyticphase?
30. Enlisttypesofantiviralagents.Explainactionofonetypeofantiviral agent.
31. Whatareimmunomodulators?Explaintheirroleintheformulationof viralvaccines.
32. DiscussthefateofviruscontainingpositivesensessRNA.
33. Explain the significanceofenvelopeproteinswithsuitableexample.
34. ElaborateonnegativesenseRNAasgenomeofvirusesandexplainthe replication of theseRNAs
35. Enlistvariousserologicalmethodsanddescribeanyonemethodindetail for detection ofviruses.
36. Explainthegenomepackagingofviruse.
37. Describethedifferentcapsidsymmetryinviruses.
38. Mentionthemechanismofviroidinfectionwithexamples.
39. ExplaingenomeorganizationofMl3.
40. ExplainlifecycleofToddphages.

Questions for 12marks:

1. Explain the mechanisms of virus entry into the cells. And give a short note on uncoating strategies.
2. Explain in brief entry of enveloped and non-enveloped viruses into cells with suitable examples.
3. Explain in brief transcription of virus genomes.
4. Explain in brief virus genome replication.
5. Explain translation of viral proteins and give note on co-and post-translational modification of proteins.
6. Explain protein nucleic acid interactions and genome packaging assembly,exit and maturation of progeny virus.
7. Explain *In ovo* and *In vivo*methods for cultivation of viruses.

8. Explain*In ovo* method for cultivation of viruses. And write short note on using various cell culture.
9. Explainhem- agglutinationandhem- agglutinationinhibitiontestsusedin detectionofviralinfection.
10. Explain morphology, Genome organization and life cycle of T4 phage.
11. Explain morphology, Genome organization and life cycle of M13 phage.
12. Explain lytic and lysogenic cycle of lambda phage.
13. Explain morphology,Genome organization and life cycle of T7 phage.
14. Give concept of modern vaccines and explain in brief modern vaccines.
15. Explain the mechanism of action of any two antivairals.