Mahila Vikas Sanstha's
INDRAPRASTHA NEW ARTS COMMERCE & SCIENCE COLLEGE, AT POST NALWADI, DIST. WARDHA (M.S.)
Accredited 'B' by NAAC
Approved by government of Maharashtra
Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Recognised by U.G.C New Delhi under section 2 (f) & 12 (b) of UGC act 1956

Department of Microbiology

Question Bank

BSc SEM V

Microbiology Paper I

Medical microbiology

1.Describe aggressive mechanism of pathogenic organisms. 10M

2. Describe normal flora of various parts of human body. 10M

3. What is pathogenicity and virulence? Describe the role of enzymes and toxinsin virulence. 10M

4. Define normal flora of human body and explain microbial flora of digestive system. 10M

5. Describe the Cultural, Biochemical characteristics and Laboratory diagnosis ofS. typhi. 10M

6.Describe various modes of transmission of communicate diseases. 10M

7 .Explain methods of controlling communcable diseases. 10M

8. Explain invasiveness and toxigenicity. 10M

9.Describe aggressive mechanisms of pathogenic organisms. 10M

10. Explain the methods of blocking the channels of transmission. 10M

11. Describe pathogenicity and virulence. Add a note on various methods of attenuation and exaltation. 10M

12.Explain microbial flora of skin, digestive and urinary tract. 10M

13.What are types of carrier? Explain various types of Carrier. 5M

14. Describe various stages of infectious disease 5M

15. What are different types of vector borne disease? Explain various types of vectors involved with suitable examples.5M

16. Explain various means to protect susceptible population. 5M

17. Explain control of communicable diseases by protecting the susceptible host. 5M

18. Discuss the cultural characteristics and lab diagnosis of M. tuberculosis. 5M

19.Schematically draw the life cycle of plasmodium vivax.5M

20. Describe the pathogenicity of HIV virus. 5M

21. Describe laboratory diagnosis of syphilis.5M

22.Describe various stages of infectious disease. 5M

23. What are the different vectors borne diseases? Explain various types of vectors involved with suitable examples. 5M

24. Explain various means to protect susceptible population.5M

25. Write a note on drugs inhibiting protein synthesis. 5M

26. Describe Kirby-Bauer disc diffusion method. 5M

27.Write any two mechanisms leading to development of drug resistance In the organism 5M

28.Write a note on drug delivery vehicles. 5M

29. Write note on qualitative WIDAL test $2^{1/2}$M

30. Compare between infectious and serum hepatitis. $2^{1/2}$M

31.Describe Ziehl Nelson staining method for mycobacterium tuberculosis $2^{1/2}$M

32. Describe Indirect ELISA test for detection of HIV infection. $2^{1/2}$M

33. Write a note on drug inhibiting protein synthesis. $2^{1/2}$M

34. Describe Kirby-Bauer disc diffusion method. $2^{1/2}$M

35. Draw well labeled diagram of Hepatitis B Virus. $2^{1/2}$M

36. Give the basic principle of drug designing.$2^{1/2}$M

37. Enumerate the bacterial DNA synthesis inhibitors and explain any one. $2^{1/2}$M

38. Explain the mechanism of cell wall synthesis inhibitor with suitable example. $2^{1/2}$M 39. Explain E-strip method for drug susceptibility test.$2^{1/2}$M

40. Write briefly on R-Plasmid. $2^{1/2}$M

41.Give the limitations of conventional drug therapy. $2^{1/2}$M

42. Discuss mode of action of chloramphenicol. $2^{1/2}$M

43.Give mode of action of Nalidixic acid. $2^{1/2}$M

44. Discuss drug resistance by efflux pump mechanism. $2^{1/2}$M

45. Discuss drug resistance by drug inactivating enzyme. $2^{1/2}$M

46. Describe sulphonamide as inhibitor of microbial growth. $2^{1/2}$M

47. Write about liposomes as drug delivery system. $2^{1/2}$M

48. Explain cell wall synthesis inhibitors with suitable example. $2^{1/2}$M

49. What is basic principle of drug designing? $2^{1/2}$M

50. Explain mechanism of action of drugs. $2^{1/2}$M

51. Give the reasons for development of drug resistance. $2^{1/2}$M

52. Describe any one method for development of modern drug delivery system. $2^{1/2}$M

53. Describe automated method for drug susceptibility. $2^{1/2}$M

54. Draw well labelled diagram of HIV. $2^{1/2}$M

55. Write a note on qualitative Widal test. $2^{1/2}$M

56. Compare between infectious and serum hepatitis. $2^{1/2}$M

57. Describe Ziehl-Neelsen staining method for Mycobacterium tuberculosis. $2^{1/2}$M

58. Explain Mantoux test. $2^{1/2}$M

59. Describe indirect ELISA test for the detection of HIV infection. $2^{1/2}$M

60. Draw the well labelled diagram of hepatitis B virus. $2^{1/2}$M

Que 2. Answer the following questions (any ten) : 1 Marks each

1. Define toxemia.

2. What is secondary infection?

3. What is nosocomial infection?

4. Define MLD and MID.

5. What is attenuation?

6. Define Gnotobiotic life.

7.What is Australia antigen?

8. What is causative agent of Malaria?

9. Give the significance of CD4 in AIDS.

10. Define MIC

11. What is liposomes?

12. Define Antimetabolites.

13. What is meant by vertical transmission?

14.What is quarantine?

15. Define the term pandemic.

16. Name any two diseases of reproductive system.

17.What is meant by meningitis?

18. What is a gnotobioticlife?

19. Name any two media used for cultivation of Mycobacterium tuberculosis.

20. What is VDRL test?

21. What is exoerythrocytic schizogony?

22.Why polymyxins are not effective against fungi?

23. What are antimetabolites?

24. How penicillin attacks bacteria?

25. Define epidemic.

26.What is prodromal phase?

27. What is a carrier?

28. Define MLD.

29.What is exaltation?

30. What is Germ free and gnotobioticlife?

31. What is Mantouxtest?

32. What is titrevalue?

33. What is window period in HIV infection?

34. Define monoclonal antibodies.

35. Define MDR.

36. What is antimetabolites

37. Define exotic disease.

38.Define septicemia.

39. What is endemic?

40. Define LD50.

41.Name any two disease causing bacteria of urogenital tract.

42. What is gnotobioticlife?

43. Name the test for diagnosis of hepatitis.

44. What is significance of Widaltest?

45. What is enteric fever?

46. What is antimetabolite?

47. What is mode of action of floxacin ?

48.What is MIC?

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Department Of Microbiology

Question Bank

B.Sc. SEM V

Microbiology Paper II

Molecular Biology and Bioinstrumentation

1. Describe in detail principle, working and applications of U-V spectrophotometer. 10M
2. Describe cojugation in detail. 10M
3. Describe in detail the principle, working and applications of gel electrophoresis.10M
4. Describe the process of transduction in detail. 10M
5. Describe in detail Bacterial Transformation.10M
6. Describe SDS-PAGE technique in detail with its applications. 10M
7. What is electrophoresis? Discuss various factors affecting electrophoretic mobility in detail. 10M
8. Describe bacterial conjugation. 10M
9. Explain in detail generalized transduction. 10M
10. Give principle, working and applications of thin layer chromatography. 10M
11. Give principle and working of GM counter and Scintillation counter. 10M
12. Discuss mechanism of spontaneous and induced mutation. 10M
13. Explain Intergenic and Intragenic genetic suppression in detail. 10M
14. . Describe principle, procedure and application of Thin Layer Chromatography. 10M

15. What is scintillation counting? Describe Geiger-Muller counter. 10M
16. Discuss mechanism of induced mutation in detail. 10M
17. Explain the operon concept and write in detail on lac operon. 10M
18.. Describe principle and mechanism of HPLC in detail. 10M
19. What are radioactive isotopes? Explain liquid scintillation counter. 10M
20. Describe Lac operon in detail. 10M
21. Describe induced mutations with suitable examples. 10M
22. Describe in detail transformation in prokaryotes. 10M
23. Describe Griffith experiment in detail. 05M
    Describe Specialized transduction in detail. 05M
24. What are transposable genetic elements? Explain IS elements.05M
25. Explain Bacterial Conjugation. 05M
26. Give applications of isotopic tracer technique. 05M
27. Explain GM counter. 05M
28. Write a note on thin layer chromatography.05M
29. Explain scintillation counter. 05M
30. Explain Intragenic suppression with suitable example. 05M
31. Explain the mechanism of mutation caused by alkylating agent and structural analogues. 05M
32. Explain mis-sense and non-sense mutations with examples.05M
33. Describe positive control of Lac operon. 05M
34. Describe positive control system of Lac Operon. 05M
35. Describe frame-shift mutations. 05M
36. Explain chemical mutagens that caused deamination of DNA base. 05M
37. Explain intragenic suppression. 05M
38. Describe Griffith experiment in detail. 05M
39. Describe specialized transduction in detail. 05M
40. What are transposable genetic elements? Explain IS elements.05M
41. Explain bacterial conjugation.05M
42. Enlist types of centrifuges and describe density gradient centrifugation.05M
43. Describe agarose gel electrophoresis. 05M
44. Explain the derivation of Beer-Lambert's Law. Give its limitations. 05M
45. Describe in detail generalized transduction. 10M

46. State the laws of absorption of light and derive Beer-Lambert's equation. 05M
47. Discuss the applications of UV-visible spectroscopy.05M
48. Enlist the types of centrifuges and describe analytical centrifuges.05M
49. Describe the types of gels used in electrophoresis.05M
50. Define Beer-Lambert law.$2^{1/2}$M
51. Explain Immunoelectrophoresis. $2^{1/2}$M
52. Give the applications of UV-Visible spectroscopy. $2^{1/2}$M
53. Describe analytical Centrifugation.$2^{1/2}$M
54. Describe various gel materials used in electrophoresis. $2^{1/2}$M
55. Describe Pulsed field Gel electrophoresis.$2^{1/2}$M
56. Write a note on UV spectroscopy. $2^{1/2}$M
57. Add a note on density gradient centrifugation. $2^{1/2}$M
58. Describe principle, procedure and application of thin layer. $2^{1/2}$M
59. chromatography.$2^{1/2}$M
60. Explain gene within gene. $2^{1/2}$M
61. Draw well labelled diagram of Lac Operon. $2^{1/2}$M
62. Describe non-sense mutation. $2^{1/2}$M
63. Explain role of U-V rays in mutation. $2^{1/2}$M
64. Describe split gene. $2^{1/2}$M
65. Write note on alkylating and intercalating agents. $2^{1/2}$M
66. Explain base-pair substitution. $2^{1/2}$M
67. Discuss intracodon suppression with suitable examples.$2^{1/2}$M
68. Give principle and application of gel filtration chromatography. $2^{1/2}$M
69. Write a note on Anion exchanger. $2^{1/2}$M
70. Write a short note on Mass spectrometry. $2^{1/2}$M
71. Write a note on GM Counter. $2^{1/2}$M
72. State the principle of HPLC.$2^{1/2}$M
73. Give the principle of thin layer chromatography.$2^{1/2}$M
74. Write a note on cation exchanger.$2^{1/2}$M
75. Explain briefly how measurement of radioactive isotope can be done by using Liquid Scintillation Counter. 2½M
76. Give Beers Law of absorption. 2½M

77. Give applications of spectrophotometry. 2½M
78. How agarose gel is prepared?2½M
79. Draw diagram of any electrophoretic apparatus.2½M
80. Give limitations of Beer's law. 2½M
81. Explain principle of ultra centrifuge. 2½M
82. Give applications of gel electrophoresis.2½M
83. Give principle of density gradient centrifuge. 2½M
84. Define Beer-Lambert's law.2½M
85. Explain Immunoelectrophoresis.2½M
86. Give application of UV-visible spectroscopy.2½M
87. Describe analytical centrifugation. 2½M
88. Describe various gel materials used in electrophoresis.2½M
89. Describe Pulsed field gel electrophoresis.2½M
90. Write a note on UV-spectroscopy.2½M
91. Add a note on density gradient centrifugation. 2½M
92. Give a brief account on Tn3.2½M
93. Define transformation and describe Griffith experiment. 2½M
94. Define F+, F' and Hfr.2½M
95. Write a note on generalized transduction. 2½M
96. Explain Lederberg and Tatum experiment. 2½M
97. Write a note on specialized transduction.2½M
98. Describe the role of competence during transformation. 2½M
99. Write a note on basic concept of recombination. 2½M
100. Discuss the applications of thin layer chromatography. 2½M
101. Explain the principle of ion exchange chromatography. 2½M
102. Write a note on HPLC. 2½M
103. Describe scintillation counter. 2½M
104. Give the principle of gel filtration chromatography.2½M
105. Write a note on GM counter.2½M
106. Describe the principle of thin layer chromatography. 2½M
107. Write a note on Mass spectrometry.2½M
108. What is recon?1M
109. What is split gene?1M

110. What are spontaneous mutations?1M
111. What are F+ cells? 1M
112. What are Hfr cells?1M
113. Name the scientist who discovered transposable element. 1M
114. What is Svedbergunit?1M
115. What is bathochromic shift?1M
116. What is buoyant density?1M
117. Name any two radioactive isotopes. 1M
118. What is half-life of isotope?1M
119. Define partition coefficient. 1M
120. Define Muton and Cistron. 1M
121. What is split gene?1M
122. What is meant by genetic suppression ? 1M
123. What is merozygote?1M
124. Define Episome. 1M
125. What is synapsis?1M
126. What is Svedberg unit?1M
127. What is TEMED?1M
128. What is full form of RCF?1M
129. Give the names of any two stable isotopes. 1M
130. Define anion exchanger. 1M
131. Name the unit of measure for radioactivity. 1M
132. Define cistron.1M
133. Name two physical mutagens.1M
134. What is tautomerism?1M
135. What is F factor?1M
136. Define competence.1M
137. What is Hfr?1M
138. Give role of β-mercaptoethanol.1M
139. What is TEMED?1M
140. What is RCF?1M
141. What is cationic exchanger?1M
142. Define Rf.1M

143. Name any two radioisotopes.1M
144. Define recon. 1M
145. What is silent mutation?1M
146. Name any two non-sense codons. 1M
147. What is competence?1M
148. What does λdg stand for?1M
149. What is prototroph?1M
150. What is a cuvette?1M
151. Give one application of analytical centrifuge. 1M
152. What is OD?1M
153. What is long form of HPLC?1M
154. Give one application of GM counter. 1M
155. Name the gel system used in gel filtration chromatography. 1M
156. Define muton. 1M
157. Give one example of pyrimidine base analogue. 1M
158. What is meant by polycistronic gene? 1M
159. Name any two donor cells in conjugation. 1M
160. Define episome. 1M
161. What are transposons?1M
162. Give Beer-Lambert Law of Absorption. 1M
163. What is analytical centrifuge?1M
164. What is SDS-PAGE?1M
165. Give one application of HPLC. 1M
166. What is radioactive isotope?1M
167. Name one material used in ion exchange column. 1M

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Question Bank

B.Sc SEM VI

Microbiology Paper I

Immunology

1. Describe Active and Passive Immunity. 10M
2. Discuss mechanisms of non-specific immune response. 10M
3. Describe the structure of Immunoglobulins. 10M
4. Discuss various applications of precipitation reaction. 10M
5. Discuss non-specific Immune responses. 10M
6. Describe structure and functions of secondary Lymphoid Organs. 10M
7. Describe antigens in relation to human being. 10M
8. Discuss various applications of precipitation reactions. 10M
9. Describe the first line of defense mechanisms of host. 10M
10. Discuss structure and functions of secondary lymphoid organs. 10M
11. Define Antigen. Describe antigens in relation to human beings.10M
12. Describe various applications of precipitation reaction. 10M
13. Discuss acquired immunity. 10M
14. Describe secondary lymphoid organs. 10M
15. Write various applications of agglutination reaction. 10M
16. Discuss general structure of immunoglobulin. 10M
17. T and B cells 5M
18. Clonal selection theory. 5M
19. Cytotoxic T cell response 5M
20. Monocytes and Macrophages. 5M
21. Cytokines. 5M
22. Primary and secondary immune response. 5M
23. Clonal selection theory. 5M
24. Antigen presentation by MHC molecules. 5M
25. Write a note on anaphylaxis. 5M

26. Explain direct ELISA test. 5M
27. Discuss serum sickness.5M
28. Discuss Mantoux test. 5M
29. Discuss Arthus reaction and serum sickness. 5M
30. Discuss Mantoux test and contact dermatitis. 5M
31. Write a note on indirect ELISA test. 5M
32. Discuss immunofluorescence. 5M
33. Arthus reaction 2½M
34. Rh compatibility 2½M
35. Gel & Coomb's classification 2½M
36. Delayed hypersensitivity 2½M
37. Localized anaphylaxis 2½M
38. Immunofluorescence 2½M
39. Serum sickness 2½M
40. Mantoux test. 2½M
41. Explain Arthus reaction. 2½M
42. Differentiate between immediate and delayed hypersensitivity. 2½M
43. Explain Rh incompatibility induced hypersensitivity. 2½M
44. Write a note on localized anaphylaxis. 2½M
45. Write a note on serum sickness. 2½M
46. Write a note on immunofluoroscence. 2½M
47. What is ELISA ? Describe in brief indirect ELISA. 2½M
48. Explain allergic contact dermatitis. 2½M
49. Write a note on dendritic cell. 2½M
50. What are cytokines? Describe in brief. 2½M
51. Explain T cell receptor. 2½M
52. Write a note on primary immune response. 2½M
53. Describe types of T-Cell. 2½M
54. Give outline of T-Cell independent antibody response. 2½M
55. Explain Mast Cells.2½M
56. Write a note on macrophages. 2½M
57. Draw diagram of haematopoiesis. 2½M
58. Give general characters of B and T cells.2½M
59. Discuss natural Killer Cells. 2½M
60. Explain Clonal Selection Theory. 2½M
61. Give diagrammatic presentation of antigen presentation and MHC molecule.2½M
62. Discuss T cell dependent antibody response. 2½M
63. Explain cytotoxic T cell response. 2½M
64. Write a note on T cell receptor. 2½M
65. What is racial immunity?1M
66. What is interferon?1M
67. What is phagocytosis ? 1M

68. What are Eosinophils?1M
69. What are Monocytes?1M
70. What are Dendritic cells?1M
71. What are Isoantigens?1M
72. What are heterophile antigens? 1M
73. What is rising antibody titre?1M
74. What is anaphylaxis?1M
75. What is Rh compatibility?1M
76. What is delayed hypersensitivity?1M
77. What is Bursa of Fabricius?1M
78. Define natural immunity. 1M
79. Give any two functions of thymus. 1M
80. What are antigen presenting cells?1M
81. What are interleukins ? 1M
82. What is the role of eosinophils ? 1M
83. Define hapten. 1M
84. Define antibody titre. 1M
85. What is the role of secretory piece ? 1M
86. What is an allergen ? 1M
87. What is erythroblastosis faetalis ? 1M
88. What is atopy ? 1M
89. Name any two secondary lymphoid organs.1M
90. What is interferon ?1M
91. What is MALT ?1M
92. What are NK cells ?1M
93. What is MHC ?1M
94. Define cytokines.1M
95. What is isoantigen ?1M
96. Define Hapten.1M
97. Define Agglutination.1M
98. What is ELISA?1M
99. How anaphylaxis can be prevented?1M
100. What is tagged antibody ?1M

Department Of Microbiology

Question Bank

B.Sc. SEM VI

Microbiology Paper II

Microbial Biotechnology and Recombinant DNA Technology

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1. Explain production of insulin by r-DNA technology. 10M

2.Explain production of interferon by r-DNA technology. 10M

3. Explain the production of soya sauce. 10M

4.Explain the concept of transgenic animal and add a note on knockout mice. 10M

5. Explain production of insulin by rDNA technology. 10M

6.Explain Hybridoma technology. Discuss the production of monoclonal antibody. 10M

7. Explain the production of Soya Sauce in detail. 10M

8.Explain the concept of transgenic plant and add note on BT cotton. 10M

9.Give a detailed account of PCR and its applications. 10M

10. Describe in detail production of Salk polio vaccine. 10M

11. Discuss in detail about different methods used for selection of recombinants. 10M

12. Describe the process of production of monoclonal antibody and give its applications. 10M

13.Explain in detail production of Insulin. 10M

14. Discuss the production of monoclonal antibody. 10M

15. Explain the production of miso. 10M

16. Describe PCR technique and add a note on its applications. 10M

17.Explain in detail development of Knockout mice. 10M

18. Explain protoplast fusion with suitable example. 5M

19. Describe biofertilizers with examples. 5M

20. Explain biosensors and write its applications. 5M

21. Discuss hazards of r-DNA technology. 5M

22. Write on concept of nanobiotechnology. Give its application. 5M

23.Describe biofertilizer with suitable examples. 5M

24. What are the applications of protoplast fusion in agriculture biotechnology? 5M

25. Discuss the concept of microarray with suitable examples. 5M

26. Describe characteristic features and types of biosensors. 5M

27.Discuss ethics and hazards of biotechnology. 5M

28. Describe briefly method used for induction of protoplast fusion and its significance in agriculture biotechnology. 5M

29. Discuss characteristic features and applications of microarrays in biotechnology. 5M

30. Describe PBR322 vector. 5M

31. Write note on pBR – 322. 2½M

32. Describe restriction endonuclease. 2½M

33.Explain the principle of PCR technology. 2½M

34. Write note on microinjection. 2½M

35. Explain colony hybridization technique with diagram. 2½M

36. What is gene library?2½M

37.What is shuttle vector?2½M

38.Give the role of Reverse transcriptase in r-DNA technology. 2½M

39. Write short notes on:2½M

40. Phagemid 2½M

41.Restriction Endonucleases 2½M

42.DNA Fingerprinting 2½M

43. Microinjection 2½M

44. Adapter and Linker 2½M

45. PEG 2½M

46. cDNA library 2½M

47. pBR 322 2½M

48. Explain genetically modified foods. 2½M

49.Write down the steps involved in soya sauce preparation. 2½M

50. Give an account of Bt genes and mechanism of action of cry proteins. 2½M

51. Describe production of knockout mice as a significance of targeted gene transfer. 2½M

52. Give the production of miso.2½M

53.What is transgenic animal? Explain with example of Dolly sheep. 2½M

54. What is oriental food? Explain with the example of sufu. 2½M

55. Writ a note on milching animal. 2½M

56. Write notes on:2½M

57. Chemical method of protoplast fusion. 2½M

58. Applications of biopesticides. 2½M

59. Bacterial biofertilizer. 2½M

60. Ethics of biotechnology. 2½M

61. Application of protoplast fusion. 2½M

62.Glucose biosensor. 2½M

63. Applications of nanobiotechnology. 2½M

64.Hazards of biotechnology. 2½M

Q2-Solve any ten of the following:1M Each

1. What is endonuclease?

2. Define plasmid.

3. Give the source of Taq polymerase.

4.What is ATS?

5. Define toxoid.

6. Give two examples of edible vaccine.

7. Give two applications of biochip.

8. What is micro array?

9.Give two names of fungal biopesticides.

10. What is milching animal?

11. What does Bt stand for?

12. Define GM foods.

13. What are restriction endonucleases ?

14. What is cosmid?

15. What is cDNA library?

16.What is interferon?

17. What are edible vaccines?

18. What is ATS?

19. What are biochips?

20. What is the significance of phosphate solubilizing bacteria in soil fertility?

21. What is the advantage of proteinase inhibitor?

22. What is meant by transfection ?

23. What is a clone?

24. What is the significance of golden rice?

25. What is palindromic sequence?

26. What is YAC?

27. What is function of ligase in r-DNA technology?

28. What is the significance of ATS?

29. What is edible vaccine?

30.What is attenuated vaccine?

31. Give any one example of bacteria used as biopesticide.

32.Give any two hazards of biotechnology.

33. What is biosensor?

34. Define GMF.

35. What is Knockout mice?

36. What is Sufu?

37. What is the role of DNA ligase?

38What is meant by sticky ends?

30.Give two applications of DNA fingerprinting.

41. What does BCG stand for?

42. What is the significance of ATS?

43. Define hybridoma.

44.Define biopesticide.

45. Give one application of nanobiotechnology.

46. What is biochip?

47. Name one genetically modified food and give its significance.

48. What is meant by transgenic plant? Give one example.