M.Sc. in Applied Microbiology

13P/292/30

Question Booklet No. .....

(To be filled up by the candidate by ***blue/black ball-point pen***)

Roll No. | | | | | | | | |

Roll No.

(Write the digits in words) .....

Serial No. of Answer Sheet .....

Day and Date .....

.....

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only ***blue/black ball-point pen*** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your *Roll Number and Serial Number of the Answer Sheet by pen* in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet No. on the Question Booklet.
7. Any changes in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfairmeans.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गये हैं।]

Total No. of Printed Pages : 21

13P/292/30

No. of Questions : 150

Time : $2\frac{1}{2}$ Hours] *[Full Marks : 450*

Note : (i) Attempt as many questions as you can. Each question carries 3 **(three)** marks. ***One mark will be deducted for each incorrect answer.*** **Zero** mark will be awarded for each unattempted question.

(ii) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

1. The first person to see the bacterial cells under the microscope was:

(1) Pasteur
(2) Koch
(3) Leeuwenhoek
(4) Hooke

2. Distilled spirit that is 40 proof contains:

(1) 25 percent alcohol
(2) 20 percent water
(3) 30 percent water
(4) 20 percent alcohol

3. Secondary metabolites are produced during which phase of bacterial growth:

(1) Lag phase
(2) Log phase
(3) Stationary phase
(4) Decline phase

4. Match the following antibiotics with their source:

(A) Chloramphenicol
(B) Streptomycin
(C) Tetracycline
(D) Clindamycin

(i) *Streptomyces venezulae*
(ii) *Streptomyces griesus*
(iii) *Streptomyces aureofaciens*
(iv) *Streptomyces lincolnensis*

(1) A (i) B (ii) C (iii) D (iv)
(2) A (iv) B (ii) C (iii) D (i)
(3) A (ii) B (iii) C (i) D (iv)
(4) A (iii) B (ii) C (iv) D (i)

5. Which of the following is not an inhibitor of Nitrification:

(1) Nitrapyrin
(2) Thiourea
(3) Diethylcarbamate
(4) Ammonium sulphate

6. Prions are :

(1) Naked RNA particles
(2) Sugar moiety
(3) Infectious proteins
(4) Capsids of RNA viruses

7. Which of the following techniques is frequently used to determine the homology or % relatedness between microbes. Select the most appropriate one:

(1) DNA homology
(2) 16s rRNA homology
(3) t-RNA homology
(4) m-RNA homology

8. Which of the following staining process is used for *Mycobacterium*.

(1) Gram Stain
(2) Giemsa stain
(3) Capsule stain
(4) Acid fast stain

9. Aflatoxin, a toxin which usually gets accumulated in stored grains is produced By the fungus:

(1) *Claviceps purpurea*
(2) *Aspergillus niger*
(3) Mucor
(4) *Aspergillus flavus*

10. Which of the following is used for phytoremediation :

(1) *Helianthus annus* (2) *Thalepia cnerulescens*
(3) *Brassica juncea* (4) All of the above

11. Lypholization is a process of :

(1) Freeze drying (2) Irradiation
(3) Heat drying (4) Chemical treatment

12. SARS, commonly known as Severe Acute Respiratory Syndrome is caused by.

(1) Adenovirus (2) Coronavirus
(3) Myxovirus (4) Rhinovirus

13. Coliform bacteria are:

(1) Gram +ve, spore forming (2) Gram –ve , non spore forming
(3) Gram +ve, non spore forming (4) All of the above

14. Kohler and Milstein developed biotechnology for the production of:

(1) Mylenomas (2) Monoclonal antibodies
(3) Steroid conversion (4) Immobilized antibodies

15. Which of the following is not an autoimmune disease:

(1) Leukemia (2) Hashimito disease
(3) Rheumatoid arthiritis (4) Myasthenia gravis

16. Which of the following bacteria is not an acidophilic bacteria :

(1) *Pseudomonas aeruginosa* (2) *Sulfolobus acidophilus*
(3) *Bacillus acidocaldrium* (4) *Lactobacillus acidophilus*

17. Which of the following method is used for entrapping of enzyme i.e enzyme immobilization :

(1) Carrier binding (2) Cross linking
(3) Entrapping (4) All of these

18. A mole of glucose (180g) contains about :

(1) 686000 calories (2) 6.6 joule
(3) 686 calories (4) 4.2 joule

19. Enzymes are :

(1) Inorganic compound
(2) Biological catalyst
(3) Proteins
(4) Both b and c are correct

20. Which of the following is not a metabolic pathway:

(1) Fermentation
(2) Glycolysis
(3) Kreb's cycle
(4) Sucrose ---Glucose+fructose

21. An American biologist Elizabeth H.Blackburn discovered the molecular structure and nature of which of the following enzyme :

(1) Telomerase
(2) Topoisomerase
(3) Helicases
(4) DNA gyrases

22. Probiotics is a term is associated with :

(1) Primitive bacteria
(2) Pathogenic bacteria
(3) PGPR used in bioremediation
(4) Live microorganisms conferring health benefit to host

23. Match the following antibiotics with their mode of action :

(A) Penicillin
(B) Tetracycline
(C) Polymyxin B
(D) Rifampicin
(E) Sulfanilamide

(i) Cell wall synthesis
(ii) Protein synthesis
(iii) Plasma membrane
(iv) Nucleic acid replication
(v) Inhibition of synthesis of essential metabolites

(1) A i, B ii, C iii, D iv, E v
(2) A v, B iii, C iv, D ii, E i
(3) A ii, B iii, C i, D iv, E v
(4) A iii, B ii, C i, D v, E iv

24. BLAST and FASTA are used as :

(1) Tools in bioinformatics
(2) Method for transformation
(3) Counting radioactive emission
(4) Methods used for protein isolation

25. Which among these is not a phosphate solubilising microorgauism:

(1) *Bacillus*
(2) *Pseudomonas*
(3) *Aspergillus*
(4) All of the above

26. Amylase produced by a fungus and used as a spot remover in laundry presoaks comes from :

(1) *Aspergillus oryzae*
(2) *Aspergillus niger*
(3) *Aspergillus flavus*
(4) None of the above

27. Enzymes used to breakdown blood clots formed during heart attacks :

(1) Streptokinase
(2) Cellulases
(3) Invertase
(4) Pectinase

28. Who is called the Dark Lady of DNA :

(1) Florence Nightiengale
(2) Rosalind Franklin
(3) Barbara Mc. Clintock
(4) Marie Curie

29. DOTS programme is associated with:

(1) *Myobacterium* infection
(2) *Lactobacillus* infection
(3) Polio virus infection
(4) HIV infection

30. Which of the following is not used as a biofertilizer :

(1) *Azotobacter*
(2) *Spirulina*
(3) *Azospirillum*
(4) *Aulsoria*

31. VAM stands for :

(1) Vascular Arbuscular Mycorrhiza
(2) Various Anaerobic Mushrooms
(3) Very Articulate Mycorrhiza
(4) Vesicular Arbuscular Mycorrhiza

32. A hypothesis is :
(1) a conclusion resulting from the results of an experiment
(2) the same thing as a theory
(3) a testable explaination for an observed phenomenon
(4) a controlled experiment

33. Salvasaran is a chemical derived from..... and used to treat .....Fill in the blanks with the correct pair:

(1) Mercury, Cholera
(2) Silver, Gonorrhea
(3) Arsenic, Syphillis
(4) Fungi. Antharax

34. The domain Eukarya contains all the following groups except :

(1) Protozoa
(2) Fungi
(3) Viruses
(4) Algae

35. Robert Koch was a native of which country :

(1) France
(2) Germany
(3) England
(4) Netherlands

36. The pH scale relates to the measure of .....of a chemical substance .

(1) Ionization
(2) Acidity
(3) Buffering
(4) Denaturation

37. Which of the following is not found in prokaryotic cells :

(1) Cell membrane
(2) Ribosomes
(3) DNA
(4) Mitochondria

38. The toxin produced by *Bacillus thuringiensis* is:

(1) Lipid
(2) Sugar
(3) Cell wall component
(4) Protein

39. The musty odour of soil is due to the presence of:

(1) *Bacillus* spp.
(2) *Pseudomonas* spp.
(3) *Streptomyces* spp.
(4) *Serratia* spp.

40 MPN stands for:

(1) Most Probable Number
(2) Most Particulate Number
(3) Mangenese, Phosphorus, Nitrogen
(4) Magnesium, Potassium, Nitrogen

41 Who is considered to be the Father of Soil Microbiology:

(1) Martinus William Beijernick
(2) Sergei Winogradasky
(3) Carlous Linnaeus
(4) Robert Koch

42. Dr. Anand Mohan Chakraborty is credited with designing of a bacterial strain capable of metabolising hydrocarbons :

(1) *Pseudomonas putida*
(2) *Bacillus thuringiensis*
(3) *Bacillus subtilis*
(4) *Chlamydia* spp.

43. Xenobiotics are .

(1) Type of antibiotics used against *Mycobacterium*
(2) Compounds which are resistant to biodegradation
(3) Antiretroviral therapy against AIDS
(4) Mercury containing compounds

44. Biodiesel is obtained from :

(1) *Euphorbia* spp
(2) *Mangifera indica*
(3) *Jatropha* spp
(4) *Argemone mexicana*

45. Which of these bacteria is not a methanogen :

(1) *Methanosarcinia*
(2) *Methanomicrobium*
(3) *Methanococcus*
(4) *Methylomicrobium*

46. The causal organism for ergotism is :

(1) *Claviceps purpurea*
(2) *Lactobacillus* spp.
(3) *Rhizopus* spp.
(4) *Aspergillus* spp.

47. Psittacosis, a common poultry disease, is caused by :

(1) *Pseudomonas* spp.
(2) *Serratia* spp.
(3) *Clostridium* spp.
(4) *Chlamydia* spp.

48. The pH of milk is about :

(1) 7
(2) 6
(3) 8.2
(4) 5

49 The term biomagnification is associated with :

(1) Term used for multiplication of bacteria
(2) Metabolic processes associated with rhizobacteria
(3) Increase in concentration of xenobiotics via food chain
(4) None of the above

50. Non perishable food includes :

(1) Fish
(2) Eggs
(3) Dried rice and Beans
(4) Milk

51. A teratogen is a/an:

(1) Cancer causing agent
(2) Protein found in some virus
(3) Toxin produced by HIV virus
(4) Agent interfering with fetal development

52. Allergy is finally caused due to:

(1) Antigen-Antibody reaction
(2) Inflammation of upper respiratory tract
(3) Introducing of foreign matter into the body
(4) Inhaling pollens

53. The common anaerobic bacteria found in mud are:

(1) *Desulfovibrio* and *Clostridium*
(2) *E.coli* and *Pseudomonas*
(3) *Bacillus* and *E coli*
(4) *Clostridium* and *Pseudomonas*

54. Xenografts are :

(1) Grafts between members of different species.
(2) Grafts between genetically different members of the same species
(3) A term applied to exosphere
(4) Nonbiodegradable compounds

55. Adenyl cyclase catalyzes the conversion of :

(1) ATP to AMP
(2) ATP to cAMP
(3) ATP to ADP
(4) ATP to FAD

56. Rh antigen named after Rhesus monkey are found on surface of :

(1) Phagocytes
(2) RBCs
(3) Tissue cells
(4) Lymphocytes

57. Who is credited with the discovery of Prions :

(1) Hans Gerhard Creutzdeldt
(2) Watson C.F
(3) Stanley B. Prusiner
(4) Alfonso Mario Jacob

58. Induced fit model of enzyme substrate complex was proposed by:

(1) Emil Fischer
(2) Arnon
(3) Daniel.E.Koshland
(4) None of the above

59. IMTECH is located at :

(1) Chandigarh
(2) Bangalore
(3) Lucknow
(4) Hyderabad

60. Which of the following is an example of hydrolases :

(1) Alcohol dehydrogenases
(2) Hexokinase
(3) Trypsin
(4) Malate isomerases

61. *Heliobacter pylori* which was in news recently as the causal agent of:

(1) Constipation
(2) Pleural cancer
(3) Peptic ulcer
(4) Hepatoencephalopathy

62. *Lac* Operon model was proposed by:

(1) Jacob and Monod
(2) Zhender
(3) Griffith
(4) Khorana

63. The structure identified by Watson and Crick was of:

(1) B DNA
(2) A DNA
(3) Z DNA
(4) None of the above

64. CFU stands for:

(1) Colony Forming Units
(2) Cell Forming Units
(3) Colony Formed Units
(4) None of the above

65. Which of the following bases is absent in DNA:

(1) Uracil
(2) Adenine
(3) Guanine
(4) Thymine

66. Salk and Sabin developed vaccioes for:

(1) Hepatitis
(2) DPT
(3) Polio
(4) Rabies

67. Candidiasis is caused by :

(1) *Candida albicans*
(2) *Tricophyton*
(3) *Microsporum*
(4) *Cryptococcus neoformans*

68. Just as virus proliferate only in living host, another group of microbes which require living cells for growth and multiplication is:

(1) PPLO
(2) Bacteria
(3) Rickettsiae
(4) Fungi

69. The chemical colchicine is obtained from which part of the plant of *colchicum autumnale* :

(1) Roots
(2) Stem
(3) Leaves
(4) Fruits

70. Ames test is used to detect:

(1) Malaria
(2) Typhoid
(3) Cholera
(4) Cancer causing ability of microorganisms

71. Syphilis is a sexually transmitted disease caused by:

(1) Vibrio
(2) Leptospira
(3) Pasteurella
(4) Treponema palladium

72. Which of the following sets includes all bacterial disease:

(1) Cholera, Typhoid, Mumps
(2) Tetanus, Tuberculosis, Measles
(3) Malaria, Mumps, Poliomyletis
(4) Diptheria, Leprosy, Plague

73. Which of the following methods are used for transformation experiments :

(1) Heat shock method
(2) Electroporation
(3) Biolistic method
(4) All of the above

74. Blue-White screening is used to detect :

(1) Recombinants
(2) Transformants
(3) Cybrids
(4) Conjugants

75. MCS in plasmid stands for :

(1) Multiple screening of recombinants
(2) Multiple cloning sites
(3) Multiple compatible strands
(4) Major compatible sites

76. Diptheria disease is connected with :

(1) Lungs
(2) Liver
(3) Blood
(4) Throat

77. Which among the following is a phosynthetic bacterium:

(1) *Rhodospirillum rubrum*
(2) *Pseudomonas phosynthetica*
(3) *Bacillus polymyxa*
(4) *Serratia fixii*

78. Recently scientists at ISRO discovered three new species of bacteria in the upper Stratosphere. Which of the following is not among them:

(1) *Bacillus isroensis*
(2) *Jainbacter hoylei*
(3) *Bacillus aryabhatta*
(4) *Pseudomonas winogradaski*

79. The model organism for the Griffith experiment on transformation was :

(1) *Streptococcus pneumoniae*
(2) *Treponema pallidum*
(3) *Escherichia coli*
(4) *Agrobacterium tumifaciens*

80. If a bacterial cell in a broth tube has a generation time of 20 min ; how many cells will be there after 4 hours of optimal expotential growth:

(1) 8192
(2) 4096
(3) 2048
(4) 128

81. 10 ml is equal to how many microlitres:

(1) 10^4 µl
(2) 10^3 µl
(3) 10^5 µl
(4) 10^2 µl

82. Anderson Sampler is used for:

(1) Determination of microbial content in air
(2) Determination of microbial content in water
(3) Determination of microbial content in soil
(4) Determination of microbial content in sewage water

83. Match the following with their causal agent:

(A) Coccidiodomycosis	(i) *Coccidoides immitis*
(B) Histoplasmosis	(ii) *Histoplasma capsulatum*
(C) Blastomycosis	(iii) *Blastomycosis dermatitis*
(D) Asthama	(iv) *Aspergillus fumigatus*

(1) A i, B ii, C iii, D iv
(2) A ii, B i, C iv, D iii
(3) A iii, B iv, C ii, D i
(4) A iv, B iii, C i, D ii

84. Lactose, a disaccharide and also acting as an osmotic laxative, is metabolized by bacteria in which part of human body :

(1) Small intestine
(2) Stomach
(3) Caecum
(4) Colon

85. Which of the following is produced in Kreb's cycle except :

(1) O_2
(2) NADH
(3) ATP
(4) CO_2

86. King's medium is used for the isolation of :

(1) *Pseudomonas* spp.
(2) *Bacillus* spp.
(3) Auaerobic bacteria
(4) *Serratia* spp

87. Gas-Pak system is used for the study of:

(1) Facultative anacrobes
(2) Facultative anaerobes
(3) Aerobes
(4) Anaerobes

88. Prokaryotes having an optimal growth rate below 15°C that can still grow at 0°C to 20° C are called :

(1) Psychrophiles
(2) Mesophiles
(3) Thermophiles
(4) Hyperthermophiles

89. Which of the following is not a differential medium :

(1) King's media
(2) Mac-Conkey agar
(3) Lactose media
(4) Nutrient medium (Complex media)

90. Prokaryotes generation time can be determined during which of the following phases:

(1) Decline phase
(2) Death phase
(3) Stationary phase
(4) Log phase

91. Match the invention with their inventor :

(A) PCR	(i) Kary Mullis
(B) Conjugation	(ii) Lederburg and Tatum
(C) Jumping genes	(iii) Barbara Mc.Clintock
(D) In vitro synthesis of complete genome	(iv) Dr. Har Gobind Khorana

(1) A i, B ii, C iii, D iv
(2) A ii, B i, C iv, D iii
(3) A iv, B iii, C ii, D i
(4) Ai, B iii, C ii , Div

92. Widal test is used for the susceptibility of:

(1) Malaria
(2) Yellow fever
(3) Typhoid
(4) Cholera

93. The term Zoonoses is associated with disease caused by:

(1) Microorganisms associated with wild animals
(2) Microorganisms associated by domestic animals
(3) By Blood transfusion
(4) None of the above

94. Metagenomics is a term associated with:

(1) Study of communities of microbial organisms
(2) full genome of a particular organism
(3) genome of E. coli
(4) term used to refer mutants o bacterial strains

95. What will he the R:S ratio if there are 110 microorganisms in the rhizosphere region and 10 microorganisms in the rhizosphere soil region :

(1) 1:11
(2) 11:1
(3) 1:10
(4) 10:1

96. Plant growth promoting bacteria (PGPR) or Yield increasing bacteria are known to have a role in plant growth promotion by:

(1) Forming siderophores (2) Producing HCN
(3) Producing Gibberelic acid (4) All of the above

97. Mumps is a viral disease caused due to the inflammation of:

(1) Submaxillary gland (2) Parotid gland
(3) Sublingual gland (4) Infraorbital gland

98. Most table wines have an alcohol percentage between:

(1) 1and 3 (2) 5 and 8
(3) 10 and 12 (4) 15 and 20

99. Some of the bacteria show Magnetoaxis due to the presence of:

(1) Iron oxide (2) Silica particles
(3) Chromium oxide (4) Copper oxide

100. Uncontrolled and undifferentiated mass of cells is known as:

(1) Tumour (2) Overgrowth
(3) Cancer (4) Hypertrophy

101. Gene transfer in plants is carried out with the help of which bacterium :

(1) *E. coli* RY 13 (2) *E.coli* DH5α
(3) *Agrobacterium* (4) *E.coli* JM 109

102. The first genetically engineered human protein was:

(1) Interferon (2) Insulin
(3) Somatotropin (4) Streptokinase

103. Competence is the ability of:

(1) F^+ and F^- cells to conjugate
(2) Microorganisms to utilize unavailable iron
(3) Recepient cells to take up free DNA
(4) To develop resistant against against microbes

104. Which of the following is not a chemical agent:

(1) Nitrous acid (2) U.V light
(3) Ethidium bromide (4) 5- Bromouracil

105. At which nucleotide does EcoRI cut DNA.

(1) G/AATTC (2) GA/ATTC
(3) GAA/TTC (4) GAAT/TC

106. Transcription is the synthesis of also referred to as:

(1) DNA on DNA (2) RNA on RNA
(3) DNA on RNA (4) RNA on DNA

107. Plasmids are:

(1) another name for transposons
(2) accessory genetic elements
(3) domains within chromosomes
(4) daughter chromosomes

108. DNA compaction involves:

(1) Nuclear proteins
(2) Twisting and Packing of DNA
(3) Supercoiling of DNA
(4) All of the above

109. Which of the following is not a nonsense codon:

(1) UAA (2) UAG
(3) UGA (4) AUG

110. Which of the following enzyme is responsible for introducing coils in DNA:

(1) DNA gyrases (2) Topoisomerases
(3) Helicases (4) Ribozymes

111. Humoral immunity is due to :

(1) B-lymphocytes (2) T-lymphocytes
(3) L-lymphocytes (4) P-lymphocytes

112. The first person to employ antisepsis in surgery was:

(1) Lister (2) Semmelweis
(3) Koch (4) Pasteur

113. The two strands of DNA are held together by:

(1) Hydrogen bonds (2) Peptide bonds
(3) Non polar covalent bonds (4) Covalent bonds

114. A non-infectious unnatural and unusual reaction of a person to any substance or condition for which he is hypersensitive is termed as:

(1) Infection
(2) Immunity
(3) Allergy
(4) Toxin

115. Genetic information is coded in:

(1) Sequence of DNA molecule
(2) Protein quartenary structure
(3) Phosphate sugar backbone
(4) Protein primary structure

116. An autoclave normally sterlizes material by heating the material to…' for ..min at …psi:

(1) 100, 10, 30
(2) 121.5, 15, 15
(3) 110, 30, 5
(4) 120, 30, 10

117. The most common form of viral hepatitis is caused by:

(1) Hepatitis A virus
(2) Hepatitis C virus
(3) Hepatitis E virus
(4) Hepatitis G virus

118. Which of the following is not used as a chemical preservative:

(1) Benzoic acid
(2) Propionic acid
(3) Sulphur dioxide
(4) Phenol

119. Milk contains highest amount of:

(1) Glucose
(2) Fructose
(3) Sucrose
(4) Lactose

120. Red tide in sea water is caused due to the activity of:

(1) *Gonyaluax* and *Gymnodium*
(2) *Phormidium*
(3) *Fetocarpus*
(4) *Ulva*

121. The jelly like masses of coagulated material formed during water purification process is called:

(1) Flocs
(2) Sludge
(3) Sediments
(4) Schmutzdecke

122. Which alga is used in oxidation ponds used for natural purification of water:

(1) *Azotobacter*
(2) *Spirulina*
(3) *Pseudomonas*
(4) *Chlorella*

123. The H in TORCH stands for:

(1) Herpes simplex virus
(2) Human
(3) Hasgminto's disease
(4) HIV

124. The genome of HIV contains:

(1) ss RNA
(2) ds RNA
(3) ds DNA
(4) ss DNA

125. Which cells of the immune system are the most affected during HIV infection:

(1) CD 4^+ T cells
(2) Macrophages
(3) CD 8^- T cells
(4) Lymphocytes

126. Montaux test is used for the detection of:

(1) Typhoid
(2) Malarial protozoan
(3) *Heliobacter*
(4) *Mycobacterium*

127. The most common therapy used currently for treatment of AIDS is

(1) AKT-3
(2) Olfaxicin and cephalosporin
(3) Ampicillin and Ciproflaxicin
(4) HAART therapy (Highly active antiretroviral therapy)

128. Which of the following is Indias's premier institute is working on DNA fingerprinting:

(1) CCMB
(2) IISc
(3) CDFD
(4) CDRI

129. The phenomenon that led to the discovery of penicillin involves:

(1) Biological antagonism
(2) Genotype competition
(3) Substrate competition
(4) Struggle for existence

130. Schmutzdecke layer used for water purification is composed of:

(1) Colloidal particles
(2) Layer of useful virus
(3) Layer of sediments
(4) Biofilms of microorganisms

131. Which among these bacteria is a microaerophile:

(1) *Bacillus subtilis*
(2) *Clostridium perfringens*
(3) *Pseudomonas aeruginosa*
(4) *Treponema palladium*

132. Flavr savr is a transgenic variety of :

(1) Brinjal
(2) Tomato
(3) Potato
(4) Cotton

133. The approximate size of a bacterium is between:

(1) 0.1-750μm
(2) 0.01-0.25μm
(3) 2μm-> 1m
(4) 2-1000 μm

134. Which of these following is an instant source of energy:

(1) Glucose
(2) Sucrose
(3) Lactulose
(4) Carbohydrates

135. The catalytic RNA molecules are also referred to as:

(1) Ribozymes
(2) Ribosomes
(3) Riboses
(4) Ribolases

136. FAME stands for:

(1) Fatty acid methyl ester analysis
(2) Fatty acid murein analysis
(3) Fluoro acid methyl analysis
(4) None of the above

137. Mycoplsma are sensitive to:

(1) Tetracycline
(2) Ampicillin
(3) Rifampicin
(4) Penicillin

138. Techoic acid is a characteristic of:

(1) Gram + bacteria
(2) Gram – bacteria
(3) Both
(4) None of the above

139. Gel electrophoresis:

(1) Measures the size of plasmid
(2) Tells which viruses are infectious
(3) Measures the charge and size of proteins of proteins and DNA fragments
(4) All of these

140. DNA replication occurs during which phase of cell cycle:

(1) S phase
(2) G1 phase
(3) G2 Phase
(4) M phase

141. A Synchronus culture is defined as:

(1) Cells are in a same state of division
(2) Cells are in a different state of division
(3) Culture from which secondary metabolite are extracted
(4) Culture of different microorganisms

142. Which is incorrectly matched:

(1) Protoplast- Plant cell engineering
(2) Base analogs-Sequencing DNA
(3) Retrovirus -Gene therapy
(4) DNA ligase- Mapping human chromosome

143. Vitamin B_2 is obtained from:

(a) *Aspergillus niger* (2) Penicillium
(3) *Acetobacter* (4) *Ashbya gossypi*

144. Dextran is used in the case of:

(1) Blood clotting (2) Bleeding
(3) Blood preservation (4) Blood transfusion

145. Hybtidomas are result of fusion of:

(1) Normal antibody cell with mylenoma
(2) Abnormal antibody producing cell with mylenoma
(3) Male reproductive cell with mylenoma
(4) Female reproductive cell with mylenoma

146. Agar used as a medium for bacterial cultures is obtained from:

(1) Bones of dead animals (2) Starch
(3) Banana (4) Seaweed

147. Microbes are used in the industrial manufacture of:

(1) Beers and wines (2) Industrial alcohol
(3) Butter and cheese (4) All of these

148. "The concept of bacterial specificity states that each kind of infectious disease is caused by one specific microbe". This was enunciated by:

(1) E.C. Hansen (2) Robert Koch
(3) Pasteur (4) Joseph Lister

149. Which of the following is a viral disease:

(1) Syphilis
(2) Measles
(3) Rickets
(4) Beri-Beri

150. Restriction fragment length polymorphism (RFLPs):

(1) Identify individuals genetically
(2) Are the basis of DNA fingerprints
(3) Based on restriction endonuclease activity
(4) All of these

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल *नीली/काली बाल-प्वाइंट पेन* से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख ले कि प्रश्नपत्र में सभी पृष्ठ मौजूद है और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर ले।
2. परीक्षा भवन में *लिफाफा रहित प्रवेश-पत्र के अतिरिक्त,* लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। *इसे न तो गोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।*
4. अपना *अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से* निर्धारित स्थान पर लिखें।
5. *उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।*
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक संख्या और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। *प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।*
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. *ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है।* यदि आप किसी प्रश्न का *उत्तर नहीं देना चाहते हैं,* तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिये इस पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा अंतिम खाली पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त *केवल ओ० एम० आर० उत्तर-पत्र* ही परीक्षा भवन में जमा करें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की भागी होगा/होगी।