M.Sc in Applied Microbiology Code No(488)

16P/292/9

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 OMR Answer Sheet ..... (209)

.....

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 OMR Answer Sheet)

1. Within 30 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 also 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 ball-point 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 : 30

89

No. of Questions : 150

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

Note : (1) 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.

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

1. The forced deposition of airborne particles usually on a solid agar surface is called :

(1) Deposition (2) Impaction

(3) Sedimentation (4) Splitting

2. Bacterial extracellular polymers present in biofilms are known as :

(1) Glycocalyx (2) Epicalyx

(3) Calyptra (4) Calyx

3. Less than 1% sunlight is present in which of the following zones ?

(1) Littoral (2) Benthic (3) Profundal (4) Limnetic

4. Intracellular vesicles are found in :

(1) Endomycorrhiza (2) Ectomycorrhiza

(3) Ectendomycorrhiza (4) None of the above

5. Methane is the central molecule of which cycle :

(1) Nitrogen
(2) Phosphorus
(3) Carbon
(4) Sulphur

6. Purple and green phototrophic bacteria are isolated by :

(1) Winogradsky column
(2) Sepharose column
(3) Blue sepharose column
(4) Concanavalin A column

7. A free living aerobic and non-photosynthetic nitrogen fixing bacterium is :

(1) *Anabaena*
(2) *Clostridium*
(3) *Azotobacter*
(4) *Rhizobium*

8. Bacteria involved in two step conversion of ammonia into nitrate are :

(1) *Azotobacter* and *Nitrosomonas*
(2) *Pseudomonas* and *Nitrobacter*
(3) *Azotobacter* and *Achromobacter*
(4) *Nitrosomonas* and *Nitrobacter*

9. This organism causes infection of the urinary tract :

(1) Giardia
(2) Trypanosoma
(3) Plasmodium
(4) Trichomonas

10. Opportunistic infections often are caused :

(1) By commensals

(2) Due to hosts weakened immune system

(3) Due to reduction in indigenous microbiota

(4) All of the above

11. Hydrothermal vents are also known as :

(1) Black smokers

(2) White smokers

(3) Black vents

(4) None of the above

12. Water fit for human consumption is technically called :

(1) Potable

(2) Portable

(3) Polluted

(4) Planktonic

13. Fossilized microbial mats are known as :

(1) Stromatolites

(2) Stalagtites

(3) Stalagmites

(4) Stromata

14. The CH_4 released into the atmosphere is the highest from which source :

(1) Ruminants

(2) Termites

(3) Paddy fields

(4) Natural wetlands

15. Anaerobic sulphate reduction is carried out by :

(1) *Thiobacillus*

(2) *Desulfovibrio*

(3) *Desulfuromonas*

(4) *Beggiatoa*

16. Micro-organisms that can multiply at 100-108 C would mostly be :

(1) Hyperthermophilic archaea
(2) Thermophilic subaerial fungi
(3) Thermophilic bacteria
(4) Marine protozoa

17. Transformation experiments were first performed in :

(1) *Escherichia coli*
(2) *Salmonella typhi*
(3) *Diplococcus pneumoniae*
(4) *Pasteurella pestis*

18. The fibrillar nature of the bacterial genomic DNA is due to the presence of :

(1) Proteins HU and H-NS
(2) Proteins A and D
(3) Proteins H3A and H3B
(4) Protein RecA

19. The ..... is where organisms that are found on and in the aerial surface plants are growing.

(1) Rhizosphere
(2) Phyllosphere
(3) Rhizoplane
(4) Desert crust

20. Which of the following functions is attributed to growth promoting bacteria ?

(1) Inhibit competeting bacteria by producing antibiotics
(2) Promote plant growth by producing chemical signals
(3) Decompose the organic materials secreted by the plant making the elements available to the plant again
(4) All of the above.

21. The function of the enzyme primase during DNA replication is to :

(1) Synthesize DNA primer

(2) Synthesize RNA primer

(3) Induce DNA supercoiling

(4) Induce DNA relaxation

22. When it introduces a tumour in plants, *Agrobacterium* introduces ..... into the DNA of the plant cell.

(1) m-RNA (2) Ti plasmid

(3) c DNA (4) T DNA

23. Methanotrophic bacteria :

(1) Oxidize methane gas

(2) Are responsible for green house effect

(3) Produce methane gas

(4) Utilise methane gas as electron source for reduction process

24. The consensus sequence of the Pribnow box is :

(1) TTGACA (2) CGGCCG (3) TGGGCC (4) TATAAT

25. One of the proteins required for the termination of transcription is :

(1) Rho (2) Sigma (3) CAP (4) p102

26. The function of recognizing both the amino acid and the specific tRNA for that amino acid rests with :

(1) Aminoacyl t-RNA synthetase
(2) Chaperonin
(3) Peptidyl transferase
(4) Selenocysteine

27. Foods packaged in plastic for microwaving are :

(1) Dehydrated
(2) Autoclaved
(3) Freeze dried
(4) Packaged aseptically

28. Which type of radiation is used to preserve foods ?

(1) Ionising
(2) Non-ionising
(3) Radiowaves
(4) Microwaves

29. The approximate number of proteins in the small subunit of prokaryotic ribosomes is :

(1) 10
(2) 21
(3) 32
(4) 39

30. Halophiles grow in concentrated salt solution due to :

(1) Bacteriorhodopsin
(2) Branched hydrocarbon chain in phospholipids
(3) Active absorption
(4) Accumulation of KCl

31. Which of the following reaction is an oxidation carried out by *Thiobacillus ferroxidans* :

(1) Fe^{2+} ..... Fe^{3+} (2) Fe^{3+} ..... Fe^{2+}

(3) Cu^{2+} ..... Cu^{3+} (4) Fe^{0} ..... Cu^{0}

32. What type of fermentation is used to produce yoghurt ?

(1) Lactic acid fermentation (2) Propionic acid

(3) Butane diol fermentation (4) Mixed acid fermentation

33. UGA is a stop codon in the universal genetic code. However, in *Mycoplasma*, UGA codes for :

(1) Glycine (2) Arginine (3) Leucine (4) Tryptophan

34. Specialized transduction was first discovered with which of the following genes ?

(1) *gal* (2) *pro* (3) *lac* (4) *his*

35. The approximate upper limit of DNA that can be cloned in a cosmid vector is :

(1) 15 kbp (2) 20 kbp (3) 35 kbp (4) 45 kbp

36. The first primer to primer product in a PCR appears in which cycle :

(1) First (2) Second (3) Third (4) Fourth

37. Which of the following is the ***correct*** combination ?

(1) Low BOD, low DO (2) High BOD, high DO

(3) Low BOD, high DO (4) None of the above

38. 2, 4, 5- T is a herbicide, the persistence of which in soil is approximately :

(1) 20 days (2) 20 weeks (3) 20 months (4) 20 years

39. The plasmid found in *Agrobacterium rhizogenes* is :

(1) Ti (2) Ri (3) pUC (4) YAC

40. A nutritional mutant with the requirement of a specific growth factor is known as :

(1) Auxotroph (2) Necrotroph

(3) Prototroph (4) Autotroph

41. Which of the following mutagens is a base analogue ?

(1) Nitrous acid (2) Ethidium bromide

(3) 5-Bromouracil (4) Nitrosoguanidine

42. DNA damage induces the protease function of which protein :

(1) Lex A (2) Rec A

(3) Topoisomerase (4) Replicase

43. Knallgas bacteria can oxidize :

(1) Sulphur (2) Methane (3) Hydrogen (4) Ammonia

44. Selman Waksman is credited with the discovery of :

(1) Penicillin (2) Streptomycin

(3) Chloramphenicol (4) Cycloheximide

45. Three distinct phylogenetic lineages of Woese have been identified through :

(1) mRNA sequences
(2) rRNA sequences
(3) Protein sequences
(4) tRNA sequences

46. Koch's Postulates was an outcome of work with :

(1) Polio
(2) Tuberculosis
(3) Anthrax
(4) Small pox

47. The first microbiologists to study the role of non-pathogenic microbes in environment were :

(1) Ivanowsky and Beijerinck
(2) Pasteur and Koch
(3) Winogradsky and Beijerinck
(4) Metchnikoff and Kitasato

48. Porin proteins are found in :

(1) Cell wall of Gram positive bacteria
(2) Cell wall of Gram negative bacteria
(3) Outer membrane of Gram negative bacteria
(4) Periplasmic space of Gram negative bacteria

49. A capsule is similar to pili because both :

(1) Are made of protein
(2) Can represent virulence factors
(3) Are endotoxins
(4) Are made of polysaccharides

50. The *group firmicutes* does ***not*** include :

(1) Streptococcus (2) Lactobacillus (3) Clostridium (4) Pseudomonas

51. Prokaryotes differ from mitochondria and chloroplasts in :

(1) Having circular DNA

(2) Reproduction by binary fission

(3) Making all of their proteins

(4) Making some proteins

52. The counterstain used in Gram stain procedure is :

(1) Safranin (2) Iodine (3) Crystal violet (4) Carbol fuchsin

53. Strain O157: H7 of *E. coli* has been identified on the basis of :

(1) Lipid A (2) O-polysaccharide

(3) Peptidoglycan (4) Flagellar antigen

54. In Pseudopeptidoglcan, N-acetyl muramic acid is replaced by :

(1) N-acetyl glucosamine

(2) D-glutamic acid

(3) L-lysine

(4) N-acetyl talosamine uronic acid

55. When comparing bacterial and archael cell membranes only bacterial membranes :

(1) have ether linkages (2) have membrane proteins

(3) have phospholipids (4) are fluid

56. Crescentin is a homolog of :

(1) ribosomal protein
(2) flagellar protein
(3) cytoskeletal protein
(4) None of these

57. Which of the following bacteria does ***not*** undergo transformation in nature ?

(1) *Escherichia Coli*
(2) *Azotobacter*
(3) *Bacillus*
(4) *Streptococcus*

58. Plasmid carrying genes for degradation of octane is found in :

(1) *Rhizobium*
(2) *Pseudomonas*
(3) *Agrobacterium*
(4) *Staphylococcus*

59. Which is ***true*** of an Hfr cell ?

(1) Has a chromosomally integrated F factor
(2) Lacks pili
(3) Does not have genes for conjugative transfer of plasmid
(4) Cannot conjugate with F-

60. Grinding and mixing of food such as hambuger and sausages :

(1) Increases food surface area
(2) Alter cellular structure
(3) Distribute contaminating microorganisms throughout the food
(4) All of the above

61. Which of the following is ***not*** an intrinsic factor in food spoilage ?

(1) pH
(2) Moisture content
(3) Available nutrients
(4) Temperature

62. The sequence most likely to be recognized by *Eco RI* is :

(1) AATTCG (2) AACCGG (3) GAATTC (4) GCTTCG

63. Competence is a term associated with :

(1) Conjugation
(2) Specialized transduction
(3) Generalized transduction
(4) Transformation

64. Specialized transduction does ***not*** involve :

(1) Prophage
(2) Virulent phase
(3) Recepient cell
(4) Lysed host cell

65. Individual protein subunit of a virus is called :

(1) Capsid (2) Capsomer (3) Peplomer (4) Nucleocapsid

66. A clear zone within a cloudy lawn of bacterial cells due to bacteriophage infection is commonly called :

(1) Negri body
(2) Syncytia
(3) Inhibition zone
(4) Plaque

67. Neurological degenerative disease with sponge like holes in the brain have been associated with :

(1) Prions (2) Viroids (3) Viruses (4) Bacteria

68. Protein only hypothesis proposed by Prusiner was for :

(1) Virusoids (2) Viroids (3) Prions (4) Enzymes

69. HIV normally infects :

(1) T-helper cells (2) CD4 + cells

(3) Macrophages (4) All of the above

70. A blister-like lesion on the scalp is commonly associated with the following fungal infection :

(1) Candidiasis (2) Crptococcosis

(3) Dermatophytosis (4) Histoplasmosis

71. An intermediate host is :

(1) where parasite asexual cycle occurs

(2) always a nonhuman host

(3) always some form of insect vector

(4) where parasite sexual cycle occurs

72. AZT interferes with :

(1) Virus entry (2) Reverse transcription

(3) *Virus* uncoating (4) Proteolysis

73. To synthesize one hexose molecule from 6 CO_2 by Calvin cycle, there is a requirement of :

(1) 10 NADPH + 16 ATP

(2) 18 NADPH + 12 ATP

(3) 16 NADPH + 10 ATP

(4) 12 NADPH + 18 ATP

74. Green sulphur bacteria fix CO_2 by :

(1) Reverse citric acid cycle

(2) Hydroxy propionate pathway

(3) Calvin cycle

(4) Entner-Doudoroff pathway

75. The electron flow in biological nitrogen fixation follows this sequence :

(1) Pyruvate - Dinitrogenase reductase - N2 - Dinitrogenase

(2) Pyruvate - Dinitrogenase reductase - Dinitrogenase - N2

(3) Dinitrogenase - Dinitrogenase reductase - Pyruvate - N2

(4) N2 - Pyruvate - Dinitrogenase - Dinitrogenase reductase

76. The *nif* regulon in *Klebsiella pneumoniae* is concerned with :

(1) Nitrate reduction

(2) Nitrite reduction

(3) Nitrogen fixation

(4) Denitrification

77. Nodulation and the development of a microaerophilic environment to facilitate nitrogen fixation are characteristics of which genus :

(1) *Agrobacterium*
(2) *Pseudomonas*
(3) *Escherichia*
(4) *Rhizobium*

78. Common microorganisms which themselves constitute an industrial product includes :

(1) Baker's yeast (*Saccharomyces cerevisiae*)
(2) *Rhizobium*
(3) *Bacillus thuringiensis*
(4) All of the above

79. Fts Z ring has a role in :

(1) Cell division
(2) DNA replication
(3) Translation
(4) Protein folding

80. $\alpha, \beta, \gamma, \delta, \varepsilon$, are subdivisions within :

(1) Archaea
(2) Proteobacteria
(3) Firmicutes
(4) Mollicutes

81. Rabies, Polio, West Nile fever are most recognized diseases of :

(1) Lymphatic system
(2) Respiratory system
(3) Nervous system
(4) Skeletal system

82. An enzyme that adds a phosphoryl group to a compound is :

(1) Kinase
(2) Phosphatase
(3) Peptidase
(4) Oxido-reductase

83. Inducers and repressors of enzyme induction are collectively referred to as :

(1) Moderators (2) Modifiers (3) Effectors (4) Reducers

84. Hepatitis B virus belongs to :

(1) Hepadnaviridae
(2) Flaviviridae
(3) Herpesviridae
(4) Retroviridae

85. *Heme* group in Haemoglobin is an example of :

(1) Coenzyme
(2) Prosthetic group
(3) Cofactor
(4) Holoenzyme

86. Enzyme activity can be regulated by :

(1) Control of enzyme availability
(2) Control of enzyme activity
(3) Both (1) and (2)
(4) Only (2)

87. Energy contained in a photon is given by :

(1) $E = h\lambda$ (2) $E = hc/\lambda$ (3) $E = hc$ (4) $E = h/\lambda$

88. In aerobic photosynthesis the molecule which is protolyzed is :

(1) CO_2 (2) $C_6H_{12}O_6$ (3) Chlorophyll (4) H_2O

89. The number of Manganese ions forming the Oxygen evolving complex are :

(1) 2 (2) 4 (3) 8 (4) 16

90. Transport of electrons from Cytochrome b_6f to PSI is via :

(1) Quinone (2) NADP

(3) Phaeophytin (4) Plastocyanin

91. Cellulose differs from glycogen and starch in having glycosidic linkage :

(1) α-1, 3 (2) β-1, 3 (3) α-1, 4 (4) β-1, 4

92. RNA differs from DNA in having :

(1) OH group on the 2' carbon of pentose sugar

(2) Nitrogen base on the 1' carbon

(3) Uracil instead of Thymine

(4) Both (1) and (3)

93. Which of the following statements are true of Enantiomers ?

(1) They are optical isomers

(2) They have the same molecular and structural formulas

(3) They are mirror images of one another

(4) All of the above

94. During protein denaturation the following does not occur :

(1) Polypeptide chains unfold

(2) Primary structure is not retained

(3) Higher order structure of proteins is destroyed

(4) Hydrophobic regions become exposed and stick together to form aggregates

95. Which statement is ***not*** true of a bacterial endospore ?

(1) Endospores contain dipicolinic acid

(2) The endospore core is dehydrated

(3) Endospore core contains high level of SASPs

(4) SASPs bind to ribosomes present in the endospore core and prevent translation

96. Taq and Pfu are examples of :

(1) Protease (2) RNA polymerase

(3) DNA polymerase (4) Lipase

97. Isoniazid interferes with the synthesis of :

(1) Mycolic acid (2) Folic acid (3) Protein (4) Nucleic acid

98. Bacterial resistance to Penicillin is due to :

(1) Efflux

(2) Alteration of target

(3) Development of resistant biochemical pathway

(4) Inactivation of antibiotic

99. An example of cytolytic toxin is :

(1) Diphtheria toxin
(2) Botulinum toxin
(3) Staphylococcal α toxin
(4) Tetanus toxin

100. Gellan, pullulan, alginate and curdlan are :

(1) Polysaccharides
(2) Antibiotics
(3) Polyesters
(4) Lipids

101. Continuous feed during fermentation is used to maintain :

(1) Temperature
(2) Water level
(3) Product concentration
(4) Substrate concentration

102. To be suitable for industrial use a microorganism should :

(1) Be generally stable
(2) Be capable of growth and product fermentation in large scale culture
(3) Grow rapidly and produce product in a relatively short period of time
(4) All of these

103. The term primary metabolite refers to :

(1) A product that is produced during the end of the growth phase, frequently at or near stationary phase.
(2) A product that is produced during the primary stage of growth.
(3) The major waste product produced during the growth of a culture.
(4) All of the above

104. Breakbone fever is associated with :

(1) AIDS (2) Dengue (3) Hepatitis (4) Yellow fever

105. Hepatitis A and E are transmitted by :

(1) Urogenital tract

(2) Contact with body fluids

(3) Gastrointestinal tract

(4) Respiratory tract

106. Which of the following is an example of a primary metabolite ?

(1) Ethanol (2) Penicillin (3) Erythromycin (4) Tetracycline

107. In a typical fermenter the function of sparger is :

(1) Provide steam in the fermenter during sterilization

(2) Provide additional nutrients so that growth may ensure

(3) Provide for proper cooling of the fermenter

(4) Provide a source of small air bubbles to help oxygenate the medium

108. Glutamic acid is probably the amino acid manufactured by fermentation in the greatest quantity. Its major use is :

(1) As flavour enhancer

(2) As nutritional supplement

(3) As raw material for animal feed

(4) As starter material for aspartame

109. The major use of microbial derived proteases is :

(1) Chemical modification of food additives

(2) An animal feed

(3) As an isomerase during production of high fructose corn syrup

(4) As an additive of laundry detergents

110. Nitrogenous fertilizers disrupt ecosystem structure and function by :

(1) Causing formation of nitrosamine carcinogens

(2) Promoting heterotrophic growth causing imbalance in carbon dioxide levels

(3) Causing more antibiotic producing to grow and produce antibiotics which stunt growth of plants

(4) Reducing the number of Nitrogen fixing bacteria in soil

111. The manner in which the hydrophobic lipid tails are attached to glycerol in the cytoplasmic membrane is different in :

(1) Bacteria and Archaea

(2) Bacteria and Eukarya

(3) Bacteria and Cyanobacteria

(4) Archaea and Methanogens

112. Which among these is a method of vinegar production ?

(1) Orelans method

(2) Bubble method

(3) Trickle method

(4) All of the above

113. Production of which of the following is anaerobic process :

(1) Ethanol (2) Glutamic acid (3) Citric acid (4) Acetic acid

114. Which of the following gives the correct zonal sequence in seas ?

(1) Bathyal, abyssal, intertidal, neritic

(2) Neritic, intertidal, bathyal, abyssal

(3) Abyssal, neritic, intertidal, bathyal

(4) Intertidal, neritic, bathyal, abyssal

115. Which of the following provides an assessment of the numbers of aerobic and facultatively anaerobic bacteria in water ?

(1) Anaerobic plate count

(2) Heterotrophic plate count

(3) Colony forming units

(4) BOD

116. The biochemistry ..... of production is most closely related to that of bread leavening :

(1) Ethanol

(2) Glutamic acid

(3) Citric acid

(4) Ascorbic acid

117. Viral genome with negative strand RNA has :

(1) RNA in the form of messenger RNA

(2) RNA complementary to messenger RNA

(3) Single stranded RNA

(4) Segmented RNA

118. Viroids can be destroyed by :

(1) DNAase (2) Protease

(3) RNAse (4) Both (1) and (3)

119. Wort is a precursor of :

(1) Beer (2) White wine (3) Brandy (4) Red wine

120. Despite efforts to eliminate spoilage organisms during canning, sometime canned foods are spoiled. This may be due to :

(1) Spoilage before canning

(2) Underprocessing during canning

(3) Leakage of contaminated water through can seams during cooling

(4) All of the above

121. The effectiveness of many chemical preservative depends primarily on the food :

(1) Temperature (2) pH

(3) Water content (4) Acidity

122. Which of the following refers to the addition of microorganisms to the diet in order to provide health benefits beyond basic nutritive value ?

(1) Adjuvants (2) Prebiotics (3) Probiotics (4) Symbionts

123. Which of the following is ***not*** an example of non-perishable foods ?

(1) Cereals (2) Rice (3) Pulses (4) Milk

124. Which of the following is ***not*** a negatively controlled operon ?

(1) lac operon (2) trp operon (3) mal operon (4) arg operon

125. a_w, which is also referred to as water activity which governs the spoilage of food by micro-organisms, is commonly interpreted as :

(1) Water content of the food

(2) Sugar content of the food

(3) pH of the food

(4) Nitrogen content of the food

126. Which of the following test is done for testing the quality of milk ?

(1) Phosphatase test

(2) Methylene Blue Reduction Test (MBRT)

(3) Multiple Tube Fermentation Test

(4) All of the above

127. The common bacteria responsible for Botulism is :

(1) *Leuconostoc* species

(2) *Salmonella* species

(3) *Clostridium* species

(4) *Staphylococcus* species

128. Sauerkraut is a fermented product of :

(1) Soyabeans (2) Coconut

(3) Cassava (4) Cabbage

129. Which among these is ***not*** an example of Single Cell Protein (SCP) ?

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

130. Arrange the following groups of micro-organisms in descending order of their occurrence in soil :

(1) Bacteria, Fungi, Protists, Nematodes, Viruses

(2) Bacteria, Protists, Viruses, Nematodes, Fungi

(3) Bacteria, Fungi, Viruses, Nematodes, Protists

(4) Bacteria, Fungi, Viruses, Nematodes, Protists

131. Because the soil primarily is an ..... environment, the elements such as Carbon, Nitrogen, Sulphur and Iron will tend to be in the ..... state in the soil.

(1) Aerobic, oxidized
(2) Aerobic, reduced
(3) Anaerobic, oxidized
(4) Anaerobic, reduced

132. For Lambda phage to maintain lysogeny, the following events should happen ***except*** :

(1) Integration of lambda genome into host chromosome

(2) Expression of C II and C III proteins

(3) Prevention of late protein production

(4) Synthesis of cro protein in high amounts

133. The terms rooted, unrooted and nodes are commonly associated with :

(1) Phylogenetic tree
(2) Cladistics
(3) Cladogram
(4) All of the above

134. ..... is the process in which micro-organisms are used as a food source resulting in nitrogen and phosphorus mineralization.

(1) Eutrophication
(2) Homeostasis
(3) Nitrogen fixation
(4) Microbivory

135. A microbial community that develops in low areas and retained on the soil surface is called :

(1) Zooglea (2) Mycorrhizae (3) Microfilm (4) Desert crust

136. Which of the following genera synthesizes Nod factors in order to activate a plant to allow development of infection thread ?

(1) *Agrobacterium*
(2) *Pseudomonas*
(3) *Frankia*
(4) *Rhizobium*

137. The nitrogen-fixing form of the *Rhizobium* is called :

(1) Bacteroid
(2) Symbiosome
(3) Mycorrhiza
(4) Infection thread

138. Which of the following genera possess a tumour inducing plasmid ?

(1) *Agrobacterium*
(2) *Rhizobium*
(3) *Pseudomonas*
(4) *Frankia*

139. Addition of nitrogen containing fertilizers affects gas exchange process in the soil :

(1) Resulting in release of NO and N_2O which are green house gases

(2) Causing methane gas to be produced

(3) Assimilation of NO_3 by the plants

(4) Causing antibiotic production in bacteria which leads to antibiotic resistance

140. The symbiotic association of plants and fungus called mycorrhiza was first described by :

(1) De Bary (2) Sergei Winogradsky

(3) A. B. Frank (4) A. M. Ross

141. DDT is an example of Persistent Organic Pollutants (POPs) but is known to be degraded by certain bacteria, select the appropriate one :

(1) *Phanerochaete chrysoporium* (2) *Trichoderma viride*

(3) *Aspergillus flavus* (4) All of the above

142. The spoilage of wine is due to acidification, which is caused due to presence of :

(1) *Gluconobacter* (2) *Acetobacter*

(3) *Lactobacillus* (4) All of the above

143. Who is referred to as the father of antibiotics ?

(1) Sewall Wright (2) Robert Koch

(3) Alexander Fleming (4) Weismann

144. Roquefort, Cheddar, Emmentaler (Swiss), Camembert are types of :

(1) Cheese (2) Butter (3) Milk (4) Proteins

145. Kefir is commonly known as :

(1) Fermented milk
(2) Fermented cereals
(3) Fermented whisky
(4) Fermented beer

146. Mycotoxins are example of :

(1) Primary metabolite
(2) Secondary metabolite
(3) Tertiary metabolite
(4) Both an example of secondary and tertiary metabolite

147. Aflatoxin, Ochratoxin, Sterigmatocystin are different types of :

(1) *Aspergillus* toxins
(2) *Fusarium* toxins
(3) *Penicillium* toxins
(4) Ergot alkaloids

148. Which of the following is found in milk ?

(1) *Vibrio* (2) *Lactobacillus* (3) *Pseudomonas* (4) *Amoeba*

149. Wood smoke is sometimes used in flavouring and preservation of foods due t the presence of :

(1) Pyragallol
(2) Catechol
(3) Phenols and cresols
(4) All of the above

150. 12D treatment is commonly referred to as :

(1) *Botulinal* cook
(2) *Fulva* cook
(3) *Coagulans* cook
(4) *Stearothermophilus* cook

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा ओ०एम०आर० उत्तर-पत्र के दोनों पृष्ठों पर केवल ***नीली/काली बाल-प्वाइंट पेन*** से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं 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 लें।
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 मोड़ें 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 बाल-प्वाइंट 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।