

12P/292/24

Question Booklet No.

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

Roll No.

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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 unfair means.
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 ।]

12P/292/24

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. Fermentation process to manufacture ethyl alcohol is :

- | | |
|------------------------------|---------------------------------|
| (1) An aerobic process | (2) An anaerobic process |
| (3) A polymerization process | (4) A catalytic aerobic process |

2. The term 'anaerobic' means :

- | | |
|----------------------|-----------------------------|
| (1) Without bacteria | (2) Without CO ₂ |
| (3) Without ATP | (4) Without O ₂ |

3. Yeast contains :

- | | |
|-------------------------------|----------------------------------|
| (1) Invertase only | (2) Zymase only |
| (3) Both invertase and zymase | (4) Neither invertase nor zymase |

4. Which gas is produced during fermentation ?

- | | | | |
|--------|---------------------|---------------------|--------------------|
| (1) CO | (2) CO ₂ | (3) Cl ₂ | (4) O ₂ |
|--------|---------------------|---------------------|--------------------|

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5. What is vinegar ?
(1) Methanol (2) Ethanol (3) Formic acid (4) Acetic acid
6. The source of sucrose in growth media required for industrial fermentation is :
(1) Corn sugar (2) Milk whey
(3) Sugarbeet molasses (4) Soyabean meal
7. Acetic acid is produced by :
(1) Genus *Gluconobacter* (2) Members of genus *Acetobacter*
(3) Both *Gluconobacter* and *Acetobacter* (4) *Aspergillus* species
8. Which of the following acid is produced by incomplete oxidation rather than a true fermentation ?
(1) Gluconic acid (2) Acetic acid (3) Citric acid (4) Lactic acid
9. Growth in a closed system affected by nutrient limitation and waste product accumulation is called :
(1) Batch culture (2) Ascus culture (3) Flocculation (4) Turbulation
10. Growth phase does not include following phases of bacteria :
(1) Decline phase (2) Stationary phase
(3) Lag phase (4) Log phase
11. In fermentor the top portion left without broth is called :
(1) Shaft (2) Head space (3) Impeller (4) Sparger
12. For industrial production of ethanol, the yeast used is :
(1) *K. pneumoniae* (2) *K. fragilis* (3) *S. cerevisiae* (4) Both (2) and (3)
13. Over heating of fermentor during fermentation is controlled by :
(1) Cooling jacket (2) Steam (3) Cool air (4) None of these

14. Doubling time is :
- (1) The rate of growth per unit time
 - (2) The time for the population to double in number/ mass
 - (3) The number of times the inoculums has replicated
 - (4) All of the above
15. "It is the enzyme zymase, not yeast itself responsible for fermenting the sugars" was shown by :
- (1) Buchner
 - (2) Mendel
 - (3) Linnacus
 - (4) Muller
16. Fermentation can occur outside the living cell, was proposed by :
- (1) Nollet
 - (2) Lamark
 - (3) Buchner
 - (4) Darwin
17. In Heterolactic fermentation how many molecules of pyruvate are converted to lactate ?
- (1) Two molecules
 - (2) One molecule
 - (3) Three molecules
 - (4) None of the above
18. The word 'Fermentation' is derived from the latin verb "fervere" which means :
- (1) To boil
 - (2) To respire
 - (3) To cook
 - (4) None of the above
19. Which of the following is a beneficial function performed by bacteria ?
- (1) Control insect populations
 - (2) Directly provide food for human
 - (3) Decompose organic material and recycle elements
 - (4) Cause disease
20. Disinfection is defined as :
- (1) Use of chemical to treat living cells
 - (2) Use of chemical to treat inert surface
 - (3) Removal or destruction of all form of microbes
 - (4) Partial removal of microbes

21. Which of the following is true for sanitization ?
- (1) Done by steam under pressure
 - (2) Treatment by chemical antimicrobials
 - (3) May be done with high tempt washing or by clipping unto a chemical disinfectant
 - (4) Done with the help of antibiotics
22. Branded product 'Dettol' used in personal hygiene, is a/an :
- (1) Antiseptic agent
 - (2) Disinfectant
 - (3) Senitizer
 - (4) Fermented product
23. Which of the following about *E. coli* is not true ?
- (1) *E. coli* is a part of the gastric flora of humans
 - (2) *E. coli* is beneficial in human intestine
 - (3) A disease causing strain of *E. coli* causes bloody diarrrhea
 - (4) None of the above
24. Which comes under 'prevention' category ?
- (1) Vaccine
 - (2) Antibiotics
 - (3) Analgesics
 - (4) None of the above
25. Which of the following is a beneficial activity of microorganisms ?
- (1) Some microorganisms use carbon dioxide
 - (2) Some microorganisms provide nitrogen for plant growth
 - (3) Some microorganisms are used in sewage treatment
 - (4) All of the above
26. Which of the following is a valid scientific name ?
- (1) *Mycobacterium tuberculosis*
 - (2) *Tubercle bacillus*
 - (3) *Bacillus tuberculosis*
 - (4) *Fusarium trichosis*

27. Which of the following enzymes is used for glucose detection in blood ?
(1) Glucose isomerase (2) Glucose oxidase
(3) Amyloglucosidase (4) Luciferase
28. Which of the following is true for an antibiotic ?
(1) It kills or inhibits the growth of bacteria
(2) Produced by micro organisms
(3) Most of the antibiotics are now chemically modified (semisynthetic)
(4) All of the above
29. Drug sensitivity is necessary :
(1) For relapse or re-treatment cases (2) When drug resistance is suspected
(3) For Drug resistance studies (4) All of the above
30. "Medical mycology" is the study of :
(1) Mycobacterium (2) Medicine (3) Fungi (4) Virus
31. *Candida* species causes opportunistic infections in :
(1) Immunocompromised person (2) AIDS patients
(3) Cancer patients (4) All of the above
32. Characteristics of Gram positive bacteria are :
(1) Stained dark blue or violet in Gram staining
(2) Thick peptidoglycan layer
(3) Cytoplasmic lipid membrane
(4) All of the above
33. Gram negative bacteria not stained dark blue or violet in Gram staining is :
(1) Due to presence of outer polysaccharide layer on peptidoglycan in cell wall
(2) Due to negative charge
(3) Due to cytoplasmic lipid membrane
(4) None of the above

34. Opportunistic infections are due to :
- (1) Malnutrition (2) Recurrent infections
(3) Immuno-suppression (4) All of the above
35. Herpes virus is a :
- (1) Family of viruses (2) Cause latent infections
(3) Causes disease in animals only (4) Both (1) and (2)
36. Bacterial flora present in water is :
- (1) *Entamoeba* (2) *E.coli*
(3) *Pseudomonas aeruginosa* (4) All of the above
37. Bacteria responsible for formation of curd from milk is :
- (1) Lactobacilli (2) Coliform bacteria
(3) Cocci (4) None of the above
38. Genetically modified cultivars of which of the following plants are available ?
- (1) Herbicide resistant cotton (2) Insecticide producing cotton
(3) Salt resistant tomatoes (4) All of these
39. The Ti plasmid from which plant pathogen is used to transfer plant genes between species ?
- (1) *Agrobacterium tumefaciens* (2) *Escherechia coli*
(3) *Haemophilus influenzae* (4) *Salmonella typhimurium*
40. Some micro-organisms produce poisonous substances known as :
- (1) Enzymes (2) Toxins (3) Coagulator (4) Hyluronidase
41. Root nodules of leguminous plants are produced by the following wherein they fix nitrogen :
- (1) *Pseudomonas* (2) *Rhizobium* (3) *Azotobacter* (4) *Anabena*

42. Heterocyst performs :
- (1) Photosynthesis (2) Photosynthesis and nitrogen fixation
(3) Nitrogen fixation (4) Respiration
43. The best and easy way to control crop pest is by :
- (1) Crop rotation (2) Chemicals
(3) Quarantine (4) Biological control
44. The is where organisms are found on and in the aerial surface plants roots.
- (1) Rhizosphere (2) Microfilm (3) Phyllosphere (4) Rhizoplane
45. The function of growth promoting rhizobacteria is to :
- (1) Decompose the organic matter secreted by plant making the nutrients available to the plants again
(2) Stimulate the mineral uptake by inhibiting activities of other bacteria in the vicinity
(3) Enhance mycorrhizal activity
(4) Promote plant growth by producing chemical signals
46. The Nitrogen fixation form of *Rhizobium* is called :
- (1) Bacteroid (2) Symbiosome (3) Infection thread (4) T-plasmid
47. Which of the following herbicide is an amino acid synthesis inhibitor ?
- (1) Fosamine (2) Hexazinone (3) 2, 4-D (4) Glyphosate
48. Which of the following herbicide is a photosynthetic inhibitor ?
- (1) Hexazinone (2) Fosamine (3) Glyphosate (4) 2, 4-D

49. Which of the following is implicit in the colonization process ?
- (1) Ability to survive inoculation onto seed
 - (2) To multiply in the spermosphere
 - (3) To attach to the root surface and colonize there
 - (4) All of the above
50. Diversity of the members of rhizosphere community varies with :
- (1) Plant species and age
 - (2) Location on the root and soil properties
 - (3) Both (1) and (2)
 - (4) None of the above
51. *Nitrobacter* converts :
- | | |
|------------------------------|-------------------------------|
| (1) Nitrites to nitrates | (2) NH_3 to nitrites |
| (3) N_2 to nitrates | (4) None of these |
52. *Azotobacter* and *Clostridium* are N_2 fixing bacteria found in :
- | | |
|----------------------|---------------|
| (1) Nodulated roots | (2) Free soil |
| (3) Leaves of plants | (4) None |
53. Beijernick discovered :
- | | |
|---------------------------------|------------------------------|
| (1) Nitrogen fixation | (2) <i>Bacillus radicola</i> |
| (3) Nodule formation in legumes | (4) Both (2) & (3) |
54. *Frankia* is organism.
- | | | | |
|---------------|---------------|-----------------|----------------|
| (1) Symbiotic | (2) Parasitic | (3) Ammonifying | (4) Putrifying |
|---------------|---------------|-----------------|----------------|
55. The limiting factor in nitrification of soil is :
- | | | | |
|--------|-----------------|---------|-----------|
| (1) pH | (2) Temperature | (3) Air | (4) Light |
|--------|-----------------|---------|-----------|

56. Insecticides are special inhibitors of :
- (1) Excretory system (2) Digestive system
(3) Nervous system (4) Blood circulatory system
57. Which form of nitrogen is most usable by plants ?
- (1) Nitrate (2) Nitrite (3) Nitrogen gas (4) Ammonia
58. All of the following have an impact on the nitrogen cycle except :
- (1) The application of inorganic fertilizers applied to the soil
(2) The action of aerobic bacteria acting on livestock wastes
(3) The overplanting of nitrogen rich crops
(4) The discharge of municipal sewage
59. Plants assimilate sulphur primarily in which form ?
- (1) Sulphates (2) Sulphites
(3) Hydrogen sulphide (4) Sulphur di-oxide
60. Which of the following enzyme detoxifies herbicide atrazine ?
- (1) Glutathione-s-transferase (2) Nitrilase
(3) Acetyl transferase (4) Both (1) & (2)
61. During phosphorous cycle weathering makes phosphate available to :
- (1) Tertiary consumers (2) Producers
(3) Consumer directly (4) Reservoir
62. The main nitrogen reservoir in the biosphere is :
- (1) Rocks (2) Oceans (3) Atmosphere (4) Organism
63. Which of the following limits the desert ecosystem ?
- (1) Water (2) Nitrogen (3) Phosphorous (4) Both (1) and (2)

64. Water during its cycle falling on land enters :
- (1) Surface Water (2) Aquifers (3) Ground water (4) All of the above
65. In nature carbon cycle is contributed by :
- (1) Photosynthesis (2) Respiration (3) Fossil fuels (4) All of the above
66. Cycling of the phosphorous occurs in the form of :
- (1) HPO_3^- (2) PO_4^{3-}
(3) P_2 (a gas) (4) None of the above
67. The stable water balance on the earth is maintained by :
- (1) Evaporation (2) Precipitation (3) Surface run off (4) All of the above
68. Oxidation of ammonia into nitrite by chemo-synthetic bacteria is known as :
- (1) Nitrification (2) Denitrification
(3) Nitrogen fixation (4) Transcription
69. The amount of oxygen required for oxidation by microbes in any unit volume of water is called :
- (1) Dissolve Oxygen (DO) (2) Biological Oxygen Demand (BOD)
(3) Eutrophication (4) Surface flow
70. The unwanted sound dumped into the atmosphere leading to health hazards meant for :
- (1) Water pollution (2) Air pollution
(3) Noise pollution (4) Radioactive pollution
71. The largest reservoir of carbon is the :
- (1) Atmosphere (2) Ocean (3) Rocks (4) Lake

72. In terms of food chain or food pyramid, organisms that trap energy, such as plants are known as :
- (1) Primary producer (2) Secondary producer
(3) Primary consumer (4) Secondary consumer
73. The biggest category of classification in biological taxonomy is :
- (1) The phylum (2) The kingdom (3) The species (4) The family
74. Organisms that break down and feed on wastes and dead organism are called :
- (1) Decomposer (2) Omnivores (3) Autotrophs (4) Producers
75. Which of the following is/are example of proto-cooperation ?
- (1) *Desulfovibrio* and *Chromatium*
(2) The Pompeii Worm and sulfur oxidizing bacteria
(3) Shrimp *Rimicaris exocalata* and filamentous sulfur-oxidizing bacteria
(4) All of the above
76. *Nitrosomonas* and *Nitrobacter* interaction in the nitrogen cycle is an example of :
- (1) Parasitism (2) Protoco-operation
(3) Commensalisms (4) Syntrophism
77. Which of the following is *not* one of the major environment problems resulting from human interference in the nitrogen cycle ?
- (1) Stratospheric ozone depletion
(2) Increased acid rain
(3) Nitrous oxide release increases global warming
(4) Eutrophication
78. The primary reservoir of nitrogen is :
- (1) The atmosphere (2) Rocks (3) Ammonia (4) Nitrates

79. The term "activated sludge" is used for a common secondary treatment technique because :
- (1) It is very short lived, and therefore active compared to primary treatment
 - (2) It requires many workers, who are actively on gated in maintaining the system
 - (3) It involves use of a mixture of detritus feeding organisms and is thus activated
 - (4) It is continually stirred and therefore activated
80. Chlorine is often added to wastewater for disinfection before effluent discharge. A Potential problem with the procedure is :
- (1) The chlorine promotes cultural eutrophication
 - (2) Toxic chlorinated hydrocarbons may be formed
 - (3) Chlorine contributed to depletion of the ozone layer
 - (4) Chlorine gas is poisonous and may threaten near by homes
81. An organism that can thrive at temperature between 60-80°C :
- (1) Psychrophile
 - (2) Halophile
 - (3) Thermophile
 - (4) Extremophiles
82. A community used water and water carried solids that flow to a treatment plant are called :
- (1) Effluent
 - (2) Wastewater
 - (3) Sludge
 - (4) Mixed liquor
83. A wastewater treatment plant may dispose of effluent by :
- (1) Discharging onto land
 - (2) Evaporating into the atmosphere
 - (3) Discharging into receiving waters
 - (4) All of the above
84. What was the first enzyme immobilized from the following ?
- (1) Cyclase
 - (2) Invertase
 - (3) Penicillin G
 - (4) Proteases

85. The functional groups of proteins suitable for covalent binding under mild conditions include :
- (1) The alpha amino groups of the chain
 - (2) The alpha carboxyl group of the chain end
 - (3) Gamma carboxyl groups of ASP and GLU
 - (4) All of the above
86. What is the microbial source used for the production of rennet commercially ?
- (1) *Bacillus*
 - (2) *Pseudomonas*
 - (3) *Rhizomucor pusillus*
 - (4) *Pencillium notatum*
87. GMO rennet was commercially produced by :
- (1) *Aspergillus niger*
 - (2) *Saccharomyces cerevisiae*
 - (3) *Pencillium spp.*
 - (4) *Spirulina*
88. Serratiopeptidase is an anti-inflammatory enzyme produced by :
- (1) *Serratia*
 - (2) *Bacillus*
 - (3) *Streptococcus*
 - (4) *Pseudomonas*
89. A synthetic ribozyme called gene shears is developed and directed against which disease ?
- (1) HIV
 - (2) Hypertension
 - (3) Cancer
 - (4) Alzheimer disease
90. Who developed RNA enzyme system capable of self replication in about an hour ?
- (1) Lincoln and Joyce
 - (2) Tang and Breaker
 - (3) Arne Tiselius
 - (4) Howard Martin Temin
91. Among the following which is a renewable polymer used for packaging industry ?
- (1) Poly styrene
 - (2) Polyethylene
 - (3) PLA
 - (4) PVC
92. The most commonly used surface attachment agent in biosensors is :
- (1) Hydrogel
 - (2) PEG
 - (3) TEMED
 - (4) Nitrocellulose

93. Which bacteria is used as a biosensor for the analysis of low BOD in river water ?
(1) *E. coli* (2) *Pseudomonas putida*
(3) *Salmonella enteritidis* (4) *Listeria monocytogenes*
94. Identify negative modifiers of enzyme activity among the below :
(1) Sulfanilamide (2) Potassium (3) Manganese (4) Zinc
95. Theinamycins is an antibiotic produced by :
(1) *S. cattleya* (2) *Nocardia uniformis*
(3) *Agrobacterium radiobacter* (4) *Flexibacter*
96. The genes *puh* and *puf* are responsible for synthesis of :
(1) Bacteriochlorophyll synthesis proteins
(2) Carotenoids synthesis proteins
(3) Pigment binding polypeptides
(4) Cytochromes
97. What is the oxidation state of ammonia, nitrite and nitrate ?
(1) -3, +3, +5 (2) +5, +3, +2 (3) +1, +3, -3 (4) -3, +3, -2
98. What is the electron acceptor used in the enrichment culture of denitrifying bacteria ?
(1) Potassium chloride (2) Potassium sulfate
(3) Potassium nitrate (4) Potassium chromate
99. The first evidence for the oxidation of inorganic substance by an organism was given by :
(1) T.Schloesing and A.Mutz (2) Winogradsky
(3) Robert Koch (4) Alexander Fleming
100. What is the unusual sugar composition of O-polysaccharide ?
(1) Colitose (2) Mannose (3) Rhamnose (4) Galactose
101. What is the transducer that sense cobalt and nickel ?
(1) CheW (2) CheA (3) Tar (4) cheY

102. Causal organism of "transmissible spongiform encephalopathies" such as Kuru disease, and Creutzfeldt Jacob Syndrome is :
- (1) Bacteria (2) Virus (3) Prion (4) Viroid
103. On the basis of structure to which category does Small pox virus belongs ?
- (1) RNA virus with icosahedral symmetry
(2) DNA virus with icosahedral symmetry
(3) DNA virus with complex symmetry
(4) RNA virus with helical symmetry
104. What are Androphages ?
- (1) Phages attacking conjugating bacteria via conjugation tube
(2) Phages attacking bacterium via flagella
(3) Phages attacking bacterium by sex pilus
(4) Phages incapable of attacking bacterium
105. Which of the following class of antibiotics is most likely to fail against Gram negative bacterium ?
- (1) Cell wall synthesis inhibitors (2) DNA synthesis inhibitors
(3) RNA subunit binding inhibitors (4) Peptidyl transferase inhibitors
106. During Gram Staining, Iodine acts as a :
- (1) Dye (2) Decolorizing agent
(3) Mordant (4) Indicator
107. Number of domains according to the latest system of classification is :
- (1) 8 (2) 5 (3) 3 (4) 2
108. An F' cell is :
- (1) Bacterial cell containing F factor
(2) Bacterial cell lacking F factor
(3) Bacterial cell containing F factor as Prophage
(4) Bacterial cell containing modified F factor

117. Virioids are :
- (1) Small, circular RNA molecules, associated with larger RNA molecules
 - (2) Small subunits of viral coat
 - (3) Hollow virus particles without nucleic acids
 - (4) Nucleic acid without viral coat
118. Discovery of Viroid is credited to :
- (1) Prusiner
 - (2) Diener
 - (3) Ivanowsky
 - (4) Alpher
119. Which of the following requires cholesterol for growth ?
- (1) Actinomycetes
 - (2) Mycoplasma
 - (3) PPLO
 - (4) Chlorophyceae
120. Specialized Transduction is an example of :
- (1) Recombination
 - (2) Vertical Gene Transfer
 - (3) Horizontal Gene Transfer
 - (4) Crossing over
121. Type IV pilus and Type II excretion system is associated with :
- (1) Conjugation
 - (2) Transformation
 - (3) Generalized Transduction
 - (4) Abortive Transduction
122. Domain System is devised on the basis of :
- (1) Numerical Taxonomy and Percentage Similarity
 - (2) DNA homology experiments involving Heteroduplexes
 - (3) Electron microscopic analyses of Ultramicroscopic structures
 - (4) Molecular level genetic analyses of 16S.r.RNA
123. In which of the following D amino acids are most likely to be found ?
- (1) *Homo sapiens*
 - (2) *Microcystis*
 - (3) *Escherichia coli*
 - (4) *Oscillatoria*
124. Which of the following belongs to Archaeobacteria ?
- (1) Cyanobacteria
 - (2) *Agrobacterium*
 - (3) Methanogens
 - (4) Chlorophyceae
125. *Saccharomyces cerevisiae* is employed for the production of :
- (1) Idli
 - (2) Beer
 - (3) Bread
 - (4) All of the above

126. *Torulopsis utilis* is :
- (1) Food yeast
 - (2) Intestinal commensal
 - (3) Microorganism that yields third generation vaccines
 - (4) Employed for synthesis of citric acid
127. Heating milk and wines to 66°C for brief period and then sudden cooling is :
- (1) Pasteurization
 - (2) Sterilization
 - (3) Fermentation
 - (4) Preservation
128. Milk is changed into curd by :
- (1) *Acetobacter aceti*
 - (2) *Bacillus megaterium*
 - (3) *Xanthomonas citri*
 - (4) None of the above
129. Pasteurization frees the foodstuff from :
- (1) All living bacteria
 - (2) All living organisms
 - (3) All vegetative forms of bacteria
 - (4) Vegetative forms of all pathogenic bacteria
130. Curd, milk, cheese and butter are produced with the use of :
- (1) Yeast
 - (2) Penicillin
 - (3) Streptococcus
 - (4) None of the above
131. Vinegar is prepared from alcohol with the help of :
- (1) *Lactobacillus*
 - (2) *Acetobacter*
 - (3) *Azotobacter*
 - (4) None of the above
132. Rennin employed in the cheese industry is :
- (1) Inhibitor
 - (2) Alkaloid
 - (3) Enzyme
 - (4) Activator
133. Distribution of clean and quality milk throughout the world has been made possible as a result of the work of :
- (1) Leeuwenkoek
 - (2) Koch
 - (3) Pasteur
 - (4) Blackman

134. Which compound is added to the medium to absorb oxygen for the creation of anaerobic conditions ?
(1) Sodiumthioglycollate (2) Nitrous acid
(3) Citrate (4) None of the above
135. The Watson-Crick structure of DNA is referred to as :
(1) A-DNA (2) B-DNA (3) C-DNA (4) Z-DNA
136. Which of the following has clove leaf like structure ?
(1) mRNA (2) tRNA (3) rRNA (4) DNA
137. Mutation theory of evolution is proposed by :
(1) Hugó de Varies (2) Darwin (3) Lamarck (4) Mendel
138. Transposes are also called as :
(1) Walking chromosomes (2) Running chromosomes
(3) Jumping genes (4) None of the above
139. Who among the following is related to transposons ?
(1) McClintok (2) Hershey and Chase
(3) Jacob and Monod (4) Ramakrishnan
140. The enzymes that helps in RNA primer formation is :
(1) DNA polymerase I (2) DNA polymerase II
(3) DNA polymerase III (4) DNA primase
141. Reverse transcriptase is a :
(1) DNA dependent RNA polymerase (2) RNA dependent polymerase
(3) Both (1) and (2) (4) Neither (1) nor (2)
142. Which of the following enzymes helps in uncoiling of DNA ?
(1) DNA primase (2) Ligase (3) Helicase (4) Lyase

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143. pBR322 is a :
- (1) Bacteriophage (2) Bacteria (3) Virus (4) Plasmid
144. Which of the following is called Nature's Genetic Engineer ?
- (1) *Agrobacterium tumefaciens* (2) RNA virus
(3) $\phi \times 174$ (4) TMV
145. Western blotting is related to :
- (1) DNA (2) RNA (3) Proteins (4) Fats
146. DNA polymerase is involved in :
- (1) Replication (2) Transcription (3) DNA repair (4) Translation
147. Mutation is a :
- (1) Defect in DNA strand (2) Alteration in DNA strand
(3) Repetitive DNA sequence (4) Single stranded RNA
148. DNA generally acts as template of :
- (1) Only protein (2) Only DNA
(3) Only RNA (4) Both DNA and RNA
149. Artificial synthesis of DNA in the laboratory was first achieved by :
- (1) Kornberg & Ochoa (2) Khorana
(3) Altman (4) Nirenberg & Mathei
150. The DNA probe, 3'GGCTTA will hybridises with DNA containing :
- (1) 5'CCGUUA (2) 3'CCGAAT (3) 5'CCGAAT (4) 3'GGCAAU

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 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 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।