Seat No.	

ENT - 42

Total No. of Pages : 20

Re - Entrance Examination, 2026
M.Sc. MICROBIOLOGY
Subject Code : 58717

Day and Date : Wednesday, 24-06-2026 **Total Marks : 100**

Time : 02.30 p.m. to 04.00 p.m.

Instructions :

1) All questions are compulsory.

2) Each question carries 1 mark.

3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.

4) Follow the instructions given on OMR sheet.

5) Rough work shall be done on the sheet provided at the end of question paper.

1. ..... is famous for the accidental discovery of the first antibiotic, Penicillin, in 1928.

   A) Selman Waksman
   B) Howard Florey
   C) Alexander Fleming
   D) Ernst Chain

2. Viroids were discovered by T.O. Diener and are known to infect mostly .....

   A) Animals
   B) Bacteria.
   C) Plants
   D) Fung

3. ..... type of ribosomes are found in eukaryotes.

   A) 70S
   B) 60S
   C) 50S
   D) 80S

4. The glycocalyx is referred to as a "slime layer" when it is .....

   A) Thick and tough
   B) Tightly bound to the cell wall
   C) Loose and easily washed off
   D) Formed primarily of proteins

5. ..... method is preferred for sterilizing heat-labile vaccines.

   A) Autoclaving
   B) Filtration
   C) Dry heat
   D) Boiling

6. Dehydration preserves food by reducing ..... activity required for microbial growth.

   A) enzyme
   B) water
   C) oxygen
   D) temperature

7. ..... is an intermediate compound specifically detected by the Voges-Proskauer (VP) test.

   A) Pyruvic acid
   B) Indole
   C) Acetoin
   D) Sodium carbonate

8. Teichoic acids are primarily found in the cell walls of ..... bacteria.

   A) Gram-negative
   B) Gram-positive
   C) Acid-fast
   D) PPLO bacteria

9. ..... is specifically designed for the cultivation of fastidious anaerobes. like Bacteroides.

   A) MacConkey Agar
   B) Robertson's Cooked Meat Medium
   C) Nutrient Broth
   D) Blood Agar with Neomycin

10. Cyanobacteria use light for energy and inorganic compounds as source of carbon. They are examples of .....

A) Chemoheterotrophs
B) Photoheterotrophs
C) Photoautotrophs
D) Chemolithotrophs

11. The lowest temperature at which all microorganisms are killed in 10 minutes is .....

A) Thermal death time
B) Thermal death point
C) D-value
D) Z-value

12. The "link reaction" that connects the EMP pathway to the TCA cycle involves the conversion of pyruvate into .....

A) Citrate
B) Acetyl-CoA
C) Lactate
D) Oxaloacetate

13. ..... is an electron carrier who transfers electrons between Complex III and Complex IV.

A) Ubiquinone
B) Coenzyme Q
C) FMN
D) Cytochrome C

14. ..... enzyme is responsible for converting Pyruvate to Lactate in homolactic fermentation.

A) Pyruvate decarboxylase
B) Hexokinase
C) Lactate dehydrogenase
D) Phosphofructokinase

15. Retardation factor is calculated in both Paper and Thin Layer chromatography by measuring .....

A) Distance moved by solvent / Distance moved by solute

B) Distance moved by solute/Distance moved by solvent

C) (Distance moved by solute + Distance moved by solvent)/2

D) Distance from origin to the top of the plate

16. ..... acts as the cross-linker during the polymerization of a polyacrylamide gel.

A) Ammonium persulfate (APS)

B) TEMED

C) N, N'-methylene bisacrylamide

D) Acrylamide monomer

17. 5-bromouracil is an example of a .....

A) Alkylating agent

B) Base analogue

C) Intercalating agent

D) Oxidizing agent

18. The significance of the 3rd base in a codon, often referred to as wobble is .....

A) It determines the start of translation.

B) It causes mutations.

C) It allows for degeneracy and looser binding.

D) It makes the code ambiguous.

19. Malaria is restricted to certain tropical regions where it is constantly present. This is an example of .....

A) An endemic disease

B) A sporadic disease

C) A pandemic

D) An epidemic

20. Ribozymes are ..... molecules with catalytic activity.

A) Protein B) DNA

C) RNA D) Lipid

21. Product of gene N of lambda phage functions as .....

A) Antiterminator B) Initiator

C) Repressor D) Inhibitor

22. Cancer originating in epithelial tissues is called .....

A) Lymphoma B) Carcinoma

C) Sarcoma D) Leukemia

23. Soft agar used for the isolation of bacteriophages functions mainly for .....

A) Lysis of host cell B) Diffusion of host cells

C) Diffusion of phages D) Growth of host cells.

24. The burst size in a one-step growth curve refers to the .....

A) Time taken for the host cell to lyse

B) Number of new virions released from a single infected cell

C) Size of the plaque formed on a bacterial lawn

D) Diameter of the bacteriophage head

25. .....capsids are regular polyhedrons with 20 triangular faces, 30 edges and 12 corners.

A) Helical B) Complex

C) Icosahedral D) Bullet-shaped

26. Genome of ..... virus consists of unusual base composition

A) Tobacco mosaic
B) Adeno
C) T4
D) Lambda

27. Prions are composed of .....

A) Misfolded cellular proteins
B) Double-stranded DNA
C) Single-stranded RNA
D) Single-stranded DNA

28. ..... are used to enumerate viruses under an electron microscope.

A) Glass beads
B) Latex beads
C) Sephadex beads
D) Copper beads

29. The integrated form of a temperate phage genome within the host bacterium's chromosome is called a .....

A) Virion
B) Provirus
C) Prophage
D) Plasmid

30. The TP53 gene is a classic example of a .....

A) Viral oncogene
B) Tumor suppressor gene
C) Proto-oncogene
D) DNA repair gene

31. ..... cells are known for their role in allergic reactions and releasing histamine.

A) T-cells
B) Basophils
C) Macrophages
D) NK cells

32. MALT (Mucosa-Associated Lymphoid Tissue) is most prominently found in the mucosa of .....

A) Nervous system

B) Respiratory and Digestive systems

C) Integumentary system

D) Muscular system

33. ..... is responsible for degradation of endogenous antigens in cytosolic pathway.

A) Lysosome B) Endosome

C) Proteasome D) TAP

34. ..... is T-cell surface molecule binds to CD40 on the B cell surface to provide co-stimulation during activation.

A) CD28 B) CD4

C) CD40 Ligand D) TCR

35. ..... is a regulatory protein that stabilizes the C3 convertase in the alternative pathway.

A) Factor H B) Factor I

C) Properdin D) DAF (CD55)

36. ..... is selective medium used to isolate hybridoma cells from unfused cells.

A) LB Broth B) HAT medium

C) Agar medium D) MS medium

37. Interferons are primarily secreted by .....

A) Liver cells
B) Spleen cells
C) Virus-infected cells
D) Lymphocytes only

38. Erythroblastosis fetalis is an example of ..... type of hypersensitivity reaction.

A) Type I
B) Type II
C) Type III
D) Type IV

39. ..... is the likely consequence of a complete breakdown in immunological tolerance.

A) Immunodeficiency
B) Enhanced resistance to viral infections
C) Autoimmune disease
D) Immediate recovery from allergies

40. ..... is primarily produced by Thi cells to activate macrophages and stimulate MHC I and II expression.

A) IL-4
B) IL-10
C) IFN-y
D) IL-5

41. A ..... medium is required for the turbidimetric assay.

A) solid
B) gas
C) liquid
D) vacuum

42. Production of penicillin occurs during the ..... phase.

A) log
B) stationary
C) lag
D) death

43. The most prevalent wine spoiling organism is .....

A) Lactobacillus brevis
B) Acetobacter aceti
C) Saccharomyces cerevisiae
D) Bacillus subtilis

44. Sodium benzoate is most commonly used to inhibit ..... beverages and fruit juices. in carbonated

A) bacteria
B) viruses
C) molds and yeasts
D) algae

45. The primary culture medium used to detect anaerobic microorganisms in sterility testing is .....

A) Soybean-Casein Digest Medium (SCDM)
B) Nutrient Agar
C) Sabouraud Dextrose Agar
D) Fluid Thioglycollate Medium (FTM)

46. ..... found in grape skins, provides the color in red wine.

A) Tannins
B) Anthocyanins
C) Resveratrol
D) Acetaldehyde

47. ..... is a structural modification used to create various semi-synthetic penicillins.

A) The Thiazolidine ring
B) The Beta-lactam ring
C) The carboxyl group at the 3-position
D) The R-group (acyl side chain) at the 6-position

48. ..... is the intrinsic factor most directly connected to the availability of free water for microbial metabolism.

A) pH
B) oxidation-reduction potential
C) water activity
D) nutrient content

49. The ..... parameter is frequently not scaled proportionately when moving from shaking flask to bioreactor.

A) agitation speed
B) aeration rate
C) inoculum size
D) medium color

50. Soil texture is determined by .....

A) Organic matter
B) Particle size distribution
C) Soil pH
D) Moisture content

51. ..... are primarily responsible for converting nitrites into nitrates.

A) Nitrosomonas sp.
B) Nitrobacter sp.
C) Rhizobium sp.
D) Azotobacter sp.

52. Optimal moisture content for composting is .....

A) 10-20%
B) 30-40%
C) 50-60%
D) 80-90%

53. ..... condition favors the rapid spread of Tikka disease.

A) Dry and cold weather
B) Warm and humid conditions
C) High temperature and dry soil
D) Only rainy season

54. ..... is used as a microbial biocontrol agent specifically against butterfly caterpillars.

A) Trichoderma
B) Bacillus thuringiensis
C) Streptococcus
D) Saccharomyces cerevisiae

55. ..... is a process that transfers carbon from living organisms back to the atmosphere.

A) Photosynthesis
B) Respiration
C) Sedimentation
D) Fossilization

56. The Carbon to Nitrogen (C:N) ratio allowed for City Compost under the FCO should be less than .....

A) 10
B) 30
C) 20
D) 15

57. The high cation exchange capacity of soil indicates .....

A) Low fertility
B) High nutrient retention
C) High acid leaching
D) High sand content

58. In the year ..... the current comprehensive Fertilizer (Control) Order come into force.

A) 1955
B) 1957
C) 1985
D) 1967

59. ..... is a common feature between Rhizobium and Azotobacter.

A) Both are symbiotic.
B) Both are free-living.
C) Both are fungi
D) Both are nitrogen-fixing bacteria

60. ..... is commonly used as a green manure crop in India.

A) Sunn hemp
B) Wheat
C) Rice
D) Maize

61. Folded fibre model for E. coli chromosome was proposed by .....

A) Watson and Crick
B) Griffith
C) Pettijohn and Hecht
D) Darwin

62. Attenuation is mechanism of regulation of ..... operon.

A) Lactose
B) Arabinose
C) Tryptophan
D) Histidine

63. The delay in phenotypic expression of newly arisen mutation is called .....

A) Phenotypic lag
B) Attenuation
C) Suppression
D) Complementation

64. Codon-specific suppressors are mutant ..... molecules.

A) rRNA
B) mRNA
C) tRNA
D) Enzyme

65. Reversal of harmful effect of primary mutation through the action of environment is called .....

A) Intragenic suppression
B) Non-genetic suppression
C) Intergenic suppression
D) Polarity suppression

66. Gradient plate technique is used for selection and detection of ..... mutant.

A) Lactose-negative
B) Streptomycin-resistant
C) Sugar fermentation-deficient
D) Auxotrophic

67. ..... can move from one genetic locus to another within the genome.

A) Transposon
B) Kappa particle
C) Linker
D) Adaptor

68. ..... technique is used to obtain multiple copies of a particular gene from a small sample of DNA.

A) DNA sequencing
B) PCR
C) Western blotting
D) Southern blotting

69. ..... is used to join linkers or adaptors to blunt-ended DNA.

A) T4 DNA ligase
B) DNA polymerase I
C) Restriction endonuclease
D) Reverse transcriptase

70. ..... is the combination of plasmid and lambda cos site.

A) Phage
B) Cosmid
C) BAC
D) YAC

71. The induced fit hypothesis of enzyme action proposes that .....

A) Enzyme has a rigid active site
B) Substrate changes its structure before binding
C) Enzyme undergoes conformational change upon substrate binding
D) Product remains permanently bound to enzyme

72. The concerted model of allosteric enzymes assumes that .....

A) Subunits change conformation sequentially

B) All enzyme subunits undergo simultaneous conformational change

C) Enzyme remains in inactive form permanently

D) Substrate binds randomly to different subunits

73. ..... purification salt is most commonly used for enzyme precipitation during

A) Ammonium Sulphate

B) Ammonium Phosphate

C) Ammonium Chloride

D) Ammonium Nitrate

74. Purification of enzymes based on biological activity ensures isolation of .....

A) Low molecular weight proteins

B) Catalytically active enzyme molecules

C) Structurally stable but inactive proteins

D) Enzymes with similar charge

75. In an enzyme assay, a decrease in substrate concentration over time indicates .....

A) Enzyme inhibition

B) Substrate instability

C) Enzyme denaturation

D) Catalytic activity of the enzyme

76. Strain and distortion mechanism in enzyme catalysis involves .....

A) Formation of enzyme-substrate covalent intermediate

B) Proper alignment of reacting molecules

C) Inducing structural strain in substrate to reach transition state

D) Proton transfer between enzyme and substrate

77. The Lineweaver-Burk plot represents .....

A) Reaction velocity versus substrate concentration

B) Reciprocal of velocity versus reciprocal of substrate concentration

C) Substrate concentration versus velocity

D) pH versus enzyme activity

78. The Entner-Doudoroff pathway functions as an alternative to .....

A) Krebs cycle

B) Fermentation

C) Electron transport chain

D) Glycolysis

79. Regeneration of ribulose-1.5-bisphosphate (RuBP) in the Calvin cycle is essential for .....

A) ATP synthesis

B) Continuation of CO. fixation

C) Pyruvate biosynthesis

D) Glucose degradation

80. Peptidoglycan structure in bacterial cell walls is characterized by .....

A) Linear glycan chains cross-linked by short peptide bridges

B) Polypeptides with carbohydrates

C) Nucleoprotein complexes

D) Polysaccharide chains lacking peptide cross-links

81. ..... is a measure of combined content of all inorganic and organic matter in sewage.

A) Total suspended solids

B) Total dissolved solids

C) Total volatile solids.

D) Total solids

82. Biodegradable organic matter content in sewage is measured by ..... test.

A) MPN
B) BOD
C) Flask
D) COD

83. The value of Secchi depth in metres is usually high in case of ..... lakes.

A) oligotrophic
B) mesotrophic
C) eutrophic
D) both oligo and eutrophic

84. ..... method is used in copper bioleaching.

A) Direct
B) Indirect
C) Direct and indirect
D) only in situ

85. The example of ex situ bioremediation is .....

A) Biopiling
B) Bioslurping
C) Biosparging
D) Bioventing

86. The process of assessing the possible effects of a proposed project on environment is called as .....

A) EPA
B) ETA
C) EIA
D) EBA

87. The oligotrophic lake is having ..... primary productivity.

A) low
B) very low
C) moderate
D) high

88. As per standards prescribed by MPCB, the treated wastewater intended to discharge into inland surface water should have BOD less than ..... mg/1.

A) 3 B) 30

C) 300 D) 3000

89. Root zone treatment systems contain ..... zones where biodegradation occurs.

A) aerobic B) anoxic

C) anaerobic D) aerobic, anoxic and anaerobic

90. The size of HEPA filters used in cleanrooms is ..... micrometer.

A) 3 B) 0.3

C) 0.03 D) 0.003

91. The ..... accumulation test is positive for Mycobacterium tuberculosis

A) nitrate B) glucose

C) lactose D) niacin

92. VDRL test is used for the diagnosis of ..... infection.

A) Mycobacterium tuberculosis B) Treponema pallidum

C) Vibrio cholerae D) Leptospira interrogans

93. Nystatin is an antifungal antibiotic that binds to ..... in the fungal cell membrane.

A) DNA B) ergosterol

C) protein D) ribosomes

94. The ..... test is used to deteet hyperviscous strains of Klebsiella pneumoniae

A) coagulase B) oxidase

C) string D) catalase

95. Cholera toxin acts specifically on the .....

A) liver B) kidney

C) small intestine D) brain

96. Immune sera (antiserum) are preparations that contain

A) antibodies B) antibiotics

C) antigens D) enzymes

97. The ..... was first called the Australia antigen.

A) HAV Ag B) HBsAg

C) HBeAg D) HBeAg

98. The infective stage of Plasmodium falciparum (and other human malaria parasites) for humans is the .....

A) Merozoite B) Sporozoite

C) Gametocyte D) Trophozoite

99. The ..... is considered the gold standard serological test for the diagnosis of Leptospirosis.

A) MAT B) ELISA

C) PCR D) Culture

100. The ..... test is a rapid diagnostic test to differentiate Candida albicans from other Candida species.

A) coagulase

B) catalase

C) oxidase

D) germ tube

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- Rough Work -