

D 102523

(Pages : 15)

Name.....

Reg. No.....

P.G. ENTRANCE EXAMINATION, APRIL 2024

MICROBIOLOGY

Time : Two Hours

Maximum : 400 Marks

Each question carries 4 marks. 1 Mark will be deducted for each wrong answer.

1. The penicillin resistance of gonococci mainly due to the presence of :
 - (a) Transmissible plasmid.
 - (b) Cryptic plasmid.
 - (c) Both of these.
 - (d) None of these.
2. Which of the following is a growth medium for meningococci ?
 - (a) Modified Thyer - Martin medium.
 - (b) Mueller Hinton agar.
 - (c) Blood agar.
 - (d) All of these.
3. Which of the following scientists described the morphology of *Staphylococcus aureus* as "bunch of grapes".
 - (a) Louis Pasteur.
 - (b) Catalase.
 - (c) Alexander Ogston.
 - (d) Friedrich Rosenbach.
4. Which of the following main test is used to differentiate *Staphylococcus aureus* and *Staphylococcus epidermidis* ?
 - (a) Coagulase.
 - (b) DDBJ.
 - (c) Phosphatase.
 - (d) IMViC.
5. In which medium *Staphylococcus aureus* produces the colonies as "Oil-paint appearance" ?
 - (a) Nutrient agar.
 - (b) Nutrient slant.
 - (c) Nutrient broth.
 - (d) Mannitol Salt Agar.

Turn over

6. Ritter's disease by *Staphylococcus aureus* is caused by :
- (a) Enterotoxin.
 - (b) Exfoliative toxin.
 - (c) Cytolytic toxin.
 - (d) None of these.
7. Hiss's serum water is used for the study of which feature of *Streptococcus pneumoniae* ?
- (a) Optochin sensitivity.
 - (b) Carbohydrate fermentation.
 - (c) Bile solubility.
 - (d) Alkaline phosphatase.
8. Ludwig's angina is ————— type of infection caused by *Streptococcus pneumoniae*.
- (a) Skin and soft tissue infections.
 - (b) Genital infections.
 - (c) Respiratory infections.
 - (d) Non supportive infections.
9. Wool sorter's disease is :
- (a) Cutaneous anthrax.
 - (b) Pulmonary anthrax.
 - (c) Intestinal anthrax.
 - (d) All of these.
10. The major location of spores in *Clostridium tetani* :
- (a) Terminal.
 - (b) Sub-terminal.
 - (c) Both of the above.
 - (d) Equatorial.
11. The spores of the *Clostridium tetani* can be used as the sterilization control for ————— sterilization
- (a) Dry heat.
 - (b) Moist heat.
 - (c) Both of the above.
 - (d) It cannot be used as the sterilization.
12. The most effective method for the treatment of tetanus is :
- (a) Treatment with antibiotics.
 - (b) Active immunization.
 - (c) Passive immunization.
 - (d) Surgical prophylaxis.

13. The major toxins produced by *Clostridium perfringens* :
- (a) Beta, episilon, iota, gamma, eta, delta.
 - (b) Beta, episilon, iota, gamma.
 - (c) Alpha, beta, epilson, delta.
 - (d) All of these.
14. A toxoid has _____.
- (a) Both toxic and antigenic properties.
 - (b) No toxic or antigenic properties.
 - (c) No toxic properties but have antigenic properties .
 - (d) Toxic properties but no antigenic properties.
15. The end products of respiration in carbon cycle :
- (a) Energy, Oxygen and water.
 - (b) Carbon dioxide and water.
 - (c) Energy and oxygen.
 - (d) Energy, Water and Carbon dioxide.
16. Which of the following is the greatest source of carbon-dioxide emission in the world ?
- (a) Anaerobic respiration.
 - (b) Weathering of rocks.
 - (c) Combustion.
 - (d) Decomposition.
17. The organisms that uses methane as their sole source of carbon is known as :
- (a) Methanotrophs.
 - (b) Methanophiles.
 - (c) Methanogens.
 - (d) All of these.
18. Who is known as the pioneer of microbial ecology ?
- (a) Martinus Beijerinck.
 - (b) Sergei Winogradsky.
 - (c) Louis Pasteur.
 - (d) Joseph Lister.

19. Which of the following bacteria which oxidize nitrites to nitrate ?
- (a) Nitrosococcus.
 - (b) Nitrosomonas.
 - (c) Nitrobacter.
 - (d) All of these.
20. Which of the following is correct about Diazotrophs ?
- (a) Diazotrophs are bacteria that fix atmospheric nitrogen gas into a more usable form such as ammonia.
 - (b) Diazotrophs are able to grow without external sources of fixed nitrogen.
 - (c) Diazotrophs contain nitrogenase complex systems.
 - (d) All of these.
21. The first non-symbiotic free living microorganism that could fix free nitrogen identified was _____.
- (a) Rhizobium.
 - (b) Clostridium.
 - (c) Azotobacter.
 - (d) Beijerinckia.
22. Which of the following organism carry a specialized structure called hetero-cysts that provide anaerobic conditions for fixation of atmospheric nitrogen ?
- (a) Clostridium.
 - (b) Cyanobacteria.
 - (c) Azospirillum.
 - (d) All of these.
23. The co-factors present in the larger sub-unit of nitrogenase complex.
- (a) Mo-Fe.
 - (b) Mn-Fe.
 - (c) Fe-Mo.
 - (d) Mg-Fe.
24. The conversion of complex organic form of sulfur present in plants and animals into various inorganic sulfur compounds are known as :
- (a) Assimilation.
 - (b) Degradation.
 - (c) Mineralization.
 - (d) Dissimilation.

25. Acid rain formed due to the interaction between _____.
(a) Sulfuric acid and Sulfur-di-oxide.
(b) Sulfur-di-oxide and water.
(c) Sulfur-di-oxide and hydrogen sulfide.
(d) Sulfur-di-oxide and Sulfuric acid.
26. Red tide of ocean is mainly due to the presence of _____.
(a) Purple- blue algae. (b) Dinoflegellates.
(c) Blue-green algae. (d) All of these.
27. According to endosymbiotic theory the bacteria is originated from which of the following cell organelle ?
(a) Mitochondria. (b) Endoplasmic reticulum.
(c) Golgi complex. (d) Lysosome.
28. The interaction between marine protozoa and dinoflegellates are known as :
(a) Cyanella. (b) Zooxanthelle.
(c) Zoochlorella. (d) Endosymbionts.
29. Which of the following is a manganese reducing bacteria.
(a) Beggiatoa. (b) Methanobacterium.
(c) Leptothrix. (d) Leptospirillum.
30. Acid mine drainage by *Thiobacillus thiooxidans* is due to :
(a) Reduction of Sulphur to sulphuric acid.
(b) Oxidation of Sulphur to sulphuric acid.
(c) Lowering the pH by the bacteria.
(d) Production of sulphuric acid by the bacteria.

31. The secondary metabolites such as antibiotics is produced in _____ phase of the bacterial growth curve.
- (a) Lag phase.
 - (b) Log phase.
 - (c) Late log phase.
 - (d) Stationary phase.
32. Barophilic organisms are mainly.
- (a) Psychrophiles.
 - (b) Mesophiles.
 - (c) Thermophiles.
 - (d) Hyperthermophiles.
33. Which of the following aquatic ecosystems harbors highest nutrient load ?
- (a) Mangroove.
 - (b) Estuary.
 - (c) Ocean.
 - (d) All of these.
34. Which of the following is the most productive natural habitats in the world ?
- (a) Lagoon.
 - (b) Pond.
 - (c) Ocean.
 - (d) River.
35. The conversion of radiant energy to chemical energy in aquatic ecosystem is done by :
- (a) Cyanobacteria.
 - (b) Diatoms.
 - (c) Chlamydomonas.
 - (d) All of these.
36. The upwelling of ocean resulted in :
- (a) Increase in the concentration of shrimplike crustacean.
 - (b) Algal bloom.
 - (c) Eutrophication.
 - (d) All of these.
37. Hydrothermal vent is resulted in the formation of :
- (a) Hydrogen sulphide.
 - (b) Carbon dioxide.
 - (c) Methane.
 - (d) All of these.
38. Which of the following is the most dangerous persistent organic pollutants (POPs) ?
- (a) Halogenated hydrocarbons.
 - (b) Aliphatic hydrocarbons.
 - (c) Polyhydroxy alkonate.
 - (d) All of these.

39. Which of the following method to extract the contaminants from the contaminated sites by using specialized designed pipelines ?
- (a) Bioventing. (b) Biostimulation.
(c) Biopile. (d) Biosparging.
40. The process of bioleaching is takes place in _____ of microbial cell.
- (a) Cell wall. (b) Plasma membrane.
(c) Cytoplasm. (d) Inclusion bodies.
41. Number of rings present in the flagella of a Gram-negative bacteria.
- (a) 2. (b) 3.
(c) 4. (d) 5.
42. Mesosomes are associated with _____ of bacterial cell wall.
- (a) Capsule. (b) Cell wall.
(c) Cell membrane. (d) Periplasmic space.
43. Proteinaceous, filamentous polymeric organelles expressed on the surface of bacteria.
- (a) Glycocalyx. (b) Pili.
(c) Flagella. (d) Capsule.
44. Self-replicating extrachromosomal DNA present in bacteria.
- (a) Plastids. (b) Plasmid.
(c) Nucleoid. (d) Chromosomal DNA.
45. Volutin granule is a _____.
- (a) Cell inclusion body.
(b) Mesosome.
(c) Lysosomal body.
(d) Cytoplasmic matrix related particle.

46. The mRNA in the case of prokaryotes :
- (a) Monocistronic.
 - (b) Poly cistronic.
 - (c) Both of the above.
 - (d) Cistronic.
47. Which of the following can act as the virulent factor in bacteria ?
- (a) Pili.
 - (b) Capsule.
 - (c) Flegalla.
 - (d) Ceil inclusion.
48. Which of the following is exclusively present in Gram positive bacteria ?
- (a) Lipid-A.
 - (b) Teichoic acid.
 - (c) Outer membrane.
 - (d) Peptidoglycan.
49. The endospore of bacteria contains.
- (a) Magnesium sulphate.
 - (b) Aluminium chloride.
 - (c) Sodium citrate.
 - (d) Calcium dipicolinate.
50. Which of the following bacteria has a polar flagellum ?
- (a) Salmonella.
 - (b) E.coli.
 - (c) Vibrio.
 - (d) Pseudomonas.
51. The ribosome of Yeast is
- (a) 70S.
 - (b) 60S.
 - (c) 40S.
 - (d) 80S.
52. Okazakki fragment involved in :
- (a) Replication.
 - (b) Transcription.
 - (c) Translation.
 - (d) Regulation.

53. The causative organism of Weil's disease.
- (a) Leptospira. (b) Leuconostoc.
(c) Borrelia. (d) Bordetella.
54. Shine- Dalgarno sequence is involved in :
- (a) Replication. (b) Transcription.
(c) Translation. (d) Regulation.
55. In which of the following organism the histones are absent ?
- (a) Saccharomyces. (b) Paramecium.
(c) Plasmodium. (d) Enterobacter.
56. COVID-19 is caused by :
- (a) ss RNA virus. (b) ds RNA virus.
(c) ss DNA virus. (d) ds DNA Virus.
57. The stop codon opal :
- (a) UAG. (b) UGA.
(c) UAA. (d) UAC.
58. Genetic code is identified by :
- (a) Har Gobind Khorana. (b) James Watson.
(c) Linus Pauling. (d) Arthur Kornberg.
59. RNA dependent DNA polymerase :
- (a) RNA Polymerase. (b) DNA Polymerase.
(c) Reverse Transcriptase. (d) DNA Ligase.
60. The supercoiling enzyme :
- (a) Helicase. (b) Polymerase.
(c) Topoisomerase. (d) Ligase.

61. Histones are Discovered by :

- (a) Joshua Lederberg.
- (b) Marshal Nierenberg.
- (c) William Austbery.
- (d) Albrecht Kossel.

62. Splicing is takes during :

- (a) Replication.
- (b) Recombination.
- (c) Transcription.
- (d) Translation.

63. Which of the following gene is not involved as structural gene in Lac operon ?

- (a) LacZ.
- (b) LacY.
- (c) LacA.
- (d) LacX.

64. Transposons are first discovered in :

- (a) Wheat.
- (b) Maize.
- (c) Rice.
- (d) Barley.

65. The core enzyme of RNA polymerase involved in transcription of prokaryotes are _____

- (a) $2\alpha\beta\beta'$.
- (b) $2\alpha 2\beta$.
- (c) $2\alpha\beta\beta'\sigma$.
- (d) $2\alpha 2\beta\sigma$.

66. The region in which the promoter present in DNA which is important for transcription is :

- (a) 10 and 35.
- (b) - 10 and - 35.
- (c) 10 and - 35.
- (d) - 10 and 35.

67. During transcription, the RNA polymerase synthesizes RNA in the _____ direction.

- (a) 3' - 5'.
- (b) 5' - 3'.
- (c) 3' - 5' downstream.
- (d) 3'-5' upstream.

68. Which of the following initiation factor is attached with P site of ribosome during translation ?
- (a) IF1. (b) IF2.
(c) IF3. (d) All of these.
69. Which of the following is a typical inhibitor of protein synthesis?
- (a) Tetracycline. (b) Amoxicillin.
(c) Nitrofurantoin. (d) Gentamycin.
70. Chromosomal Theory of Inheritance was proposed by :
- (a) Thomas Hunt Morgan. (b) Walter Sutton.
(c) Gregor Mendel. (d) George Beadle.
71. The diameter of BDNA helix is _____ A.
- (a) 2. (b) 10.
(c) 20. (d) 34.
72. The ribose puckering of DNA is observed in which Carbon atom of the sugar ?
- (a) C1. (b) C2.
(c) C3. (d) C4.
73. 5-methyluracil is otherwise called :
- (a) Guanine. (b) Thiamine.
(c) Cytosine. (d) Adenine.
74. The most accepted model of chromosome structure is proposed by :
- (a) Arthur Kornberg. (b) Roger Kornberg.
(c) E. J. Dupraw. (d) Thomas Kornberg ,.

75. Short sequences of nucleotides which are synthesized discontinuously and linked by DNA ligase
- (a) Klenow Fragment.
 - (b) Okazaki fragments.
 - (c) Shine-Dalgarno fragment.
 - (d) Consensus fragment.
76. Immunoglobulins are otherwise known as
- (a) Antigen.
 - (b) Immunogen.
 - (c) Antibody.
 - (d) Haptens.
77. Healthcare-associated infections are otherwise known as :
- (a) Iatrogenic infection.
 - (b) Nosocomial infection.
 - (c) Zoonotic infection.
 - (d) Congenital infection.
78. Epitope is present in :
- (a) Immunogen.
 - (b) Immunoglobulin.
 - (c) Complement.
 - (d) Dendritic cell.
79. Which of the following is a primary lymphoid organ ?
- (a) Spinal Cord.
 - (b) Spleen.
 - (c) Liver.
 - (d) Bone marrow
80. Which of the following is used as the serodiagnosis of enteric fever?
- (a) VDRL.
 - (b) ELISA.
 - (c) WIDAL.
 - (d) RA.
81. Cardiolipin antigen is involved in :
- (a) RA.
 - (b) RPR.
 - (c) WIDAL.
 - (b) ELISA.
82. Mantoux test used for the detection of :
- (a) TB.
 - (b) Cholera.
 - (c) Typhoid.
 - (d) Malaria.

83. Sherffer fulton staining method is used for the detection of :
- (a) Capsule.
 - (b) Cell wall.
 - (c) Endospore.
 - (d) Flagella.
84. Which of the following is an example of acidic stain :
- (a) Safranine.
 - (b) LPCB.
 - (c) Nigrosin.
 - (d) Crystal Violet.
85. "The shortest distance between two nearby-objects when the images formed by the microscope are properly differentiated is called :
- (a) Resolving power.
 - (b) Magnification.
 - (c) Numerical aperture.
 - (d) Refractive index.
86. The best microscope that is used to detect the bacterial motility is _____.
- (a) Dark filed microscope.
 - (b) Fluorescent microscope.
 - (c) Confocal microscope.
 - (d) Phase contrast microscope.
87. Which of the following is NOT an edible mushroom ?
- (a) Agaricus.
 - (b) Amanita.
 - (c) Pleurotus.
 - (d) Lentinus.
88. Eutrophication is caused by the growth of :
- (a) Cyanobacteria.
 - (b) Coliphage.
 - (c) Archebacteria.
 - (d) Coliforms.
89. International Microorganism Day is celebrated in :
- (a) 05th June.
 - (b) 17th September.
 - (c) 16th October.
 - (d) 28th February.

90. The temperature used in holder method of pasteurization is :

- (a) 62.5°C.
- (b) 68.2°C.
- (c) 71.7°C.
- (d) 68.5°C.

91. Niemann- Pick Syndrome is a disease associated with :

- (a) Carbohydrate.
- (b) Protein.
- (c) Lipid.
- (d) Nucleic acid.

92. Which of the following is an example of a heteropolysaccharide ?

- (a) Starch.
- (b) Peptidoglycan.
- (c) Pectin.
- (d) All of these.

93. Which of the following interactions are the weakest interactions ?

- (a) Hydrogen bond.
- (b) Van der Waals interactions.
- (c) Electrostatic interactions.
- (d) Hydrophobic interactions.

94. $\text{H}_2\text{O} \longrightarrow 2\text{H}_2 + \text{O}_2$ is an example of :

- (a) Disproportionation reaction.
- (b) Combination reaction.
- (c) Displacement reaction.
- (d) Decomposition reaction.

95. Which of the following is correct for the weak acid ?

- (a) It has high affinity for proton.
- (b) It has high tendency to lose its proton.
- (c) It dissociates readily in water.
- (d) All of these.

96. Clustal Omega is used for :
- (a) Similarity search.
 - (b) Sequence retrieval
 - (c) Multiple alignment.
 - (d) Gene prediction.
97. Which of the following is a scoring matrix is used for sequence alignment ?
- (a) BLAST.
 - (b) PHYLIP.
 - (c) BLOSUM.
 - (d) EMBOSS.
98. Which of the following is NOT a structural database ?
- (a) RCSB.
 - (b) OMIM.
 - (c) MMDB.
 - (d) CATH.
99. Boot strapping is used for :
- (a) Pairwise alignment.
 - (b) Progressive alignment.
 - (c) Phylogenetic analysis.
 - (d) Similarity searching.
100. Threading is used for :
- (a) Sequence retrieval.
 - (b) Sequence comparison.
 - (c) Structure modelling.
 - (d) Motif prediction.