

COMMON P.G. ENTRANCE TEST-2022 (CPET-2022)

Subject Code : **33**

Test Booklet No.:

Entrance Subject : **Microbiology**

Hall Ticket No.:

TEST BOOKLET

Time Allowed : **90 Minutes**

Full Marks : **70**

INSTRUCTIONS TO CANDIDATES

1. **Please do not open this Question Booklet until asked to do so.**
2. Check the completeness of the Question Booklet immediately after opening.
3. Enter your **Hall Ticket No.** on the Test Booklet in the box provided alongside. **Do not** write anything else on the Test Booklet.
4. Fill up & darken Hall Ticket No. & Test Booklet No. in the OMR Answer Sheet as well as fill up Test Booklet Serial No. & OMR Answer Sheet Serial No. in the Attendance Sheet carefully. Wrongly filled up OMR Answer Sheets are liable for rejection.
5. Each question has four answer options marked (A) , (B) , C) & (D).
6. Answers are to be marked on the Answer Sheet, which is provided separately.
7. Choose the most appropriate answer option and darken the oval completely, corresponding to (A), (B), (C) or (D) against the relevant question number.
8. Use only **Blue/Black Ball Point Pen** to darken the oval for answering.
9. Please do not darken more than one oval against any question, as scanner will read such markings as wrong answer.
10. **Each question carries equal marks. There will be no negative marking for wrong answer.**
11. **Electronic items such as calculator, mobile, etc., are not permitted inside the examination hall.**
12. Don't leave the examination hall until the test is over and permitted by the invigilator.
13. **The candidate is required to handover the original OMR sheet to the invigilator and take the question booklet along with the candidate's copy of OMR sheet after completion of the test.**
14. Sheet for rough work is appended in the Test Booklet at the end.

1. Bacteria that retain the saffranin stain and appear reddish pink colour under microscope are:
 - (A) Gram negative
 - (B) Diplococcus
 - (C) Gram positive
 - (D) Spirillum
2. Bacteria devoid of cell are:
 - (A) *E. coli*
 - (B) Mycoplasma
 - (C) L- form
 - (D) both (B) and (C)
3. Bacteria having flagella on one side of its surface are:
 - (A) Monotrichous
 - (B) Lophotrichous
 - (C) Peritrichous
 - (D) Atrichous
4. Which one of the following is absent in Gram negative bacteria?
 - (A) Peptidoglycan layer
 - (B) LPS membrane
 - (C) Cytoplasmic membrane
 - (D) Teichoic acid
5. In a trisomic individual the number of chromosomes is:
 - (A) $2n - 1$
 - (B) $2n + 2$
 - (C) $2n + 3$
 - (D) $2n + 1$

6. Which one of the following mutagens act only on replicating DNA?
- (A) Ethidium bromide
 - (B) Nitrosoguanidine
 - (C) Acridine orange
 - (D) None of above
7. The alkaloid 'Ergotoxin' is produced by:
- (A) *Pseudomonas*
 - (B) *Claviceps purpurea*
 - (C) *Ashbya gossypi*
 - (D) *Clostridium butylicum*
8. Mesosomes are infoldings or invaginations of which one of the following:
- (A) Plasma membrane
 - (B) Mitochondria
 - (C) Endoplasmic reticulum
 - (D) Peroxisome
9. How many ATP are required for the conversion of one N_2 to $2NH_4^+$ during biological nitrogen fixation ?
- (A) 8 ATP
 - (B) 10 ATP
 - (C) 12 ATP
 - (D) 16 ATP
10. J- chain is found in:
- (A) IgM
 - (B) IgA
 - (C) IgM and IgA
 - (D) IgE

11. A nucleic acid containing 30% A, 10% U, 21% C and 11% G is called:
- (A) ds DNA
 - (B) ssDNA
 - (C) dsRNA
 - (D) ssRNA
12. Which of the following is a post transcriptional modification?
- (A) 5' capping
 - (B) 3' polyadenylation
 - (C) Splicing
 - (D) All of the above
13. Which of the following organism is widely used as a biocontrol agent in organic farming?
- (A) *Rhizobium tropicii*
 - (B) *Trichoderma harzianum*
 - (C) *Fusarium oxysporum*
 - (D) *Nosto muscorum*
14. Inactivation of Retinoblastoma Rb leads to:
- (A) Regulated cell cycle progression
 - (B) Inhibition of cell cycle
 - (C) Formation of tumors
 - (D) Both (A) and (C)
15. Embryonic cell cycle lacks which phase of cell cycle:
- (A) G1 phase & G2 phase
 - (B) S phase
 - (C) M phase
 - (D) All phases are present

16. During generation of an action potential, resting potential is due to:
- (A) Na^+/k^+ pump
 - (B) Na^+ channel
 - (C) Cl^- channel
 - (D) K^+ channel
17. Transport of glucose across plasma membrane is regulated by:
- (A) Lipids
 - (B) GLUT receptors
 - (C) Aquaporins
 - (D) None of the above
18. Secondary water treatment involves-
- (A) Physical removal of solids from polluted water by filtration and sedimentation
 - (B) Removal of chemical remains by precipitation
 - (C) Removal of dissolved organic compounds by activated sludge or trickling filter
 - (D) Removal of microbial pathogens by chlorination or ozonation
19. Which of the following microbes is used for the production of streptomycin is:
- (A) *Penicillium chrysogenum*
 - (B) *Penicillium notatum*
 - (C) *Streptomyces sp.*
 - (D) *Saccharomyces sp.*
20. Which group of the plant pathogens is used as a tool in genetic transformation in plants:
- (A) *Phytophthora*
 - (B) *Xanthomonas*
 - (C) *Agrobacterium*
 - (D) *Mycobacterium*

21. Purple and green sulfur bacteria use _____ as the electron donor to reduce carbon dioxide.
- (A) S^{2-}
 - (B) SO_4^{2-}
 - (C) H_2S
 - (D) Organic acids
22. Amoebic dysentery in humans is caused by:
- (A) Plasmodium
 - (B) Paramecium
 - (C) Yeast
 - (D) *Entamoeba histolytica*
23. The size of the virus can be determined by:
- (A) Micrography
 - (B) Ultra-centrifugation at high speed
 - (C) Ultra-filtration
 - (D) All of these
24. Nucleic acids are highly charged polymers due to:
- (A) There is phosphodiester bond between 5'-hydroxyl of one ribose and 3'-hydroxyl of next ribose
 - (B) They have positive and negative ends
 - (C) Nucleotides are charged structures
 - (D) Nitrogenous bases are highly ionized compounds
25. Toxic shock syndrome is caused by:
- (A) *Staphylococcus albus*
 - (B) *Staphylococcus aureus*
 - (C) *Streptococcus viridana*
 - (D) None of these

26. Which of the following microorganism produces only L (+) - lactic acid without further racemization?
- (A) *Leuconostoc mesenteroides*
 - (B) *Lactobacillus delbrueckii*
 - (C) *Rhizopus oryzae*
 - (D) *Lactobacillus bulgaricus*
27. Tetracyclin antibiotic affect :
- (A) Protein synthesis
 - (B) Nucleic acid synthesis
 - (C) Mode of action not known
 - (D) All of the above
28. Which of the following is not a vegetable or fruit-based fermented product?
- (A) Wine
 - (B) Sauerkraut
 - (C) Beer
 - (D) Vinegar
29. Glucose molecule during the process of glycolysis is broken down into:
- (A) Four pyruvic acid
 - (B) Three pyruvic acid
 - (C) Two pyruvic acid
 - (D) One pyruvic acid
30. The carbon dioxide (CO₂) is removed in alcoholic fermentation from_____
- (A) pyruvic acid
 - (B) nitric acid
 - (C) sulphuric acid
 - (D) hydrochloric acid

31. Which of the following is considered as a visual marker?
- (A) Antibiotic marker
 - (B) Resistance marker
 - (C) Selectable marker
 - (D) Screenable marker
32. Name the first transgenic virus resistant plant?
- (A) Rice
 - (B) Cotton
 - (C) Tobacco
 - (D) Tomato
33. Which one of the following is used as a green manure?
- (A) Sesbania
 - (B) Rice
 - (C) Oat
 - (D) Maize
34. BGA is used as Biofertilizer in _____
- (A) Rice field
 - (B) Sugarcane field
 - (C) Wheat field
 - (D) Legume field
35. The symbiotic relationship between fungi and roots of higher plants is called:
- (A) lichen
 - (B) Mycorrhiza
 - (C) Helotism
 - (D) mutualism

36. The biosynthesis of complex molecules of microbial protoplasm from ammonium and nitrate is called as:
- (A) Mineralization
 - (B) Immobilization
 - (C) Denitrification
 - (D) All of the above
37. Methanogens belong to _____
- (A) Eubacteria
 - (B) Dinoflagellates
 - (C) Slime moulds
 - (D) Archaeobacteria
38. Which of the following is not a sulphate reducing bacteria:
- (A) *Desulfovibrio*
 - (B) *Desulfomonas*
 - (C) *Desulfatovaculum*
 - (D) *Zymomonas*
39. In prokaryotes, which subunit of the ribosome has Shine-dalgarno's sequence?
- (A) 50S subunit
 - (B) 30S subunit
 - (C) A site of ribosome
 - (D) P site of ribosome
40. Mutations which cause functional change in the protein is known as:
- (A) Nonsense mutation
 - (B) Missense mutation
 - (C) Frameshift mutation
 - (D) All of the above

41. Which site/region of the DNA molecule is responsible for synthesis of repressor?
- (A) Operator
 (B) Promoter
 (C) Leader sequence
 (D) Regulator
42. There are 3 genes A, B and C, if the recombination frequency between AB is 15% and BC is 17%. Calculate the map distance between AB and BC?
- (A) AB- 2.5 cM; BC- 5 cM
 (B) AB- 15 cM; BC- 17 cM
 (C) Cannot be calculated
 (D) AB- 10 cM; BC- 20 cM
43. Genes whose products are constantly needed for cellular activity are called :
- (A) Regulator genes
 (B) Structural genes
 (C) Housekeeping genes
 (D) Smart genes
44. Tryptophan operon in *E.coli* is an example of
- (A) inducible operon
 (B) positively regulated operon
 (C) repressible operon
 (D) all of the above
45. An interrupted mating experiment was performed between HfrStr^S a⁺ b⁺ c⁻ and F⁻ Str^r a⁻ b⁻ c⁻ strains. The genotype of majority of streptomycin resistant (Str^r) exconjugant after 10, 20 and 30 minutes is given below-

10 min	a ⁺ b ⁻ c ⁻
20 min	a ⁺ b ⁻ c ⁺
30 min	a ⁺ b ⁺ c ⁺

The most probable gene order would be-

- (A) a b c
 (B) c a b
 (C) b a c
 (D) a c b

46. The following is the inheritance pattern of a trait under observation-
1. The trait often skips a generation
 2. The number of affected males and females is almost equal
 3. The trait is often found in pedigrees with consanguineous marriages
- The trait is likely to be-
- (A) Autosomal recessive
 - (B) autosomal dominant
 - (C) sex- linked recessive
 - (D) sex- linked dominant
47. Which one of the following is NOT an Extracellular Matrix (ECM) protein?
- (A) Fibronectin
 - (B) Vibronectin
 - (C) Laminin
 - (D) Cyclin
48. The T-wave of ECG indicates-
- (A) Atrial depolarization
 - (B) Ventricular depolarization
 - (C) Ventricular repolarization
 - (D) Atrial repolarization
49. The fungal group presently classified under protists is:
- (A) Zygomycetes
 - (B) Oomycetes
 - (C) Deuteromycetes
 - (D) Discomycetes
50. Glucose residues in amylase are linked by:
- (A) β 1-4
 - (B) α 1-4
 - (C) α 1-6
 - (D) β 1-6

51. In the lysogenic state of λ phage:
- (A) Both Cl and Cro are on
 - (B) Both Cl and Cro are off
 - (C) Cl is on while Cro is off
 - (D) Cl is off while Cro is on
52. Tuberculosis is a
- (A) Water borne disease
 - (B) Air borne disease
 - (C) Food borne disease
 - (D) Arthropod borne disease
53. *E.coli* produce which type of toxins?
- (A) Exotoxins
 - (B) Endotoxins
 - (C) Leucocidin
 - (D) Both (A) and (B)
54. If the Optimum growth temperature is between 30°-40 °C then the organism is?
- (A) Mesophiles
 - (B) Thermophiles
 - (C) Psychrophiles
 - (D) None of these
55. Yeast extract is an excellent source of _____.
- (A) A Vitamin
 - (B) Proteins
 - (C) B Vitamin
 - (D) Carbohydrates

56. Causative organism of whooping cough is:
- (A) *Bordetella pertussis*
 - (B) *Bordetella parapertussis*
 - (C) *Bordetella bronchi septica*
 - (D) None of these
57. An example of competitive inhibition of an enzyme is the inhibition of:
- (A) Succinic dehydrogenase by malonic acid
 - (B) Cytochrome oxidase by cyanide
 - (C) Hexokinase by glucose-6-phosphate
 - (D) Carbonic anhydrase by carbon dioxide
58. Mycotoxins are produced by_____.
- (A) Bacteria
 - (B) Fungi
 - (C) Algae
 - (D) Protozoans
59. Cerebral malaria is caused by:
- (A) *Plasmodium vivox*
 - (B) *P. ovale*
 - (C) *P. falsiparum*
 - (D) *P. malaria*
60. A cell becomes flaccid when placed in a:
- (A) Isotonic solution
 - (B) Hypertonic solution
 - (C) Hypotonic solution
 - (D) Normal solution

61. Electron microscope studies does not help in identifying the section of bacterial Spore:
- (A) Core
 - (B) Spore cortex
 - (C) Capsule
 - (D) All of these
62. For sterilization of fermentation equipment the method followed is:
- (A) Radiation
 - (B) Chemicals
 - (C) Heating
 - (D) All of these
63. A common laboratory method of cultivating anaerobic micro-organisms is:
- (A) Gas pack system
 - (B) Brewer jar system
 - (C) Pyrogallic acid over the cotton
 - (D) None of these
64. On Mac Conkey's medium *E. coli* forms:
- (A) Colorless colonies
 - (B) Greenish pigmentation
 - (C) Pink coloured colonies
 - (D) Medusa head appearance
65. Which organelles are involved in photorespiration?
- (A) Mitochondria-Glyoxysomes-Peroxisomes
 - (B) Mitochondria-Chlorophyll- Peroxisomes
 - (C) Mitochondria-Chlorophyll-Glyoxosomes
 - (D) Mitochondria- Peroxisomes -Lysosomes

66. Human eye cannot resolve any image less than:
- (A) 1ì m
 - (B) 2ì m
 - (C) 7ì m
 - (D) 5ì m
67. Fluroscent substance used in fluorescent microscopy are:
- (A) Quinine sulphate
 - (B) Auramine
 - (C) All of these
 - (D) None of these
68. The first antibody to contact invading microorganisms was:
- (A) IgG
 - (B) IgM
 - (C) IgA
 - (D) IgD
69. An organism that is osmophilic and has a specific requirements for sodium chloride resembles:
- (A) Halophile
 - (B) Basophile
 - (C) Barophile
 - (D) Xerophile
70. Heterolactic acid bacteria produce:
- (A) Lactic acid only
 - (B) Lactic acid + H₂O + CO₂
 - (C) Lactic acid + CO₂
 - (D) Lactic acid + alcohol + CO₂

ROUGH WORK