

RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2014

MICROBIOLOGY (Honours)

Date : 23-06-2014

Full Marks : 50

Time : 11 a.m. – 12 noon

Instructions for the candidate

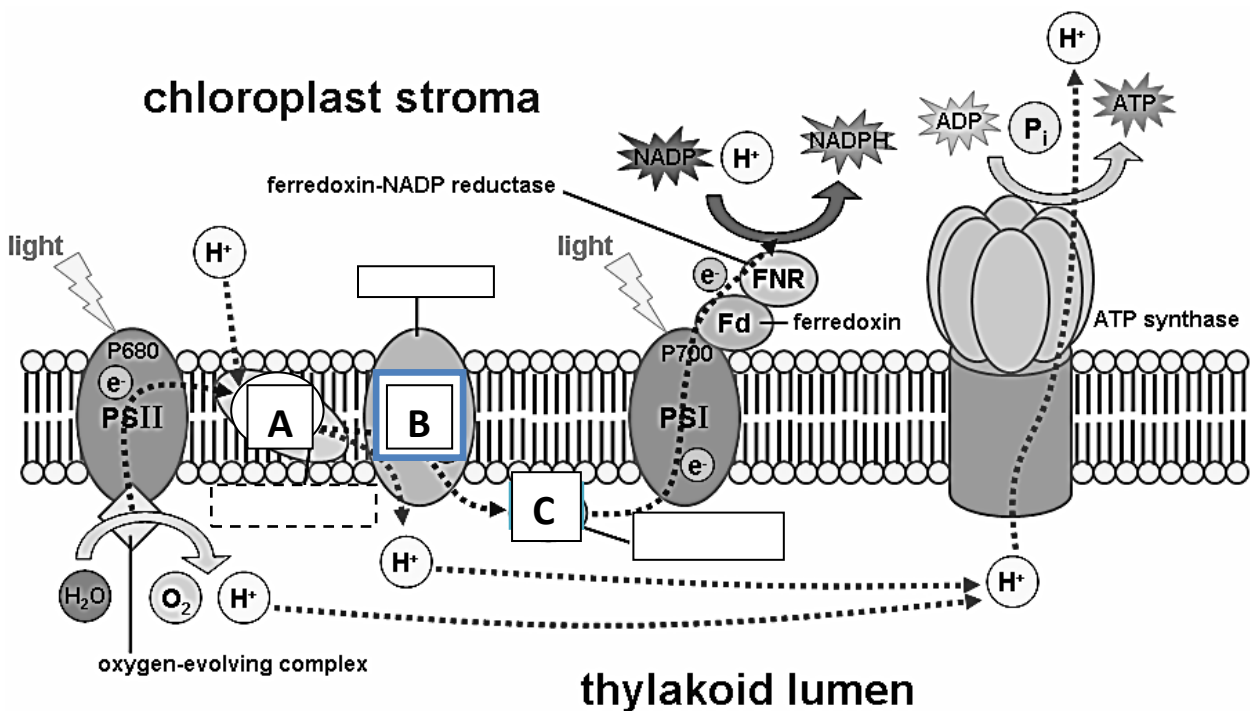
There are 50 questions **each carrying 1 mark**. Candidates have to select the correct choice by marking in blue/black pen only in the optical mark recognition (OMR) to be provided during written test. Marking should be dark and should completely fill **only** one blank box out of four choices against the corresponding question number. Incomplete filling or multiple filling of boxes will be rejected. Once one answer is marked in OMR, there is no scope to alter the choice. Doing rough work, or use of eraser, blade, whitener, etc. on the OMR is strictly prohibited. **One mark will be deducted for three wrong answers.**

- Bacteria was observed first by
a) Louis Pasteur b) Robert Hook c) A.V. Leewenhoek d) Robert Koch
- Which is common between chloroplast, chromoplast and leucoplast?
A. Thylakoid present
B. Pigment present
C. Store starch, protein and lipid
D. Ability to multiply by fission like process
a) A, B b) A, C c) A, D d) C, D
- Match the column and find the correct combination:

(A) Detoxification	i) Leucoplast
(B) Mechanical strength	ii) Lysosome
(C) Secretion	iii) Endoplasmic Reticulum
(D) Heterophagy	iv) Golgi Complex
(E) Storage	V) Cell wall

- a) A-iv B-v, C-iii, D-ii, E-i b) A-iv. B-v, C-iii, D-i, E-ii
c) A-iii, B-iv, C-v, D-ii, E-i d) A-iii, B-v, C-iv, D-ii, E-i
- Here is given a few statements. Choose the correct combination
A. Mitochondria contain DNA
B. 70S ribosome is present in prokaryotes
C. Ribosomes are lipoproteins
D. Elaioplasts are concerned with storage of lipid
a) A, B, C b) B, C, D
c) A, B, D d) All of the statements are correct
- The magnification in a compound light microscope is given by a number of lens set. The number is
a) 2 b) 3 c) 4 d) 5
- If the F1 hybrid organism has the genotype AaBbCCDdEE, the types of gamete will be produced are
a) 6 b) 8 c) 12 d) 25
- Crossing-over occurs during
a) Leptotene b) Zygotene c) Diplotene d) Pachytene
- Which one of the electron transport chain components is not located in the inner mitochondrial membrane?
a) Succinate dehydrogenase b) NADPH-dehydrogenase
c) Cytochrome oxidase d) Ubiquinone

9. Triple helical structure is exhibited by
 - a) Albumin
 - b) Globulin
 - c) Myoglobin
 - d) Collagen
10. Segregation of Mendelian factors (Aa) occurs during
 - a) Anaphase I
 - b) Diplotene
 - c) Zygotene/Pachyete
 - d) Anaphase II
11. Active proton pump is present in the cell membrane of
 - a) Lysosomes
 - b) Chloroplast
 - c) Mitochondria
 - d) Endoplasmic reticulum
12. If each turn of a sample of B-DNA contains 10.4 bp, then the number of turns in a DNA of 2080 nucleotides will be
 - a) 104
 - b) 100
 - c) 208
 - d) 624
13. Maltase is a kind of
 - a) Oxidoreductase
 - b) Transferase
 - c) Hydrolase
 - d) Lyase
14. Which of the following is not a reducing sugar
 - a) Glucose
 - b) Fructose
 - c) Maltose
 - d) Sucrose
15. The high energy bonds in ATP are
 - a) Glycoside bonds
 - b) Ester bonds
 - c) Anhydride bonds
 - d) all of these
16. The sequence of DNA recognized by sigma factor during transcription is called
 - a) Operator
 - b) Promoter
 - c) Regulator
 - d) Structural gene
17. The infectious agents composed of protein only are
 - a) Viroids
 - b) Virusoids
 - c) Prions
 - d) Viruses
18. In the diagram given below, the compounds marked A, B and C are



- a) A- Plastoquinone, B- Cytochrome b₆f, C- Plastocyanin
 - b) A- Plastocyanin, B- Plastoquinone, C- Cytochrome b₆f
 - c) A- Pheophytin, B- Plastoquinone, C- Cytochrome b₆f
 - d) A- Pheophytin, B- Cytochrome b₆f, C- Plastocyanin
19. The catalytic efficiency of two different enzymes is compared by
 - a) Product
 - b) V_{max}
 - c) ½ V_{max}
 - d) K_m
 20. The method of partial destruction of pathogenic microorganisms in milk is called
 - a) Sterilization
 - b) Pasteurization
 - c) Lyophilization
 - d) Tyndalization
 21. In CAM plants, CO₂ is fixed as
 - a) Oxaloacetic acid
 - b) PEPA
 - c) Glycolic acid
 - d) Malic acid

22. The backbone of nucleic acid is formed by
 a) N-bases b) Nucleotides c) Sugar-phosphates d) Nucleosides
23. Chitin is present in the wall of
 a) Gram positive bacteria b) Gram negative bacteria
 c) Fungi d) Green plants
24. A thermostable enzyme is
 a) DNA ligase b) Restriction endonuclease
 c) *Taq* polymerase d) Proteinase K
25. In coding dictionary, the numbers of sense codons are
 a) 60 b) 61 c) 64 d) 62
26. An autosome linked recessive trait in human is
 a) Sickle cell anaemia b) Haemophilia c) Colour blindness d) Skin colouration
27. RNA is more reactive than DNA due to
 a) 3' OH b) 2' OH c) 5' OH d) Single stranded form
28. In molecular biology, Okazaki is known for his discovery of
 a) Discontinuous DNA synthesis on lagging strand template
 b) Restriction enzyme c) DNA polymerase d) Ribozyme
29. A clone is a group of cells which are
 a) Morphologically identical b) Genetically identical
 c) Morphologically and genetically identical
 d) A group of heterogeneous organisms performing same type of functions
30. Which of the following base sequence in DNA qualifies it for a palindromic (inverted repeat) sequence?
 a) 5'GAATTC3' b) 5'GATTC3' c) 5'AGTTAAG3' d) 5'AGTTAAA3'
31. Reverse glycolysis is said in reference to
 a) Glycogenolysis b) Glycogenesis c) Synthesis of amino acids d) Gluconeogenesis
32. Osmotic pressure of blood is maintained by
 a) Thrombin b) Fibrinogen c) Globulin d) Albumin
33. Mammalian RBCs are enucleated because
 a) Nucleus is not essential b) RBC cannot divide
 c) Can carry more haemoglobin d) Carry more oxygen
34. Purines possess nitrogen at
 a) 1,2,4,6 b) 1,3,5,7 c) 1,3,7,9 d) 1,2,6,8
35. When carbohydrate is converted to fat, the value of RQ (Respiratory Quotient) will be
 a) 1 b) less than 1 c) greater than 1 d) approximately 1
36. A culture of *E. coli* cells were grown for a few hours in a medium containing labelled $^{15}\text{NH}_4\text{Cl}$. Then the cells were transferred to a medium containing normal $^{14}\text{NH}_4\text{Cl}$. After 40 minutes, the number of DNA strands that will remain labelled is
 a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{1}{4}$ d) $\frac{1}{8}$
37. The antibody found on the membrane of mast cell is
 a) IgA b) IgE c) IgD d) IgM
38. Antigens are processed by
 a) Dendritic cells b) Neutrophils c) B-lymphocytes d) T-lymphocytes
39. In a test cross of a dihybrid, the F_2 progeny yielded 40% recombinants. The result exhibits
 a) Complete linkage b) Incomplete linkage
 c) Gene interaction d) No linkage between the genes

40. Which one statement is not true for influenza virus?
 a) It is a retrovirus
 b) It possesses segmented genome
 c) Its envelope contains neuraminidase and haemagglutinin
 d) It enters the host cell by means of receptor-mediated endocytosis
41. The biofertilizers “Biosuper” is commonly produced using
 a) *Azotobacter* spp. b) *Clostridium* spp. c) *Anabaena* spp. d) *Thiobacillus* spp.
42. Which one is known as Kornberg’s enzyme?
 a) DNA polymerase III b) RNA polymerase
 c) DNA polymerase I d) DNA gyrase
43. If P/O value for NADH and FADH₂ are 2 and 1 respectively, then the number of ATP yield/ glucose molecule will be
 a) 26 b) 24 c) 28 d) 32
44. Bacteriocin is a kind of
 a) Antibiotic b) Killer protein synthesized by bacteria
 c) Killer protein synthesized by infected host d) Lipoprotein required for viral infection
45. The catalytic RNA is
 a) Ribozyme b) Ribosomal RNA c) t-RNA d) m-RNA
46. Which one feature is unique for cancer cell?
 a) Angiogenesis b) Contact inhibition c) Apoptosis d) Differentiation
47. Which cyanobacteria reside within the body of *Azolla* spp. symbiotically and fix atmospheric nitrogen
 a) *Clostridium* spp. b) *Nostoc* spp. c) *Anabaena* spp. d) *Azospirillum* spp.
48. For the cloning of longest eukaryotic gene, the vector used is
 a) Plasmid b) Cosmid c) BAC d) YAC
49. The enzyme of pentose phosphate pathway are located in
 a) Mitochondria b) Cytosol
 c) Mitochondria and cytosol d) Plasma membrane and cytosol
50. HIV causing AIDS in human destroys the immunity of the body by killing
 a) CD4⁺ helper T cell b) Cytotoxic T cell c) Plasma cell d) Monocytes