RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2023

MICROBIOLOGY

Date : 15-07-2023 **Full Marks : 50** Time: 1·00 p.m. – 2·00 p.m.

Instructions for the candidate

Answer all the questions given below. Each question carries 2 marks. 1 mark will be deducted for a wrong answer. Answer the questions by ***putting tick mark*** **(✓)** *in the correct option clearly in the given* ***OMR SHEET*** *using either Black or Blue ink.* **Putting *tick mark* (✓) *in* more than one option for a single question would not be considered (neither checked nor marks deducted).**

ENGLISH VERSION

A. MCQ type questions

1. _____ is the most common method of reproduction in bacteria.

   a) Binary fission b) Endospore formation

   c) Conjugation d) Sexual reproduction

2. Naked cytoplasm, multinucleated and saprophytic are the characteristics of

   a) Monerans b) Protists c) Fungi d) Slime moulds

3. Which of the following are found in extreme saline conditions?

   a) Eubacteria b) Cyanobacteria c) Mycobacteria d) Archaebacteria

4. Match column I with column II and select the correct option from the given codes.

	Column I		**Column II**
A	Plant virus	(i)	Mad cow disease
B	Animal Virus	(ii)	Potato spindle tuber
C	Viroids	(iii)	Polio
D	Prions	(iv)	Tobacco mosaic

   a) A-(iv), B-(iii), C-(ii), D-(i) b) A-(i), B-(ii), C-(iii), D-(iv)

   c) A-(iii), B-(iv), C-(i), D-(ii) d) A-(ii), B-(iii), C-(iv), D-(i)

5. Read the given statements about algae and select the correct option.

   i) Plant body is thalloid

   ii) They are largely aquatic

   iii) Reproduction occurs by vegetative, asexual and sexual methods

   iv) *Chlamydomonas*, *Volvox* and *Ulothrix* are the multicellular algae

   a) Statements (i) and (ii) are true only b) Statements (ii) and (iii) are true only

   c) Statements (i), (ii) and (iii) are true c) All statements are true

6. Different cells have different sizes. Arrange the following cells in an ascending order of their sizes and select the correct option.
   i) *Mycoplasma* ii) Ostrich egg iii) Human RBCs iv) Bacteria

   a) (i), (iv), (iii), (ii) b) (i), (iii), (iv), (ii) c) (ii), (i), (iii), (iv) d) (iii), (ii), (i), (iv)

7. Organelle "X" is the major centre of release of energy in aerobic respiration, but is absent in prokaryotes and anaerobic eukaryotes. It can be stained differentially by Janus Green. Identify the organelle "X".

   a) Nucleus b) Mitochondria
   c) Lysosome d) Rough endoplasmic reticulum

8. Select the incorrect match.
   a) Lampbrush chromosomes ---- Diplotene bivalents
   b) Allosomes ----- Sex chromosomes
   c) Sub metacentric chromosomes ---- L-shaped chromosomes
   d) Polytene chromosomes ---- Oocytes of amphibians

9. Cholesterol is a precursor for each of the following except
   a) Bile salts b) Vitamin D c) Insulin d) Steroids

10. Which one of the following is a non-reducing carbohydrate?
    a) Maltose b) Sucrose c) Lactose d) Ribose-5-phosphate

11. There are 7 chromosomes in each cell and 2C DNA after M-phase in a plant. Find out the correct match in the following table.

	Stage	**Chromosome number**	**DNA content**
A	G1	7	2C
B	S	14	4C
C	G2	7	4C
D	M	7	2C

    a) A and B are correct b) A, B and D are correct
    c) A, C and D are correct d) B, C and D are correct

12. The stage during which separation of the paired homologous chromosomes begins is
    a) Pachytene b) Diplotene c) Diakinesis d) Zygotene

13. When transport proteins simultaneously move two molecules across a membrane in the same direction, the process is called
    a) Uniport b) Antiport c) Symport d) Active transport

14. The increase in concentration of the toxicant at successive trophic level is referred to as
    a) Bioremediation b) Biotransformation c) Biomagnification d) Eutrophication

15. The product(s) of the reaction catalysed by nitrogenase in root nodules of leguminous plants is/are
    a) Ammonia alone
    b) Nitrate alone
    c) Ammonia and oxygen
    d) Ammonia and hydrogen

16. Chemosynthetic bacteria obtain energy from
    a) Sun
    b) Infra-red rays
    c) Organic substances
    d) Inorganic chemicals

17. In a chroloplast the highest number of protons are found in
    a) Intermembrane space
    b) Antennae complex
    c) Stroma
    d) Lumen of thylakoids

18. Cytochromes are found in
    a) Cristae of mitochondria
    b) Lysosomes
    c) Matrix of mitochondria
    d) Outer wall of mitochondria

19. Consider the following statements and choose the correct option.
    i) Six codons do not code for any amino acid
    ii) Codon is read in mRNA in a contiguous fashion
    iii) Three codons function as stop codons
    iv) The initiator codon AUG codes for methionine

    a) i, ii and iii are wrong
    b) ii, iii and iv are wrong
    c) i is wrong
    d) i, ii and iv are wrong

20. In which of the following situations, is there a risk factor of children acquiring erythroblastosis foetalis?
    a) Mother is Rh -ve and father is Rh –ve
    b) Mother is Rh -ve and father is Rh +ve
    b) Mother is Rh +ve and father is Rh +ve
    c) Mother is Rh +ve and father is Rh –ve

B. Assertion and Reasoning type questions

The following questions consist of two statements one labelled **ASSERTION (A)** and the another labelled **REASON (R)**. Select the correct answer to these questions from the codes given below:

a) Both **A** and **R** are true and **R** is the correct explanation of **A**
b) Both **A** and **R** are true but **R** is not correct explanation of **A**
c) **A** is true but **R** is false
d) **A** and **R** are false

21. (A): siblings are biparental in origin
    (R): monoparental progenies are exact copies of parent.

22. (A): total number of chromosomes found in cells of individual is called genome
    (R): there are two sets of chromosomes in gametes

23. (A): one codon may code for more than one amino acid.
    (R): a codon is degenerate and ambiguous

24. (A): IgM is a type of immunoglobulin which cannot cross the placenta
    (R): IgM is pentameric immunoglobulin joined by J-chain.

25. (A): Restriction enzymes cut the strands of DNA to produce sticky ends
    (R): stickiness of the ends facilitates the action of the enzyme DNA polymerase

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