RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah - 711 202

ADMISSION TEST – 2019 MICROBIOLOGY (Honours)

Date: 19-06-2019 Full Marks: 50 Time: 1.00 p.m - 2.00 p.m

Instructions for the candidate

Answer all the questions given below. Each MCQ type question carries 2 mark. ½ mark will be deducted for one wrong answer. Each Assertion type question carries 2 marks. ½ mark will be deducted for one wrong answer. Shade or darken the correct option on the OMR SHEET using either Black or Blue ink. The shades must be very clear and non-overlapping and if it is smudgy or not clear, no marks will be awarded.

A. MCQ type questions

The following table summarizes the differences between light and dark reactions 1.

	Light reactions	Dark reactions
(i)	These are also called as biosynthetic phase	These are also called as photochemical phase
(ii)	These reactions occur over thylakoids	These reactions occur in stroma of chloroplasts
(iii)	These produce assimilatory power i.e., NADPH ₂ and ATP	These consume NADPH ₂ and ATP
(iv)	These are directly dependant on light	These depend upon the products synthesized during light reactions

Whi	ich of the above pairs	of differences is/are incorre	ect?	
(a)	(i) and (iv)	(b) (iii) and (iv)	(c) only (iv)	(d) only (i)
2. T	he process of crossing	g over during cell division i	s assisted by which o	f the following enzymes?
(a)	Endonuclease	(b) Polymerase	(c) Ligase	(d) both (a) and (c)
3. T	he concept of contagi	ium vivum fluidum was prop	posed by	
(a)	D.J. Ivanowsky	(b) M.W. Beijerinck	(c) Stanley	(d) Robert Hooke
4. A	rrange the following	steps in a correct sequence	as per Gram's stainin	ig technique:

Washing with water

(i) (ii)

Treatment with absolute alcohol/acetone

Treatment with 0.5% iodine solution

Staining with weak alkaline solution of crystal violet (iv)

(a)	Giri	· —	(;)	۷.	(;;\	. حـ	(;;;)
(a)	(iv)) フ((1)) 🔰 (11)フ(111

(b) (iii)
$$\rightarrow$$
(ii) \rightarrow (iv)

(c)
$$(iii) \rightarrow (ii) \rightarrow (iv)$$

$$(d) (iv) \rightarrow (ii) \rightarrow (iii) \rightarrow (i)$$

5. Saturated fatty acids possess _____ bonds between carbon atoms and are _____ at room temperature

- (a) single, solids
- (b) double, solids
- (c) single, liquids
- (d) double, liquids
- 6. Refer the two reactions (i) and (ii) given below and select the correct option
- (i) $ADP + Pi \rightarrow ATP$
- (ii) ATP \rightarrow ADP +Pi

Options	Reaction (i)	Reaction (ii)
(a)	Endergonic	Exergonic
(b)	Exergonic	Endergonic
(c)	Endergonic	Endergonic
(d)	Exergonic	Exergonic

- 7. Reactions carried out by nitrogen cycle microbes are given below:
- (i) $2NH_3 + 3O_2 \rightarrow 2NO_2^- + 2H^+ + 2H_2O$
- (ii) $2NO_2^- + O_2 \rightarrow 2NO_3^-$

Which of the following statements about these equations is not true?

- (a) Step (i) is carried out by *Nitrosomonas* or *Nitrosococcus*
- (b) Step (ii) is carried out by Nitrobacter
- (c) Both (i) and (ii) can be called nitrification
- (d) Bacteria carrying out these steps are usually photoautotrophs
- 8. Which of the following will not result in variations among siblings?
- (a) Independent assortment of genes
- (b) Crossing over
- (c) Linkage
- (d) Mutation
- 9. In a monohybrid cross between two heterozygous individuals, percentage of pure homozygous individuals obtained in F_1 generation is
- (a) 25%

(b) 50%

- (c) 75%
- (d) 100%

- 10. Which of the following pairs is incorrectly matched?
- (a) Purine → Adenine and Guanine
- (b) Pyrimidines → Cytosine and Uracil
- (c) Nucleosides → Adenosine and Thymidine
- (d) DNA → basic biomolecule
- 11. The possibility of a female becoming haemophilic is extremely rare because mother of such a female has to be ______ and father should be _____.
- (a) haemophilic, carrier

(b) carrier, haemophilic

(c) haemophilic, normal

(d) haemophilic, haemophilic

12.	Methyl guanosine t	triphosphate is added to the	e 5' end of hnRNA in a pro	ocess of			
(a)	splicing	(b) capping	(c) tailing	(d) none of these			
13.	The common cold	is caused by					
(a) Rhinovirus			(b) Streptococcus p	(b) Streptococcus pneumoniae			
(c) Salmonella typhimurium			(d) Plasmodium viv	(d) Plasmodium vivax			
14.	During the life cychosts?	ele of <i>Plasmodium</i> , sexual	reproduction takes place in	which of the following			
(a) l	human (b) femal	e Anopheles mosquito (c) male Anopheles mosquito	o (d) both (a) and (b)			
15.	The most abundant	antibody produced agains	st allergens is				
(a)	IgE	(b) IgA	(c) IgG	(d) IgM			
16.	Which of the follow	wing disease cannot be cur	red by taking antibiotics?				
(a)	Plague	(b) Amoebiasis	(c) Leprosy	(d) Whooping cough			
17.	Black rust of whea	t is caused by					
(a)	Puccinia	(b) Albugo	(c) Ustilago	(d) Cystopus			
18. <i>(a)</i> (b) <i>(c) (d)</i>	Trichoderma han Nucleopolyhedro	ovirus mpestris	esticide?				
19. (a)		logical treatment of waste (b) increase BOD (c) r		increase sedimentation			
20. (a)	Methanogens grow CH ₄	ing anaerobically on cellu (b) CH ₄ and CO ₂	losic material produce (c) CH ₄ and H ₂	(d) CH ₄ ,CO ₂ and H ₂			
		B. Assertion and	Reason type quest	ions			
	• •		ements one labelled ASSE answers to these questions	RTION (A) and another from the codes given below:			
	(a) Both A and R	are true and R is the corr	ect explanation of A .				
	(b) Both A and F	\mathbf{R} are true but \mathbf{R} is not the \mathbf{G}	correct explanation of A				
(c) A is true but R is false(d) A and R are false							

Assertion: Genetic engineering requires both nucleases and ligases

Reason: ligases produce the nick in the recombinant DNA molecule.

21.

22. Assertion: All immunoglobulin molecules have a basic structure composed of four polypeptide chains.

Reason: The polypeptide chains consist of two identical heavy and light chain connected by disulphide bonds.

23. Assertion: The arrangement of axonemal microtubules in cilia and flagella is called 9+2 array

Reason: The axoneme usually has nine pairs or doublets of randomly arranged peripheral microtubules, and a pair of centrally located microtubules.

24. Assertion: Hydrolases are the enzymes which catalyse the hydrolysis of ester, ether, peptide, glycosidic, C-C or C-N etc; bonds.

Reason: Lyases are the enzymes catalysing the linking together of 2 compounds like joining of C-O, C-N, P-O etc; bonds.

25. Assertion: *Escherichia coli*, *Shigella* sp. and *Salmonella* sp. are all responsible for diarrhoeal diseases

Reason: Dehydration is common to all types of diarrhoeal diseases and adequate supply of fluids and electrolytes should be ensured.

