Exam Date & Time: 27-Jul-2022 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Biochemistry [PBT-BP203T]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Carotenes fall under the class of

1)	Compound Lipids		2)	Heterolipids		3)	Homolipids		4)	Derived lipids	

(1)

2) The percentage of element Hydrogen in Protein is about

1)	7		2)	22		3)	2		4)	50	

(1)

3) Phosphocreatine falls under the class of which High energy compound?

1)	Enol Phosphate		2)	Phosphagens		3)	Thioesters		4)	Pyrophosphates	

(1)

4) The lac operon comprises of which of the following structural genes?

1)	*lacG, lacZ, lacA*		2)	*lacZ, lacY, lacH*		3)	*lacA, lacZ, lacY*		4)	*lacZ, lacY, lacG*	

(1)

5) The number of ATPs generated in heart muscles during step 6 of aerobic oxidation of one molecule of glucose are

(1)

1)	2		2)	3		3)	4		4)	6	

6) Pick the odd one out with respect to gluconeogenesis:

1)	Glycine		2)	Alanine		3)	Leucine		4)	Phenylalanine	

(1)

7) Which of the following is not a participant in oxidative phosphorylation?

1)	SGOT		2)	CoQ		3)	Cyt c		4)	Enzyme Complex I	

(1)

8) The PPPG value of Mr X was found to be 168mg/dl. This condition is called as

1)	RPG		2)	Diabetes Mellitus		3)	IGT		4)	IFG	

(1)

9) An example of a mineralocorticoid class of steroid hormone is

(1)

1)	Cortisol		2)	Testosterone		3)	Aldosterone		4)	Progesterone	

10) Linolenic acid contains how many double bonds? (1)

1)	03		2)	02		3)	04		4)	00	

11) The number of ATPs derived when Myristic acid, a 14 carbon containing fatty acid undergoes complete oxidation is (1)

1)	131		2)	129		3)	114		4)	112	

12) Which of the following coenzyme is essential during serotonin synthesis? (1)

1)	NAD+		2)	FAD		3)	Tetrahydrobiopterin		4)	Biotin	

13) Promoter sequence is located at (1)

1)	Upstream of start		2)	Downstream of start		3)	Ori of replication		4)	Start codon	

14) Degeneracy of genetic code is explained by (1)

1)	Non-overlapping nature of genetic code		2)	Wobble hypothesis		3)	Frame shift mutation		4)	Universal nature of genetic code	

15) Which of the following is not a feature of tRNA? (1)

1)	Cloverleaf structure		2)	Coding region		3)	D loop		4)	Variable arm	

16) The inorganic contributor in de novo synthesis of IMP is (1)

1)	N10 formyl THF		2)	Glycine		3)	Aspartate		4)	CO_2	

17) The coenzyme Tetrahydrofolate is derived from Vitamin (1)

1)	B1		2)	B9		3)	B2		4)	B3	

18) In non-competitive inhibition, which of the following is true? (1)

1)	Vmax remains unchanged whereas Km increases		2)	Km decreases and Vmax increases		3)	Vmax and Km are lowered simultaneously		4)	Vmax is lowered whereas Km remains unchanged	

19) AST stands for (1)

1)	Alanine Serum Transaminase		2)	Alanine Serum Transferase		3)	Aspartate Transaminase		4)	Aspartate Transferase	

20) The term catalysis was coined by (1)

1)	Kuhne		2)	Berzelius		3)	Menten		4)	Koshland	

II Long Answers

Answer all the questions.

1) Explain Phosphogluconate pathway and mention any four significance of NADPH. Add a note on engine driving model of ATP formation. (10)

2) Explain the following processes in nucleic acid metabolism:
a) Elongation step in translation process
b) Events at replication fork
c) Post transcriptional modification
d) Salvage pathway for purine nucleotide synthesis (10)

III Short Answers

Answer all the questions.

1) Classify Proteins based on their function and Nutritional value. (5)

2) Sketch the bypass steps of gluconeogenesis from pyruvate. (5)

3) Sketch the steps involved in Ketolysis. Add a note on the significance of ketone bodies. (5)

4) Sketch the Krebs-Henseleit cycle. (5)

5) A. 'During De novo synthesis, out of the 16 carbons that Palmitic acid possesses, 2 carbons are obtained directly through a molecule of acetyl CoA, whereas the remaining are obtained from Malonyl CoA'. Justify the given statement. [2m] (5)

B. Draw the shuttle system that is involved in β-oxidation of fatty acids. [3m]

6) "Enzymes are regarded as biological catalysts". Justify the given statement with pictorial representation and relevant facts to support the same. (5)

7) Define enzymes. Enlist their properties and mention briefly about their nomenclature. (5)

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