

Subject: Biochemistry

Duration: 3 Hrs

Year and Sem: F. Y. B. Pharm Sem II

Total marks: 80 M

N.B.: 1. All questions are compulsory

2. Figures to right indicate full marks

Q. 1	Choose appropriate option for following multiple choice-based questions.	20
1	Which of the following is an aliphatic amino acid with R group containing sulfhydryl group?	
a	Phenyl alanine	
b	lysine	
c	Threonine	
d	cysteine	
2	The process of change in the specific optical rotation representing the interconversion of α and β forms of D-glucose to an equilibrium mixture is called as _____.	
a	Mutarotation	
b	Epimerization	
c	Racemization	
d	Inversion	
3	Glucose and mannose are examples of _____.	
a	C4 epimers	
b	C2 epimers	
c	C6 epimers	
d	C1 epimers	
4	The conversion of phosphoenol pyruvate to pyruvate catalysed by enzyme pyruvate kinase resulting in the synthesis of ATP is an example of _____.	
a	Oxidative Phosphorylation	
b	Oxidative dephosphorylation	
c	Substrate level Phosphorylation	
d	Photophosphorylation	
5	_____ is useful in generating pentoses and NADPH, required for the biosynthetic reactions.	
a	HMP shunt	
b	Glycolysis	
c	TCA cycle	
d	Gluconeogenesis	
6	The total ATP yield from oxidation of one mole of acetyl CoA by TCA cycle is ..	
a	8	
b	12	
c	24	
d	16	

7	Which of the following enzyme is common for gluconeogenesis and glycolysis?
a	Glyceraldehyde-3-phosphate dehydrogenase
b	Hexokinase
c	Pyruvate kinase
d	Pyruvate carboxylase
8	The reducing equivalents are supplied by _____ in fatty acid biosynthesis.
a	NADPH
b	NADH
c	NAD
d	FADH ₂
9	The regulatory step in the synthesis of AMP from IMP is catalyzed by _____.
a	Glutamine-phosphoribosyl pyrophosphate amido transferase
b	Adenylosuccinate synthetase
c	Adenylosuccinate lyase
d	IMP dehydrogenase
10	_____ separates the two strands of DNA during replication.
a	Gyrase
b	Topoisomerase
c	Helicase
d	DNA polymerase
11	Which of the following work is done by the sigma factor in transcription?
a	Helicase action
b	Transcription initiation
c	Transcription elongation
d	Transcription termination
12	Fluorouracil inhibits the activity of _____.
a	Dihydrofolate reductase
b	Thymidylate synthase
c	CTP synthase
d	Ribonucleotide reductase
13	_____ is involved in salvage pathway of purines.
a	Adenine phosphoribosyl transferase
b	Glutamine- PRPP amidotransferase
c	IMP dehydrogenase
d	Uridine-cytidine kinase

14	The number of ATP molecules formed by β -oxidation of one mole of palmitic acid are _____.	
a	126	
b	106	
c	135	
d	108	
15	_____ of the following is the regulatory step of cholesterol biosynthesis.	
a	Formation 3-hydroxy-3-methylglutaryl CoA	
b	Formation of Mevalonate	
c	Formation of Isoprenoid Unit	
d	Formation of acetoacetyl CoA	
16	The accumulation of acetyl CoA in the mitochondria of the liver results in generation of_____.	
a	ATP	
b	Ketone bodies	
c	Free fatty acids	
d	Oxaloacetate	
17	_____ is involved in biosynthesis of dopamine.	
a	Tyrosine hydroxylase	
b	Tyrosinase	
c	Phenylethanolamine N-methyltransferase	
d	Dopamine β -hydroxylase	
18	_____ is the link between urea cycle and TCA cycle.	
a	Fumarate	
b	Succinate	
c	α - ketoglutarate	
d	Citrate	
19	_____ catalyses the rearrangement reactions involving atomic grouping without altering molecular weight or number of atoms.	
a	Ligase	
b	Isomerase	
c	Oxidoreductase	
d	Hydrolase	
20	The functional unit of the enzyme is known as _____.	
a	Chiroenzyme	
b	Holoenzyme	
c	Prosthetic group	
d	Monomeric enzyme	

Q. 2 A	Answer any one question.	12
a	<ul style="list-style-type: none"> i) Write a note on Carnitine shuttle. ii) Explain the biosynthesis of noradrenaline with its significance. iii) Give the reactions catalysed by FAS complex in the biosynthesis of fatty acid. 	
b	<ul style="list-style-type: none"> i) Outline TCA cycle with its significance. ii) Give the names and structures of substrate and product for the following enzymes: <ul style="list-style-type: none"> a) Pyruvate dehydrogenase b) Phosphoglycerate kinase c) Lactate dehydrogenase d) Enolase 	
Q. 2 B	Answer any four questions	48
a	<ul style="list-style-type: none"> i) Explain gluconeogenesis with respect to the names of the intermediates and the enzymes involved in reversal of glycolysis. ii) Describe the various complexes involved in ETC. iii) Discuss deamination and decarboxylation reactions involved in amino acid metabolism. 	
b	<ul style="list-style-type: none"> i) Give the four steps involved in the β-oxidation of saturated fatty acid. ii) Explain the formation of ketone bodies. iii) Outline the oxidative phase of HMP shunt and give its significance. 	
c	<ul style="list-style-type: none"> i) Classify carbohydrates and give two examples of disaccharides. ii) Draw the structures of any two acidic amino acids, and explain α-helix structure of protein. iii) Discuss in brief the steps involved in translation. 	
d	<ul style="list-style-type: none"> i) Outline the steps involved in the following <ul style="list-style-type: none"> a) Synthesis of AMP from IMP b) Salvage pathway for purines ii) Explain in brief about initiation and elongation steps in prokaryotic replication. iii) Define enthalpy and entropy. Discuss the biological role of phospholipids. 	
e	<ul style="list-style-type: none"> i) Draw the structure of ATP and explain enzyme induction and repression. ii) Classify enzymes as per IUB system with suitable examples. iii) Discuss Michaelis Menten plot with respect to reversible enzyme inhibitors. 	