F.Y. B. Pharm
Sem - II
1/11/2025
ATKT

Duration: 3 Hrs **Total marks: 75 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 Glucose and mannose are example of
A C4 epimer
B C1 epimer
C C6 epimer
D C2 epimer

2 The glycosidic linkage found in maltose is
A β (1-6)
B β (1-4)
C α (1-6)
D α (1-4)

3 ___is a start codon
A UAG
B UGA
C AUG
D UAA

4 Gluconeogenesis involves conversion of_____.
A Glucose 6 Phosphate to Fructose 6 Phosphate
B Pyruvate to Lactate
C Pyruvate to Acetyl CoA
D Oxaloacetate to Phosphoenolpyruvate

5 In aerobic respiration, where does the citric acid cycle occur in eukaryotic cells?
A Cytoplasm
B Mitochondrial matrix
C Endoplasmic reticulum
D Nucleus

6 _____ is an alternative pathway to glycolysis for oxidation of glucose.
A Pentose phosphate pathway
B Cori Cycle
C Glucose Alanine Cycle
D Gluconeogenesis

7 The reaction catalyzed by pyruvate dehydrogenase complex involves_____.
A Oxidative Phosphorylation
B Oxidative decarboxylation
C Oxidative carboxylation
D Oxidative dephophorylation

8 Glycogen phosphorylase catalyses conversion of glycogen to _____.
A Glucose -1- phosphate
B Glucose -6-phosphate
C Glycogen -1-phosphate
D Glycogen -6-phosphate

9 _____ is a regulatory enzyme in fatty acid synthesis.
A Fatty acyl CoA synthase
B Acetyl CoA dehydrogenase
C Acetyl CoA carboxylase
D Thioesterase

10 Ketone bodies cannot be utilized in the liver due to absence of _____enzyme.
A Thiophorase
B Thiolase
C β -hydroxybutyrate dehydrogenease
D HMG CoA lyase

11 Cys-SH site of fatty acid synthase complex accepts _____.
A Acetyl CoA
B Malonyl CoA
C Propionyl CoA
D Succinyl CoA

12 Hydration step in β-oxidation of fatty acids is catalyzed by_____.
A Enoyl CoA hydratase
B Acyl CoA hydratase
C Succinyl CoA hydratase
D Enoyl CoA hydrolase

13 Steroid hormones are synthesized from _____.
A Fatty acid
B Cholesterol
C Bilirubin
D Protein

14 Which molecule acts as the backbone for nucleotide synthesis in both purine and pyrimidine biosynthesis?
A Adenosine triphosphate
B 5-phosphoribosyl pyrophosphate (PRPP)
C Uridine diphosphate
D Deoxyribose

15 The gaps between segment of DNA on the lagging stand produced by restriction enzymes are joined/sealed by:
A DNA Topoisomerase
B DNA Helicase
C DNA Ligase
D DNA Phosphorylase

16 What is the final product of purine catabolism in humans?
A Urea
B Uracil
C Uric acid
D Ammonia

17 Which event defines transcription?
A Synthesis of DNA from RNA
B Post-translational modification
C Synthesis of RNA from DNA
D Synthesis of protein from RNA

18 Methotrexate inhibits the activity of which of the following enzyme?
A Dihydrofolate reductase
B Thymidylate synthase
C CTP synthase
D Ribonucleotide reductase

19 The functional unit of the enzyme is known as ____
A Chiroenzyme
B Holoenzyme
C Prosthetic group
D Monomeric enzyme

20 The relative affinities of the substrate and inhibitor with the enzyme determines the degree of ____Inhibition
A Competitive
B Non-Competitive
C Uncompetitive
D Suicide

Q. 2 A Answer any two questions. 20

A i) Describe the three rate-limiting steps for reversal of glycolysis. 5
ii) Outline TCA cycle and depict its linkage with the Urea Cycle 5

B i) Discuss the salvage pathway for purine and pyrimidine nucleotide synthesis. 5
ii) Explain the three steps involved in protein synthesis. 5

C i) Discuss the Michaelis-Menten plot with respect to reversible enzyme inhibitors. 5
ii) Describe the IUB classification of enzymes with suitable examples. 5

Q. 2 B Answer any seven questions 35

i) Explain the primary structure of proteins. Classify Carbohydrates with examples.
ii) Draw Fischer and Haworth Projection formulae for α-D- glucose and explain the terms, epimer and non-reducing sugar with suitable examples.
iii) Elaborate in detail the regulatory steps of glycolysis with respect to name and structure of intermediates, enzymes and cofactors.
iv) Explain Gluconeogenesis. Give the substrates for Gluconeogenesis. Write a note on Cori cycle.
v) Discuss ketogenesis w.r.t reactions, regulation and disorders involved.
vi) Give the reactions catalysed by FAS complex in the biosynthesis of fatty acid.
vii) Explain the four reactions involved in β- oxidation of Palmitic acid and give the bioenergetics.
viii) Give the steps involved in the synthesis of GMP from IMP. Discuss Gout and its treatment.
ix) Explain the term i) Induction ii) Repression iii) Allosteric regulation iv) Non-competitive inhibition with respect to Enzymes with suitable examples.

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