Duration: 3 Hrs **Total marks: 75**

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 The example of essential fatty acid is _____.
a Linolenic acid
b Palmitic acid
c Stearic acid
d Oleic acid

2 The amino acid containing indole group is _____.
a Leucine
b Tryptophan
c Histidine
d Lysine

3 The process of change in optical rotation from dextrorotatory (+) to levorotatory (-) is referred to as
a Mutarotation
b Epimerization
C Racemization
d Inversion

4 _____is the regulatory enzyme in glycolysis.
a Phosphofructokinase
b Enolase
c glucose-1,6 bisphosphatase
d aldolase

5 The reaction catalyzed by pyruvate dehydrogenase complex involves_____.
a Oxidative Phosphorylation
b Oxidative decarboxylation
c Oxidative carboxylation
d Oxidative dephosphorylation

6 Intermediate that is common in glycolysis, glycogenesis and glycogenolysis:
a Glucose 1,6 bisphosphate
b Glucose- 1 phosphate
c Glucose- 6 phosphate
d Fructose 1,6 bisphosphate

7 NADPH is produced by _____.
a Krebs cycle
b Anaerobic glycolysis
C Uronic acid pathway
d Hexose monophosphate pathway

8 _____ is liberated when Citrate converted to Cis Aconitate.
a water
b hydrogen
c hydrogen peroxide
d carbon dioxide

9 _____ separates the two strands of DNA during replication.
a Gyrase
b Helicase
c Topoisomerase
d DNA polymerase

10 ____ is a termination codon.
a UAG
b UUA
c UUG
d AUA

11 Transcription of _____strand of DNA results in mRNA formation.
a Template
b Anti-template
c Coding
d Transcript

12 Carbamoyl phosphate sythetase II is inhibited by _____.
a ATP
b PRPP
c GTP
d Biotin

13 _____ is the end product of purine metabolism, that has been implicated in the gout disorder.
a Uric acid
b Urea
c Hypoxanthine
d Carbon dioxide

14 _____ is the cofactor involved in regulating step of fatty acid synthesis.
- **a** Biotin
- **b** Pyridoxal phosphate
- **c** Ascorbate
- **d** Aspartate

15 Conversion of acetoacetyl CoA to acetyl CoA is catalyzed by_____.
- **a** Thiolase
- **b** hydratase
- **c** enolhydratase
- **d** Hydrolase

16 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

17 Bile acids are synthesized from _____.
- **a** Fatty acids
- **b** Cholesterol
- **c** Bilirubin
- **d** Proteins

18 Urea cycle occurs in
- **a** cytoplasm
- **b** endoplasmic reticulum
- **c** ribosomes
- **d** mitochondria

19 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

20 Aldolase enzyme belongs to _____ class according to IUB.
- **a** Oxidoreductase
- **b** Transferase
- **c** Hydrolase
- **d** Lyase

Q. 2 Answer any two questions **20**

a i) Describe the three rate limiting steps for reversal of glycolysis with respect to gluconeogenesis. **3**

ii) Outline Pentose phosphate pathway and state its importance. **3**

iii) Explain glycogenesis with respect to names of the intermediates, enzymes and cofactors. **4**

b i) Discuss the synthesis of AMP and GMP from IMP with respect to name and structures of intermediates and enzymes involved. **5**

ii) Explain the steps involved in prokaryotic replication in brief.

iii) Name the disorders of purine metabolism and give one example of xanthine oxidase inhibitor. **5**

c i) Discuss enzyme inhibition with respect to Michealis plot along with suitable examples. **5**

ii) Explain secondary structure of protein. Draw the structure of lecithin. **5**

Q. 3 **35**

i Draw the structure of Sucrose and Palmitic acid. Explain the term anomer with suitable examples.

ii Write a note on phospholipid with respect to classification with structures.

iii Give the names and structures of substrate and product for the following enzyme catalysed reactions : a) Pyruvate kinase b) HMG CoA synthase

iv Discuss the steps involved in β-oxidation of saturated fatty acid.

v Explain Urea cycle and give its physiological importance.

vi Give the reactions catalysed by FAS complex in the biosynthesis of fatty acid.

vii Discuss deamination and decarboxylation reactions involved in amino acid metabolism.

viii Outline the steps involved in prokaryotic translation.

ix Classify enzymes based on the IUB system with suitable examples.