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 An example of saturated fatty acid is _____.
a Palmitic acid
b Oleic acid
c Linoleic acid
d Arachidonic acid

2 α(1→4) glycosidic bond is present in_____.
a Lactose
b Maltose
c Sucrose
d Cellobiose

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 Which of the following kinetic effect is true for competitive inhibition?
a It decreases both Km and Vmax
b It increases both Km and Vmax
c It decreases Km without affecting Vmax
d It increases Km without affecting Vmax

5 The conversion of alanine to glucose is termed as _____.
a Glycolysis
b HMP shunt
c Glycogenesis
d Gluconeogenesis

6 The cycle involving the synthesis of glucose in liver from the skeletal muscle lactate and the reuse of glucose by the muscle is known as ____.
a Cori cycle.
b Glucose-alanine cycle
c Urea cycle
d TCA cycle

7 Example of xanthine oxidase inhibitor is_____.
a Allopurinol
b Methotrexate
c Trimethoprim
d Puromycin

8 Glucose should be derivatized to _____ for glycogenesis,
a glucuronic acid
b pyruvic acid
c UDP glucose
d Sorbitol

9 Bile acids are derived from_____.
a Fatty acids
b Cholesterol
c Bilirubin
d Proteins

10 _____ is a termination codon in translation.
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 Conversion of α-ketoglutarate to succinyl CoA occurs through_____.
a oxidative decarboxylation
b oxidative phosphorylation
c oxidative dephosphorylation
d Phosphorylation

13 _____ is an enzyme of purine salvage pathway and its defect causes Lesch-Nyhan syndrome.
a Xanthine Oxidase
b Hypoxanthine guanine phosphoribosyl transferase
c Adenine phosphoribosyl transferase
d Adenosine deaminase

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

15 _____ is C-4 epimer of Glucose.
a Galactose
b Mannose
c Ribose
d Fructose

16 Cys-SH site of fatty acid synthase complex accepts_____.

a Acetyl CoA

b Malonyl CoA

c Propionyl CoA

d Succinyl CoA

17 Gout is characterized by increased plasma level of_____.

a Creatine

b Uric acid

c Urea

d Creatinine

18 Okazaki fragment is related to_____.

a DNA synthesis

b Protein synthesis

c mRNA formation

d tRNA formation

19 In ____ type of inhibition, the inhibitor binds covalently with enzyme and inactivates it.

a Competitive

b Uncompetitive

c Non-competitive

d Irreversible

20 Lipase enzyme belongs to _____ class according to IUB.

a Oxidoreductase

b Transferase

c Hydrolase

d Lyase

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

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

ii) Describe the three rate limiting steps for reversal of glycolysis with respect to gluconeogenesis. 4

iii) Explain reactions of PDH complex. 2

b i) Discuss the synthesis of AMP and GMP from IMP with respect to name and structures of intermediates and enzymes involved. 4

ii) Explain the steps involved in prokaryotic replication in brief. 4

iii) Name any two regulatory enzymes of Kreb's cycle. 2

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

ii) Explain the degradation of Purine Nucleotides. 5

Q. 2 B Answer any seven questions **35**

i) Explain Oxidative and Non oxidative deamination reaction of amino acid metabolism.

ii) Outline conversion of Isoprene to cholesterol and discuss drug modulating lipid metabolism.

iii) Give the names and structures of substrate and product for the following enzyme catalysed reactions: a) Aconitase b) Malate dehydrogenase

iv) Explain multiprotein complexes in ETC in detail.

v) Give the four steps involved in Beta oxidation of saturated fatty acid.

vi) Explain Salvage pathway of Purines and Pyrimidines.

vii) Classify enzymes based on the IUB system with suitable examples.

viii) Give the classification of amino acids on the basis of structure (one structure for each class)

ix) Explain the formation of ketone bodies. Explain negative and positive ΔG.

****