

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 $\alpha(1\rightarrow4)$ 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 K_m and V_{max}
 - b It increases both K_m and V_{max}
 - c It decreases K_m without affecting V_{max}
 - d It increases K_m without affecting V_{max}

- 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 .
