Duration: 2 ½ hrs

Total marks: 75

Note:

1) Attempt **all** questions.
2) **All questions** carry **equal** marks.
3) Draw **neat labeled diagrams** wherever necessary.
4) For **Q.2, Q.3** and **Q.4** attempt A and B **OR** C and D.

Q.1 Do as directed **(any fifteen)** 15

Choose the correct option and fill in the blanks:

(1) The coenzyme for enzyme transaminases is _____. (NAD$^+$/ PLP)

(2) Ammoniotelic animals dispose_____ in their surrounding environment. (ammonia/ uric acid)

(3) PKU is characterised by excretion of _____ in urine. (phenyllactate /phenylpyruvate)

(4) _____ is degraded to methyl semialdehyde. (thymine / adenine)

(5) The coenzyme for enzyme succinate dehydrogenase is _____. (NAD$^+$/ FAD)

State true /false:

(6) Deamination of tyrosine releases carbon dioxide.

(7) Glycine serves as transport form of ammonia in blood.

(8) Ketosis is seen in people under starvation.

(9) The electron transport chain and ATP synthesizing system are located in the mitochondrial matrix.

Fill in the blank:

(10) Precursor amino acid for biosynthesis of histamine is _____.

(11) The site for omega oxidation of fatty acids in eukaryotic cells is _____.

(12) Acetoacetate, beta hydroxybutyrate and _____ are known as ketone bodies.

(13) Characteristic feature of gout is formation of _____ crystals in the synovial joints.

(14) _____ is the end product of anaerobic glycolysis in animals.

Write the equation for the reaction catalysed by following enzymes:

(15) Xanthine oxidase.

(16) Lactate dehydrogenase.

(17) Fumarase.

Name the enzyme that catalyses the conversion of following reactions:

(18) Fructose 6-phosphate to fructose 1,6-bisphosphate.

(19) Ornithine to citrulline.

(20) L - methyl malonyl CoA to succinyl CoA.

Q.2 (A) Describe gluconeogenesis pathway. 08

(B) Using a neat schematic diagram explain the structural organization of respiratory chain. 07

OR

(C) Give an account of uncouplers in inhibition of oxidative phosphorylation. 08

(D) Explain the significance of pentoses and NADPH produced in the oxidative phase of HMP. 07

Q.3 (A) Describe the mechanism of transamination of amino acids. 08

(B) Justify: Nitrogen of amino acids is converted to urea in liver by cyclic enzyme catalysed reaction. 07

OR

(C) (i) Discuss regulation of urea cycle. 04

(ii) What is glutathione? Describe its structure. 04

(D) (i) Write the reactions for synthesis of serotonin from its precursor amino acid. 04

(ii) What are ketogenic amino acids? Give examples and describe. 03

Q.4 (A) Describe steps involved in oxidation of monounsaturated fatty acid. 08

(B) Discuss the degradation pathway for thymine. 07

OR

(C) Discuss the disorders associated with defect in purine metabolism. 08

(D) Describe the formation of ketone bodies in patients with uncontrolled diabetes mellitus. 07

Q.5 Write short notes on **(any three)** 15

(a) Fates of pyruvate formed by glycolysis.

(b) Hydrolysis of ATP as an energy rich compound.

(c) Non oxidative deamination by amino acid oxidases.

(d) Defects associated with tyrosine catabolism.

(e) Role of carnitine in fatty acid catabolism.