PAQ-003-001530 Seat No. _____

B. Sc. (Sem. V) (CBCS) Examination

October / November - 2018

502 - Intermediary Metabolism

(Old Course)

Faculty Code : 003
Subject Code : 001530

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 Answer the following questions in just one or two lines : **20**

(1) Why Krebs cycle is also known as tricarboxylic acid cycle?

(2) Define gluconeogenesis.

(3) Name the cofactor required by kinase enzymes.

(4) Which metabolic pathway is capable of converting hexose sugar glucose in to pentose sugars?

(5) Cytochrome P_{450} is not a component of mitochondrial ETC. True or false? Justify.

(6) What is another name given to Cytochrome a-a_3 ?

(7) Carbon monoxide inhibits which complex of mitochondrial electron transport chain?

(8) What will be the effect of uncoupler on mitochondrial oxidative phosphorylation?

(9) Write the calorific value of triglycerides.

(10) Give the name of alcohol present in sphingolipids.

(11) Name the enzyme that is a multi enzyme complex and involved in fatty acid synthesis.

(12) HMG CoA reductase is a key regulatory enzyme in pathway for synthesis of which lipids?

(13) Tripeptide would have how many amino acids and how many peptide bonds in its structure?

(14) Which amino acids are purely ketogenic? Write examples.

(15) Phenylketonuria is a condition caused by genetic defect in which enzyme?

(16) Name the amino acid that act as a precursor for synthesis of Dopamine neurotransmitter.

(17) Draw the structure of adenine.

(18) Define the term nucleoside.

(19) Write the full form of HGPRT.

(20) Write the difference between purine and pyrimidine.

2 (a) Answer any **three** of the following questions : **6**

(1) What do you understand by Salvage pathway of purine metabolism?

(2) Briefly outline the role of UDP-Glucose in glycogen biosynthesis.

(3) Describe the link between TCA cycle and Urea cycle.

(4) Why major energy storage form in human body is triglycerides and not glycogen?

(5) Write the role of Complex I in mitochondrial electron transport chain.

(6) Write metabolic fates of acetyl CoA.

(b) Answer any **three** of the following questions : **9**

(1) How is the 6-carbon glucose converted to the 3-carbon glyceraldehydes 3 phosphate?

(2) Write differences between glycolysis and gluconeogenesis.

(3) Explain the regulation of purine biosynthesis.

(4) Write examples of inhibitors of mitochondrial electron transport system.

(5) Which coenzyme is essential for transamination reactions? Write its role in such reaction.

(6) What is the mechanism of transport of fatty acyl CoA from cytosol to mitochondrial matrix?

(c) Answer any **two** of the following questions : **10**

(1) Describe individual reactions of the TCA cycle.

(2) Write a detail note on pyrimidine biosynthesis.

(3) Describe reactions of urea cycle (structures of intermediates are not required).

(4) Write a brief note on process of beta oxidation of fatty acids.

(5) Discuss glycerol phosphate shuttle for transport of NADH from cytosol to mitochondrial matrix.

3 (a) Answer any three of the following questions : **6**

(1) How does gluconeogenesis produce glucose from pyruvate?

(2) Draw the structure of any one nucleotide.

(3) Write the reaction catalyzed by SGOT or AST. What is the clinical significance of measuring its activity in the serum?

(4) Describe ammonotelic, ureotelic and uricotelic organisms with examples.

(5) Describe coupling efficiency and P/O ratio.

(6) Define ketone bodies with their suitable examples.

(b) Answer any **three** of the following questions : **9**

(1) Explain the conversion of pyruvate to lactate in Muscle.

(2) Describe the conditions responsible for causing ketosis.

(3) Explain amphibolic nature of TCA cycle.

(4) Why cyanide is poisonous to humans and why it doesn't cause instant death?

(5) Define and write examples of essential amino acids. Why essential amino acids cannot be synthesized in human body?

(6) Explain the conversion of ribose sugar to deoxyribose sugar.

(c) Answer any **two** of the following questions : **10**

(1) Write a detail note on HMP pathway.

(2) Write a detail note on AMP and GMP synthesis from IMP.

(3) Write a short note on mitochondrial ETC and its complexes I to IV.

(4) Give a comparative account of fatty acid oxidation and fatty acid synthesis.

(5) What is the role of oxidative deamination of amino acids? Write the reaction catalyzed by glutamate dehydrogenase.
