HCM-003-001530

HCM-003-001530 Seat No. _____

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

October - 2017

Intermediary Metabolism : Paper - 502

Faculty Code : 003

Subject Code : 001530

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

1 Answer the following questions briefly : **20**

(1) The glycolytic pathway is also known as _____ pathway

(2) The conversion of pyruvate to lactate is catalysed by _____ enzyme

(3) Which pyrimidine base contains an amino group at carbon number four?

(4) Write the names of disorders of nucleotide metabolism.

(5) Write the difference between salvage and de novo pathway of nucleotide metabolism.

(6) Name the enzyme involved in glycogen synthesis. How its activity is regulated by phosphorylation/ dephosphorylation?

(7) Write the importance of HMP shunt.

(8) Write the other name of HMP pathway.

(9) Tyrosine is not an essential amino acid for humans but why does it become an essential amino acid for people suffering from phenylketonuria (PKU)?

(10) Write two examples of amine neurotransmitters. Which enzymes/enzyme reactions are involved in synthesis of these amine neurotransmitters from amino acids?

(11) Define purely ketogenic amino acids with examples.

(12) Describe painkiller peptides and their significance.

(13) Which enzyme of cholesterol biosynthesis is inhibited competitively by statin group of drugs?

(14) Write the two sources of glycerol 3 phosphate for synthesis of triglycerides.

(15) Write activation step for fatty acid oxidation.

(16) Which compound used as antibacterial agent in soaps, face wash and lotions act by inhibiting fatty acid synthase complex in bacteria?

(17) Which substance act as a terminal electron acceptor in mitochondrial electron transport chain?

(18) What will be the effect on electron transport and oxidative phosphorylation when mitochondria were incubated with DNP solution?

(19) Why oxidation of $FADH_2$ gives only 2 ATP by mitochondrial ETC and oxidative phosphorylation?

(20) What is the role of iron sulfur proteins in mitochondrial electron transport chain?

2 (A) Answer any **three** of the following question : **6**

(1) How pyruvate is converted into ethanol in yeast?

(2) Write the metabolic fates of pyruvate.

(3) Write difference between nucleotide and nucleoside.

(4) Define essential amino acids and write their examples. Why they cannot be synthesized in our body?

(5) Draw a diagram of phospholipid and show the action of various phospholipases at different positions on a phospholipid molecule.

(6) Under what conditions, mitochondrial Fo-F1 ATPase can work as either ATP synthase of ATP hydrolase?

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

(1) Explain Gyoxylate cycle very briefly.

(2) Draw the structure of purine and pyrimidine rings and show the sources of different carbon and nitrogen atoms.

(3) Explain the steps for synthesis of GMP from IMP.

(4) Define P/O ratio and discuss coupling efficiency of mitochondria.

(5) Write the reaction catalyzed by SGPT and discuss clinical significance of measuring its activity in serum.

(6) Write the physiological functions of phospholipids.

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

(1) Write the pathway for catabolism of pyrimidine nucleotide.

(2) Explain TCA cycle (without structures) and briefly discuss its regulation.

(3) Write different enzymatic steps involved in Urea cycle (Structures are not required). Describe the link between. Urea cycle and Krebs's cycle.

(4) Calculate the ATP yield of complete oxidation of stearic acid.

(5) Discuss malate aspartate shuttle for transport of NADH from cytosol to mitochondrial matrix.

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

(1) What do you understand by Cori cycle?

(2) Explain any one disorder of nucleotide metabolism.

(3) Describe the role of pyridoxal phosphate in amino acid metabolism.

(4) Write a brief note on biologically important peptides.

(5) What is the site of action of cyanide on mitochondrial ETC?

(6) Write the reaction catalyzed by acetyl CoA carboxylase.

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

(1) Explain the regulatory role of phosphofructokinase in glycolysis.

(2) How ribose sugar is converted into deoxyribose sugar?

(3) What is the end product of oxidation of odd chain fatty acids? How it is metabolized?

(4) Write the action of rotenone on mitochondrial ETC.

(5) Describe the control of activity of hormone sensitive lipase by epinephrine.

(6) Write the mechanism of activation of fatty acids in cytoplasm.

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

(1) Explain glycogenolysis with its regulation

(2) how ribose - 5 - phosphate is converted into IMP.

(3) Write a short note on beta oxidation of fatty acids

(4) List various functions of different types of proteins in human body.

(5) Write a short note on mitochondrial ATP synthase.