JW-003-1015030 Seat No. _____

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

October - 2019

Biochemistry : Paper - 502

(Intermediary Metabolism)

Faculty Code : 003
Subject Code : 1015030

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

1 (a) Answer the following questions in one or two lines : **4**

(1) _____ is a Key Regulatory Enzyme in glycolysis.

(2) Write the function of debranching enzyme.

(3) Define the term gluconeogenesis.

(4) Write the overall reaction of glycolysis.

(b) Answer any one of the following questions briefly : **2**

(1) Write all possible fate of pyruvate.

(2) What do you understand by Cori cycle ?

(c) Answer any one of the following questions in detail : **3**

(1) Just draw the TCA cycle in detail (without structure).

(2) Explain the second phase of glycolysis.

(d) Write a detailed note on any one of the following questions briefly : **5**

(1) Write a detail note on glycogenesis.

(2) Describe HMP pathway in detail.

2 (a) Answer the following questions in one or two lines : **4**

(1) Under which conditions mitochondrial ATP synthase would start working as ATP hydrolase or ATPase ?

(2) Name the soluble carrier that carries both electrons and protons from Complex I as well as Complex II to Complex III of mitochondrial ETC.

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

(4) Why physiological ATP yield of oxidation of NADH and FADH2 is lower than theoretical ATP yield ?

(b) Answer any one of the following questions briefly : **2**

(1) Define uncouplers and write their mechanism of action using suitable example.

(2) Write mode of action of rotenone.

(c) Answer any one of the following questions in detail : **3**

(1) Describe the process of oxidation and reduction during mitochondrial electron transport giving suitable examples.

(2) Write a brief note on inhibitors of mitochondrial ETC.

(d) Write a detailed note on any one of the following questions briefly : **5**

(1) Write a short note on different components mitochondrial ETC and their arrangement using a suitable diagram.

(2) Discuss glycerol phosphate shuttle for transport of cytosolic NADH to mitochondria.

3 (a) Answer the following questions in one or two lines : **4**

(1) Describe the important role of pyridoxal phosphate in amino group transfer reactions by transaminases.

(2) Write two examples of amino acids that are purely ketogenic.

(3) Describe biochemical basis of the disease albinism and list its important symptoms.

(4) What is glutathione ? Write its functions in the cell.

(b) Answer any one of the following questions briefly : **2**

(1) Explain and write examples for ammonotelic, uricotelic and ureotelic organisms.

(2) Write the clinical significance of measuring the activity of SGOT or ALT in serum.

(c) Answer any one of the following questions in detail : **3**

(1) Write the reactions involved in synthesis of the following non essential amino acids: Alanine, aspartic acid, glutamic acid and tyrosine.

(2) List important functions of proteins in human beings.

(d) Write a detailed note on any one of the following questions briefly : **5**

(1) Describe the reaction catalyzed by glutamate dehydrogenase. Explain the importance of glutamate dehydrogenase reaction in amino acid metabolism.

(2) Write a Short note on reactions of urea cycle (Structures of intermediates are not required)

4 (a) Answer the following questions in one or two lines : **4**

(1) List the functions of TAG in humans.

(2) Write differences between fats and oils

(3) Explain role of lung surfactant and write the example of molecule that act as a lung surfactant.

(4) Draw a structure of the 18 carbon fatty acid that contain one double bond at carbon number 9.

(b) Answer any one of the following questions briefly : **2**

(1) Write a brief note on mechanism of degradation of triglycerides

(2) Why fat and not glycogen is the major energy storage form in the human body ?

(c) Answer any one of the following questions in detail : **3**

(1) Give a comparative account of the processes of fatty acid oxidation and fatty acid synthesis

(2) Why the ATP yield of complete oxidation of fatty acids is higher in comparison to the complete oxidation of glucose inside the human body ?

(d) Write a detailed note on any one of the following questions briefly : **5**

(1) Write a short note on enzymatic activation of fatty acids and transport of fatty acids from cytoplasm to mitochondria by carnitine and carnitine acyl transferase.

(2) Discuss different reactions of beta oxidation of fatty acids.

5 (a) Answer the following questions in one or two lines : **4**

(1) Write the importance of CPS-II.

(2) _____ is the end product of pyrimidine catabolism.

(3) Draw the structure of adenine.

(4) Write the name of Antimetabolites of pyrimidine nucleotides.

(b) Answer any one of the following questions briefly : **2**

(1) Write all Element sources of pyrimidine base with ring structure.

(2) How UTP is converted to CTP explain ?

(c) Answer any one of the following questions in detail : **3**

(1) Discuss regulation of purime biosynthesis.

(2) Explain conversion ribose sugar to deoxyribose sugar.

(d) Write a detailed note on any one of the following questions briefly : **5**

(1) Write a detail note on pyrimidine biosynthesis.

(2) Explain synthesis of AMP & GMP from IMP.
