JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION- 2024
B.Tech-III[rd] Semester (BT)

COURSE CODE (CREDITS):18B11BT312 MAX. MARKS: 25

COURSE NAME: Biochemistry

COURSE INSTRUCTOR: Dr. Jitendraa Vashistt MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory. (b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

Q. No.	Question	CO	Marks
Q1	a) Which sugar is considered as preferential sugar of brain? b) Write the general formulae of carbohydrates. c) Define essential and non-essential amino acids with example.	I	3.0
Q2	Define the role of glucose concentration in blood with respect to hypoglycemic and hyperglycemic conditions in humans.	II	3.0
Q3.	During glycolysis, pyruvate gets synthesized in cell cytoplasm. However, there are different biochemicals generated due to different environments in different organisms. Describe the different biochemical's produced in anaerobic conditions on pyruvate in yeast and in humans.	III	3.0
Q4.	In general, cholesterol is considered as bad molecule for human health. However, in general, we also know the term 'good cholesterol' also? Differentiate the good cholesterol and bad cholesterol on the basis of their molecular architecture. Also explain the inference of this architecture on plaques of atherosclerosis.	V	3.0
Q5.	Suppose you have two samples a) 1 gm of carbohydrate and sample b) 1 gm of Palmitic acid (C16). Calculate the amount of ATP generated after complete oxidation of sample 'a' and 'b'. Which molecule will give more energy 'a' or 'b'? Justify your answer with calculations. (Hint: 1 NADH= 2.5 ATP and 1 FADH2= 1.5 ATP).	III	4.0
Q6.	Is it possible that glucose can be generated by a human origin cell? If yes then which biochemical process may be required for obtaining glucose? Explain the biochemical pathway and its associated enzymes.	III	4.0
Q7.	NADH generated in the glycolysis can't travel into mitochondrial matrix and therefore it requires a specialized mechanism. a) Define the method of translocation of above mentioned molecule into the mitochondria with respect to Liver and Cardiac cells. b) Calculate the ATP generated during the process.	IV	5.0