Enrollment No._____

NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program: MSc-LS
Year: 2nd **Semester:** 3rd
Examination: End Semester Examination
Examination year: December - 2021

Course Code: LS226 **Course Name:** Metabolism, Regulation and Integration
Date: 01/12/2021 **Total Marks:** 40
Time: 08:30 am to 10:30 am **Total Pages:** 02

Instructions:

- *Write each answer on a new page.*
- *Use of a calculator is ~~permitted~~/not permitted.*
- *Draw labelled-figures wherever it is necessary.*
- ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
Q.1	**Objective-based questions. (All mandatory; 1M x 16Q = 16M)** 1) Define: Payoff phase of glycolysis. 2) Define: Oxidation and reduction in terms of electron. 3) Differentiate between the role of uncouplers and inhibitors of ETC. Examples not required. 4) Differentiate between cofactor and coenzyme with examples. 5) Explain the role of Q cycle in ETC. 6) Monosaccharides other than glucose funnel in glycolysis through _____ pathway. 7) _____ and _____ are products of pentose phosphate pathway. 8) Explain the unit of enzyme activity. 9) What is initial velocity of enzymes? 10) Write the role of urea cycle. 11) Explain the role of lipase with example. 12) Differentiate between the role of NADH and NADPH in metabolism. 13) _____ sugar primarily present in human blood glucose. 14) Explain the role of beta oxidation in fatty acid metabolism. 15) How desaturase and elongase are different from each other in fatty acid metabolism? 16) Explain the significance of isoenzymes in organism with examples.	16	CO1, CO2, CO3, CO4, CO5, CO6	BT1, BT2, BT4, BT5

Q.2	**Short answers. (Any Six; 2M x 6Q = 12M)** 1) Explain: ATP synthetase complex. 2) Explain: ROS generation and neutralization process. 3) Describe: Glycogen storage disease. 4) Differentiate between the two phases of pentose phosphate pathway. 5) How enzyme lowers the activation energy to enhance rate of reaction? 6) Explain different types of lipoproteins. 7) Describe the functioning of acetyl-CoA carboxylase enzyme.	**12**	CO1, CO2, CO3, CO4, CO5, CO6	BT1, BT3, BT4
Q.3	**Long answers. (Any Three; 4M x 3Q = 12M)** 1) Explain in detail: Complex I to IV of Mitochondrial Respiratory Chain. 2) Explain with proper rationale: Regulation of glycogen metabolism. 3) Explain with proper rationale: How glycolysis & gluconeogenesis are reciprocally regulated? 4) Explain in detail: The full metabolism of vigorously active muscle.	**12**	CO1, CO2, CO3, CO4, CO5, CO6	BT2, BT3, BT4, BT5

**********End of Question Paper**********