

**PARUL UNIVERSITY**  
**PARUL INSTITUTE OF APPLIED SCIENCES**  
**MID SEMESTER INTERNAL EXAMINATION, MARCH 2020**  
**M. Sc. Microbiology Semester II**

**Paper Name: Biochemical Pathways and metabolism**

**Date: 05/03/2020**

**Paper Code: 11203153**

**Time: 1hr 30min**

**Max. Marks: 40**

**Instructions:**

1. All questions are compulsory and options are given in first and second question only.
2. Numbers to the right of question indicate the marks of respective question.

**Q. 1** Attempt any one question of the following. **(08)**

- (i) Explain the HMP Shunt Pathway.
- (ii) Explain the Galactose metabolism in humans.

**Q. 2** Attempt any three questions of the following. **(12)**

- (i) Write a short note on regulation of glycolysis.
- (ii) Describe the process of formation of glycogen (Glycogenesis)
- (iii) What do you mean by protein turn over? Write the role of ubiquitin in degradation of protein.
- (iv) Explain the process of formation of glucose (gluconeogenesis)
- (v) Write the function of glycoproteins.

**Q. 3** Do as directed. Attempt all five questions. **(05)**

- (i) Which hormone can accept glucose from UDPG during glycogenesis?
- (ii) What is the name of enzyme which causes the disease Essential fructosuria?
- (iii) Write any one importance of uronic acid pathway.
- (iv) Where does glyoxylate cycle takes place?
- (v) Give an example of essential amino acid.

**Q. 4** Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

MCQ 1	The chemical inhibitor of TCA cycle is:			
	(A)	PFK	(B)	Flurocitrate
	(C)	Citrate	(D)	AcetylCoA
MCQ 2	In glycolysis, dihydroxyacetone phosphate is rapidly and reversibly converted to			
	(A)	Glyceraldehyde 3-phosphate	(B)	1, 3-bis-phosphoglycerate
	(C)	Fructose 1, 6-bisphosphate	(D)	Fructose 6-phosphate
MCQ 3	In what form does the product of glycolysis enter the TCA cycle?			
	(A)	AcetylCoA	(B)	Pyruvate
	(C)	NADH	(D)	Glucose
MCQ 4	What is galactosemia?			
	(A)	Decreased galactose level in blood	(B)	Decreased galactose level in Urine
	(C)	Increased galactose level in blood	(D)	Increased galactose level in Urine

MCQ 5	ER glycosylation occurs on the side chain N of asparagine and is called?			
	(A)	N-glycosylation	(B)	O-glycosylation
	(C)	Viral neuraminidase	(D)	None of the above
MCQ 6	Which of the following is a lipid carrier?			
	(A)	Dolichol phosphate	(B)	Glycoproteins
	(C)	Endotoxin	(D)	All of the above
MCQ 7	Which enzyme can catalyse the synthesis of a linear unbranched molecule with 1,4 – glycosidic linkages.			
	(A)	Glucosyl a- 4 -6 transferase.	(B)	Glycogen synthase
	(C)	Glucosyl 4 – 6 transferase	(D)	None of them
MCQ 8	Which enzyme hydrolyses lactose to galactose and glucose of intestinal mucosal cells:			
	(A)	Lactase	(B)	Galactase
	(C)	Pyruvate kinase	(D)	All of them
MCQ 9	Which of the hormones promotes the gluconeogenesis?			
	(A)	Epinephrin	(B)	Glucagon
	(C)	Insulin	(D)	All of them
MCQ 10	Hereditary fructose intolerance occurs dueto the deficiency of enzyme:			
	(A)	Glycogen phosphorylase	(B)	Sorbitol dehydrogenase
	(C)	Aldolase B	(D)	None of them
MCQ 11	Conversion of pyruvate to oxaloacetate occurs by enzyme:			
	(A)	Phosphoenolpyruvate carboxykinase	(B)	glycerokinase
	(C)	succinyl CoA	(D)	Pyruvate carboxylase
MCQ 12	UDP-glucose is synthesized by the enzyme:			
	(A)	UDP-glucose pyrophosphorylase	(B)	UDP glucose dehydrogenase
	(C)	Phospho-glucomutase	(D)	glucuronidase
MCQ 13	ATP is from which general category of molecules?			
	(A)	Polysaccharides	(B)	Proteins
	(C)	Nucleotides	(D)	Amino acids
MCQ 14	Which of the following regulates glycolysis steps?			
	(A)	Phosphofructokinase	(B)	Hexose kinase
	(C)	Pyruvate kinase	(D)	All of these
MCQ 15	Nonenzymic attachment of sugars to proteins can also occur, and is referred to as			
	(A)	Glycosylation	(B)	Glycoproteination
	(C)	Glycation	(D)	None of these

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