

**PARUL UNIVERSITY**  
**PARUL INSTITUTE OF APPLIED SCIENCES**  
**MID SEMESTER INTERNAL EXAMINATION, April 2018**  
**M.Sc. Semester II**

**Subject: Microbiology**

**Paper Code: 11203153**

**Title of the paper: Biochemical pathways & metabolism**

**Date: 29/03/2018**

**Time: 10:00-11:30AM**

**Maximum 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.**

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- Q. 1 Attempt any one question of the following. (08)  
(i) Describe Glycogenesis and its regulation with the help of diagram.  
(ii) Discuss the Urea Cycle with its regulation.
- Q. 2 Attempt any three questions of the following. (12)  
(i) Differentiate between ketogenic and glyco-genic amino acids.  
(ii) Write short note on any one inborn error of amino acid metabolism.  
(iii) Describe the regulation of Glycolysis.  
(iv) Draw a well labeled diagram of TCA or Krebs cycle.  
(v) Write a short note on "Glyoxylate Cycle".
- Q. 3 Do as directed. Attempt all five questions. (05)  
(i) Write the name of coenzyme which participates in transamination reactions.  
(ii) Write the name of one ketogenic branched chain amino acid.  
(iii) How many ATPs are generated from one molecule of Glucose under aerobic and anaerobic conditions respectively?  
(iv) Write the name of disease caused by increased galactose levels in blood.  
(vi) Describe briefly the significance of HMP shunt.
- Q. 4 Write correct option in your answer sheet for following 15 multiple choice questions. (15)
- MCQ 1 Debranching enzyme is absent in  
(A) Cori's disease (B) Andersen's disease  
(C) Her's disease (D) Von Gierke's disease
- MCQ 2 Cori's cycle transfers  
(A) Lactate from muscles to liver (B) locus  
(C) Glucose from muscles to liver (D) Pyruvate from liver to muscles
- MCQ 3 Glycogenin is  
(A) Polymer of glycogen molecules (B) Uncoupler of oxidative phosphorylation  
(C) Protein primer for glycogen synthesis (D) Intermediate in glycogen breakdown

- MCQ 4 DOPA is an intermediate in the synthesis of  
 (A) Thyroid hormones (B) Catecholamines  
 (C) Melanin (D) Catecholamines and melanin
- MCQ 5 The 2 nitrogen atoms in urea are contributed by  
 (A) Ammonia and glutamate. (B) Glutamine and glutamate  
 (C) Ammonia and aspartate (D) Ammonia and alanine
- MCQ 6 The enzymes of urea synthesis are found in  
 (A) Both mitochondria and cytosol (B) Cytosol only  
 (C) Mitochondria only (D) Nucleus
- MCQ 7 Before pyruvic acid enters the TCA cycle it must be converted to  
 (A) Acetyl CoA (B) Lactate  
 (C)  $\alpha$ -ketoglutarate (D) Citrate
- MCQ 8 Our body can get pentoses from  
 (A) Glycolytic pathway (B) Uronic acid pathway  
 (C) TCA cycle (D) HMP shunt
- MCQ 9 The heptose ketose sugar formed as a result of chemical reaction in HMP shunt:  
 (A) Sedoheptulose (B) Galactoheptose  
 (C) Glucoheptose (D) Mannoheptose
- MCQ 10 The amino acid which detoxicated benzoic acid to form hippuric acid is  
 (A) Glycine (B) Alanine  
 (C) Serine (D) Glutamic acid
- MCQ 11 An organ which is extremely sensitive to ammonia toxicity is  
 (A) Liver (B) Kidney  
 (C) Brain (D) Heart
- MCQ 12 Glycogen is converted to glucose-1-phosphate by  
 (A) UDPG transferase (B) Branching enzyme  
 (C) Phosphorylase (D) Phosphatase
- MCQ 13 Which one of these is non-essential amino acids  
 (A) Valine (B) Cysteine  
 (C) Homocysteine (D) Alanine
- MCQ 14 Which of the following statements about the regulation of a metabolic pathway is correct?  
 (A) Most metabolic pathways are not regulated. (B) Regulation of metabolic pathways always involves changing the amount of enzymes.  
 (C) Metabolic regulation always depends on control by hormones. (D) Most metabolic pathways are regulated.
- MCQ 15 Pyruvate dehydrogenase complex consists of:  
 (A) TFK, lipoic acid, Acetyl CoA, FAD+, NAD+ (B) TPP, citric acid, CoA, FAD+, NAD+  
 (C) TPP, lipoic acid, CoA, FAD+, ATP, TPP, (D) TPP, lipoic acid, CoA, FAD+, NAD+