

Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)

Affiliated to Saurashtra University, Rajkot

SEMESTER END EXAMINATION APRIL – 2017

M. Sc. Microbiology

16PMBCC06 – MICROBIAL PHYSIOLOGY AND ENERGETICS

Duration of Exam – 3 hrs

Semester – II

Max. Marks – 70

Part A (5x2= 10 marks)

Answer **ALL** questions

1. Mention the location and name of heat resistant chemical in a bacterial endospore.
2. What is the significance of HMP shunt?
3. Calculate ATP produced during beta oxidation of a palmitate molecule.
4. What is alkaptonuria?
5. What is Z scheme?

Part B (5X5 = 25 marks)

Answer **ALL** questions

6a. Explain physiology of microbial stress response.

OR

6b. Describe bacterial chemotaxis in detail.

7a. Explain Gluconeogenesis pathway along with its regulation.

OR

7b. Describe the significance of Glyoxylate cycle.

8a. Write pathway of cholesterol biosynthesis.

OR

8b. Write a review of types of lipids.

9a. Explain Urea cycle in detail.

OR

9b. Describe : Inborn errors of metabolism.

10a. What is bioenergetics? Explain the concept of Free Energy.

OR

10b. What is Crabtree effect? Explain fermentation in *S.cerevisiae* and calculate ATP.

Part C (5X7 = 35 marks)

Answer **ALL** questions

11a. Give an account of Microbial Fuel Cell and mention its application.

OR

11b. Explain microbial biofilm formation in detail.

12a . Explain TCA cycle in detail.

OR

12b. Discuss classification and importance of carbohydrates.

13a. Explain the regulation of fatty acid biosynthesis.

OR

13b. Describe breakdown of Fatty acyl co A by suitable pathway.

14a. What is transamination? Explain amino acid catabolism in brief.

OR

14b. Write a note on classification and structural levels of proteins.

15a. Calculate bioenergetics of Glucose catabolism in aerobic bacterial cell.

OR

15b. What are exothermic and endothermic reactions? How they are different from Exergonic reactions ?
