

**MASTER OF SCIENCE (MICROBIOLOGY) (CBCS - 2018 COURSE)**  
**M.Sc. (Microbiology) Sem-II :SUMMER- 2022**  
**SUBJECT : MICROBIAL METABOLISM**

Day : Saturday  
Date : 23-07-2022

**S-18593-2022**

Time : 03:00 PM-06:00 PM  
Max. Marks : 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

**Q.1** Describe working & regulation of glycolytic pathway. **(15)**

**OR**

Write the enzymatic reaction with reactants, products formed, cofactors and metal ion requirements (if any) for following enzymes (any five )

- |                       |                                    |
|-----------------------|------------------------------------|
| i) Pyruvate kinase    | ii) Succinate dehydrogenase        |
| iii) Isocitrate lyase | iv) Phosphogluconate dehydrogenase |
| v) Citrate synthase   | vi) Glycogen phosphorylase         |

**Q.2 a)** Describe in brief biosynthesis of phospholipids. **(8)**

**b)** Explain with the help of diagram the shuttle systems across mitochondrial membrane involved in aerobic respiration. **(7)**

**Q.3** Attempt **ANY THREE** of the following: **(15)**

- a) Describe pathway for starch synthesis.
- b) Write note on pathway for  $\beta$ -oxidation of fatty acids.
- c) Describe the ETC of nitrate reducers
- d) State Nernst equation and give its significance
- e) Write a note on degradation of purine nucleotides.

**Q.4** Attempt **ANY THREE** of the following: **(15)**

- a) Draw pyrimidine nucleus and schematically explain the pathway leading to its synthesis.
- b) Write a note on heterolactic fermentation.
- c) Explain compartmentation as metabolic control mechanism.
- d) Write a note on gluconeogenesis.
- e) Describe the mechanism for generation of proton motive force.

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