

B.Sc. Semester - 5 (Remedial) (CBCS) Examination
Feb/Mar. -2021 (OLD COURSE)
PROCARYOTIC METABOLISM(CORE)

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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Q. 1 a. Answer the following: (Any one out of Two) (07 marks)

- 1) Derive Michaelis-Menten equation for enzymatic reaction
- 2) What are non-regulatory and regulatory enzymes? Explain importance of regulatory enzymes.

Q.1 b. Attempt any one. (Out of Two) (04 marks)

- 1) What are energy rich compounds? Explain any two in brief.
- 2) Explain role of reducing power in metabolism.

Q.1 c. Attempt any three. (Out of Five) (03 marks)

- 1) What is ΔG ?
- 2) What is K_m and V_{max} ?
- 3) Define: Bioenergetics.
- 4) How much free energy get released when ADP get converted to AMP?
- 5) What are precursor metabolites?

Q. 2 a. Answer the following: (Any one out of Two) (07 marks)

- 1) Discuss in detail: Citric acid cycle
- 2) Discuss the biochemical reactions of Pentose phosphate pathway.

Q.2 b. Attempt any one. (Out of Two) (04 marks)

- 1) Explain: β - oxidation of fatty acids.
- 2) How glyoxylate pathway bypass the citric acid cycle?

Q.2 c. Attempt any three. (Out of Five) (03 marks)

- 1) Enlist two enzymes of ED pathway.
- 2) What is Stickland reaction?
- 3) Which reactions of glycolysis are irreversible?
- 4) What is transamination?
- 5) Write any one substrate level phosphorylation reaction that occurs during glycolysis.

Q. 3 a. Answer the following: (Any one out of Two) (07 marks)

- 1) Discuss the components of ETC
- 2) Explain the Light reaction of bacterial photosynthesis.

Q. 3 b. Attempt any one. (Out of Two) (04 marks)

- 1) Use of Biochemical Mutants Write a note on anaerobic respiration.
- 2) Discuss the modes of ATP generation.

Q. 3 c. Attempt any three. (Out of Five) (03 marks)

- 1) What are quinones?
- 2) What is substrate level phosphorylation?
- 3) Name the terminal electron acceptor for aerobic and anaerobic respiration.
- 4) Name the isotopes used in isotopic labelling
- 5) What is PMF?

Q. 4 a. Answer the following: (Any one out of Two) (07 marks)

- 1) Discuss the fermentative patterns of lactic acid bacteria.
- 2) Discuss in detail: Photophosphorylation in *Halobacterium*.

Q. 4 b. Attempt any one. (Out of Two) **(04 marks)**

- 1) Discuss Common properties of the enteric group of bacteria.
- 2) Discuss the energy metabolism and carbon-assimilation in Methanogens

Q. 4 c. Attempt any three. (Out of Five) **(03 marks)**

- 1) Give examples of ensheathed iron bacteria.
- 2) How does *Nitrosomonas* differ from *Nitrobacter* in terms of nitrogen metabolism?
- 3) What is purple membrane?
- 4) How homofermentative lactic acid bacteria differ from heterofermenter ?
- 5) What are Methylophils?

Q. 5 a. Answer the following: (Any one out of Two) **(07 marks)**

- 1) Explain primary and secondary messengers of signal transduction.
- 2) Draw and discuss the types of cell signalling.

Q. 5 b. Attempt any one. (Out of Two) **(04 marks)**

- 1) Briefly explain: membrane transport of small molecules.
- 2) Discuss the phosphotransferase system

Q. 5 c. Attempt any three. (Out of Five) **(03 marks)**

- 1) What are antiport?
- 2) Cell membrane is permeable to which molecules?
- 3) Define: Phagocytosis.
- 4) What is pinocytosis?
- 5) What are symport?
