

Exam.Code:1032 ✓

Sub. Code: 7561 ✓

2023

M. E. (Bio-Technology)

First Semester

ME-BIO-101: Advances in Bio-Chemistry

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Write briefly:-

- a) Why does CO₂ fixation reaction is known as dark reaction?
- b) How ammonia oxidizers get the electron for ammonia monooxygenase reaction?
- c) Why TCA cycle is also known as Krebs cycle?
- d) What are the major types of receptors available on cell surface?
- e) Give example of COX-2 inhibitors.
- f) What are ribozymes?
- g) What are the second messengers available in the body?
- h) How bacteriochlorophyll is different from plant chlorophyll?
- i) What is the importance of Q-cycle in electron transport chain?
- j) What is the importance of GLUT4 receptor? (10x1)

UNIT - I

- II. a) How many ATP is generated during TCA cycle? Clarify with proper structural diagram.
- b) Write short notes on:-
 - i) Methanotroph and methylotroph
 - ii) Acetic acid bacteria. (5,5)
- III. a) What are detail biochemical reactions that actually fixes CO₂ into carbohydrates? Explain with proper diagram.
- b) Aerobic respiration is the dominant process, justify the statement with respect to redox tower. (5,5)

(2)

- IV. a) How CO₂ fixation reaction is different from photorespiration?
b) What are the commonalities of photosynthesis and aerobic oxidation pathway?
Linear electron flow in plants requires two photosystems simultaneously. Justify the statement. (4,6)

UNIT - II

- V. a) How does cyclic AMP play an important role as second messenger in glucose metabolic pathway?
b) Glucagon and insulin are always at odd fighting to keep blood sugar levels well controlled. Justify with proper explanation with diagram. (5,5)
- VI. a) What are the stages of metastasis? What are key molecules involved in angiogenesis?
b) Ras-Raf-Mek-Erk, how these proteins are very important in the context of signal transduction? (5,5)
- VII. a) Prostaglandin, thromboxane and leukotrienes are important targets of clinical medicine. Justify the statement. (5)
b) Write short notes on:-
i) RNAi technology
ii) NSAIDs. (2x2½)