

Question Paper

Exam Date & Time: 28-Dec-2023 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MSc. (GENOME ENGINEERING) DEGREE EXAMINATION - DECEMBER 2023
SUBJECT: MGE 503 - BIOMOLECULES
(OBE-2021 REGULATION - REPEATERS)

Marks: 70

Duration: 180 mins.

Answer all the questions.

Essays:

- 1) Describe beta-oxidation of fatty acids in detail. Add a note on its energetics. (14)
- 2) Explain HMP shunt pathway. Write its significance and add a note on G6PD deficiency. (14)

Short Essays:

- 3A) Explain methionine metabolism. Add a note on phenylketonuria. (7)
- 3B) Describe protein energy malnutrition (PEM). Give the characteristic features of 2 important forms of PEM. (7)
- 4A) Explain the structure of ATP synthase, with neat labelled diagram. (7)
- 4B) Synthesis, activation and function of Vitamin D. (7)

5. Write short notes on the following:

- 5A) Structure of heme. (3.5)
- 5B) Wilson's disease. (3.5)
- 5C) Von Gierke disease. (3.5)
- 5D) Respiratory mechanism of pH regulation. (3.5)

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MANIPAL ACADEMY OF HIGHER EDUCATION

FIRST SEMESTER MSc. (MEDICAL BIOTECHNOLOGY / MOLECULAR BIOLOGY AND HUMAN GENETICS / GENOME ENGINEERING / TISSUE ENGINEERING) DEGREE EXAMINATION - DEC 2023 / JAN 2024
SUBJECT: MBT-503 / MBH 503 / MGE-503 / MTE-503 BIOMOLECULES
(OBE-2023 REGULATION - REGULARS)

Marks: 60

Duration: 180 mins.

Answer all the questions.

Explain in Detail:

- 1) Describe beta-oxidation process of fatty acids. Add a note on fatty acid synthase complex. (12)
- 2) Explain glycolysis and its energetics. Write the key reactions of gluconeogenesis. (12)

Explain the following briefly:

- 3A) Describe respiratory regulation of acid-base balance. Explain the anion gap. (6)
- 3B) Explain the metabolism of Glycine. What are the specialized products formed from it? (6)
- 4A) Explain the synthesis and activation of vitamin D. (6)
- 4B) What are the functions of copper? Describe the disorders associated with it. (6)

5. Write short notes:

- 5A) Bence-Jones protein. (3)
- 5B) Bilirubin conjugation. (3)
- 5C) Dietary fibers. (3)
- 5D) Ionophores. (3)

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