

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**MSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)**

Branch – **BIOTECHNOLOGY**

METABOLIC REGULATION

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (5 x 1 = 5)

- 1 Which of these is mandatory for all metabolic reactions?
(i) Breakdown of biomolecules (ii) Synthesis of biomolecules
(iii) Presence of inhibitor (iv) Presence of catalyst
- 2 Which of the following enzymes leads to a glycogen storage disease known as Tarui's disease?
(i) Glucokinase (ii) Pyruvate Kinase
(iii) Phosphofructokinase (iv) Phosphoglucomutase
- 3 Transaminase enzymes are present in
(i) Pancreas (ii) Kidney
(iii) Liver (iv) Intestine
- 4 Find out the essential fatty acid from the following option.
(i) Linolenic acid (ii) Palmitic acid
(iii) Linoleic acid (iv) both (i) and (iii)
- 5 The body's central metabolic clearing house, known as
(i) brain (ii) Liver
(iii) Skeletal muscles (iv) Adipose tissue

SECTION - B (15 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

- 6 a Compare and contrast enthalpy and entropy.
OR
b Is epinephrine a hormone or regulator? How does epinephrine work in the body?
- 7 a How is Glycolysis regulated by phosphofructokinase?
OR
b Discuss briefly about the glycogen storage disease.
- 8 a Comment on Proteolysis.
OR
b With a neat sketch explain the salvage pathway of purines.
- 9 a Illustrate the lipogenesis of palmitic acid.
OR
b Outline the role of carboxylase in fatty acid synthesis.
- 10 a Why are kidneys important for metabolism?
OR
b Analyse the physiological adaptation to prolonged starvation.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

- 11 a Explain briefly the hormonal regulation of glucose metabolism by insulin.
OR
b Give an account on overview of ATP hydrolysis.
- 12 a Outline the steps involved in TCA Cycle.
OR
b Analyze the purpose of the hexose monophosphate shunt? Add on note on its oxidative phase.
- 13 a Give a detailed account on Urea cycle.
OR
b Describe the metabolic role of selenocysteine.
- 14 a Elaborate the stages of fatty acid oxidation.
OR
b Elucidate the concept of ketogenesis and its control.
- 15 a Assess how alcohol is metabolized by the body.
OR
b Glucose-6 Phosphate, a Central hub for liver carbohydrate – justify.

Z-Z-Z

END