

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023  
(Third Semester)

Branch - BIOTECHNOLOGY

METABOLISM

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 the following statement is true regarding glycolysis pathway?
  - a) Glycolysis occurs only in mammalian cells
  - b) Glycolysis occurs in mitochondria
  - c) Glycolysis occurs in the presence and absence of oxygen
  - d) Glycolysis occurs when ATP concentration is high.
2. Which of the following enzyme is responsible for the conversion of cholesterol to cholesterol ester inside the cells?
  - a) Lecithin Cholesterol Acyl Transferase
  - b) Acyl CoA Cholesterol Acyl Transferase
  - c) Cholesterol Esterase
  - d) None of the Above
3. Purine nucleotide biosynthesis can be inhibited by which of the following Molecules?
  - a) Guanosine triphosphate
  - b) Uridine mono phosphate
  - c) Adenosine mono phosphate
  - d) Adenosine tri phosphate
4. An important reaction for the synthesis of amino acid from carbohydrate intermediates is transamination which requires the cofactor? \_\_\_\_\_.
  - a) Thiamine
  - b) Riboflavin
  - c) Niacin
  - d) Pyridoxal phosphate
5. B.M.R. is raised in
  - a) Polycythemia
  - b) Starvation
  - c) Lipid nephrosis
  - d) Hypothyroidism

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

6. a) Discuss about glycolytic reactions where ATP is produced.  
(OR)  
b) Explain autoregulation of blood sugar level in brief

Cont...

7. a) Outline the structure of cholesterol and add a note on its importance.

(OR)

b) Discuss about alpha oxidations.

8. a) Write a note on inhibitors of purine and pyrimidine biosynthesis.

(OR)

b) State the difference between bases, nucleosides and nucleotides.

9. a) Enumerate the list of metabolic changes takes place during starvation.

(OR)

b) Compare transamination and deamination process.

10. a) Discuss the metabolism of copper in brief.

(OR)

b) Define BMR. Describe the factors affecting BMR.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a) Describe the steps involved in TCA cycle in detail

(OR)

b) Elucidate the steps involved in glycogenolysis and add a note on its regulation

12. a) Write a detailed note on  $\beta$  – oxidation of saturated even carbon fatty acid.

(OR)

b) Enumerate the biosynthesis of Phosphatidylcholine in detail

13. a) Outline major steps in the pyrimidine synthesis.

(OR)

b) Sketch the purine salvage pathway and state its connection between HGPRT and Lesch Nyhan syndrome.

14. a) Describe the biosynthesis of tryptophan in detail.

(OR)

b) Illustrate the steps involved in urea cycle.

15. a) Describe the dietary sources, RDA factors affecting absorption, function and deficiency manifestations of Iron. Add a note on its regulation.

(OR)

b) Describe in detail about the diseases occurring due to metabolic errors.

Z-Z-Z

END