

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2023  
(Fifth Semester)

Branch – BIOCHEMISTRY

INTERMEDIARY METABOLISM

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- Electron transport system (ETS) is present in which of the following parts of mitochondria?  
(i) Inner membrane (ii) Outer membrane  
(iii) Matrix (iv) Stroma
- Which of the following is the Complex III of ETS?  
(i) NADH dehydrogenase (ii) Cytochrome aa<sub>3</sub>  
(iii) Cytochrome bc<sub>1</sub> (iv) ATP synthase
- The EMP pathway in eukaryotes usually takes place in  
(i) nucleus (ii) lysosome (iii) Golgi apparatus (iv) cytosol
- In EMP pathway, the process by which ATP is formed from ADP is  
(i) reduction (ii) oxidative phosphorylation  
(iii) substrate-level phosphorylation (iv) photo phosphorylation
- Rancidity of lipids of lipid-rich foodstuff is because of  
(i) Reduction of fatty acids  
(ii) Hydrogenation of unsaturated fatty acids  
(iii) Dehydrogenation of saturated fatty acids  
(iv) Oxidation of fatty acids
- The degree of unsaturation of lipids can be measured as  
(i) Iodine number (ii) Saponification number  
(iii) Reichert Meissel number (iv) Polenske number
- Transamination reaction in amino acid synthesis is catalyzed by enzyme \_\_\_\_\_.  
(i) Nitric oxide synthase (ii) Decarboxylase  
(iii) Aminotransferase (iv) Glutamate decarboxylase
- Name the amino acid which does not take part in transamination during amino acid catabolism.  
(i) Proline (ii) Threonine (iii) Lysine (iv) Serine
- Find the correct statement about phosphodiester linkage between adjacent nucleotides in nucleic acids  
(i) 3'-phosphate of one nucleotide joins the 3'-hydroxyl of the next nucleotide  
(ii) 3'-phosphate of one nucleotide joins the 5'-hydroxyl of the next nucleotide  
(iii) 5'-phosphate of one nucleotide joins the 5'-hydroxyl of the next nucleotide  
(iv) 5'-phosphate of one nucleotide joins the 3'-hydroxyl of the next nucleotide
- Which of the following nucleotide contains only ribose sugar and not deoxyribose?  
(i) Thymine – pentose sugar-phosphate  
(ii) Uracil – pentose sugar-phosphate  
(iii) Thymine – pentose sugar-phosphate  
(iv) Cytosine – pentose sugar-phosphate

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**SECTION - B (35 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 7 = 35)

- 11 a. Compare and contrast between exergonic and endergonic reaction.  
OR  
b. Elucidate the concept of chemiosmotic hypothesis.
- 12 a. Describe the pathway of HMP shunt.  
OR  
b. Give a note on glycogen metabolism.
- 13 a. Describe the catabolism of sphingolipids.  
OR  
b. Explain the beta oxidation of fatty acids.
- 14 a. Discuss the biosynthesis of phenyl alanine.  
OR  
b. Elucidate the mechanism of urea cycle.
- 15 a. Write a note on biological methylation process.  
OR  
b. List out inhibitors of pyrimidine metabolism.

**SECTION - C (30 Marks)**

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

16. Discuss the mechanism of oxidative phosphorylation.
17. Explain the cyclic pathway of Kreb's cycle and its bio energetics.
18. Discuss the biosynthesis and degradation of phospholipids.
19. Outline of oxidative and non oxidative deamination process.
20. Enumerate the anabolism and catabolism of purine.

Z-Z-Z

END