

**Parvatibai Chowgule College of Arts and Science**  
**Autonomous**

B.Sc. Semester End Examination, January/February 2022

Semester: III

Subject: Biochemistry

Title: Metabolism of Biomolecules (Core)

Duration: 2 Hours

Max. Marks: 45

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**Instructions:** 1. All the questions are compulsory; an internal choice is available.  
2. Figures to the right indicate maximum marks to the question.  
3. Draw neatly labelled diagrams wherever necessary.

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**Q. 1. Answer ANY THREE of the following: (09)**

- a) Differentiate between catabolism and anabolism. (3 points)
- b) What are two phases of glycolysis? Why are they named so?
- c) State the significance of Pentose Phosphate Pathway.
- d) Is Citric Acid cycle an anabolic or a catabolic pathway? Give reasons.

**Q. 2. Answer ANY TWO of the following: (12)**

- a) Explain  $\beta$  oxidation of palmitoyl-CoA and give the net yield in terms of ATPs generated.
- b) Draw and describe the structure of ATP synthase. State the function of each sub-unit.
- c) Write a note on Ketone bodies.

**Q. 3. Answer ANY TWO of the following: (12)**

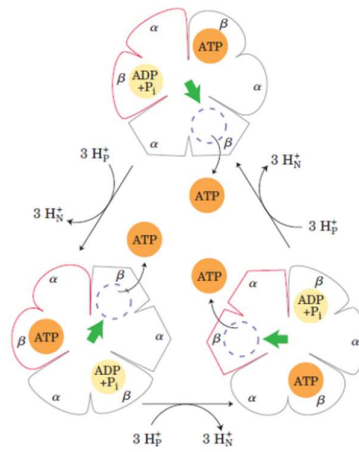
- d) Discuss any three disorders associated with nucleotide metabolism.
- e) Describe the process of enzymatic degradation of dietary proteins in humans.
- f) Explain the pathway with regard to the single excretory end product in ureotelic organisms.

**Q. 4. Answer ANY ONE of the following: (12)**

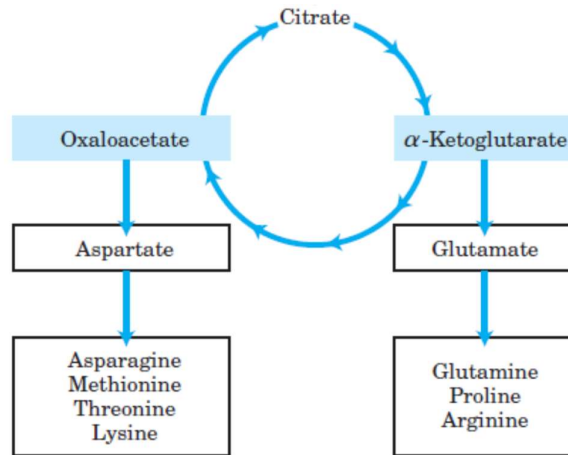
- A) Soy sauce is prepared by fermenting a salted mixture of soybeans and wheat with several microorganisms, including yeast, over a period of 8 to 12 months. The resulting sauce (after solids are removed) is rich in lactate and ethanol.
- i. How are these two compounds produced? Explain in detail with reactions. (10)
  - ii. To prevent the soy sauce from having a strong vinegar taste (vinegar is dilute acetic acid), oxygen must be kept out of the fermentation tank. Why? What is the other reason to keep oxygen away from the fermentation tank? (2)

**OR**

B) i. What does the figure given below signify? Write a brief note on the same.



ii. A cell has sufficient quantity of Glutamine but needs to produce more Arginine. Explain whether the cell will be able to produce Arginine or not, and why.



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