

**MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR**  
**SEMESTER END THEORY EXAMINATION, B.Tech. (D.T.)**

Semester	: I (V Dean)	Academic Year	: 2021-2022
Course No.	: DC-101	Course Title	: Biochemistry
Credits	: 1+1=2	Total Marks	: 50
Day & Date	: Friday, 13/05/2022	Time	: 2.30 hrs.

- Note :**
- 1) All questions from **Section 'A'** are compulsory.
  - 2) Solve **Any Three** questions from **Section 'B'**.
  - 3) Draw neat and well labelled diagram wherever necessary.

**SECTION - 'A'**

Q. 1 A) Choose the most appropriate answer from the options given below. (05)

- i) The molecule which acts directly on an enzyme to lower its catalytic rate is .....
  - a) Repressor
  - b) Inhibitor
  - c) Modulator
  - d) Regulator
- ii) ..... is a polysaccharide that contains only a single type of monosaccharide linked together.
  - a) Heteropolysaccharide
  - b) Homopolysaccharide
  - c) Oligosaccharide
  - d) None of these
- iii) Which among the following is not a component of RNA?
  - a) Thymine
  - b) Adenine
  - c) Guanine
  - d) Cytosine
- iv) The synthesis of glucose from non-carbohydrate sources is known as .....
  - a) Glycogenesis
  - b) Gluconeogenesis
  - c) Glycogenolysis
  - d) None of these
- v)  $\beta$ -pleated sheets are the examples of .....
  - a) Primary structure
  - b) Secondary structure
  - c) Tertiary structure
  - d) Quaternary structure

B) Do as directed. (05)

- i) Give two examples of essential fatty acids.
- ii) Give two examples of co-enzymes.
- iii) Name the organ in which urea is synthesized.
- iv) Enlist the characteristic components present in nucleotides.
- v) Give two examples of hydrolases.

Q. 2 A) Define the following terms: (05)

- i) Zwitter ions
- ii) Regulatory enzymes
- iii) Co-factors
- iv) Active site
- v) Activation energy

- B) State whether 'True' or 'False'. If false, rewrite the statement after making necessary corrections. (05)
- i) ATP is the link between anabolism and catabolism.
  - ii) Liver is the central metabolic organ.
  - iii) Even chain fatty acids upon  $\beta$ -oxidation gives propionyl CoA as final product.
  - iv) Histidine on decarboxylation gives histamine.
  - v) In EMP pathway, 2-phosphoglycerate is converted to acetic acid.

### SECTION - 'B'

- Q. 3 A) Discuss the double helical structure of DNA. (05)  
B) Describe various steps of glycolysis with neat diagram. (05)
- Q. 4 A) Discuss the lock and key model of enzyme action. (05)  
B) Explain in detail various factors affecting enzyme action. (05)
- Q. 5 A) Define the term enzyme immobilization. Discuss in brief the different methods used for enzyme immobilization. (03)  
B) State the biological importance of milk proteins. (03)  
C) Describe the  $\beta$ -oxidation of fatty acids. (04)
- Q. 6 A) Differentiate between m-RNA and t-RNA (03)  
B) Differentiate between competitive and non-competitive enzyme inhibition. (03)  
C) Write a note on Urea cycle. (04)
- Q. 7 State the major pathways of carbohydrate metabolism. How TCA cycle is important? (10)  
Discuss the steps involved in TCA cycle.

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