

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH(FT)(O)/SEM-3/FT-302/2012-13**

**2012**

**BIOCHEMISTRY & NUTRITION**

*Time Allotted : 3 Hours*

*Full Marks : 70*

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives from the following :

10 × 1 = 10

i) Which of the following is acidic amino acid ?

- |          |           |
|----------|-----------|
| a) Glu – | b) Gly –  |
| c) Ala – | d) Lys –. |

ii) Number of ATP molecule formed in metabolic breakdown of glucose molecule will be

- |       |        |
|-------|--------|
| a) 10 | b) 26  |
| c) 14 | d) 12. |

iii) Primary structure of protein gets denatured on heating.

- |        |        |
|--------|--------|
| a) Yes | b) No. |
|--------|--------|

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**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

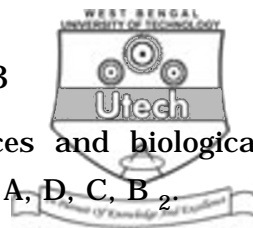
2. Explain why glycolysis can operate anaerobically although TCA cycle cannot. 5
3. What do you mean by BV and PER ? Animal proteins have high BV. Comment.  $2 + 2 + 1$
4. Is there any difference between nutrients and micronutrients ? What should be the diet pattern to meet the recommended dietary allowances ?  $2 + 3$
5. What is  $K_m$  of an enzyme ? Explain how pH and temperature affects the rate of enzymatic reaction.  $2 + 3$
6. How protein is different from amino acid ? What are essential amino acids ? Why are they called so ? Explain why protein has the minimum solubility at isoelectric pH.  $1 + 1 + 1 + 2$

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) What do you mean by oxidative decarboxylation ? Explain this showing Krebs Cycle. 5
- b) Krebs cycle is known as TCA cycle. Justify. 5
- c) Mention the oxidative and non-oxidative pathway of PPP. Sometimes PPP is named as PPP shunt. Explain why. 5



8. a) Mention the scientific names, sources and biological functions of the following vitamins — A, D, C, B<sub>2</sub>. 7
- b) Discuss the physiological roles of Fe, Co, Mg, Ca in human metabolism. Mention food sources for each. 8
9. Derive the Michaelis-Menten equation. Mention the assumptions made. What are the units of  $K_m$  and  $V_{max}$  ?  
What do you mean by cofactor, apoenzyme and holoenzyme ?  
5 + 5 + 2 + 3
10. a) Define saponification number and Iodine number. What do they signify ? 4
- b) Name two essential fatty acids. 2
- c) What are triglycerides ? Write down the general structure of triglyceride. 2
- d) Write down the importance of polyunsaturated fatty acids in human diet. 2
- e) Briefly describe how fatty acids are absorbed in jejunum. 5
11. a) Mention the steps involved in urea cycle showing the substrates and enzymes involved. Is it a N-catabolism process ? 5
- b) Give the difference between transamination and deamination processes. 5
- c) Discuss about the secondary structure of a protein molecule. 5

