



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Sc.(H)/BT/GEN/MICRO-BIO/MOL-BIO/SEM-2/OMB-201/2013**

**2013**

**ORGANIC MECHANISMS IN BIOLOGY**

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 for any *ten* of the following :

10 × 1 = 10

- i) An enzyme found in the liver but not in skeletal muscle is
- a) glycogen phosphorylase
  - b) lactate dehydrogenase
  - c) hexokinase
  - d) glucose-6-phosphate.
- ii) Conversion of 2-phosphoglycerate to phosphoenol pyruvate requires
- a) phosphoglycerate kinase
  - b) aldolase
  - c) pyruvate kinase
  - d) enolase.





- x) In mammals fatty acid biosynthesis takes place in
- a) peroxysome                      b) cytosol  
c) mitochondria                      d) SER.
- xi) Pentose phosphate pathway is of greater importance because it produces
- a) NADH                                  b) NADPH  
c) ATP                                      d) acetylc-CoA.
- xii) The monosaccharide most rapidly absorbed from the small intestine is
- a) glucose                                b) fructose  
c) mannose                                d) galactose.
- xiii) Glucose is the best substrate for Hexokinase because
- a)  $K_m$  is higher                      b)  $K_m$  is lower  
c)  $K_m$  is zero                              d) none of these.

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.                      3 × 5 = 15

2. Define porphyrias. Why is TCA cycle regarded as a cycle of amphibolic nature ?    2 + 3
3. What do you mean by non-standard amino acid ? Why does the concentration of ketone bodies in the blood increased during prolonged starvation ?    2 + 3
4. Differentiate between ammotelic, uricotelic and ureotelic creatures.
5. What is anomeric carbon ? Write a note on autorotation.    1 + 4
6. Write a note on 'oxidative deamination'.



**GROUP – C**

**( Long Answer Type Questions )**

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

7. Distinguish between nucleosides and nucleotides. How is purine synthesis regulated ? "Catabolism of Pyrimidine nucleotide produces alanine." Illustrate. How is uric acid produced from purine nucleotides ?  $2 + 3 + 5 + 5$
8. What is the difference between de novo and salvage pathway ? How is IMP produced from PRPP ? Mention clearly the name of different enzymes involved in the synthesis. How IMP gets converted to AMP and GMP ? What is the major site of purine synthesis ?  $2 + 8 + 4 + 1$
9. How is acetyl-CoA formed from pyruvate ? How is TCA cycle regulated ? What is the significance of TCA cycle ? Discuss glyoxylate cycle.  $3 + 5 + 3 + 4$
10. Describe in brief different steps in glycolysis mentioning the different enzymes involved. What are the different regulating steps in glycolysis ? How is lactic acid formed from pyruvate in the muscle ? What is anaerobic alcoholic fermentation ?  $6 + 4 + 2\frac{1}{2} + 2\frac{1}{2}$
11. What are essential and non-essential amino acids ? Give examples. Write a brief note on their synthesis. Discuss the synthesis of heme using glycine. Discuss urea cycle.  $3 + 5 + 3 + 4$
12. What are hormones ? Discuss their chemical nature. Write the structure of cyclic AMP. What is second messenger system ? Describe in brief the mechanism of hormone action on the membrane receptors and elaborate on the role of cyclic AMP.  $1 + 2 + 2 + 4 + 6$

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