

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III (Biotechnology) Examination December 2009

Subject code: 130403

Subject Name: Basic Biochemistry

Date: 23 /12 /2009

Time: 11.00 am – 1.30 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Draw the Pentose Phosphate Pathway with all necessary structures. 07
- (b) Explain the Glyoxylate Cycle. 05
- (c) Calculate the total ATP produced when 200 molecules of Fructose-6-Phosphate enters the Glycolysis till the end of TCA cycle. [1 NADH = 3 ATP, 1 FADH₂ = 2 ATP] 02
- Q.2** (a) Describe Urea Cycle with all necessary structures. 07
- (b) Explain metabolic breakdown of Linoleic acid. 07
- OR**
- (b) Explain the fatty acid activation and its transportation across the mitochondrial membrane. 07
- Q.3** (a) Discuss metabolic breakdown of Valine. 10
- (b) Write an account on Watson and Crick model of DNA. 04
- OR**
- Q.3** (a) Draw the pathway for the synthesis of pyrimidine ribonucleotide and explain it. 10
- (b) Describe the primary and secondary structure of protein. 04
- Q.4** (a) Draw the breakdown pathways for the AMP, IMP, XMP and GMP. 07
- (b) Explain: Water is an universal solvent. 04
- (c) Give classification of lipids. 03
- OR**
- Q.4** (a) Explain synthesis of glucose from noncarbohydrate precursors. 07
- (b) Derive Henderson-Hasselbalch equation 04
- (c) Enlist different hormones secreted from corresponding endocrine glands with their respective functions. 03
- Q.5** (a) What is Glycogenesis? Explain it. 07
- (b) Explain chemistry and biological active form of pantothenic acid. How its biosynthesis takes place? 04
- (c) Write a short note on macronutrients. 03
- OR**
- Q.5** (a) What is Glycogenolysis? Explain it. 07
- (b) Give classification of hormones on the basis of hormone receptor mechanism. 07
