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GAS-3161 Seat No._____

B. Sc. (Sem. III) Examination

November/December - 2013

Biotechnology (CORE) : Paper - III

(Cellular Metabolism - I)

Time : Hours] [Total Marks : **70**

1 Answer the following : (any **fourteen**) **14**

(1) What is used as an universal energy currency.

(A) ATP

(B) ADP

(C) AMP

(2) _____ law of thermodynamics is law of conservation of energy.

(A) First

(B) Second

(C) Third

(3) For a spontaneous reaction free energy change should be

(A) Negative

(B) Positive

(C) Zero

(4) I an pace maker of glycolysis. I am _____

(A) Hexokinase

(B) Pyruvate kinase

(C) PFK-I

(5) How many ATP molecules can be synthesized under anaerobic condition by glycolysis ?

(A) 8

(B) 36

(C) 38

(D) 2

(6) An enzyme is having EC number starting with 2 it should belongs to _____

(A) Ligase

(B) Oxidoreductase

(C) Transferase

(7) Ribozyme is ?

(A) RNA as an enzyme

(B) Protein enzyme

(C) Applicable to all enzymes of the biosystem

(8) What is location of glycoclysis ?

(9) Give full form of TCA cycle ?

(10) Give one example of multi enzyme complex ?

(11) Define gluconeogenesis.

(12) What is unit of enzyme activity ?

(13) Give first law of thermodynamics ?

(14) What is enzyme ?

(15) Give the irreversible steps of glycolysis ?

(16) How many amino acids are present in each chain of HbA ?

2 Answer the following : (any **eight**) **16**

(1) Give the equation presenting the relation between free energy, enthalpy & entropy ?

(2) Define redox potential.

(3) Enlist the classes of enzyme designated by E.C.

(4) Explain in brief about lock and key model.

(5) What do you mean by suicide inhibitor ?

(6) Enlist the ways for covalent modification of enzymes.

(7) What is cofactor and coenzyme ?

(8) What is the importance of pentose phosphate pathway ?

(9) Define km.

(10) Define second law of thermodynamics.

3 Answer the following : (any **four**) **20**

(1) Justify : ATP is energy currency of cell.

(2) Explain about effect of temperature and pH on enzyme activity.

(3) Explain about allosteric regulation of enzyme.

(4) Write a note on Gluconeogenesis.

(5) Explain about redox reactions and redox potential.

(6) Discuss about anaerobic fate of pyruvate.

4 Answer the following : (any **two**) **20**

(1) What is bioenergetics ? Explain in detail about equilibrium constant and its biological significance.

(2) Explain about M-M equation. Add a note on significance of Km and Vmax.

(3) Write a detailed note on reversible inhibition of enzyme.

(4) Explain in detail : TCA cycle. Add an account of ATP production in TCA cycle.
