

Sardar Patel University
M.Sc. (BIOINFORMATICS)
SEMESTER - I External Examination
PS01CMBI01: Fundamentals of Biology
Tuesday, 4th December 2012

Time: 10:30 a.m. to 01:30 p.m.

Max Marks: 70

- Q1. Choose the most appropriate option for each question. [8]
- a. _____ is a population of organisms capable of interbreeding and producing fertile offspring.
- A) Genus
B) Species
C) Kingdom
D) Family
E) None of Above
- b. Which of the following organism contains 50S ribosome?
- A) Prokaryotic cell
B) Animal cell
C) Plant cell
D) Eukaryotic cell
E) None of Above
- c. IP₃ produced from phosphatidylinositol 4,5-bisphosphate stimulate
- A) Ca²⁺ mobilization
B) Protein kinase C
C) G protein-coupled receptors
D) Protein-tyrosine kinases
E) None of Above
- d. Which of the following amino acid is not a natural amino acid?
- A) Alanine
B) Glycine
C) Valine
D) Lysine
E) None of Above
- e. Small hydrophobic molecules that dissolve in lipid bilayers and increase their permeability to specific inorganic ions are known as
- A) Ionophores
B) Homophores
C) Inorganophores
D) Hydrophores
E) None of Above

- f. COP-I coat assembly and clathrin coat assembly at Golgi membranes is due to the presence of
- A) Sar-I proteins
 - B) ARF proteins
 - C) Adaptin
 - D) Dynamin
 - E) None of Above
- g. The column matrix is a synthetic polymer containing bound charged groups with negative charged groups are called,
- A) Cation exchangers
 - B) Anion exchanger
 - C) Negative ion exchanger
 - D) Poly ion exchanger
 - E) None of Above
- h. Proteins _____ can pass through the Nuclear Pore Complex by diffusion.
- A) < 50kD
 - B) < 60kD
 - C) <55kD
 - D) < 40 kD
 - E) None of Above

Q2. Answer the questions (Any seven):

[14]

- a. Explain feeders' pathway for carbohydrate metabolism.
- b. Draw the schematic diagram of ester linkage of nucleic acids in polynucleotides.
- c. Describe reactions where there is loss of the C from substrate in form of CO₂ during the conversion of pyruvate to oxaloacetate via TCA.
- d. Give road map of transport routes in the cells and explain how *Ran* protein regulates Nuclear Transport.
- e. Explain epimers, and anomers of monosaccharides.
- f. Explain signal patch and give import signal sequence for nucleus.
- g. Explain role of chaperone present in mitochondrial membrane with diagram.
- h. Define and explain Anaploratic Reaction.
- i. How nitric oxide is synthesized in cell which is major intracellular target of NO and what is its effect in cell.
- j. Define and discuss homopolysaccharides.

