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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

[8]

is a population of organisms ca	apable of interbreeding and producing fertil
offspring.	
A) Genus	B) Species
C) Kingdom	D) Family
E) None of Above	
Which of the following organism contains	50S ribosome?
A) Prokaryotic cell	B) Animal cell
C) Plant cell	D) Eukaryotic cell
E) None of Above	
IP3 produced from phosphatidylinositol	4,5-bisphosphate stimulate
A) Ca+2 mobilization	B) Protein kinase C
C) G protein-coupled receptors	D) Protein-tyrosine kinases
E) None of Above	
Which of the following amino acid is not a	natural amino acid?
A) Alanine	B) Glycine
C) Valine	D) Lysine
E) None of Above	
Small hydrophobic molecules that disse	olve in lipid bilayers and increase thei
permeability to specific inorganic ions are l	known as
A) Ionophores	B) Homophores
C) Inorganophores	D) Hydrophores
E) None of Above	

f.	.COP-I coat assembly and clathrin coat as	ssembly 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 carbohydra	ite metabolism.	
ь.	Draw the schematic diagram of ester linkage of nucleic acids in polynucleotides.		
c.	Describe reactions where there is loss o	f 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's	which is major intracellular target of NO and	
	what is its effect in cell.		
i.	Define and discuss homopolysaccharides		

defective. b. The role of calnexin and N-linked glycosylation in ER protein folding. OR	[6] [6]
b. The role of calnexin and N-linked glycosylation in ER protein folding. OR b. Define isomerism and explain constitutional, configurational and conformational isomerism in carbohydrate with example. Q4. Answer the following questions: a. De Novo Purine Nucleotide synthesis. b. Explain structure and function PDH complex in detail. OR b. Explain oxidative and non-oxidative phase of Pentose Phosphate Pathway of Glucose oxidation. Q5. a. List and describe structure of different components of the Nuclear Envelop in detail	
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b. Which are the additional enzymes required for Gluconeogenesis? Discuss reactions	[6]
carried out by those enzymes along with role of biotin.	
OR	
b. With schematic diagram explain different subunits of SRP. Discuss how SRP directs	[6]
ribosomes to the ER membrane.	
Q6.	
a. Describe the mechanism of regulation of G Proteins.	[6]
b. Discuss four major pathways for the external signal may take entry in a cell.	[6]
OR	54
 Discuss mechanism for the control of nuclear import during T-cell activation. 	[6]

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