


<b>Name:</b>	 <b>UPES</b> UNIVERSITY WITH A PURPOSE
<b>Enrolment No:</b>	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Online End Semester Examination, May 2020**

<b>Course: Cell biology</b>	<b>Semester: I</b>	<b>Time 03 hrs.</b>
<b>Program: B.Sc. Allied Sciences</b>		<b>Max. Marks: 100</b>
<b>Course Code: HSCC1014</b>		

**SECTION A**

**1. Each Question will carry 5 Marks**  
**2. Instruction: Complete the statement / Select the correct answer(s)**

S. No.	Question	CO
Q 1	Define the “Hypothesis of Endosymbiosis”. Four molecular evidences that support the hypothesis. A. _____ B. _____ C. _____ D. _____	<b>CO1</b>
Q2	Define Karyotype and Genome. “If two normal individuals of the same species undergo sexual reproduction, they would have identical genomes and identical karyotypes.” Mark the above statement as TRUE or FALSE with justification.	<b>CO3</b>
Q3	Define Osmosis. What will happen if you put one plant and one animal cell separately in following solutions: A. Hypotonic solution, B. Isotonic solution, C. Hypertonic solution	<b>CO2</b>
Q4	Define with example A. Autocrine, B. Paracrine, C. Endocrine D. Juxtacrine.	<b>CO4</b>
Q5	Mention the locations of following signal sequences within the proteins: A. Endoplasmic Reticulum (ER) B. Mitochondria, C. Chloroplast, D. Peroxisome, C. Nucleus.	<b>CO5</b>

Q6	In a cell-line culture, you added <i>colchicine</i> and observed under microscope that movement of the cell organelles were significantly reduced as compare to control. What could be the reason of the observation?	<b>CO6</b>
<b>SECTION B</b>		
<b>1. Each question will carry 10 marks</b> <b>2. Instruction: Write short / brief notes</b>		
Q1	Describe the components of Electron Transport Chain (ETC)? Name five inhibitors of ETC and their mode of action.	<b>CO2</b>
Q2	Part A: "Nucleus is active but chromosomes are not distinct."- This you can see in which of the following stages and explain why? A. prophase, B. metaphase, C. anaphase, D. telophase, and E. interphase of mitosis Part B: Give the justification, why lysosomes are called- (a) Digestive bags, (b) Demolition squad, (c) Suicidal bags Part C: State the differences between Osmosis and Diffusion?	<b>CO2</b>
Q3	Briefly describe different families of G-protein coupled receptors (GPCRs) and their functions. Explain how elevated concentrations of cAMP activates gene expression in eukaryotes?	<b>CO4</b>
Q4	Sequence of a protein sample is given to you and asked you to identify a particular targeting peptide in that protein sequence. What will be your suggested experiment for that?	<b>CO6</b>
Q5	Describe the mechanisms of protein targeting to Endoplasmic reticulum (ER). OR A membranous complex of smooth, superposed flat saccules with vesicles detaching from the extremities seen in electronic microscopy. Name the observed structure. Describe its biological functions. Similarities and differences between lysosomes and peroxisomes.	<b>CO5</b>
<b>Section C</b>		
<b>1. Each Question carries 20 Marks.</b> <b>2. Instruction: Write long answer.</b>		
Q1	Explain the mechanistic roles of retinoblastoma, p53 and APC to prevent uncontrolled growth of cells. Describe RB gene- two hit hypothesis. OR Functional implications of Phosphoinositides in cell signaling pathways.	<b>CO3</b>