

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

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

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

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. _____	CO1
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.	CO3
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	CO2
Q4	Define with example A. Autocrine, B. Paracrine, C. Endocrine D. Juxtacrine.	CO4
Q5	Mention the locations of following signal sequences within the proteins: A. Endoplasmic Reticulum (ER) B. Mitochondria, C. Chloroplast, D. Peroxisome, C. Nucleus.	CO5

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?	CO6
SECTION B		
1. Each question will carry 10 marks 2. Instruction: Write short / brief notes		
Q1	Describe the components of Electron Transport Chain (ETC)? Name five inhibitors of ETC and their mode of action.	CO2
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?	CO2
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?	CO4
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?	CO6
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.	CO5
Section C		
1. Each Question carries 20 Marks. 2. Instruction: Write long answer.		
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.	CO3