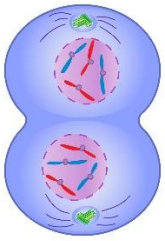
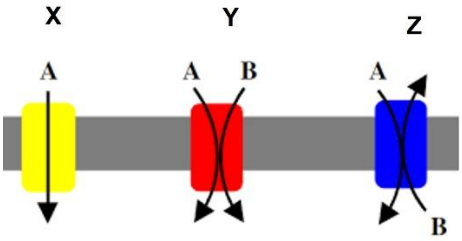
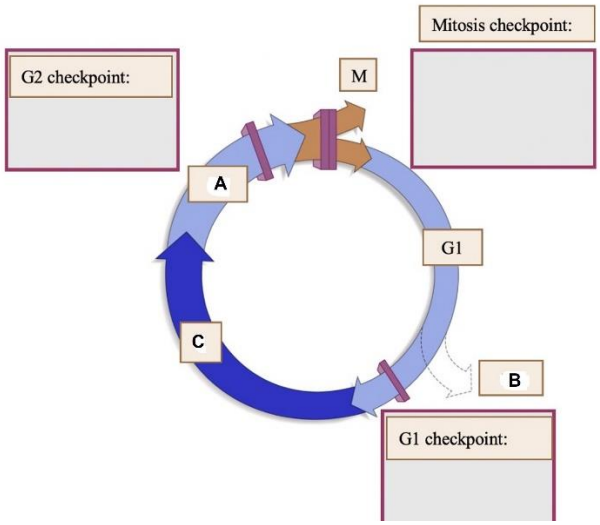
Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Supplementary Odd Semester Examination, Dec 2023

Course: Cell Biology **Semester : I**
Program: B.Sc. (F, N & D), BSc Microbiology, BSc Clinical Research; Int. B. MSc. Clinical Research, Int. B. MSc. Microbiology, Int. B. MSc. F, N & D **Duration : 3 Hours**
Course Code: HSCC 1014 **Max. Marks: 100**
Instructions: Carefully read all questions

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q 1	List two characteristics of living system	1.5	CO1
Q 2	State two observations of endosymbiotic theory	1.5	CO1
Q 3	Recall the environment conditions under which the initial (pre-biotic) assembly of polymers were happened.	1.5	CO1
Q 4	List the two main differences between prokaryotic and eukaryotic cells	1.5	CO1
Q 5	During the evolution, mitochondria is thought to be developed by engulfing …….	1.5	CO1
Q 6	Define paracrine signaling	1.5	CO2
Q 7	Define G0 phase of cell cycle	1.5	CO2
Q 8	Explain why mitochondria is called as powerhouse of the cell	1.5	CO2
Q 9	Define nucleosomes.	1.5	CO2
Q 10	Recall the function of dolichol phosphate	1.5	CO2
Q 11	Describe the purpose of nuclear localization signal (NLS)	1.5	CO2
Q 12	Define histones proteins	1.5	CO2
Q 13	Discuss two functions of BiP	1.5	CO2
Q 14	Explain the role of signal recognition particles (SRP)	1.5	CO2
Q 15	Describe the purpose of karyopherin (importin and exportin)	1.5	CO2
Q 16	Recall the name of any second messenger molecule.	1.5	CO2
Q 17	Recognize the below stage of cell division	1.5	CO2

			
Q 18	**Write the function tumor suppressor gene (p53)**	**1.5**	**CO3**
Q 19	**Recall and label antiport, symport and uniport mechanism of transport.** 	**1.5**	**CO3**
Q 20	**Sketch the metaphase stage of mitosis**	**1.5**	**CO3**
	Section B **(4Qx5M=20 Marks)**		
Q 1	**State the differences between plant and animal cells.**	**5**	**CO1**
Q 2	**Describe the role of Mannose-6-PO4 in protein transporting.**	**5**	**CO4**
Q 3	**Evaluate the similarities and differences between passive and facilitated diffusion.**	**5**	**CO5**
Q 4	**Demonstrate the role of Cop-I and Cop-II protein in protein trafficking.**	**5**	**CO3**
	Section C **(2Qx15M=30 Marks)**		
Q 1	**Define signal transduction pathway. Examine the role of G-protein coupled receptor (GPCR) in activating adenylate cyclase and signaling cascade.**	**3+12**	**CO4**
Q 2	**Assemble signal recognition particles (SRP), ribosome, target protein, mRNA and endoplasmic reticulum for Co-translational translocation of targeting protein into endoplasmic reticulum.**	**15**	**CO6**
	Section D **(2Qx10M=20 Marks)**		
Q 1	**Label the following diagram of the cell cycle with all phases of cell cylce (A, B and C) and cell division (different phases in M**	**3+3+4**	**CO3**

	Phase) and list the major checkpoint activities that occurred at G1, G2 and M checkpoints.  		
Q 2	**Differentiate between necrosis and apoptosis with well labelled diagram.**	**10**	**CO5**