LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

FIRST SEMESTER – **NOVEMBER 2022**

PBT1MC01 – CELL BIOLOGY AND MOLECULAR GENETICS

Dept. No. Date: 23-11-2022 Time: 01:00 PM - 04:00 PM

Max. : 100 Marks

Answer ALL the Questions1Choose the best option(5 x 1 = 5)a)What is the shape of kinetochore?b) Disc-shapedK1a)Cylindricald) TriangularCOb)SH2 domains mainly bind tod) TriangularK1c)Shpericald) Disc-shapedK1c)Phosphorylated tyrosine residuesd) Phosphorylated serine residuesK1c)Which of the following method does not require any channel for transport of substances?K1COa)Secondary active transportb) Facilitated diffusionK1COc)Sinple diffusiond) Primary active transportK1COd)Types of histones present in eukaryotes are a) H1,H2,H3,H4,H5K1COb)H1,H2,H3,H4,H5K1COc)Sickle cell anaemia is caused a) When valine is replaced by glutamic acid in beta polypeptide chain d) When valine is replaced by valine in alpha polypeptide chain d) When valine is replaced by glutamic acid in alpha polypeptide chain d) When valine is replaced by glutamic acid in alpha polypeptide chain d) When valine is replaced by glutamic acid in alpha polypeptide chain d) When valine is replaced by glutamic acid in alpha polypeptide chainK1CO2Answer in one or two sentences(5 x 1 = 5)a) What happens during the metaphase stage of mitosis?K2COb)How would you relate plasmodesmata and turgor pressure?K2COc)When the importance of TBP.K2COc)Define Mendelian factor.K2CO				
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SECTION - B				
Answer any THREE of the following in 500 words (3 x 10 = 30)				
3Briefly describe the structure of chloroplast and function.K3CO2				
4Give an account on chemotaxis in bacteria.K3CO2				
5 Illustrate the key steps in protein folding and processing in endoplasmic reticulum. K3 CO2				
6 DNA replication in <i>E. coli</i> follows the semi conservative model. Demonstrate. K3 CO2				
7 Paraphrase and explain about incomplete dominance at molecular level. K3 CO2				
SECTION - C				
Answer any TWO of the following in 500 words (2 x 12.5 = 25)				
8 Explain the structure and organization of plasma membrane. K4 CO3				
9 a) Summarize the role of "intermediate filaments" in cells? How did they get this				

10			1	
10	b) Sketch the pathway for endocytosis.			
	Construct a table for possible types of DNA damage, its specifications and explain an appropriate repair mechanism for the same.	K4	CO3	
11	Paraphrase and explain about codominance using example at molecular level.	K4	CO3	
	SECTION - D			
Answer any ONE of the following in 1000 words(1 x 15 = 15)				
12	Discuss in detail how kinesin coordinate their steps along with dynein in transport of biomolecules	K5	CO4	
13	Elaborate on the core concept of cell- cell communication.	K5	CO4	
SECTION - E				
Answer any ONE of the following in 1000 words			$(1 \times 20 = 20)$	
14	Elucidate the importance of membrane physiology in cell biology	K6	CO5	
15	Compare and contrast: Regulation of gene expression in bacteria and eukaryotes.			
	or Illustrate and explain the concept of extra nuclear inheritance. Compare and contrast it with Mendelian principles of nuclear inheritance.	K6	CO5	