LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034				
M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY				
FIRST SEMESTER – NOVEMBER 2023				
PBT1MC01 – CELL BIOLOGY AND MOLECULAR GENETICS				
Date: 31-10-2023 Dept. No. Max. : 100 Marks				
	Time: 01:00 PM - 04:00 PM			
SECTION A – K1 (CO1)				
	Answer ALL the questions (5 x 1 = 5)			
1	Choose the best option)			
a)	What is present in the polar head of phospholipid?			
	i) Fatty acid ii) Glycerol			
	iii) Protein iv) Vesicle			
b)	Which of the following genes is unlikely to be involved in preaxial polydactyl in mice?			
	i) Sonic hedgehog ii) Gli transcription factor			
	iii) FGF iv) Delta			
c)	A membrane enclosed sac that transports proteins from Golgi apparatus to cell surface			
	i) COP coated vesicle ii) Clathrin coated vesicle			
	iii) Endoplasmic reticulum iv) Secretory vesicle			
d)	Human Genome Project was started on			
	i) 1 st October 1990 ii) 14 th April 2003			
	iii) 22 nd April 2000 iv) 20 th May 1994			
e)	Online Primer design tool in NCBI is called			
	i) FASTA ii) primer3			
	iii)Primer blast iv) N Primer			
	SECTION A – K2 (CO1)			
	Answer ALL the questions (5 x 1 = 5)			
2	Answer in one or two sentences)			
a)	What are stromatolites?			
b)	Mention the function of plasmodesmata.			
c)	What are the three types of passive transport?			
d)	Differentiate purines and pyrimidines.			
e)	Define genotype and phenotype.			
SECTION B – K3 (CO2)				
	Answer any THREE of the following (3 x 10 = 30)			
3	Outline the fluid mosaic model of the plasma membrane.			
4	Describe the TGF beta signaling pathway.			
5	Summarize the role of molecular motor proteins.			
6	Describe the molecular events in mutation.			
7	Explain the packaging of DNA.			

SECTION C – K4 (CO3)			
	Answer any TWO of the following	(2 x 12.5 = 25)	
8	Analyze the role of mitochondria in ATP synthesis		
9	Differentiate gap junction and tight junctions.		
10	a) Paraphrase and explain protein sorting)		
	b) Analyze the confirmation of proteins.		
11	Illustrate and explain the steps involved in replication of DNA.		
SECTION D – K5 (CO4)			
-	Answer any ONE of the following	$(1 \times 15 = 15)$	
12	Defend the statement that stromatolites have an important role in evolution of life		
13	Illustrate and give an account on hedgehog signaling pathway		
	SECTION E – K6 (CO5)		
	Answer any ONE of the following	$(1 \times 20 = 20)$	
14	Elucidate the structure and functions of cell membrane channels with illustration		
15	Explain the significance of LOD score for identification of genetic disorder and add	onethical and	
	legal issues in human genetics.		