LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

FIRST SEMESTER – **APRIL 2024**

UPB 1501 – CELL BIOLOGY AND EVOLUTION

Date:2004-2024 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

Draw diagrams / flowcharts wherever necessary.

	SECTION A - K1 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
1.	**Fill in the blanks**	
a)	The suspended colloidal particles of the cytoplasm moving in zig-zag fashion is called as ----------	
b)	---------- is involved in the secretion of materials of primary and secondary cell walls.	
c)	The mechanism of synthesis of mRNA from DNA is called as ----------.	
d)	Direct cell division is otherwise called as ----------.	
e)	Natural selection is explained by the theory ----------.	
2.	**True or False**	
a)	Phase contrast microscope is used to observe living cells.	
b)	Nucleolar organizer consists of the genes for 18S, 5.8S and 28S rRNA.	
c)	Anticodons are seen in mRNA.	
d)	Reduction of chromosome number takes place during mitosis.	
e)	Miller-Urey experiment provided the first experimental evidence for the 'primordial soup' hypothesis.	
	SECTION A - K2 (CO1)	
	Answer ALL the Questions	**(10 x 1 = 10)**
3.	**Choose the correct answer**	
a)	Father of Microscopy is i)Robert Hooke ii)Ernst Ruska iii)Carl Zeiss iv)Anton van Leeuwenhoek	
b)	Polymorphism is exhibited by i)Ribosomes ii)Golgibodies iii)Lysosomes iv)peroxisomes	
c)	Chromosomes are V-shaped in i)Telocentric ii)Acrocentric iii)Submetacentric iv)Metacentric	
d)	During meiosis, synapsis happens at i)Leptotene ii)Zygotene iii)Pachytene iv)Diplotene	
e)	Mutation theory was proposed by i) Linnaeus ii) Lamarck iii) Hugo de Vries iv) Darwin	
4.	**Answer the following, each in about 50 words.**	
a)	State the cell theory.	
b)	Mention the significance of elementary particles.	
c)	Define idiogram.	
d)	Cite the event during zygotene.	
e)	Comment on Neo-Darwinism.	

SECTION B - K3 (CO2)	
Answer any TWO of the following each in about 500 words.	**(2 x 10 = 20)**
5.	Discuss the 'fluid mosaic model' of plasma membrane and its function.
6.	Elaborate on Lamp brush and polytene chromosomes.
7.	Describe the stages of cell cycle.
8.	Explain the theory of Lamarck.
SECTION C – K4 (CO3)	
Answer any TWO of the following each in about 500 words.	**(2 x 10 = 20)**
9.	Analyse the components of the fluorescence microscope.
10.	Distinguish the types of endoplasmic reticulum. Add a note on their function.
11.	Examine the structure of DNA and histones.
12.	Summarize the stages of Meiosis-I.
SECTION D – K5 (CO4)	
Answer any ONE of the following	**(1 x 20 = 20)**
13.	Explain the principle, construction and applications of SEM.
14.	Evaluate the ultrastructure, function and semiautonomous nature of chloroplast.
SECTION E – K6 (CO5)	
Answer any ONE of the following in about 1000 words.	**(1 x 20 = 20)**
15.	Compile the structure and types of chromosomes.
16.	Discuss in detail the process and mode of speciation.

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