CBCS SCHEME

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BBT301

Third Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Cell Biology and Genetics

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	The physio-chemical nature of plasma membrane determines the functions of plasma membrane substantiate.	10	L3	CO1
	b.	With a neat labeled diagram, explain the structure and functions of the power house of the cell.	10	L2	CO1
		OR			
Q.2	a.	The integrity and distribution of various cytoskeleton elements determine the shape and flexibility of the cell. Substantiate.	10	L3	CO1
	b.	Write short notes on : i) Cytoskeletal architecture ii) Ribosomes.	10	L2	CO1
		Module – 2			
Q.3	a.	With labeled diagram, explain the processes involved in meiotic I division.	10	L2	CO2
	b.	Apoptosis is called programmed cell death. Justify the statement.	10	L3	CO2
		OR			
Q.4	a.	Write short notes on : i) G protein coupled receptors ii) Hayflick phenomenon.	10	L2	CO2
	b.	Give an account of the various types of cell signaling.	10	L3	CO2
		Module – 3			
Q.5	a.	Give an account of the endomembrane system of the cell.	10	L3	CO2
	b.	With schematic diagram, explain the process of endocytosis.	10	L2	CO2
		OR			
Q.6	a.	Give an account of the translocation of secretary proteins across the endoplasmic reticulum.	10	L3	CO2
	b.	Explain briefly the processes involved in sorting of proteins to chloroplasts.	10	L2	CO2
		Module – 4			
Q.7	a.	Using Mendelian dihybrid ratio, state and prove law of segregation.	10	L3	CO3
	b.	What is epitasis? Explain it using coloured genes in fowls.	10	L2	CO3

		OR			
Q.8	**a.**	Give the expected genotypic and phenotypic ratios for the following crosses for ABO blood groups : i) $I^Ai \times I^Bi$ ii) $I^AI^B \times I^Ai$ iii) $I^A I^B \times I^A I^B$ iv) $i\,i \times I^Ai$. Add a note on Co-dominance.	**10**	**L3**	**CO3**
	b.	Explain briefly the strucutre of chromosomes.	**10**	**L2**	**CO3**
		Module – 5			
Q.9	**a.**	Explain in brief XX – XY, XX – XO , ZW – ZZ and ZO – ZZ types of sex determination with examples.	**10**	**L2**	**CO4**
	b.	Explain non – disjunction as a proof of Chromosomal theory.	**10**	**L2**	**CO4**
		OR			
Q.10	**a.**	What is Speciation? Briefly explain the factors that favour speciation.	**10**	**L2**	**CO4**
	b.	Write short notes on : i) Spontaneous mutations ii) Pedigree analysis.	**10**	**L2**	**CO4**

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