

M.Sc Sem-3 Examination

502

Human Genetics

November-2024

Time : 2-30 Hours]

[Max. Marks : 70

Q-I	1	Write a note on the maternal effect genes.	(14)
	2	Explain the process of generating dorsal-ventral patterning.	
	OR		
	1	Write a short note on “Bicoid”.	
	2	What is Cre-LoxP? Explain its use in developmental biology.	
Q-II	1	Explain the neural crest as a fourth germ layer.	(14)
	2	Explain the process of formation of the heart tube with appropriate diagrams.	
	OR		
	1	Describe the process of neuronal induction.	
	2	Describe the process for the partition of truncus arteriosus drawing appropriate diagrams.	
Q-III	1	Explain in detail: Genetic predisposition and its importance in hereditary cancers.	(14)
	2	Define Telomeres and Telomerase. Write down its role and molecular mechanisms in normal and cancer cells.	
	OR		
	1	What is tumor suppressor gene and DNA repair gene? Explain its role and mechanism in cancer in cancer development with example.	
	2	What is tumor marker? Write down the different types, characteristics and clinical applications of tumor markers.	
Q-IV	1	What is personalised medicine and why is it important?	(14)
	2	What are the key therapeutic applications of RNA technology?	
	OR		
	1	Give a note on the modus operandi of exon-skipping therapy.	
	2	Explain briefly: Fluorescence Resonance Energy Transfer	
Q-V	Answer any SEVEN out of TWELVE.		(14)
	1	Enlist the disadvantages of radioactive probes.	02
	2	Name and give characteristics of microtubule-associated motor proteins.	02
	3	Give the name and role of two scientists who are associated with developmental biology.	02
	4	Name the partitions and apertures present between the auricles during embryonic development.	02
	5	What is a hyaloid artery? When does it appear and disappear during development?	02
	6	Enlist any four developmental anomalies of kidneys.	02
	7	Which organization initiated TCGA?	02
	8	Write down six hallmarks of cancer discovered by Hanahan and Weinberg in 2000.	02
	9	What is oncogene, protooncogene? Give an example.	02
	10	Define: Euthenics.	02
	11	Give the full form of "ZFPs" and mention its role.	02
	12	What is Ayurgenomics?	02