

Q-I	1	Write a note on Nanos.	(14)
	2	Explain the functioning of gap genes in the development of Drosophila.	
	OR		
	1	Explain the concept of a gradient using the example of maternal-effect genes.	
	2	Write a note on dorso-ventral patterning.	
Q-II	1	What is the neural crest? Why is it called the fourth germ layer?	(14)
	2	Explain the development of the retina.	
	OR		
	1	Describe a process of molecular induction responsible for the development of the nervous system.	
	2	Explain the development and function of the spiral partition of the aorta in humans.	
Q-III	1	Define tumor marker and write down characteristics of an ideal tumor marker, types of tumor markers, and clinical applications of it.	(14)
	2	Define Telomeres and Telomerase and write down their role, molecular mechanism, and importance in cancer.	
	OR		
	1	Write down differences: Liquid biopsy vs Tumor Biopsy.	
	2	What is microsatellite instability? Explain the molecular mechanism, application, and significance of MSI with examples.	
Q-IV	1	Discuss therapeutic applications of bone marrow transplant.	(14)
	2	Give a note on FRET.	
	OR		
	1	Write a short note on "how a protein is identified as a molecular medicine target".	
	2	Explain Morpholino, including its mechanism and applications.	
Q-V	Answer any SEVEN out of TWELVE.		(14)
	1	Write any four limitations of radioactive fate mapping?	02
	2	What are vital dyes? Why did Vogt use them in his experiment?	02
	3	What are microtubule-associated motor proteins? Give their exact functions.	02
	4	Differentiate between foramen primum and foramen secundum.	02
	5	Differentiate between the pronephros, mesonephros and metanephros.	02
	6	What is the ascent of the kidney? What happens when it fails?	02
	7	Write down six hallmarks of cancer discovered by Hanahan and Weinberg in 2000.	02
	8	Give definitions: Cell-free DNA and Circulating tumor DNA.	02
	9	Give any four differences of Normal cell vs Cancer cell.	02
	10	Define: Euphenics	02
	11	Differentiate between pharmacogenetics and pharmacogenomics.	02
	12	What is Eteplirsen and its primary therapeutic use?	02

