2/21

1511E1239

Candidate's Seat No : _____

M.Sc. Sem.-3 Examination

503 (EA)

Bio-medical Technology

November-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Write a detailed note on the non-invasive prenatal diagnostic testing.	**(14)**
	2	What is the FISH technique? Discuss giving its applications.	
		OR	
	1	Write a descriptive note on sex chromosomal disorders.	
	2	What is the amniocentesis technique? Explain.	
Q-II	**1**	Write a note on DNA modification in prokaryotes.	**(14)**
	2	Explain the excision repair mechanism.	
		OR	
	1	Explain the technique used for isolation of gene for specific protein.	
	2	Write a note on the regulation of gene expression in eukaryotes.	
Q-III	**1**	Draw a well-labelled diagram for the sequential steps of EMT.	**(14)**
	2	Write any seven properties of the tumour markers.	
		OR	
	1	Write a note on the faulty regulation of angiogenesis during the development of cancers.	
	2	Explain hormone receptors as a diagnostic tool for cancer.	
Q-IV	**1**	Describe the principle, procedure (flow chart), applications, advantages, and disadvantages of the Ames Test.	**(14)**
	2	What are the different methods by which drugs can be administered to the body? Give examples.	
		OR	
	1	Describe the concept and types of dose–response relationships in toxicology.	
	2	Write an account of the various factors pertaining to the organism that influence the toxicity of a substance.	

Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	Give any two chromosomal abnormalities observed in cancer.	**02**
	2	What is spectral karyotyping?	**02**
	3	Give the hypothesis for evolution of chromosome 2 in humans.	**02**
	4	Define: gene family	**02**
	5	How were the sample collected for Human Genome Project?	**02**
	6	How are the genes arranged on human chromosomes?	**02**
	7	What is AFP? Explain its use as a prognostic marker.	**02**
	8	How is PET used in the diagnosis of cancer?	**02**
	9	How does p53 regulate the cell cycle and cancer development?	**02**
	10	List the factors of the surrounding medium that affect the toxicity of a substance.	**02**
	11	Write the names of four commonly used in vitro antioxidant evaluation tests.	**02**
	12	What do you mean by IC_{50} and EC_{50}? Define both terms.	**02**

P.T.O

1511E1239 –2

Candidate's Seat No : _____

M.Sc. Sem.-3 Examination

503 (EE)

Bio-medical Technology

November-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Discuss the design and construction principles for the animal house according to CPCSEA guidelines.	**(14)**
	2	Explain the composition and fundamental roles of the Institutional Animal Committee (IAC) as mandated by CPCSEA.	
		OR	
	1	Explain the caging facility and physiological factors for different laboratory animals according to the CPCSEA guideline.	
	2	Explain in detail: IACUC guideline, including scope and committee structure, key responsibilities, documentation, and animal care standards for animal housing facilities.	
Q-II	**1**	List the main routes by which hazardous agents enter the human respiratory system and identify the primary target organs or tissues affected by each route.	**(14)**
	2	Explain in detail: Toxic response to skin.	
		OR	
	1	Explain the core cellular and molecular mechanisms of hepatotoxicity. Describe the key events and how they lead to hepatocyte injury.	
	2	Describe the health consequences of long-term exposure to endocrine-disrupting chemicals (EDCs) in humans.	
Q-III	**1**	Describe the major factors affecting radiotoxicity.	**(14)**
	2	List and describe the main classes of food additives used in the food industry.	
		OR	
	1	Explain teratogens and their effects on embryonic development.	
	2	How are toxicants classified? Write briefly about each category with examples.	
Q-IV	**1**	Describe the principle, procedure (flow chart), applications, advantages, and disadvantages of the Ames Test.	**(14)**
	2	What are the different methods by which drugs can be administered to the body? Give examples.	
		OR	
	1	Describe the concept and types of dose–response relationships in toxicology.	
	2	Write an account of the various factors pertaining to the organism that influence the toxicity of a substance.	

Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	Compare the CPCSEA and IACUC guidelines. (any two)	**02**
	2	Define photoperiod.	**02**
	3	What are the signs of heatstroke in dogs?	**02**
	4	Define: Presumed Toxicity	**02**
	5	What is the meaning of genotoxic?	**02**
	6	Give the full name of DLCO.	**02**
	7	Give the complete names of the abbreviations NOAEL and DNEL used in toxicology.	**02**
	8	Write the difference between food contamination and food adulteration.	**02**
	9	Give four examples of naturally occurring plant-based pesticides.	**02**
	10	List the factors of the surrounding medium that affect the toxicity of a substance.	**02**
	11	Write the names of four commonly used in vitro antioxidant evaluation tests.	**02**
	12	What do you mean by IC_{50} and EC_{50}? Define both terms.	**02**