0402E1407

Candidate's Seat No :_____

MSc Sem.-1 Examination

403

Human Genetics

February-2025

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

Q-I	**1**	Explain numerical aperture.	**(14)**
	2	Explain the structure and functioning of the transmission electron microscope.	
		OR	
	1	Explain the principle, structure and functioning of a phase contrast microscope.	
	2	Write a note on the aberrations of light microscopes.	
Q-II	**1**	Explain the various forms of centrifuge rotors using the diagram.	**(14)**
	2	Explain thoroughly and draw a labelled diagram of the differential centrifugation method.	
		OR	
	1	What are the applications of capillary electrophoresis? Give detailed notes on the capillary electrophoresis technique.	
	2	What is PFGE? Write a thorough explanation of it.	
Q-III	**1**	Explain briefly the UV/Vis spectroscopy and the laws involved.	**(14)**
	2	Discuss the principles and applications of HPTLC.	
		OR	
	1	Explain the principle of column chromatography and its applications.	
	2	What are the derivatizers used for? Give a brief note.	
Q-IV	**1**	What is a ventilator? Write down different types of ventilators in detail.	**(14)**
	2	Write a note: Different types of Sphygmomanometers.	
		OR	
	1	What is Sonography? What are the different probes used in sonography, and what are their applications?	
	2	Explain in detail: Dialysis machine and its applications.	
Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	Enlist the advantages and disadvantages of a confocal microscope to that of a fluorescence microscope.	**02**
	2	Draw the well-labelled diagram for the electron interaction with material with respect to an electron microscope.	**02**
	3	Draw the diagram for the light path in a stereo microscope.	**02**
	4	The centrifugal force (F) is calculated using _____ formula. In this formula, the 'm' is _____, and the angular velocity is denoted by _____.	**02**
	5	List the substances required to make the polyacrylamide gel for PAGE.	**02**
	6	What is the formula for calculating the retarding force (Fs) during electrophoresis? In the formula, what are 'n' and 'v'?	**02**
	7	What are the key components of an HPTL system?	**02**
	8	What is the principle of LC-MS?	**02**
	9	What is the primary role of the matrix in MALDI?	**02**
	10	Who first invented the mercury thermometer? What is the principle of a mercury thermometer?	**02**
	11	What is the principle of pulse oximeter?	**02**
	12	What are the key differences between EMG and ECG?	**02**