BE Semester-__V__ (BIOMEDICAL ENGINEERING) Question Bank

(Analytical & Optical Instrumentation)

All questions carry equal marks (10 marks)

Q.1	Discuss interaction of radiation with matter and explain Spectrophotometer type instrument with its various components in detail.
Q.2	Explain in detail clinical Flame photometer instrument and its essential parts with block diagram. State how it is different from colorimeter.
Q.3	Explain Pulse oximeter type instrument and its signal processing circuit in detail.
Q.4	Explain in detail principle of Coulter counter and discuss how the sequence of building up the pulse the cell has with respect to the orifice.
Q.5	Explain in detail microscope and its working principle with neat diagram.
Q.6	Explain various parts of endoscopy.
Q.7	Elaborate Electrophoresis apparatus and Boundry method concept.
Q.8	Explain briefly measurement of pH and its various types of electrodes.
Q.9	Briefly describe various components of Auto analyser and densitometer.
Q.10	Write short note on chromatography and its classification. Discuss about HPLC.
Q.11	Explain the following terms: (i) Centrifuge, (ii) Microtome, (iii) Hot air oven, (iv) Laminat flow tables, (v) Auto pipette
Q.12	Write short note on the following: (i) PCR Units. (ii) ELISA reader.
Q.13	Explain working principle of CCTV and its applications in detail.
Q.14	Discuss about endoscopic imaging system and explain each subsystem.
Q.15	State advantages and disadvantages of automated cell counter. Discuss about automatic recognition and differential counting of cells.
Q.16	State and explain different methods for blood cell counting in detail.
Q.17	State advantages and disadvantages of autoanalyser, give its classification and explain in detail centrifugal analyser and discrete analyser.
Q.18	Write short note on the following terms: (i) Incubator, (ii) Beer Lambart's Law, (iii) electronic balances, (iv) Histokinette, (v) Autoclaves.
Q.19	Explain the working principle of colorimeter and mention its applications. Also

	discuss about multichannel colorimeter.
Q.20	Write short note on Capnography.
Q.21	What is RIA? Give its application in biochemistry.
Q.22	Explain electron microscope in detail with neat diagram.
Q.23	Explain dark field microscopy and bright field microscopy in detail with working principle and their applications.
Q.24	Write short on flow cytometry. Explain each component.
Q.25	What is histopathology? State each terminology involved in histopathology.
Q.26	Explain in detail continuous flow analysers. Give advantages and disadvantages of single channel continuous flow analyser.
Q.27	What is blood gas analyser? What is the need of analysing blood gases? Explain about complete blood gas analyser with its block diagram.
Q.28	What is Picoscale?, explain with diagram and its importance.
Q.29	What is optical fiber? Give its applications in endoscopy majorly.
Q.30	What is Laminar flow table? State its working principle with diagram. Give its uses.
Q.31	What is the basic principle of electrophoresis? Write short note on Capillary electrophoresis.
Q.32	Write down different culture techniques. Explain about anaerobic apparatus.
Q.33	What is the need of blood banking? Give its procedure and explain.
Q.34	Explain pO_2 and pCO_2 Measurement with neat diagram.
Q.35	Explain the block diagram principle and uses of Gas Chromatography
Q.36	Explain the enzymatic methods used in Strip Test for Blood Glucose Level measurement.
Q.37	Write short note on monochromators and Glass electrodes.
Q.38	Write short note on Semiautoanalyser with neat diagram.
Q.39	Explain optical system used in compound light microscope in detail with diagram.
Q.40	Explain in detail signal processing circuitrly in pulse oximeter.