

M.SC (INSTRUMENTATION SCIENCE) 2<sup>nd</sup> YEAR 2<sup>nd</sup> SEMESTER -2022

SUBJECT: Advanced Bio-Medical Instrumentation

Time: 4 Hours

Full Marks- 80

Answer any five questions

1. Describe the physical basis of Electrocardiography. Describe the cause, characteristic features and clinical significance of different waves, intervals and segments of ECG. (10+6)
2. Write in brief about neurophysiological basis of EEG? Describe the location of EEG electrodes with respect to modern clinical investigation. (8+8)
3. What are the difference between bipolar versus unipolar EEG? Describe the characteristic features and different waves of normal EEG recording. (6+10)
4. What are the major causes of Hemolytic Disease of the Newborn (HDN) and how it can be treated or minimised? (8+8)
5. Where liver is located in your body? Discuss few important functions of this organ. What are the symptoms you may experience when your liver is not functioning properly? Name few liver diseases and how these diseases can be diagnosed? (1+5+5+5)
6. Define flow-cytometry. What are the 3 basic components of this technology? Write down the basic principle of this machine with diagram. What are the areas where flow-cytometry can be used? Name three fluorochromes those are popularly used in flow-cytometry. (2+3+5+3+3)
7. Define Haemoglobin. What are the diseases predicted by MCV & MCH? What are the symptoms of a person suffering in thalassemia? Discuss different diagnostic tests for thalassemia. (3+4+4+5)
8. How early diagnosis is useful to save cancer patient's life? Name three instruments used to detect cancer. Discuss how these machines help to detect cancer. What is biopsy? How microtomes help in cancer biopsy? (2+2+6+2+4)