

2025

M.Sc. 1st Semester Examination

HUMAN PHYSIOLOGY

Paper : PHYC402X1

**[Biomedical Instrumentation
and Electrophysiology]**

Full Marks : 25

Time : One Hour

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A.

Answer any *two* questions : $2 \times 2 = 4$

1. Draw a suitable labelled diagram of cylindrical coil NMR blood flow meter.
2. Write down the differences between A scan and M scan.
3. What are suction cup electrodes?
4. What is vectorcardiogram?

P.T.O.

(2)

Group - B

Answer any *two* questions : $4 \times 2 = 8$

5. State the principle of ultrasonic blood flow meter. Calculate the velocity (V) and speed (C) of blood flow by ultrasonic blood flow meter. What is transit time?
 $1+2+1$
6. Describe a transducer probe with a labelled diagram. What is transducer Q factor?
 $3+1$
7. Describe the components of microprocessor based on ECG machine.
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8. Briefly state the characteristics of an ECG recording during second degree of AV block. What changes can be observed in ECG recording in tachycardia and bradycardia?
 $2+2$

Group - C

Answer any *one* question : $8 \times 1 = 8$

9. State the principle and mode of operation of Geiger-Müller radiation detection counter. Mention the significance of quenching during radiation measurement. Mention the mechanism of scintillation detector for radiation measurement.
 $(2+3)+2+1$
10. What is electrode potential? Describe 10/10 system of EEG and why it is called so. What is montage? Mention the advantages of metal microelectrodes.
 $2+2+2+2$

Internal Assessment : 5 marks
