



Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with A++ Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment – II (October 2025)
V Semester

Class: III UG
Branch : Physics

Duration: 2 Hours
Max. Marks: 60

23BPHDE4- Medical Diagnostic Equipments

Course Outcomes:

- CO1:** Learn the techniques of non- invasive diagnosis using the sound from the body
CO2: Learn the techniques of non- invasive diagnosis using the electric potential and magnetic potential from the body surface
CO3: Comprehend the techniques of non- invasive diagnosis using the blood flow in the body
CO4: Acquire knowledge on the imagining techniques towards diagnosis
CO5: Have an idea on scopes using visual inspection through optical devices for non-invasive detection of diseases

Part A

6 x 1 = 6 Marks

Choose the Correct Answer

1. What principle does an endoscope use to view internal body parts? CO1K2
a. Refraction of light b. Dispersion of light
c. Scattering of light d. Total Internal Reflection
2. As ultrasound is transmitted through tissue, its intensity decreases because of CO1K2
a. Excitation b. Absorption c. Scattering d. Divergence
3. What type of laser is used in a Laser Doppler Blood flow meter? CO2K2
a. Nd-YAG b. Argon c. He-Ne d. CO₂
4. The average flow velocity of an electromagnetic blood flow meter appears to be _____ cm/s in arteries. CO2K1
a. 5 to 10 b. 10 to 12 c. 12 to 18 d. 20 to 25
5. The induced emf is picked by point electrodes made from _____ in electromagnetic blood flow meter. CO3K2
a. Copper b. Graphite c. Platinum d. Tungsten
6. Which of the following is used to examine the ear canal and tympanic membrane? CO3K2
a. Endoscope b. Stethoscope c. Otoscope d. Microscope

Part B

3 x 6 = 18

Answer ALL questions

Each answer should not exceed 400 words or two pages

- 7a. Discuss about the optical coherence Tomography technique. CO1K2
(or)
- 7b. Write short notes on Positron emission Tomography and its working. CO1K1

8. a. Explain the non-invasive methods of estimating Blood – Pressure. CO2K1
(or)
8. b. Write short notes on
a) X-rays
b) Probe technique CO2K1
9. a. Describe on Electroretinogram and its working principle. CO3K1
(or)
9. b. Explain the principle of operation of an Ophthalmoscope. CO3K1

Part C

3 x 12 = 36

Answer ALL questions

Each answer should not exceed 800 words or four pages

10. a. Explain the fundamental principles of laser Doppler flowmetry, focusing on how the Doppler effect is utilized to measure blood flow and what factors contribute to frequency shift observed. CO1K1
(or)
10. b. What is the principle behind MRI imaging? CO1K2
11. a. Describe the recording setup used in the EMG measurements. CO2K1
(or)
11. b. Explain the principle of operation of an ultrasonic transducer. CO2K2
12. a. Discuss the concept of spin-echo techniques in NMR imaging and how they contribute to the inherent contrast between flowing blood and vascular structures. CO3K2
(or)
12. b. Explain the principle of operation of an electromagnetic blood flow meter. CO3K2

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