

Reg. No.:



Name:

University of Kerala

W7190

Third Semester FYUGP Degree Examination, November 2025

Discipline Specific Elective

PHYSICS

UK3DSEPHY204 - Introduction to medical physics

Academic Level: 200-299

2024 Admission

Time: 2 Hours(120 Mins)

Max. Marks: 56

**Part A.6 Marks:Time 5 Minutes.(Cognitive Level :Remember(RE)/Understand(UN)) Objective Type.1 mark each,
Answer all questions**

Qn No.	Question	CL	CO
1	Recall the average blood pressure for human body	RE	1
2	Define Doppler effect	RE	2
3	Interpret the defect of vision corrected using a concave lens.	UN	3
4	Explain hydrostatic pressure	UN	1
5	Explain tensile stress	UN	1
6	Recognize one application of M-mode	UN	2

Part B.10 Marks.Time:20 Minutes (Cognitive Level:Understand(UN)/Apply(AP))Two-three sentences.2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Explain why gel is applied on the body before ultrasound scan?	UN	2
8	Explain systolic and diastolic pressures? Give their typical values.	UN	1
9	Illustrate the causes of image artifacts in ultrasound.	AP	2
10	Demonstrate any two optical instruments in medicine	AP	3
11	Present the sequence of events that occur during a cardiac cycle	AP	1

Part C.16 Marks.Time:35 Minutes.(Cognitive Level :Apply(AP)/Analyse(AN))Short Answer.4 marks each, Answer all 4 questions,choosing among options * within each question

Qn No.	Question	CL	CO
12	A) Apply the principles of laser-tissue interaction to describe the use of lasers in photocoagulation and bloodless surgery. OR B) Apply the concept of nerve impulse transmission to explain how an action potential is generated and transmitted through the retinal neurons up to the optic nerve.	AP	3, 3
13	A) Interpret aneurysm and stenosis OR B) Investigate the use of sphygmomanometer to measure blood pressure	AP	1, 1
14	A) Compare any two optical instruments in medicine OR B) Analyse the main parts of the human eye and explain how each part contributes to the process of vision?	AN	3, 3
15	A) Analyze the movement of a leg when the soccer player kicks a ball. OR B) Analyse how the metabolic rate of the human body is calculated using spirometry.	AN	1, 1

Part D.24 Marks.Time: 60 Minutes.(Cognitive Level :Analyse(AN)/Evaluate(EV)/Create(CR)) Long Answer 6 Marks each.Answer all 4 questions choosing among options * within each question

Qn No.	Question	CL	CO
16	A) Analyze the different types of Doppler scans and explain how each type contributes to diagnostic imaging. OR B)	AN	2, 2

Qn No.	Question	CL	CO
	Analyse the attenuation of ultrasound in tissues		
17	A) Assess the blood flow rate and velocity OR B) Evaluate on density, pressure and flowrate	EV	1, 1
18	A) Evaluate the three classes of levers in the human body with suitable examples OR B) Evaluate how metabolic rate of human body is calculated using spirometry	EV	1, 1
19	A) Formulate the difference between a simple microscope and a compound microscope. Explain how these differences affect their magnification and usage OR B) Generate the effectiveness of interaction light with tissue and hence explain the laser light herapy	CR	3, 3