

Reg. No.:



Name:

University of Kerala

W6889

Third Semester FYUGP Degree Examination, November 2025

Discipline Specific Core Course

PHYSICS

UK3DSCPHY203 - Heat, Magnetism and Geophysics

Academic Level: 200-299

2024 Admission

Time: 1 Hour 30 Minutes(90 Mins.)

Max. Marks: 42

Part A. 6 Marks.Time:6 Minutes.(Cognitive Level:Remember(RE)/Understand(UN)) Objective Type. 1 Mark
Each.Answer all questions

Qn No.	Question	CL	CO
1	Name the region of atmosphere where the Van Allen radiation belts occur.	RE	2
2	Define the instrument used to record variations in magnetic fields.	RE	3
3	Outline how a magnetic map is useful to our development.	UN	3
4	Explain the relationship between altitude and atmospheric pressure ?	UN	2
5	Compare thermal conductivity and thermometric conductivity.	UN	4
6	Explain about different types of seismic waves	UN	1

Part B.8 Marks.Time:24 Minutes.(Cognitive Level:Understand(UN)/Apply(AP))Short Answer. 2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Explain the variation in acceleration due to gravity on equator and poles?	UN	1
8	Explain the terms temperature and pressure in the context of atmosphere.	UN	2
9	At a certain location in Africa, a compass points 12° west of geographic north. The north tip of the magnetic needle of a dip circle placed in the plane of the magnetic meridian points 60° above horizontal. The horizontal component of the earth's field is measured to be 0.16 G. Estimate the magnitude of the earth field at the location	AP	3

Qn No.	Question	CL	CO
10	The thermal conductivity of copper is $400 \text{ W m}^{-1}\text{K}^{-1}$. If a copper bar of length 0.5 m and cross-sectional area 1 cm^2 has its ends maintained at 100°C and 0°C , calculate the rate of heat flow through it.	AP	4

Part C. 28 Marks. Time: 60 Minutes (Cognitive Level: Apply (AP)/Analyse (AN)/Evaluate (EV)/Create (CR)) Long Answer: 7 marks each. Answer all 4 Questions choosing among options * within each question

Qn No.	Question	CL	CO
11	A) Apply the concept of gravitational force to explain how the Sun and the Moon produce tides on Earth. Analyse why the Moon's tidal influence is stronger than the Sun's, even though the Sun has a much greater mass. OR B) Establish the relation between gravitational potential and gravitational field of a solid sphere.	AP	1, 1
12	A) Analyse the atmospheric properties OR B) Examine the roles of the ionosphere and magnetosphere in Earth's atmosphere.	AN	2, 2
13	A) Evaluate the various theories proposed to explain Earth's magnetism and justify which theory is most scientifically accepted today, giving reasons for your conclusion. OR B) Discuss the making and uses of magnetograph.	EV	3, 3
14	A) Devise an experiment to study the energy distribution in the spectrum of a black body and generalize the results. OR B) Construct an experiment to determine the thermal conductivity of a poor conductor.	CR	4, 4