



Reg. No.:

Name:

University of Kerala

First Semester FYUGP Degree Examination, December 2025

Discipline Specific Core Course

PHYSICS

UK1DSCPHY102 - Properties of Solids

Academic Level: 100-199

2025-Admission onwards

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	State the relation between permeability and susceptibility	RE	1
2	Define thermometric conductivity.	RE	2
3	Explain critical temperature	UN	1
4	Discuss Cooper pairs.	UN	1
5	Explain the origin of magnetic moment in magnetic materials	UN	2
6	Describe drift velocity	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 Wiedemann – Franz law.	UN	2
8	Explain the effect of temperature on ferromagnetic properties of a material.	UN	1
9	Using classical free electron theory, compute the expression for conductivity of a metal	AP	1
10	Establish Isotope effect in superconductivity	AP	1

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)	AP	1, 1

Qn No.	Question	CL	CO
	<p>Establish the classical free electron theory and mention its draw backs.</p> <p>OR</p> <p>B)</p> <p>Illustrate Weiss theory of ferromagnetism and significance of curie temperature</p>		
12	<p>A)</p> <ol style="list-style-type: none"> 1. Analyze Type 1 and Type 2 superconductors. 2. Deduce the applications of high temperature superconductivity. <p>OR</p> <p>B)</p> <ol style="list-style-type: none"> 1. Investigate the properties of diamagnetic, paramagnetic and ferromagnetic materials . 2. Analyze Weiss theory of ferromagnetism. 	AN	1, 1
13	<p>A)</p> <p>"Pressure and impurities affect freezing point" - Justify the statement.</p> <p>OR</p> <p>B)</p> <p>Evaluate the laws of fusion and its practical applications.</p>	EV	2, 2
14	<p>A)</p> <p>Create an overview of Peltier and Thomson effects and their coefficients.</p> <p>OR</p> <p>B)</p> <ol style="list-style-type: none"> 1. Formulate the expression for thermal conductivity for the radial flow of heat. 2. Two rods A and B of same area of cross section are joined together end to end. The free end of the rod A is kept in melting ice at 300K and free end of B rod at 400K. the rods are of same length. The conductivity of A is 3 times that of B. Calculate the temperature of the junction of the rods. 	CR	2, 2