



Internal Assessment Test 2 - May 2024

Sub:	Physics for CSE stream				Sub Code:	BPHYS202	ISE/AIML/AID	ISE/AIML/AIDS/CSE(AIML)			
Date:	21/05/2024 Duration: 90 mins Max Marks: 50 Sem/Sec: II Sem/ I,J,K &						: L	OBE			
$\frac{\text{Answer any FIVE FULL Questions}}{\text{Given: } c = 3 \times 10^8 \text{ m/s; } h = 6.625 \times 10^{-34} \text{Js; } k = 1.38 \times 10^{-23} \text{ J/K; } m_e = 9.1 \times 10^{-31} \text{kg; } e = 1.6 \times 10^{-19} \text{C}}$							MARKS	CO	RBT		
1 (a)	Discuss the failures of classical free electron theory.							[06]	CO2	L2	
(b)	Write a short note on high T _C superconductors.								[04]	CO2	L2
2 (a)	Define Fermi factor. Explain the variation of Fermi factor with temperature and energy.								[06]	CO2	L2
· · ·	The Fermi energy of a metal is 5.5eV at 0K. Find the energy for which there is 1% probability of finding the electron at 330K.								[04]	CO2	L3
3 (a)	With the help of neat diagrams, discuss the different types of optical fibers .								[06]	CO1	L2
	For an optical fiber, given that the numerical aperture is 0.30 and RI of cladding is 1.53. Calculate the fractional index change and the acceptance angle.								[04]	CO1	L3

РТО

USN/						
ROLL						
NO						

										ACCREDITED WITH ALL G	ADD BY NAAC
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Date:	21/05/2024 Duration: 90 mins Max Marks: 50 Sem/Sec: II Sem/ I,J,K &							& L	OBE		
	1		Answer an	y FIVE FULL Qu	estions	,	,			CO	RBT
	Given: $c = 3 \times 10^8 \text{ m}$	$h/s; h = 6.625 \times$	10 - ³⁴ Js ;	$k = 1.38 \times 10^{-23} J/$	/K; m	$h_e = 9.1 \times 10^{-31} k$	e = 1.6×10^{-10}	10 ⁻¹⁹ C	MARKS		
1 (a) Discuss the failures of classical free electron theory.							[06]	CO2	L2		
(b)	(b) Write a short note on high T _C superconductors. [04]									CO2	L2
2 (a)	2 (a) Define Fermi factor. Explain the variation of Fermi factor with temperature and energy. [06]								CO2	L2	
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(b)	For an optical fiber, given that the numerical aperture is 0.30 and RI of cladding is 1.53. Calculate
	the fractional index change and the acceptance angle.

[04]

CO1

L3

4 (a)	Obtain an expression for numerical aperture and arrive at the condition for propagation of signal in an optical fiber	[6]	CO1	L2
(b)	Discuss any two attenuation mechanisms in an optical fiber.	[4]	CO1	L2
()	Give a brief account of the BCS theory of superconductivity.	[6]	CO2	L2
(b)	The critical field is 2.7×10^4 A/m at 9K and 5.3×10^4 A/m at 6K . Calculate the transition temperature and the critical magnetic field at 0 K.	[4]	CO2	L3
6 (a)	Differentiate between Type I and Type II superconductors.	[6]	CO2	L2
(b)	What are SQUIDs? Explain briefly the construction and working of RF SQUID.	[4]	CO2	L2
7 (a)	Discuss point to point communication system. Mention its advantages and disadvantages.	[6]	CO1	L2
(b)	The attenuation co-efficient of an optical fiber is 0.18 dB/Km. What fraction of its initial intensity remains after 1200m?	[4]	CO1	L3

Obtain an expression for numerical aperture and arrive at the condition for propagation of signal in an optical fiber	[6]	CO1	L2
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