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Internal Assessment Test 2 – May 2024

Sub:	Physics for CSE stream					Sub Code:	BPHYS202	Branch:	ISE/AIML/AIDS/CSE(AIML)
Date:	21/05/2024	Duration:	90 mins	Max Marks:	50	Sem/Sec:	II Sem/ I,J,K & L		OBE

Answer any FIVE FULL Questions

Given: $c = 3 \times 10^8$ m/s; $h = 6.625 \times 10^{-34}$Js; $k = 1.38 \times 10^{-23}$ J/K; $m_e = 9.1 \times 10^{-31}$kg; $e = 1.6 \times 10^{-19}$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
(b)	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
(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

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Internal Assessment Test 2 – May 2024

Sub:	Physics for CSE stream					Sub Code:	BPHYS102	Branch:	ISE/AIML/AIDS/CSE(AIML)
Date:	21/05/2024	Duration:	90 mins	Max Marks:	50	Sem/Sec:	II Sem/ I,J,K & L		OBE

Answer any FIVE FULL Questions

Given: $c = 3 \times 10^8$ m/s; $h = 6.625 \times 10^{-34}$Js ; $k = 1.38 \times 10^{-23}$ J/K; $m_e = 9.1 \times 10^{-31}$kg; $e = 1.6 \times 10^{-19}$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
(b)	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
(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

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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
5 (a)	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

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