VIT

Vellore Institute of Technology

School of Advanced Sciences

DEPARTMENT OF PHYSICS

Mid Term Test (MTT)

Question Paper- C1 SLOT(C)

B.Tech – Fall Semester-2020-21

Course: PHY1701- Engineering Physics

: 90 mins **Max Marks: 60**

Answer all Questions

	If the temperature of the sun is 6000K and that of the earth is 300K, find the flux of energy in watts m^{-2} of the radiations emitted by them. Justify the answer.	6	CO1
	Discuss de Broglie hypothesis. Find the energy of the neutron in units of electron volts (eV) whose de Broglie wavelength is 1Å.	6	CO1
	What is the Kinetic Energy of an electron like particle if the associated de Broglie wavelength is 2.64×10^{-11} m?	6	CO1
	How do the wave function and the probability densities of a particle vary within the boundaries of an infinitely hard box? Explain graphically	6	CO2
	An X-ray photon is found to have its wavelength doubled on being scattered through an angle of 90°. Find the wavelength and energy of the incident photon?	6	CO2
	Explain the various types of optical fibers with respect to light propagation and refractive index?	6	CO6
	For an optical fiber of length - 1km, core refractive index, n1 = 1.5 and the ratio $(n_1-n_2)/n_1$ approximately 0.01, what will be the pulse broadening in nanoseconds per km? ($c = 3 \times 10^8$ m/s)	6	CO6
	Calculate the critical incident angle, critical propagation angle, acceptance angle and the numerical aperture for an optical fiber having core refractive index 1.550 and cladding refractive index 1.498.	6	CO6
	What is the difference in the working of an LED and a photo detector? Explain using suitable energy level diagrams.	6	CO7
0	Explain the working of a LED and Laser diode. Explain the difference between the two.	6	CO7