



VIT
UNIVERSITY
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VELLORE • CHENNAI
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Reg. No. :

Name:

Date of exam:

Continuous Assessment Test -I, August 2016

Programme	: B. Tech	Semester	: Fall 2016-17
Course Title	: Engineering Physics	Course Code	: PHY1001
School	: School of Advanced Sciences – Department of Physics	Slot	: C2+TC2
Duration	: 1 Hour 30 minutes	Max. Marks	: 50

Answer all questions (5x10 = 50)

1. Describe in detail the Davisson and Germer experiment for the confirmation of the de-Broglie hypothesis. (10)
2. a) Compare the following two cases and hence provide proper interpretation. (i) An electron has a speed of 300 m/sec, accurate to 0.01%. With what fundamental accuracy we can locate the position of the electron? (ii) A bullet of mass 50 g, has a speed of 300 m/sec, accurate to 0.01%. With what fundamental accuracy we can locate the position of the bullet? (5)
3. X- Rays of wavelength 0.24 nm are Compton scattered and the scattered beam is observed at an angle of 60° relative to the incident beam. Determine (i) the wavelength of the scattered X rays (ii) the energy of the scattered X ray photons (iii) the kinetic energy of the scattered electrons. (5)
4. Derive the eigenvalues and normalized eigen functions and hence draw the probability densities of a free particle confined in a one dimensional infinite potential well of width L . (10)
5. a) Explain the working principle of STM with neat diagram. (5)
- 6) Discuss the reasons for difference in properties between bulk and nano materials. (5)
7. a) Explain quantum confinement. Mention the characteristics of quantum well, quantum wire and quantum dot. (5)
- 6) Briefly explain Carbon nano tubes. (5)