

QP Code

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 Register Number

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VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Affiliated to Anna University, Chennai)

Semester Examinations – Apr / May 2017 Regulations-2016

Programme: B.E/ B.Tech Semester: 1 Max. Marks: 100 Duration 3 Hrs

Course Code & Title: **16PHT11 ENGINEERING PHYSICS**

(Specify any Chart, Tables or others to be permitted.)

Knowledge	K1 - Remembering	K3 - Applying	K5 – Evaluating
Levels (KL)	K2 - Understanding	K4 – Analyzing	K6 – Creating

Part A - Answer ALL Questions.

10 x 2 = 20 Marks

No.	Question	KL
1.	Write any four properties of Ultrasonic waves.	K1
2.	What is Non-Destructive Testing (NDT)?	K2
3.	Distinguish between spontaneous and stimulated emissions.	K4
4.	What is the principle of using laser in industrial applications?	K5
5.	Give any two differences between step mode and multi mode fibres.	K4
6.	Optical power of 1mW is launched into an optical fibre of length 100 m. If the power emerging from other end is 0.3 mW, calculate the fibre attenuation.	K5
7.	Give the Planck’s quantum hypothesis.	K1
8.	How deBroglie justified the concept of matter wave?	K6
9.	Lattice constant of an unit cell of aluminium is 4.04 Å. Calculate the spacing of (220) planes.	K5
10.	Draw the crystal planes (101) and (111) in a cubic unit cell.	K6

Part B - Answer ALL Questions.

5 x 16 = 80 Marks

No	Question	Marks	KL
11.	a i. Describe the principle, construction and working of Piezo electric oscillator.	12	K2
	ii. List the methods to detect ultrasonic waves.	4	K1
OR			
	b i. Discuss the applications of ultrasonic in industries for drilling, welding, soldering and cleaning.	12	K4
	ii. Briefly explain sonogram.	4	K5

12.	a	Explain the modes of vibration in CO ₂ molecule. Describe the construction and working of CO ₂ laser, using energy level diagram.	16	K2
OR				
	b	i. Describe the construction and reconstruction of Holographic image using neat diagram.	12	K2
		ii. List any four advantages of using laser in surgery.	4	K4
13.	a	Explain the Principle and propagation of light in optical fiber and derive an expression for acceptance angle and numerical aperture of an optical Fiber.	16	K2
OR				
	b	i. Explain the fibre optic communication system with block diagram.	8	K4
		ii. Explain the use of optical fibre as temperature sensor.	8	K4
14.	a	Give the theory of Lee's disc method to determine thermal conductivity of bad conductor.	16	K2
OR				
	b	i. Give the theory of Compton effect and derive an expression for the change of wave length of scattered photons.	12	K2
		ii. An electron is trapped in a one-dimensional box of length 0.1nm. Calculate the energy required to excite the electron from its ground state to the fifth excited state.	4	K6
15.	a	Draw the HCP structure and get the value of c/a and hence calculate the packing fraction of HCP structure.	16	K5
OR				
	b	i. With diagrams, explain edge dislocation and screw dislocation.	8	K4
		ii. Describe Bridgman method for crystal growth.	8	K2
