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Code No. : 11128 O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. I-Semester Backlog Examinations, Jan./Feb:-2024**Applied Physics**

(Civil Engg.)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B****Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Enlist the characteristics of SHM.	2	1	1	1,2,10,12
2.	Define Quality factor and write its equation.	2	1	1	1,2,10,12
3.	How diffraction is different from interference?	2	1	2	1,2,10,12
4.	Mention the Brewsters law.	2	2	2	1,2,10,12
5.	Write the engineering applications of LASER.	2	1	3	1,2,10,12
6.	Draw the internal structure of optical fibre and label the parts.	2	3	3	1,2,10,12
7.	Write the difference between music and noise.	2	1	4	1,2,10,12
8.	List out the properties of ultrasonics.	2	2	4	1,2,10,12
9.	Give the significance of structural health monitoring.	2	2	5	1,2,10,12
10.	What is a sensor? List various types of sensors.	2	2	5	1,2,10,12
Part-B (5 × 8 = 40 Marks)					
11. a)	Write the differences between free and forced oscillator.	3	2	1	1,2,10,12
b)	Derive the equation of motion of a forced harmonic oscillator and discuss conditions.	5	3	1	1,2,10,12
12. a)	Explain interference in thin films due to reflected light (cosine law).	5	3	2	1,2,10,12
b)	In a Newton's rings experiment the diameter of 10 th and 20 th dark ring are 0.5cm and 0.7cm respectively. If the wavelength of the light is 5890Å, find the radius of curvature of the lens.	3	3	2	1,2,10,12
13. a)	With the help of energy level diagram describe the construction and working of He:Ne laser.	5	2	3	1,2,10,12
b)	An optical fibre has the core refractive index of 1.48 and the relative refractive index is 0.01. Find the refractive index of cladding, numerical aperture and acceptance angle.	3	3	3	1,2,10,12

Contd... 2

14. a)	Mention the basic requirements of acoustically good hall.	3	1	4	1,2,10,12
b)	What is inverse piezo electric effect? With the help neat sketch explain the production of ultrasonics by piezo electric method.	5	3	4	1,2,10,12
15. a)	Explain the use of strain gauges in structural health monitoring.	5	2	5	1,2,10,12
b)	Write the significance of inclinometer and tilt meter.	3	1	5	1,2,10,12
16. a)	Obtain expressions for potential and kinetic energies for particle executing simple harmonic oscillator (SHM)	4	3	1	1,2,10,12
b)	Write a short note on quarter wave and half wave plates.	4	2	2	1,2,10,12
17.	Answer any <i>two</i> of the following:				1,2,10,12
a)	With the help of block diagram explain the optical fibre in communication system.	4	3	3	1,2,10,12
b)	List various types of ultrasonic detection methods and Briefly explain Kund's tube method.	4	3	4	1,2,10,12
c)	Write a short note on Linear Variable Differential Transformer (LVDT).	4	2	5	1,2,10,12

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	38.75%
iii)	Blooms Taxonomy Level – 3 & 4	41.25%
