CONTINUOUS INTERNAL EVALUATION - 1

Dept: FY	Sem/Div:I/A,B,C	Sub: Engineering Physics	S Code:18PHY12
01/02/2021	Time: 3-4:30pm	Max Marks: 50	Elective: N

Note: Answer any 2 full questions, choosing one full question from each part.

QN		Questions	Marks	RBT	CO's
		PART A			
1	a	What are damped oscillations? Give the theory of damped oscillations.	10	L2	CO1
	b	Define shock wave and give an example. With a neat diagram explain the construction and working of Reddy shock tube.	10	L1 &L 2	CO1
	c	A mass of 0.5kg causes an extension of 0.03m in a spring and the system is set for oscillations. Find (i) force constant of the spring (ii) angular frequency (iii) Time period of the resulting oscillation.	5	L3	CO1
		OR			
2	a	Define simple harmonic motion. Derive the differential equation of motion for it using Hooke's law. Mention the characteristics and examples of simple harmonic motion	10	L1 &L 2	CO1
	b	Define force constant and mention its physical significance. Derive the expression for force constant for springs in series and parallel combinations.	10	L1 &L 2	CO1
	c	The distance between the two pressure sensors in a shock tube is 150mm. The time taken by a shock wave to travel this distance is 0.3ms. Find the Mach number of the shock wave. Given velocity of sound as 340m/s.	5	L3	CO1

		PART B			
3	a	Explain the terms gradient of a scalar, divergence and curl of a vector with physical significance.	10	L1	
	b	What is attenuation? Name the three types of attenuation in optical fibre. Obtain the expression for attenuation coefficient.	10	L1 &L 2	C
	c	Determine constant C, such that $\vec{A}=(x+ay)\hat{a}_x+(y+bz)\hat{a}_y+(x+cz)\hat{a}_z$ is solenoidal.	5	L3	CO2
		OR			
4	a	Define fractional index change. Describe different types of optical fibers with neat diagrams.	10	L1 & L2	CO2
	b	Define Numerical aperture. Derive the expression for numerical aperture in an optical fiber and state the condition for propagation.	10	L2	CO2
	c	Find the attenuation in an optical fiber of length 500m When a light signal of power 100mW emerges out of the fiber with a power 90mW.	5	L3	CO2

29/01/21

Prepared by: Ms. Thejaswini L P

29/01/21

HOD: Prof. Ramanand Kamath