CONTINUOUS INTERNAL EVALUATION– 1

Dept: FY	Sem/Div:II/D,E,F	Sub: Engineering Physics	S Code:18PHY22
24/06/21	Time: 3-4:30pm	Max Marks: 50	Elective: N
Note: Answer any 2 full questions, choosing one full question from each part.			

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QN		Questions	Marks	RBT	COs
		PART A			
1	a	Define simple harmonic motion. Derive the equation for simple harmonic motion using Hooke's law. Mention the characteristics and examples of SHM.	10	L2	CO1
	b	What are damped oscillations? Give the theory of damped oscillations and hence discuss the cases of critical and under damping.	10	L1& L2	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) The force constant for the spring ii) angular frequency and iii)time period of the resulting oscillation	5	L3	CO1
		OR			
2	a	Explain Control volume with a neat diagram and also state and explain laws of conservation of mass, energy and momentum.	10	L1& L2	CO1
	b	With a neat diagram explain the construction and working of Reddy tube. Mention any four applications of Shock waves	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. If the velocity of sound under the same condition is 340m/s. Find the Mach number of the shock wave.	5	L3	CO1
		PART B			
3	a	Discuss the theory of forced vibrations and hence obtain the expression for amplitude and phase.	10	L2	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	Calculate the resonant frequency for a simple pendulum of length 1m.	5	L3	CO1
		OR			
4	a	Define fractional index change (Δ), Numerical Aperture and angle of acceptance. Derive an expression for the NA and state condition for propagation.	10	L1& L2	CO2
	b	With the help of Block diagram, explain point to point communication using optical fibre. Mention the merits and de merits of optical fibre communications	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

Prepared by: HOD