CRM08	Rev 1.9	<BS>	<20/10/19>

CONTINUOUS INTERNAL EVALUATION – 1

Dept: FY	Sem / Div:	Sub: Engg. Physics	S Code: 18PHY16
Date:24/10/19	Time: ~~2:30-4:00~~ 3:00 - 4:30 MY	Max Marks: 50	Elective:N

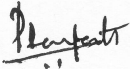Note: Answer any 2 full questions, choosing one full question from each part.

QN		Questions	Marks	RBT	CO's
		PART A			
1	a	What are Damped oscillations. Give the complete theory of damped oscillations. (assume constants C and D) Also define qualify factor.	10	L1/ L2	CO1
	b	What is spring constant? Derive an expression for the effective spring constants of two springs in series and parallel.	10	L1/ L2	CO1
	c	A mass of 0.5kg causes an extension of 0.03m in a spring set to oscillations. Calculate its force constant (k), angular frequency (ω) and time period (T)	5	L3	CO1
		OR			
2	a	What are forced oscillations. Explain the theory of forced oscillations and hence explain resonance.	10	L1/ L2	CO1
	b	Define Mach number and there by define subsonic, sonic and supersonic waves. Also explain the construction and working of Reddy's Shock tube.	10	L1/ L2	CO1
	c	Calculate the peak amplitude of vibration of a system whose natural frequency is 1000Hz, when it oscillates in a resistive for which the value of damping/unit mass is 0.008 rad/sec under the action of an external periodic force /unit mass of amplitude 5 N/Kg.	5	L3	CO1

PART B

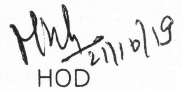|					
3	a	What is Hooke's law of elasticity? Give two examples of elastic and plastic materials. Explain the elastic curve with a neat graph.	10	L1/ L2	CO1
	b	What is a beam? Explain different types of beams. Prove that the bending moment a beam is YI_g/R.	10	L1/ L2	CO1
	c	A solid lead sphere of radius 10.3 m is subjected to a normal pressure of 10 N/m^2 acting all over the surface determine the change in volume if the bulk modulus of lead is 4.58 x 10^{10} N/m^2	5	L3	CO1

OR

4	a	Define Y, K and σ. Derive a relation between them.	10	L1/ L2	CO1
	b	What is the expression of time period (T) of a torsional pendulum. Derive an expression for the couple 'C' of the torsional pendulum.	10	L1/ L2	CO1
	c	Calculate the the angular twist of a wire of length 0.3m the radius 0.2mm, when the torque of 5 x 10^{-4} Nm is applied. Rigidity modulus of material 8 x10^{10} N/m^2 .	5	L3	CO1

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