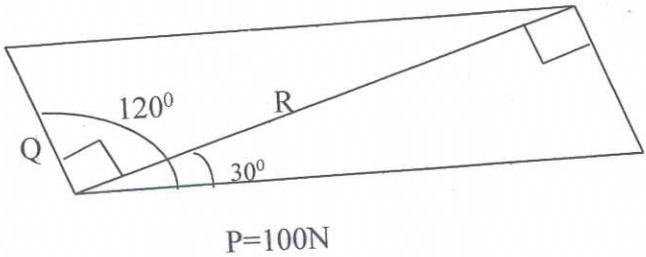


Revision :2015 Corse code: 1003

Course Title: Engineering Physics I

Qst. No	Scoring Indicator	Split up score	Sub Total	Total
I	Part A			
1.	If two vectors are represented in magnitude and direction by two sides of a triangle taken in order, then their resultant is represented in magnitude and direction by third side of the triangle taken in the opposite order.	2	2	2
2.	Physical quantities which depend on other physical quantities are called derived quantities. Any two examples.	1 1	2	2
3.	Within elastic limit, stress is directly proportional to strain.	2	2	2
4.	Ampere Candela	1 1	2	2
5.	A node is formed at the closed end and an antinode at the open end	2	2	2
II	Part-B			
1.	Statement Derivation	2 4	 6	 6
2.	Resolution Rectangular resolution with figure and equation for F_x and F_y $F_x = F \cos \theta$ $F_y = F \sin \theta$ $F_x = 30 \cos 30 = 25.98N$ $F_y = 30 \sin 30 = 15N$	1 2 3	 6 6	 6 6
3.	Kinetic energy definition and equation Potential energy definition and equation Pressure energy definition and equation Bernoulli's theorem statement and equation	1 1 1 3	 6 6	 6 6
4.	Free vibration Forced vibration Resonance	2 2 2	 6 6	 6 6

5.	Definition of wavelength, velocity and acceleration Derivation of $v=f\lambda$	3 3	6	6
6.	$l = \frac{mgL}{\pi r^2 Y}$ Steps Answer= $9.3 \times 10^{-4}m$	2 3 1	6	6
7.	P=2IINC Steps Answer=4396 w	2 3 1	6	6
Part-C				
UNIT -I				
III	a)Definition of displacement, velocity, acceleration with units and equation b)Derivation of $S_n = u + a(t - \frac{1}{2})$ i) $S_n = u + a(t - \frac{1}{2})$ answer=19m ii) $S = ut + \frac{1}{2}at^2$ answer=75m c) Newton's second law statement Derivation of force	3 3 1.5 1.5 2 4	3 6 6	15
IV	a) Large force for a small interval of time is called Impulse. $I = F.t = ma.t = \frac{m(v-u)}{t}t = mv - mu = \text{change in momentum}$ b) Definition and derivation of recoil velocity. $V = \frac{-mv}{M} = -(0.025 \times 500) \div 5 = -2.5m/s$ c) In the case of upward motion, $0 = u - g.t_1$ $t_1 = \frac{u}{g}$ In the case of downward motion $v = 0 + g.t_2$ As the body falls back to the earth with the same velocity it was thrown upward $v = u$ $t_2 = \frac{u}{g} \quad t_1 = t_2$	3 3 3 6	3 6 6	15

		UNIT -II		
V	a) Definition of concurrent forces Statement of Lami's theorem with figure.	1 2	3	15
	b) Statement of parallelogram law Derivation of magnitude and direction of resultant	2 4	6	
	c)  $P=100N$ $R=100 \cos(30) = 86.60 N$ Smaller force $Q=100 \sin(30) = 50N$	6	6	
VI	a) i. Algebraic sum of forces acting on the body should be zero (Total upward force = total downward force) ii. Algebraic sum of moment of forces about any point should be zero (sum of clockwise moments = sum of anticlockwise moments)	3	3	15
	b) Couple definition with expression of moment of couple and figure. Derivation of work done by the couple.	2 4	6	
	c) Equation Steps $T=6.5kg$ $OC=0.62m$ The scale to be suspended at the 62cm mark.	2 3 1	6	

UNIT-III

VII	a) Young's modulus definition with SI unit and equation. b) Stream line flow and turbulent flow. Explanation of equation of continuity with derivation of equation. c) $a_1v_1 = a_2v_2$ Steps $v_2 = 3.46\text{m/s}$	3 2 4 2 3 1	3 6 6	15
VIII	a) Equation for variation of viscosity of liquid with temperature Equation for variation of viscosity of gas with temperature b) Poiseuille's formula Poiseuille's method description with figure c) $F = 6\pi\eta rv$ Steps $v = 0.147\text{cm/s}$	1.5 1.5 2 4 2 3 1	3 6 6	15
UNIT-IV				
IX	a) Any 3 characteristics of stationary waves. b) Definition of ultrasonics with any 4 application. c) Proof with figure.	3 6 6	3 6 6	15
X	a) $v = f\lambda$ $f = \frac{v}{\lambda}$ $= (3 \times 10^8) \div (430 \times 10^{-9}) = 6.976 \times 10^{14}\text{Hz}$ b) Description of resonance column experiment with figure. c) $v = f\lambda$ $= 4L.f = 4 \times 22.1 \times 10^{-2} \times 384$ $= 339.46\text{m/s}$	3 6 6	3 6 6	15