SCHEME OF VALUATION

(Scoring Indicators)

Revision: **2015**				Course Code:**1003**
Course Title: ENGINEERING PHYSICS I				
Qst. No	Scoring Indicator	Split up score	Sub Total	Total
	Part A			
I (1)	Any two advantages (Universally accepted. Coherent. Comprehensive etc..)	2		2
I (2)	Definition of resultant	1		
	Definition of equilibrant	1		2
I(3)	Definition of Streamline flow	1		
	Definition of turbulent flow	1		2
I(4)	Definition of SHM	1		
	Differential equation[$d^2y/dt^2 = -\omega^2y$]	1		2
I(5)	$V=\lambda/T$.	1		
	Since $1/T= f$; $V=f\lambda$.	1		2
	Part B			
II(1)	Statement of conservation of linear momentum	1		
	$A=(m_2v_2-m_2u_2)/t$ and $R=(m_1v_1-m_1u_1)/t$	2		6
	$A=-R$	1		
	$(m_2v_2-m_2u_2)/t = - (m_1v_1-m_1u_1)/t$	1		
	$m_1u_1+ m_2u_2 = m_1v_1 + m_2v_2$	1		

II(2)	Statement of Newton's second law of motion	2		
	Rate of change in momentum=(mv-mu)/t	2		6
	(v-u)/t = a	1		
	F=ma	1		
II(3)	Definition of moment of a force about a point	2		
	Condition for translational equilibrium	2		6
	Condition for rotational equilibrium	2		
II(4)	$P=2\pi NC$	2		
	N= 1 revolutions per second	1		6
	P= 1256W	3		
II(5)	$P=hdg = 1.96 \times 10^6 \, N/m^2$	2		
	Volume strain=$\Delta v/v= 1 \times 10^{-3}$	2		6
	$K=P/(\Delta v/v)= 1.96 \times 10^9 \, N/m^2$	2		
II(6)	Statement of Bernoulli's principle	2		
	Equation from Bernoulli's principle	1		
	Explanation of the working of spray atomizer	3		6
II(7)	Figure of uniform circular motion with projection	2		
	Explanation	1		
	$y = a \sin \omega t$	1/2		6
	$dy/dt = a\omega \cos \omega t$	1/2		
	$d^2y/dt^2 = -\omega^2 y$	2		
	Part C			
III(a)	$v= u+gt$	1		
	$s= ut+1/2gt^2$	1	3	
	$v^2= u^2+ 2gs$	1		

III(b)	$S_n = S_1 - S_2$	1		6	15
	$S_1 = un + 1/2an^2$ and $S_2 = u(n-1) + 1/2a(n-1)^2$	2			
	Derivation	2			
	$S_n = u + a(n - 1/2)$	1			
III(c)	$s = ut + 1/2at^2$ and $50 = 5u + 12.5a$	2		6	
	$S_n = u + a(n-1/2)$ and $14 = u + 4.5a$	2			
	Solving $u = 5m/s$ and $a = 2m/s^2$	2			

IV(a)	$I = F \times t$	1		3	
	$I = (mv - mu)/t \times t$	1			
	$I = mv - mu$	1			
IV(b)	Explanation of recoil of a gun using law of conservation of momentum	3			
	$MV + mv = 0$	2		6	15
	$V = -mv/M$	1			
IV(c)	$mgh = 1/2mv^2$	2			
	$v = \sqrt{(2gh)}$	2		6	
	$v = 1.4m/s$	2			
V(a)	Statement of Lami's theorem	1			
	Explanation with figure	1		3	
	$P/\sin\alpha = Q/\sin\beta = R/\sin\gamma$	1			

V(b)	Figure of Parallelogram with explanation	2		
	Derivation of $R=\sqrt{(P^2+Q^2+2PQ\cos\theta)}$	2	6	15
	Derivation of $\alpha =\tan^{-1}[Q\sin\theta/(P+Q\cos\theta)]$	2		
V(c)	$6.5\times d= (1\times0.3+ 2\times0.45+ 0.5\times0.5+ 3\times0.86)$	3		
	$d= 0.62m$	3	6	
VI(a)	Definition of couple	1		
	Any two characteristics of a couple	2	3	
VI(b)	Explanation with figure	2		
	$W= F(AO+BO)\theta$	2	6	15
	$W=C\theta$	2		
VI(c)	$R=\sqrt{(P^2+Q^2+2PQ\cos\theta)}$	2		
	Let P=3k & Q=5k solving we get k= 5	2	6	
	P=15N & Q=25N	2		
VII(a)	Definition of elasticity	$1\frac{1}{2}$		
	Definition of plasticity	$1\frac{1}{2}$	3	
VII(b)	Figure with the explanation of experiment procedure to find Young's modulus of a wire.	4		
	$Y=MgL/\times\pi r^2 l$	2	6	15
VII(c)	$v = 2r^2(\rho-d)g / 9\eta$	2		
	Equating net volume in both cases we get $r_2=4r_1$	2	6	
	Terminal velocity of combined drop = 16cm/s	2		

VIII(a)	Statement of equation of continuity	1	3	
	Explanation	1		
	$a_1v_1 = a_2v_2$	1		
VIII(b)	Explanation of the Poiseuille's method to determine the coefficient of viscosity with figure	3	6	15
	Poiseuille's formula $V = \pi Pr^4/8l\eta$	1		
	$\eta = (\pi hdgr^4/8lV)$	2		
VIII(c)	$P_2-P_1 = d/2(V_1^2 - V_2^2)$	2	6	
	$P_2-P_1 = 1023.75$ N/m^2	2		
	Upward lift = 3071.25N	2		
IX(a)	Magnetostriction method for the production of ultrasonic waves	3	3	
IX(b)	3 diagrams of first three modes of vibration in an open pipe	$1\frac{1}{2}$	6	15
	Derivation of $f=v/2L$ (For first mode of vibration)	$1\frac{1}{2}$		
	Derivation of $f_1=v/L$ (For second mode of vibration)	$1\frac{1}{2}$		
	Derivation of $f_2=3v/2L$ (For third mode of vibration)	$1\frac{1}{2}$		
IX(c)	$v_t/v_0 = \sqrt{[(273+t)/273]}$	2	6	
	$v_t/v_0 = 2$	1		
	solving for t we get. t = 819^{0}C	3		
X(a)	Any three application of ultrasonic waves.	3	3	

X(b)	Explanation of resonance column experiment	2		6	15
	Obtaining relation $v=4f(l_1+e)$	2			
	velocity of sound in air by eliminating end correction, $v=2f(l_2-l_1)$	2			
X(c)	$2f=880Hz$, $f=440Hz$	2		6	
	$\lambda = v/f = 350/440 = 0.795m$	2			
	$L = \lambda/2 = 0.795/2 = 0.398m$	2			