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 Definition of equilibrant	1 1		2
I(3)	Definition of Streamline flow Definition of turbulent flow	1 1		2
I(4)	Definition of SHM Differential equation[$d^2y/dt^2 = -\omega^2 y$]	1 1		2
I(5)	$V=\lambda/T$. Since $1/T= f$; $V=f\lambda$.	1 1		2
	Part B			
II(1)	Statement of conservation of linear momentum $A=(m_2v_2-m_2u_2)/t$ and $R=(m_1v_1-m_1u_1)/t$ $A=-R$ $(m_2v_2-m_2u_2)/t = -(m_1v_1-m_1u_1)/t$ $m_1u_1+m_2u_2=m_1v_1+m_2v_2$	1 2 1 1 1		6

II(2)	Statement of Newton's second law of motion Rate of change in momentum=(mv-mu)/t (v-u)/t = a F=ma	2 2 1 1		6
II(3)	Definition of moment of a force about a point Condition for translational equilibrium Condition for rotational equilibrium	2 2 2		6
II(4)	$P=2\pi NC$ N= 1 revolutions per second P= 1256W	2 1 3		6
II(5)	$P=hdg = 1.96\times10^{6}\ N/m^2$ Volume strain=$\Delta v/v = 1\times10^{-3}$ $K=P/(\Delta v/v)= 1.96\times10^{9}\ N/m^2$	2 2 2		6
II(6)	Statement of Bernoulli's principle Equation from Bernoulli's principle Explanation of the working of spray atomizer	2 1 3		6
II(7)	Figure of uniform circular motion with projection Explanation $y = a \sin \omega t$ $dy/dt = a\omega \cos \omega t$ $d^2y/dt^2 = -\omega^2 y$	2 1 1/2 1/2 2		6
	Part C			
III(a)	$v= u+gt$ $s= ut+1/2gt^2$ $v^2= u^2+ 2gs$	1 1 1	3	

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

IV(a)	$I=F\times t$	1		
	$I=(mv-mu)/t \times t$	1	3	
	$I= mv-mu$	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		
	$d=0.62$m	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	
	$P=15$N & $Q=25$N	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	4		
	Young's modulus of a wire.		6	15
	$Y=MgL/\times\pi r^2l$	2		
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		
	Explanation	1	3	
	$a_1v_1 = a_2v_2$	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		
	$P_2-P_1= 1023.75\ N/m^2$	2	6	
	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	$1^1/_2$		
	Derivation of $f=v/2L$ (For first mode of vibration)	$1^1/_2$		
	Derivation of $f_1=v/L$ (For second mode of vibration)	$1^1/_2$	6	15
	Derivation of $f_2=3v/2L$ (For third mode of vibration)	$1^1/_2$		
IX(c)	$v_t/v_0= \sqrt{[(273+t)/273]}$	1		
	$v_t/v_0= 2$	1	6	
	solving for t we get, $t= 819^0C$	3		
X(a)	Any three application of ultrasonic waves.	3	3	

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