1. A stone of mass 1kg is tied to a string 2m long and is rotated at a constant speed of 40 ms⁻¹ in a vertical circle . The ratio of the tension at the top and the bottom is [Take g = 10ms-2]
(A) 81/79
(B) 79/81
(C) 19/12
(D) 12/19

2. Two coils have a mutual inductance of 0.01 H. The current in the first coil changes according to equation I = 5 sin 200πt. The maximum value of e.m.f induced in the second coil is
(A) 10π Volt
(B) 0.1π Volt
(C) π Volt
(D) 0.01π Volt

3. The radius of the earth and the radius of orbit around the sun are 6371 km and 149×106 km respectively. The order of magnitude of the diameter of the orbit is greater than that of earth by
(A) 10^3
(B) 10^2
(C) 10^4
(D) 10^5

4. In a series LCR circuit R=300Ω ,L=0.9H,C=2μF , ω =1000rad/s. The impedance of the circuit is
(A) 500Ω
(B) 1300Ω

(C) 400Ω
(D) 900Ω

5. The quantity which does not vary periodically for a particle performing S.H.M. is
(A) Acceleration
(B) Total Energy
(C) Displacement
(D) Velocity

6. In moving coil galvanometer, strong horse shoe magnet of concave shaped pole pieces is used to
(A) Increase space for rotation of the coil.
(B) Reduce weight of galvanometer
(C)Produce a magnetic field which is parallel to the plane of the coil at any position.
(D) Make magnetic induction weak at the centre

7. Two identical wires of substances 'P' and 'Q' are subjected to equal stretching force along the length. If the elongation of 'Q' is more than that of 'P', then
(A)Both P and Q are equally elastic
(B) P is more elastic than Q
(C)P is plastic and Q is elastic
(D)Q is more elastic than P

8. In fundamental mode, the time required for the sound wave to reach upto the closed end of a pipe filled with air is 't' second .The frequency of vibration of air column is

(A) $(2t)^{-1}$

(B) $4(t)^{-1}$

(C) $2(t)^{-1}$

(D) $(4t)^{-1}$

9. If radius of the solid sphere is doubled by keeping its mass constant, the ratio of their moment of inertia about any of its diameter is

(A) 1:8

(B) 2:5

(C) 2:3

(D) 1:4

10. For a metallic wire, the ratio of voltage to corresponding current is

(A) Independent of temperature

(B) Increases with rise in temperature

(C) Increases or decreases with rise in temperature depending upon the metal

(D) Decreases with rise in temperature