MODEL QUESTION PAPER

DF3

I Semester DIPLOMA Examination, August 2011
ENGINEERING PHYSICS - I

Time: 3 Hours Max. Marks: 75

GROUP A : Answer any three questions.

Q.1 Explain Newton's law of Vicosity.

Q.2 A wire 1m long and weighting 5 gm is stretched by a tension of 4 kg wt. When sounded, it is found to vibrate in two loops. Calculate the frequency of the note emitted by the wire.

Q.3 Draw an equation for Binding Energy of an orbiting Satellite & Binding Energy of a body at rest on Earth's surface.

Q.4 A plate of metal having 100 sq-cm area sets on a layer of paraffine oil, 2mm thick. If the horizontal force require to move the plate with velocity 3 cm/s is 0.24 Newton, find the co- efficient of viscosity.

Q.5 Write the principle of Radar & Applications of Radar.

GROUP B : Answer any three questions.

Q.6 Define
- (i) Fundamental physical Quantity,
- (ii) Derived Physical Quantity
- (iii) Unit
- (iv) Fundamental Units
- (v) Derived Units

Q.7 Derive the relation between surface tension and capillary size.

Q.8 A steel wire of diameter 1 mm & length 2m is stretched by force of 2 kg. Calculate.
- (i) Increases in length of wire
- (ii) Strain
- (iii) Stress

(Acc^n due to gravity g = m/s^2, Y= 2 x 10^{11} N/m^2)

Q.9 State and verify Lami's theorem.

Q.10 List out the three types of stresses and explain then.
(Hint: Longitudinal, volume, shearing)

GROUP C : All Questions are Compulsory.

Q.11 Fill in the blanks

(i) Young's modules = _____.

(ii) The dimensional formula for density is _____.

(iii) The normal trajectory of a projectile is _____.

(iv) All the planets move in _____ orbit having the sun as one of the foci.
(v) The value of the velocity of flow liquid up to which flow in stream line is called as _____.

Q.12 Multiple choice questions.

(i) Hooke's is valid in _____.
(a) Elastic range (b) Plastic range
(c) Any range (d) 0.03 to 0.4 cm

(ii) Unit of stain _____.
(a) N/m^2 (b) m^2/N
(c) No unit (d) N/mm^2

(iii) When a fan turns through an integral number of revolutions, the angle in radians is an even multiple of _____.
(a) $\pi/2$ (b) π
(b) 2π (d) $3\pi/2$

(iv) The unit of angular acceleration in S. I. system is _____.
(a) N kg^{-1} (b) m s^{-2}
(b) rad s^{-2} (d) Nm kg^{-1}

(v) The flow of liquid in which every particle is moving in random direction is called as_____.
(a) Turbulent flow (b) Viscous flow
(c) Streamline flow (d) None of these

Q.13 True or false.

(i) The escape velocity of a body depends on the radius of the planet.
(ii) Rubber is more elastic than steel.
(iii) The velocity of sound is generally greater in solids than in gases at NTP.
(iv) Law of orbits: All the planets move in the elliptical orbit the sum as one focus.
(v) The property by which a liquid oppose relative motion between its different layers is called as viscosity.

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