Engineering Physics
(2019)

Q.1. Choose the correct answer of the following questions:

(i) Which is a fundamental quantity?

(a) Length (b) Velocity
(c) Acceleration (d) Force

Ans.(a)

(ii) Which is a vector quantity?

(a) Force (b) Work
(c) Speed (d) Distance

Ans.(a)

(iii) Dimension of work is-

(a) ML^2T^{-2} (b) ML^2T^{-2}
(c) M^2LT (d) MLT

Ans.(a)

(iv) A liquid does not wet a solid surface if the angle of contact for pair of liquid and solid is -

(a) 0^0 (b) 90^0 (c) 60^0 (d) 120^0

Ans.(d)

(v) Ratio among the coefficients of linear expansion, superficial expansion and cubical expansion is -

(a) 3 : 5 : 4 (b) 1 : 2 : 3
(c) 4 : 3 : 5 (d) 5 : 3 : 4

Ans.(b)

(vi) What type of wave carry sound in air?

(a) Transverse wave (b) Longitudinal wave
(c) Electromagnetic wave (d) None of the above

Ans.(b)

(vii) Equation for kinetic energy is-

(a) $\frac{1}{2}mv^2$ (b) mv^2
(c) $\frac{1}{2}mv^2v^2$ (d) m^2v^2

Ans.(a)

(viii) The gravitational force between two bodies is-

(a) attractive (b) repulsive
(c) both (a) & (b) (d) none of these

Ans.(c)

Q.2(a) State and explain Newton's laws of motion.

Ans. *Refers to chapter 2 Q.no. 4*

Q.2(b) Find the significant figures in the following numbers:

(i) 1.080 (ii) 0.0018 (iii) 108 (iv) 5.98×10^{11}

Ans. (i) 4 (ii) 3 (iii) 3 (iv) 3

Q.3(a) Define angular displacement, angular velocity and angular acceleration. Establish the relation between linear velocity and angular velocity.

Ans. *Refers to chapter 2.2 Q.no. 1 & 2.*

Q3.(b) State and explain Newton's law of gravitation.

Ans. *Refers to chapter 3 Q.no. 1.*

OR

Q3. Define gravitational constant and write the S.I. unit of it.

Ans. *Refers to chapter 3 Q.no. 2.*

Q4.(a) State Hook's law. Define young's modulus; bulk modulus and modulus of rigidity.

Ans. *Refers to chapter 5 Q.no. 2 & 5.*

Q4.(b) Define surface tension. Write its S.I. unit. What is the effect of impurities and tempereature on the surface tension?

Ans. *Refers to chapter 5.2 Q.no. 3.*

Q5.(a) Write Newton's laws of viscosity and define coefficient of viscosity. Write its dimension formula.

Ans. *Refers to chapter 5.3 Q.no. 1.*

Q5.(b) Explain linear expansion, superficial or serial expansion and cubical expansion.

Ans. *Refers to chapter 6 Q.no. 5.*

Q6.(a) Define Amplitude, Time period, frequency and wavelength.

Ans. *Refers to chapter 7 Q.no. 1.*

Q6.(b) Define reverberation time. Write the conditions for good acoustics of building.

Ans. *Refers to chapter 7.2 Q.no. 3*

Q7. A block of wood of mass 3kg is lying on the frictionless table. A force of 9N is applied on it for 10 seconds. Calculate the kinetic energy.

Ans. Given: $m = 3kg, F = 9N$

$\therefore$ Acceleration, $a = \frac{F}{m} = \frac{9}{3} = 3 m/s^2$

Velocity attained by body after 10 second.

$V = u + at$

$\Rightarrow V = 0 + 3 \times 10$

$= 30$ m/s

$\therefore$ K.E of the body $= \frac{1}{2}mv^2$

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