Short Questions

Write the short answers of the following:

Q.1: **Define degree and radians measure**

Q.2: Convert into radius measure.

(a)120°,   (b) $22\dfrac{1}{2}^\circ$,   (c) $12^\circ\ 40'$,   (d) $42^\circ\ 36'\ 12''$

Q.3: Convert into degree measure

(a) $\dfrac{\overline{\wedge}}{2}$ rad,   (b)   0.726 rad.   (c) $\dfrac{2\overline{\wedge}}{3}$ rad.

Q.4: Prove that $\ell = r\theta$

Q.5:   What is the length of an arc of a circle of radius 5 cm whose central angle is 140° ?

Q.6:   Find the length of the equatorial arc subtending an angle 1° at the centre of the earth taking the radius of earth as 6400 KM.

Q.7:   Find the length of the arc cut off on a circle of radius 3 cm by a central angle of 2 radius.

Q.8:   Find the radius of the circle when $\ell = 8.4$ cm, $\theta = 2.8$ rad

Q.9:   If a minute hand of a clock is 10 cm long, how far does the tip of the hand move in 30 minutes?

Q.10   Find x, if $\tan^2 45^\circ - \cos^2 60^\circ = x \sin 45^\circ \cos 45^\circ . \tan 60^\circ$.

Q.11:   Find r when $l = 33$ cm. $\theta = 6$ radian

Q12:   Prove that $2 \sin 45^\circ + \dfrac{1}{2} \csc 45^\circ = \dfrac{3}{\sqrt{2}}$

Q.13:   Prove that $\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ = \dfrac{13}{3}$

Q.12: Prove that $\dfrac{2 \tan \frac{\wedge}{6}}{1 - \tan^2 \frac{\wedge}{6}} = \sqrt{3}$

Q.13: prove that $\cos 30^\circ \cos 60^\circ - \sin 30^\circ \sin 60^\circ = 0$

Q.14: Prove that $\cos 90^\circ - \cos 30^\circ = -2 \sin 60^\circ \sin 30^\circ$

Q.15: Prove that $\sin^2\theta + \cos^2\theta = 1$

Q.16: Prove that: $1 + \tan^2\theta = \sec^2\theta$

Q.17: Prove that $1 + \cot^2\theta = \text{Cosec}^2\theta$

Q.18: Prove that: $(1 + \sin\theta)(1 - \sin\theta) = \dfrac{1}{\sec^2\theta}$

Q.19: Show that: $\cot^4\theta + \cot^2\theta = \text{Cosec}^4\theta - \text{cosec}^2\theta$

Q.20: Prove that: $\cos\theta + \tan\theta \sin\theta = \sec\theta$

Q.21: Prove that $1 - 2\sin^2\theta = 2\cos^2\theta - 1$

Q.22: $\cos^4\theta - \sin^4\theta = 1 - 2\sin^2\theta$

Q.23: $\dfrac{1}{1 + \sin\theta} + \dfrac{1}{1 - \sin\theta} = 2\sec 2\theta$

Answers

2. (a) 2.09 rad   (b) 0.39 rad   (c) 0.22 rad   (d) 0.74   radius

3. (a) 90° (b) $41^0 35^{'} 48^{''}$ (c)   120 degree

5. 12.21 cm.   6.   111.7 Km   7.   6 cm

8.   3cm.   9.   31.4 cm   10. $\dfrac{\sqrt{3}}{2}$ 11.   5.5 cm.