Chapter 12

APPLICATION OF TRIGONOMETRY

EXERCISE 12.1

Q.1 Find the values of

(i) $\sin 53^o\ 40'$

$= 0.8056$

(ii) $\cos 36^o\ 20'$

$= 0.8056$

(iii) $\tan 19^o\ 30'$

$= 0.3541$

(iv) $\cot 33^o\ 50'$

$= \frac{1}{\tan 33^o\ 50'} = 1.4919$

(v) $\cos 42^o\ 38'$

$= 0.7357$

(vi) $\tan 25^o\ 34'$

$= 0.4784$

(vii) $\sin 18^o\ 31'$

$= 0.3176$

(viii) $\cos 52^o\ 13'$

$= 0.6127$

(ix) $\cot 89^o\ 9'$

$= \frac{1}{\tan 89^o\ 9'} = 0.01483$

Q.2 Find θ , if

(i) $\sin\theta = 0.5791$

$\Rightarrow \quad \theta = \sin^{-1}(0.5791) = 35^{o}\,23'$

(ii) $\cos\theta = 0.9316$

$\theta = \cos^{-1}(0.9316) = 21^{o}\,18'$

(iii) $\cos\theta = 0.5257$

$\theta = \cos^{-1}(0.5257) = 58^{o}\,17'$

(iv) $\tan\theta = 1.705$

$\theta = \tan^{-1}(1.705) = 59^{o}\,36'$

(v) $\tan\theta = 21.943$

$\theta = \tan^{-1}(21.943) = 87^{o}\,23'$

(vi) $\sin\theta = 0.5186$

$\theta = \sin^{-1}(0.5186) = 31^{o}\,14'$

EXERCISE 12.2

Q.1 Find the unknown angles and sides of the following triangles.

(i) $\alpha = 45^{o}$, $\beta = 90^{o}$, $\gamma = m\angle B$

(ii) $\alpha = 60^{o}$, $\beta = 90^{o}$, $\gamma = m\angle c$

(iii) $\alpha = 90^{o}$, $\beta = m\angle B$, $\gamma = m\angle c$

Solution:

(i) $\alpha = 45^{o}$, $\beta = 90^{o}$, $\gamma = m\angle B$

since α, β, γ are angles of triangle

so $\alpha + \beta + \gamma = 180°$

$45^{o} + 90^{o} + m < B = 180^{o}$

$m\angle B = 45^{o}$

$\sin 45^{o} = \dfrac{BC}{AB}$

$\sin 45^{o} = \dfrac{4}{AB}$