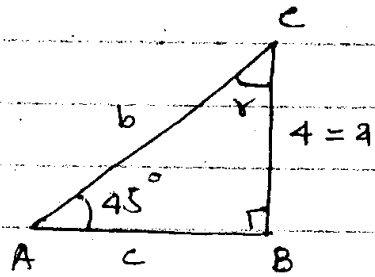


Q<sub>No</sub>.1 (i) From figure

$$a = 4, \quad \alpha = 45^\circ$$

$$\therefore \frac{a}{c} = \tan 45^\circ$$

$$\Rightarrow \frac{4}{c} = (1) \Rightarrow \boxed{4 = c}$$



Also  $\frac{a}{b} = \sin 45$

$$\Rightarrow \frac{4}{b} = 0.707 \Rightarrow \frac{4}{0.707} = b \Rightarrow \boxed{b = 5.657}$$

Now  $\alpha + \gamma = 90^\circ \Rightarrow \gamma = 90 - \alpha$   
 $= 90 - 45 \Rightarrow \boxed{\gamma = 45}$

(iii)

here  $b = 5, \quad c = 10$

from pythagoras theorem

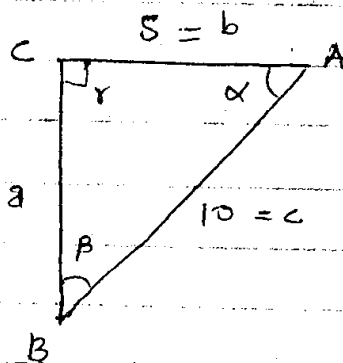
$$c^2 = a^2 + b^2$$

$$\Rightarrow (10)^2 = a^2 + (5)^2$$

$$\Rightarrow 100 = a^2 + 25 \Rightarrow 100 - 25 = a^2$$

$$\Rightarrow a^2 = 75 \Rightarrow a = \sqrt{75}$$

$$\Rightarrow \boxed{a = 8.66}$$



Now  $\tan \alpha = \frac{a}{b} = \frac{8.66}{5} = 1.732$

$$\Rightarrow \alpha = \tan^{-1}(1.732) \Rightarrow \alpha = 59.999 \approx 60$$

$$\text{i.e. } \boxed{\alpha = 60^\circ}$$

Now  $\alpha + \beta = 90^\circ \Rightarrow \beta = 90 - \alpha$

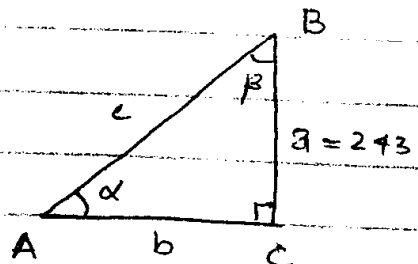
$$= 90 - 60 \Rightarrow \boxed{\beta = 30^\circ}$$

Q<sub>No</sub>2  $\alpha = 37^\circ 20'$ ,  $a = 243$

$$\therefore \alpha + \beta = 90^\circ$$

$$\Rightarrow \beta = 90 - \alpha = 90 - 37^\circ 20'$$

$$\Rightarrow \boxed{\beta = 52^\circ 40'}$$



Now  $\sin \alpha = \frac{a}{c} \Rightarrow \sin 37^\circ 20' = \frac{243}{b}$

$$\Rightarrow 0.606 = \frac{243}{b} \Rightarrow b = \frac{243}{0.606} \Rightarrow \boxed{b = 400.692}$$

$$\text{Now } \frac{243}{c} = \tan \alpha \Rightarrow \frac{a}{c} = \tan \alpha$$

$$\Rightarrow \frac{243}{c} = \tan 37^\circ 20' \Rightarrow \frac{243}{\tan 37^\circ 20'} = c$$

$$\Rightarrow c = \frac{243}{0.763} \Rightarrow \boxed{c = 318.598}$$

Q No 5  $b = 68.4$  ,  $c = 96.2$

By Pythagoras theorem

$$c^2 = a^2 + b^2$$

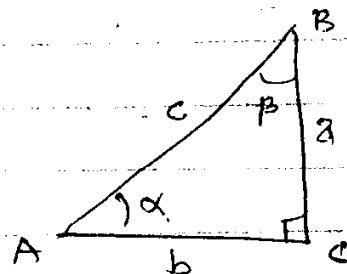
$$\Rightarrow (96.2)^2 = a^2 + (68.4)^2$$

$$\Rightarrow 9254.44 = a^2 + 4678.56$$

$$\Rightarrow 9254.44 - 4678.56 = a^2$$

$$\Rightarrow 4575.88 = a^2$$

$$\Rightarrow \boxed{a = 67.645}$$



$$\text{Now } \tan \alpha = \frac{a}{b} = \frac{67.645}{68.4} = 0.98897$$

$$\Rightarrow \alpha = \tan^{-1}(0.98897) = 44.68$$

$$\Rightarrow \boxed{\alpha = 44^\circ 41'}$$

$$\text{Now } \alpha + \beta = 90^\circ$$

$$\Rightarrow \beta = 90 - \alpha = 90 - 44^\circ 41'$$

$$\Rightarrow \boxed{\beta = 45^\circ 19'}$$

END