

SAMPLE PAPER 6: PAPER 2

QUESTION 9 (70 MARKS)

Question 9 (a)

(i) $|OC| = 10 \text{ cm}$

$$|OC| = |OD| + |DF| + |FE| + |EC|$$

$$\therefore 10 = 3 + a + b + 5$$

$$a + b = 2$$

(ii) Triangles OAF and CBF are similar because:

$$|\angle OAF| = |\angle FBC| \text{ (90}^\circ \text{ angles)}$$

$$|\angle OFA| = |\angle BFC| \text{ (Vertically opposite)}$$

$$\therefore |\angle AOF| = |\angle BCF|$$

(iii) $\frac{|BC|}{|OA|} = \frac{|FC|}{|OF|} \Rightarrow \frac{5}{3} = \frac{b+5}{a+3}$

$$5a + 15 = 3b + 15$$

$$5a = 3b$$

$$\therefore b = \frac{5a}{3}$$

$$a + b = 2$$

$$a + \frac{5a}{3} = 2 \Rightarrow 3a + 5a = 6$$

$$8a = 6$$

$$\therefore a = 0.75 \text{ cm}$$

$$\therefore b = \frac{5(0.75)}{3} = 1.25 \text{ cm}$$

(iv) $|AB| = |AF| + |FB|$

$$\Delta AOF : |OF|^2 = |OA|^2 + |AF|^2$$

$$\therefore 3.75^2 = 3^2 + |AF|^2$$

$$|AF| = \sqrt{3.75^2 - 3^2} = 2.25 \text{ cm}$$

$$\Delta FBC : |FC|^2 = |BC|^2 + |FB|^2$$

$$\therefore 6.25^2 = 5^2 + |FB|^2$$

$$|FB| = \sqrt{6.25^2 - 5^2} = 3.75 \text{ cm}$$

$$\therefore |AB| = 2.25 + 3.75 = 6 \text{ cm}$$



