

SAMPLE PAPER 2014 (SET F): PAPER 2

QUESTION 5 (25 MARKS)

QUESTION 5 (a)

$$g: x \mapsto \sin x \Rightarrow P = 2\pi, R = [-1, 1]$$

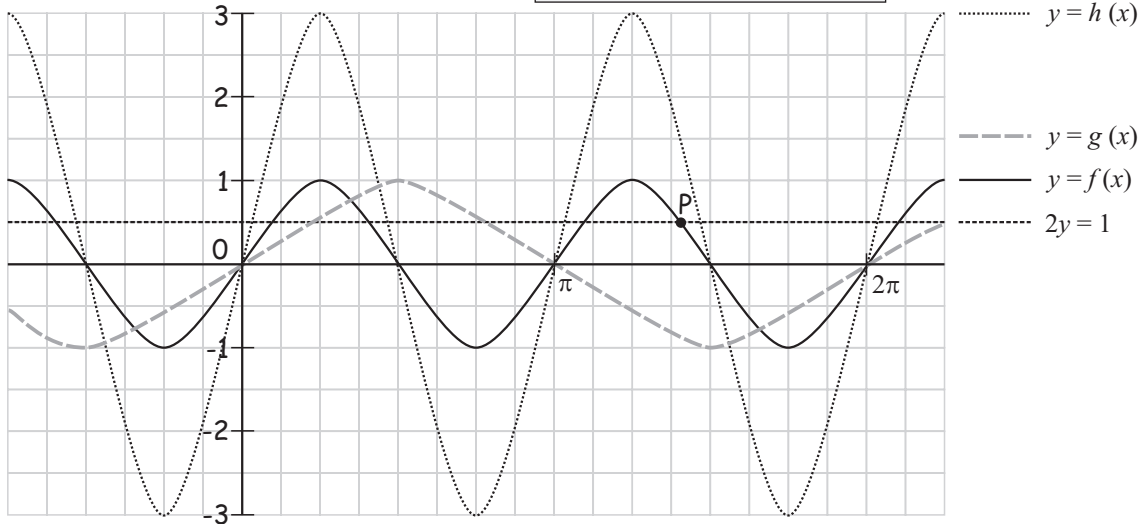
$$h: x \mapsto 3 \sin 2x \Rightarrow P = \frac{2\pi}{2} = \pi, R = [-3, 3]$$

PERIOD P AND RANGE R

$$y = a \sin bx$$

$$\text{Range } R = [-a, a]$$

$$\text{Period } P = \frac{2\pi}{b}$$



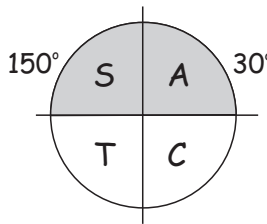
QUESTION 5 (b)

$$y = f(x) = \sin 2x$$

$$2y = 1 \Rightarrow y = \frac{1}{2}$$

$$\therefore \sin 2x = \frac{1}{2}$$

$$2x = \sin^{-1}\left(\frac{1}{2}\right) = 30^\circ = \frac{\pi}{6}$$



$$2x = \frac{\pi}{6}, \frac{13\pi}{6} \text{ [First quadrant]}$$

$$2x = \frac{5\pi}{6}, \frac{17\pi}{6} \text{ [Second quadrant]}$$

$$x = \frac{\pi}{12}, \frac{13\pi}{12}$$

$$x = \frac{5\pi}{12}, \frac{17\pi}{12}$$

$$\therefore x = \frac{\pi}{12}, \frac{5\pi}{12}, \frac{13\pi}{12}, \frac{17\pi}{12} \text{ [These are all the solutions between 0 and } 2\pi\text{.]}$$

