Sub - Math

Section - A

I A Select the correct option from the given alternatives :- 3

1 $\left(\frac{22\pi}{15}\right)$ is equal to

a) 246° b) 264° c) 224° d) 426°

2 $\sqrt{-3}\ \sqrt{-6}$ is equal to

a) $-3\sqrt{2}$ b) $3\sqrt{2}$ c) $3\sqrt{2}\,i$ d) $-3\sqrt{2}\,i$

3 If ω is complex cube root of unity, then the value of $\omega^{99} + \omega^{100} + \omega^{101}$ is

a) -1 b) 1 c) 0 d) 3

Section - B

B Answer the following :- 10

1 Find modulus and amplitude of $1 + i\sqrt{3}$

2 Solve the quadratic equation.

$x^2 + 3ix + 10 = 0$

OR

2 Show that $(-1 + i\sqrt{3})^3$ is a real number.

3 Find the angle between hour - hand and minute hand in a clock at quarter to six

5 A pendulum of length 14cm oscillates through on angle of 18°. Find the length of its path.

Section - C 12

C Answer the following :-

1 Express the complex number in polor form and Exponential form.

$1 + \sqrt{3}\,i$

and also use De moivers theorem and simplify $\frac{(\cos 2\theta + i \sin 2\theta)^7}{(\cos 4\theta + i \sin 4\theta)^3}$

2 Find the square root of complex number $2(1 - \sqrt{3}\,i)$

3 The measures of the angle of a triangle are in the ratio 3: 7 : 8. Find their measures in degree and radian.

4 OAB is a sector of the circle having centre at O and radius 12cm. If m $\angle AOB = 45$. Find the difference between the area of sector $\angle OAB$ and $\triangle AOB$.

OR

4 Two circles each of radius 7cm. intersect each other. The distance between their centres is $7\sqrt{3}$ cm. Find the area common to both the circles.