Professor Vishwanathan Iyer's

HERAMB COACHING CLASSES

Yogeshwar Towers, Katemanivali, Kalyan (East) **Date: 16/09/17**

XI/MATHS **Marks: 30** **Duration: 1Hour**

ATTEMPT ANY FOUR OF THE FOLLOWING:

1. Express the following in the form of $a+ib, a, b \in R, i=\sqrt{-1}$. State the values of a and b. (Any Two)

i)$(1+i)(1-i)^{-1}$ ii) $\frac{i(4+3i)}{(1-i)}$ iii) $\frac{(2+i)}{(3-i)(1+2i)}$ iv) $\frac{3+2i}{2-5i}+\frac{3-2i}{2+5i}$

2. If $a=\frac{-1+\sqrt{3i}}{2}, b=\frac{-1-\sqrt{3i}}{2}$ show that $a^2=b$ and $b^2=a$.

3. If $x+iy=(a+ib)^3$, show that $\frac{x}{a}+\frac{y}{b}=4(a^2-b^2)$.

4. If $\frac{a+3i}{2+ib}=1-i$, show that $(5a-7b)=0$

5.Find the value of $x^3-x^2+x+46, if\ x=2+3i$.

6. Find the square roots of the ANY ONE complex numbers.

i) $7+24i$ ii) $1+4\sqrt{3i}$

7. Express the following numbers in the form $x+iy$.

i) $\sqrt{3}(cos\frac{\pi}{6}+i\ sin\frac{\pi}{6})$ ii) $\sqrt{2}(cos\frac{\pi}{4}+i\ sin\frac{\pi}{4})$

ATTEMPT ANY FOUR

1 If $X^c=405^0\ and\ Y^0=-\frac{\pi^c}{12}, find\ x\ and\ y$

2. The difference between two acute angles of a right angled triangle is $\frac{3\pi^c}{10}$. Find the angles in degrees.

3. The measurement of angles of triangle are in the ratio 2:3:5. Find their measures in radians.

4 Find in radians and degrees the angle subtended at the centre of a circle by an arc whose length is 15 ams, if the radius of the circle is 25 cms.

5 The perimeter of a sector of a sector of a circle of area 64 $\pi\ sq.cms. Find\ the\ area$ of sector.

6 Two areas of the same length subtend angles of 60° and 75° at the centres of the circles. What is the ratio of radii of two circles?