Question 1

I)Express the angular measurements of the angle of regular decagon in degree, grades and radian.

II) Find the value of $\tan\frac{13\pi}{12}$

III) find the principal solution of the equation $\cos x = \frac{-\sqrt{3}}{2}$

IV) Find the most general values of θ satisfying the equation $2\cos\theta + 1 = 0$.

V)Find the multiplicative inverse of $\frac{3+4i}{4-5i}$.

Question 2 (any 2)

A) Express the following in the form of $a + ib$ where $a, b \in R$; $\frac{1}{(2+i)^2} - \frac{1}{(2-i)^2}$.

B) Find the modulus and argument of $\frac{i-1}{\cos\frac{\pi}{3}+i\sin\frac{\pi}{3}}$

C) If $x + iy = \sqrt{\frac{1+i}{1-i}}$ prove that $x^2 + y^2 = 1$.

Question 3 (any 2)

I) Prove that $\tan 36 + \tan 9 + \tan 36 \tan 9 = 1$

II) II) Prove that $\tan 75 + \cot 75 = 4$

III) Prove that $\sin 12 \sin 48 \sin 54 = \frac{1}{8}$

Question 4

I) Find the Square root of $-5 - 12i$.

II) Find the Modulus of $\frac{(1+3i)(2-5i)}{(2-i\sqrt{6})(-3+i\sqrt{5})}$

Question 5

A) How many ways can we select 6 members committee from 6men and 5 women such that each committee has at least 3 women.

B)A polygon has 35 diagonals. Find the number of its sides

Question 6

In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H and I, 11 read both H and T, 8 read both T and I, 3 read all three newspapers. Find:

(i) the number of people who read at least one of the newspapers.

(ii) the number of people who read exactly one newspaper.

(iii) the number of people who read exactly two newspaper

Question 7 (any 2)

A) Find r $C(n, r-1) = 36;\ C(n, r) = 84;\ C(n, r+1) = 126$

B) Find n if $C(2n, 3) : C(n, 3) = 11 : 1$

C) A cricket team of 11 players is to be selected from 16 players including 5 bowlers and 2 wicket keepers. In how many ways can a team be selected so as to consist of exactly 3 bowlers and one wicket keeper?