Note 1.Scientific Calculators are **Not** allowed.

2.If there is no answer in the options write as " **None** "

SECTION-A

Answer all the MCQ, each question carries 1 marks. **5X1=5M**

1. If $\sqrt{2}+\sqrt{5}$ & $\frac{4}{3}$ are roots of $3x^5 + 2kx^4 - 42x^3 + 56x^2 + 27x - 36 = 0$
   Then k =?
   A) 2 B) -2 C) 4 D) -4

2. (i) $x^6 - 2x^5 + 3x^3 - 3x^2 + 2x - 1 = 0$ is reciprocal equation of class two.
   (ii) The polynomial equation whose roots are squares of the roots of
   $x^3 - x^2 + 8x - 6 = 0$ is $x^3 + 15x^2 + 52x - 36 = 0$

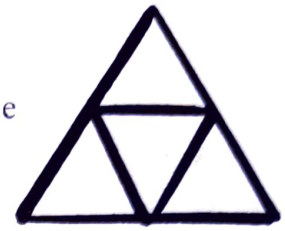
   A) (i) is False & (ii) is True
   B) Both (i) & (ii) are Flase
   C) (i) is True & (ii) is Flase
   D) Both (i) & (ii) are True

3. Each of 3 , one mark questions in a multiple choice question Test has 4 options.Then in how many different possible ways a student will not get 3 marks ,when exactly one of the four options is correct.[All the questions must be answered]
   A) 12 B) 81 C) 64 D) 63

4. Number of ways of arranging the letters of the word 'SINGING' Such that two N's do not come together are

A) 180 B) 350 C) 450 D) 1080

5. In how many ways the adjacent diagram be coloured. If each of the smaller triangle can be coloured with one of the four colours : Red,blue,green or pink such that no two adjacent triangles have the same colour ?



A) 16 B) 24 C) 108 D) 256

SECTION-B

Answer any Two out of Three questions. 2X5=10M

1.

(a) Solve $x^4 - 12x^3 + 50x^2 - 92x + 65 = 0$, given that $4 + \sqrt{3}$ is one of its roots . **[3M]**

(b) Solve $x^3 - 7x^2 + 14x - 8 = 0$, given that the roots are in Geometric Progression. **[2M]**

2. Find the sum of all the 4-digit numbers that can be formed using the digits 0,2,4,7,8 . **[5M]**

3.

(a) If the letters of the word **MOTHER** are permuted in all the possible ways and the words thus formed are arranged in the dictionary order, then find the rank of the word **'MOTHER'**. **[3M]**

(b) Find the number of ways of seating 6 Indians , 3 Italians and 2 Russians at a round table so that no 2 Russians , no 2 Italians sit together. **[2M]**

End of the Question Paper