



**Preparatory Program – AMTI - NMTC Final
Year 2011 Test Paper**

EXCLUSIVE ★

Success begins with you ...-

Note -

Elegant and novel solution will get extra Credits
Diagrams and explanation should be given wherever necessary.
Rough work should be shown in the answer copy itself.

1. Find all three digit and four digit natural numbers such that the product of the digits is a prime number. Find the sum of all such three digit numbers and the sum of all such four digit numbers. Find the biggest prime factor of each sum.

2. Let a sequence of numbers be denoted as t_1, t_2, t_3, \dots , where $t_1 = 1$ and $t_n = t_{n-1} + n$. (n is a natural number). Find $t_2, t_3, t_4, t_{10}, t_{2011}$.

3. When written out completely 16^{2011} has m digits and 625^{2011} has n digits. Find the value of $(m + n)$.

4. Four digit numbers are formed by four different digits a, b, c, d (none of them is zero) without any repetition of digits. Prove that when the sum of all such numbers when divided by the sum of the digits a, b, c, d , the quotient is 6666.

5. ABCD is a parallelogram. Through C a straight line is drawn outside the parallelogram. AP, BQ, DR are drawn perpendicular to this line from A, B and D, Prove that $AP = BQ + DR$.

6. Neev puts 12 plastic bags inside another plastic bag. Each of these 12 bags is either empty or contains 12 other plastic bags. All together if 12 bags were non-empty, find the total number of bags.

7. Nine squares are arranged to form a rectangle ABCD. The smallest square P has an area 4 sq. units. Find the areas of Q and R.


