

**Topics : Permutation & Combination, Binomial Theorem**

Type of Questions		M.M., Min.
Single choice Objective (no negative marking) Q.,1,2,3	(3 marks, 3 min.)	[9, 9]
Multiple choice objective (no negative marking) Q.4	(5 marks, 4 min.)	[5, 4]
Subjective Questions (no negative marking) Q. 5,6,7	(4 marks, 5 min.)	[12, 15]

1. The sum of all the four digit numbers that can be formed using the digits 1, 2, 3, 4 if repetition of digits is allowed, is  
 (A) 399996                      (B) 388840                      (C) 711040                      (D) none of these
  
2. All possible three digit even numbers which can be formed with the condition that if 5 is one of the digit, then 7 is the next digit, is  
 (A) 5                                  (B) 325                                  (C) 345                                  (D) 365
  
3. Different words are formed by arranging the letters of the word "SUCCESS", find
  - (i) The number of words in which C are together but S's are seperated, is  
 (A) 120                                  (B) 96                                  (C) 24                                  (D) 420
  
  - (ii) The number of words in which no two C's and no two S's are together is  
 (A) 120                                  (B) 96                                  (C) 24                                  (D) 180
  
  - (iii) The number of words in which the consonants appear in alphabetic order is  
 (A) 42                                  (B) 40                                  (C) 420                                  (D) 280
  
4. If  $(1 + 2x + 3x^2)^{10} = a_0 + a_1x + a_2x^2 + \dots + a_{20}x^{20}$ , then :  
 (A)  $a_1 = 20$                                   (B)  $a_2 = 210$   
 (C)  $a_4 = 8085$                                   (D)  $a_{20} = 2^2 \cdot 3^7 \cdot 7$
  
5. How many 10 digit numbers can be made with odd digits so that no two consecutive digits are same.
  
6. If repetitions are not permitted
  - (1) How many 3 digit numbers can be formed from the six digit 2, 3, 5, 6, 7 & 9 ?
  - (2) How many of these are less than 400 ?
  - (3) How many are even ?
  - (4) How many are odd ?
  - (5) How many are multiples of 5 ?
  
7. Consider the word W = "COMMISSIONER". Find
  - (i) Number of 5 lettered word containing two vowels and three consonants.
  - (ii) Number of ways in which all the letters of the word W can be arranged if alike letters are together but seperated from the other alike letters.
  - (iii) Number of ways in which letters of the word W can be arranged without changing order of alike letters.



## Answers Key

1. (C)    2. (D)    3. (i) (C) (ii) (B) (iii) (A)  
4. (A, B, C) 5. (A, B) 6.  $5.4^9$   
7. (1) 120 (2) 40 (3) 40 (4) 80 (5) 20  
8. (i) 6720 (ii) 2880 (iii)  ${}^{12}P_4$

