CHAPTER-7			
PERMUTATIONS AND COMBINATIONS			
One	mark questions		
1.	Find the number of 4 letter words, with or without meaning, which can be formed	out of the	
	letters of the word ROSE, where the repetition of the letters is not allowed.	(U)	
2.	Given 4 flags of different colours, how many different signals can be generated, if a the use of 2 flags one below the other?	signal requires	
3.	How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming of the digits is allowed?	that repetition (U)	
4.	How many 3-digit numbers can be formed from the digits 1, 2, 3, 4 and 5 assuming of the digits is not allowed?	that repetition (U)	
5.	How many 4-letter codes can be formed using the first 10 letters of the English alph letter can be repeated?	habet, if no (U)	
6.	How many 5-digit telephone numbers can be formed using the digits 0 to 9 if each with 67 and no digit appears more than once?	number starts (U)	
7.	A coin is tossed 3 times and the outcomes are recorded. How many possible outco	mes are there? (U)	
8.	Evaluate 5!	(К)	
9.	Evaluate 7! – 5!	(К)	
10	. Compute ⁷¹ ₅₁	(к)	
11	Compute $\frac{12!}{(10!)(2!)}$	(к)	
12	Evaluate $\frac{n!}{r! (n-r)!}$, when n = 5, r = 2.	(К)	
13	Evaluate 8!	(К)	
14	Evaluate 4! – 3!	(К	
15	ls 3! + 4! = 7! ?	(К)	
16	Compute $\frac{8!}{(6!)(2!)}$.	(К)	
17	Evaluate $\frac{n!}{(n-r)!}$, when n = 6, r = 2	(К)	
18	Evaluate $\frac{n!}{(n-r)!}$, when n =9, r =5.	(К)	
19	Find the number of permutations of the letters of the word ALLAHABAD.	(U)	
20	How many 4-digit numbers can be formed by using the digits 1 to 9 if repetition of allowed?	digits is not (U)	
21	In how many ways can 4 red, 3 yellow and 2 green discs be arranged in a row if the	discs of the same	
22	Colour are indistinguishable:	(A) (S)	
22	How many 4-digit numbers are there with no digit repeated?	(S)	
23	now many 3-digit even numbers can be made using the digits 1, 2, 3, 4, 6, 7, if no d	(U)	
24. From a committee of 8 persons, in how many ways can we choose a chairman and a vice chairman			
assuming one person cannot hold more than one position? (U)			
25	How many words, with or without meaning, can be formed using all the letters of the	ne word	
	EQUATION, using each letter exactly once?	(U)	

Department of Pre-university Education

26. If ${}^{n}C_{9} = {}^{n}C_{8}$, find ${}^{n}C_{17}$	(К)		
 27. A committee of 3 persons is to be constituted from a group of 2 men and 3 women ways can this be done? 28. If ⁿC₈ = ⁿC₂, find ⁿC₂. 	ı. In how many (U) (K)		
29. How many chords can be drawn through 21 points on a circle?	(A)		
 30.In how many ways can a team of 3 boys and 3 girls be selected from 5 boys and 4 gi 31. In how many ways can one select a cricket team of eleven from 17 players in which can bowl if each cricket team of 11 must include exactly 4 bowlers? 32. A bag contains 5 black and 6 red balls. Determine the number of ways in which 2 bl balls can be selected. 33. In how many ways can a student choose a programme of 5 courses if 9 courses are specific courses are compulsory for every student? 	rls? (A) only 5 players (A) lack and 3 red (A) available and 2 (S)		
Three marks questions			
34. Find the number of different signals that can be generated by arranging at least 2 f (one below the other) on a vertical staff, if five different flags are available.	lags in order (A)		
35.If $\frac{1}{8!} + \frac{1}{9!} = \frac{x}{10!}$, find x.	(к)		
36.If $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$, find x.	(К)		
37. How many numbers lying between 100 and 1000 can be formed with the digits 0, 1, 2, 3, 4, 5 if the			
repetition of the digits is not allowed? 38 Find the value of <i>n</i> such that $n_{n_2} = 42$ $n_{n_2} \to 4$	(U) (U)		
$p_5 = 12. p_3, n > 1$			
39.Find r, if5. ${}^{*}p_{r} = 6. {}^{5}p_{r-1}$.	(К)		
40.Find the value of <i>n</i> such that $\frac{n_{p_4}}{n-1p_4} = \frac{5}{3}$, n> 4.	(к)		
41.Find the number of different 8-letter arrangements that can be made from the letters of the word			
(i)all vowels occur together (ii) all vowels do not occur together.	(U)		
42.Find the number of arrangements of the letters of the word INDEPENDENCE. In how arrangements,	v many of these		
(i) do the words start with P (ii) do the words begin with I and end in P?	(U)		
43.Find n, if ${}^{n-1}p_3: {}^np_4 = 1:9.$	(К)		
44.Find r if ${}^{5}p_{r} = 2$. ${}^{6}p_{r-1}$.	(К)		
45.How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if.			
(i) 4 letters are used at a time, (ii) all letters are used at a time,	(11)		
(iii) all letters are used but lirst letter is a vower?	(0)		

- 46. In how many distinct permutations of the letters of the word MISSISSIPPI the four I's do not come together? (U) 47. In how many ways can the letters of the word PERMUTATIONS be arranged if the (i) words start with P and end with S, (ii) all the vowels are together. (S) 48. Determine the number of 5 card combinations out of a deck of 52 cards if each selection of 5 cards has exactly one king. (A) Five marks questions: 49. What is the number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these (i) four cards are of the same suit, (ii) four cards belong to four different suits. (A) 50. How many words, with or without meaning, each of 3 vowels and 2 consonants can be formed from the letters of the word INVOLUTE? (A)
 - 51. A group consists of 4 girls and 7 boys. In how many ways can a team of 5 members be selected if the team has (i) no girl ? (ii) at least one boy and one girl ? (iii) at least 3 girls ?

(A)

(A)

- 52. How many numbers greater than 1000000 can be formed by using the digits 1, 2, 0, 2, 4, 2, 4? (U)
- 53. A committee of 7 is to be formed from 9 boys and 4 girls. In how many ways can this be done when the committee consists of:
 - (i) exactly 3 girls? (ii) at least 3 girls? (iii) at most 3 girls?
- 54. In an examination, a question paper consists of 12 questions divided into two parts i.e., Part I and Part II, containing 5 and 7 questions, respectively. A student is required to attempt 8 questions in all, selecting at least 3 from each part. In how many ways can a student select the questions? (A)
- 55. Prove that ${}^{n}C_{r} + {}^{n}C_{r-1} = {}^{n+1}C_{r}$ and hence If ${}^{n}C_{9} = {}^{n}C_{8}$, find ${}^{n}C_{17}$. (U)
- 56. From a class of 25 students, 10 are to be chosen for an excursion party. There are 3 students who decide that either all of them will join or none of them will join. In how many can the excursion party be chosen?

57. 4 cards are chosen from a pack of 52 playing cards In how many of these

i) are face cards ii) two are red cards and two are black cards iii) cards are of the same colour?(A)
