J.E.E. Main/ Advanced Foundation - XI Maths Worksheet

Time: 60 min **Chapter#7. Permutations and Combinations** **Full Marks:**

Q.1	If ${}^nC_7 = {}^nC_4$, find the value of n. (1 mark)
Q.2	If $\frac{1}{6!}+\frac{1}{7!} = \frac{x}{8!}$, find x.
Q.3	Out of 3 books on economics, 4 books on political science and 5 books on Geography, how many collections can be made if each collection consist of exactly one book on each subject? (2 marks)
Q.4	How many numbers greater than 1000000 can be formed by using the digits 1, 2, 0, 2, 4, 2, 4,?
Q.5	Find the value of n such that ${}^nP_5 = 42{}^nP_3$, n > 4. (3 marks)
Q.6	How many 3-digit numbers can be formed from the digit 1, 2, 3, 4 and 5 assuming that (i) repetition of the digit is allowed? (ii) repetition of the digits is not allowed? (2 marks)
Q.7	In an examination, a question paper consists of 12 questions divided into 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?
Q.8	How many 4-digit numbers are there with no digit repeated?
Q.9	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 at least one boy and one girl?
Q.10	How many 3-digit even numbers can be made using the digits 1, 2, 3, 4, 5, 6, if no digit is repeated? (2 marks)
Q.11	What is number of ways of choosing 4 cards from a pack of 52 playing cards? In how many of these (3 marks) (i) four cards are of the same suits, (ii) are face cards.
Q.12	How many words with or without meaning each of 3 vowels and 2 consonants can be formed from the letters of the word *INVOLUTE?* (3 marks)
Q.13	Eighteen guests have to be seated, half on each side of a long table. Four particular guests desire to sit on one particular side and three others on the other on side. Determine the number of ways in which the sitting arrangement can be made. (3 marks)
Q.14	In how many of the distinct permutations of the letters in MISSISSIPPI do the four 1's not come together?
Q.15	Find the number of different 8-letters arrangements that can be made from the letters of the word DAUGHTER so that (i) all vowels occur together, (ii) all vowels do not occur together.
Q.16	If ${}^nC_2 - {}^nC_1 = 35$, then find the value of n.
Q.17	In a class there are 27 boys and 15 girls. The teacher wants to select a boys and a girl for the monitor ship of the class. In how many ways can the teacher make this selection? (1 mark)
Q.18	A person has got 15 acquaintances of whom 10 are relatives. In how many ways he may invite 9 guests so that 7 of them would be relatives? (2 marks)
Q.19	A committee of 3 persons is to be constituted from a group of 2 men and 3 women. In how many ways can this be done? How many of these committees would consist of 1 man and 2 women?
Q.20	A box contains 7 red 6 white and 4 blue balls. How many selection of three balls can be made so that all three are red balls? (1 mark)