Permutation & Combination Practice Set

1. There are fourteen juniors and twenty-three seniors in the Service Club. The club is to send four representatives to the State Conference.

I. How many different ways are there to select a group of four students to attend the conference?

II. If the members of the club decide to send two juniors and two seniors, how many different groupings are possible?
A] (i): $^{37}C_4$, (ii): $^{14}C_2 \times ^{23}C_2$
B] (i): $^{37}P_4$, (ii): $^{14}P_2 \times ^{23}P_2$
C] (i): $^{37}P_4$, (ii): $^{14}C_2 \times ^{23}C_2$
D] (i): $^{37}C_4$, (ii): $^{14}P_2 \times ^{23}P_2$

2. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
A] 210 B] 1050 C] 25200 D] 21400

3. In how many ways can the letters of the word 'LEADER' be arranged?
A] 72 B] 144 C] 360 D] 720

4. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?
A] 564B] 645 C] 735 D] 756

5. In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?
A] 360 B] 480 C] 720 D] 5040

6. In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?
A] 810 B] 1440 C] 2880 D] 50400

7. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?
A] 159 B] 194 C] 205 D] 209

8. How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?
A] 5 B] 10 C] 15 D] 20

9. In how many ways a committee, consisting of 5 men and 6 women can be formed from 8 men and 10 women?
A] 266 B] 5040 C] 11760 D] 86400

10. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?
A] 32 B] 48 C] 64 D] 96

11. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?
A] 32 B] 48 C] 36 D] 60

12. In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?
A] 63 B] 90 C] 126 D] 45

13. How many 4-letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?
A] 40 B] 400 C] 5040 D] 2520

14. In how many different ways can the letters of the word 'MATHEMATICS' be arranged so that the vowels always come together?
A] 10080 B] 4989600 C] 120960 D] None

15. In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?
A] 120 B] 720 C] 4320 D] 2160

16. How many 4-digit number can be formed using digits 1, 2, 3, 4 and 5 which are divisible by 4 and without any digits being repeated.
A] 8 B] 24 C] 30 D] 125

17. How many 5-digit no. can b formed using digits 1, 2, 3, 4, 5 and 6 which are divisible by 4 and without any digits being repeated?
A] 144 B] 168 C] 192 D] None

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18. If 6 parallel lines are cut by another 5 parallel lines, then how many parallelograms can be formed?
A] 24 B] 30 C] 150 D] 600

19. In how many ways a 2-digit number can be formed using the digits. 1, 3, 4, 5 and 7 when repetition is allowed.
A] 20 B] 25 C] 5^5 D] 2^5

20. The permutations and combinations of abcd taken 3 at a time are respectively.
A] 12, 2 B] 24, 4 C] 36, 6 D] 48, 8

21. A committee is to be formed comprising 7 members such that there is a simple majority of men and at least 1 woman. The shortlist consists of 9 men and 6 women. In how many ways can this be done?
A] 3724 B] 3630 C] 4914 D] 5670

22. There are 5 letters and 5 addressed envelopes. The number of ways in which all the letters can be put in wrong envelopes are?
A] 119 B] 44 C] 59 D] 40

23. In how many ways can 12 toys be divided equally among 4 kids?
A] $(12C3)^4$ B] $(12C3)^4$. 4!
C] 12C3.9C3 .6C3 .3C3
D] 12C3. 9C3 .6C3 .3C3 / 4P4

24. If we permute 5 letters of the word 'mango', the number of permuted words with 'n' at the second place are
A] 24 B] 6 C] 12 D] 14

25. If nC5 = nC0 , then find the value of n.
A] n = 0 B] n = 1 C] n = 5 D] n = 10

26. The number of ways in which the letters of the word 'RESULT' can be arranged without repetition is
A] 720 B] 120 C] 60 D] 840

27. A teacher was trying to form the groups of students in such a way that every group has equal number of students and that number should be a prime number. She tried for first 5 prime numbers, but on each occasion exactly one student was left behind. If the number of students is in 4 digits, then how many different values can she take?
A] 0 B] 2 C] 3 D] 4

28. A phone company offers 5 phone plan options: call waiting, call forwarding, voice mail, conferencing, and caller ID. A customer can choose 3 options. The number of ways one can avail the plan options is
A] 5 B] 10 C] 3 D] 20

29. In how many different ways can the letters of the word 'HARDWARE' be arranged such that the vowels always come together?
A] 120 B] 1080 C] 1440
D] 4320 E] 720

30. In how many ways can the letters of the word 'ELEPHANT' be arranged?
A] 5760 B] 6720 C] 20160 D] 40320

31. Mayank is going on a holiday trip. He wants to pack 3 t-shirts from 5 t-shirts he has. In how many ways can he make his choice?
A] 15 B] 10 C] 8 D] 20

32. A box contains 5 red, 4 white and 3 green balls. In how many ways can 3 balls be drawn from the box, without replacement, so that at least 2 of them are green?
A] 18 B] 28 C] 27 D] 9 E] 30

33. In how many ways can 9 female and 7 male members be selected for a review team from a group of 15 females and 10 males?
A] 15C9 + 10C7 B] 15P9 + 10P7
C] 15P9 x 10P7 D] 15C9 x 10C7

34. What are the number of ways of arranging 9 books out of 14 in a library where the librarian, while arranging the books, got 2 damaged books and sent them for rebinding and repairing?
A] 12C9 B] 12P9 C] 14C7 D] 14P7

35. What is the number of ways of seating 7 candidates for an interview around a round table if all the 4 women want to sit together?
A] 4! 3! B] 4! 4!

C]7C4 x 4! x 3! D] 7C3 x 7!

36. Ram buys 7 novels from a book fair. Shyam buys 8 novels from another book fair, none of which is common with those bought by Ram. They decide to exchange their books one for one. In how many ways can they exchange their books for the first time?
A] 7! * 8! B] 7 * 8!
C] 7! * 8 D] 56

37. In how many ways can the letters of the word "SMUDGE" be arranged such that the vowels always come together?
A] 150 B] 120 C] 240 D] 720

38. In how many ways can 10 chairs be divided and arranged for 2 cabins A and B with 4 and 6 chairs respectively?
A] 10C4 x 6C6
B] 10C4 x 6C6 x 10!
C] 10C4 x 10C6 x 10P10
D] 10C4 x 4P4 x 6P4

39. A five-digit number divisible by 3 is to be formed using numerals 0, 1, 2, 3, 4 and 5 without repetition. The total number of ways this can be done is?
A] 216 B] 240 C] 600 D] 3125

40. In how many ways can 7 members of the content team, 5 members of the R&D team, 3 members of HR and 2 members of the Sales team be allotted workstations in a row so that all employees of the same team sit together?
A] 12! * 5!
B] 7 * 5 * 3 * 2
C] 7! * 5! * 3! * 2!
D] 7! * 5! * 4! * 3! * 2!
E] 17!