**Permutation and combinations**

**1. How many numbers between 400 and 1000 can be made with the digits 2, 3, 4, 5, 6 and 0?**

(a) 60 (b) 70 (c) 40 (d) 120

**2. How many even numbers of four digits can be formed with the digits 0, 1, 2, 3, 4, 5 and 6; no digit being used more than once?**

(a) 300 (b) 140 (c) 120 (d) 420

**3. How many numbers of four digits greater than 2300 can be formed with the digits 0, 1, 2, 3, 4, 5 and 6; no digit being repeated in any number?**

(a) 480 (b) 560 (c)660 (d) 580

**4. In how many ways 3 prizes can be given away to 7 boys when each boy is eligible for any of the prizes.**

(a) 243 (b) 343 (c) 433 (d) 2187

**5. A telegraph has 5 arms and each arm is capable of 4 distinct positions, including the position of rest. What is the total number of signals that can be made?**

(a) 1023 (b) 1024 (c) 3124 (d) 3125

**6. How many numbers greater than 1000 but not greater than 4000 can be formed with the digits 0, 1, 2, 3, 4 repetition of digits being allowed.**

(a) 357 (b) 375 (c) 135 (d) None of these

**7. In how many ways can 8 I.A. and 6 I.Sc. students be seated in a row so that no two of the I. Sc. students may sit togther?**

(a) (b) (c) (d) None of these

**8. In a class of 12 students, there are 4 girls. In how many different ways can they be arranged in a row such that no two of the three girls are consecutive?**

(a) (b) (c) (d)

**9. In how many ways can 12 examination papers be arranged so that the best and the worst papers never come together.**

(a) 10 11! (b) 12 11!

(c) 10 12! (d) 10! 11!

**10. There are 3 boys and 2 girls. In how many ways can they be seated in a row so that all the three boys do not sit together.**

(a) 72 (b) 42 (c) 172 (d) 190

**11. In how many ways 3 boys and 3 girls can be seated in a row so that boys and girls are alternate?**

(a) 9 (b) 36 (c) 72 (d) Data inadequate

**12. In how many ways 10 boys and 9 girls can be seated in a row so that they are alternate?**

(a) 10!9! (b) 10!11!

(c) 9!11! (d) Data inadequate

**13. Find the number of ways in which 7 different beads can be arranged to form a necklace.**

(a) (b) (c) (d) None of these

**14. In how many ways can the letters of the word ‘civilization’ be rearranged?**

(a) (b) (c) (d) None of these

**15. In how many ways can the letters of the word ‘Director’ be arranged so that the three vowels are never together?**

(a) 1800 (b) 18000

(c) 16000 (d) 1600

**16. How many different letter arrangements can be made from the letters of the word RECOVER?**

(a) 1210 (b) 5040

(c) 1260 (d) 1200

**17. Find the no. of diagonals of a hexagon.**

(a) 9 (b) 18 (c) 12 (d) 15

**18. There are 4 members in a delegation which is to be sent abroad. The total no. of members is 8. In how many ways can the selection be made so that a particular member is always (i) included (ii) excluded?**

(a) 35, 35 (b) 35, 40

(c) 36, 32 (d) None of these

**19. In an examination a minimum is to be secured in each of 3 subjects for a pass. In how many ways can a student fail?**

(a) 8 (b) 9 (c) 7 (d) Data inadequate

**20. In an examination a minimum is to be secured in each of 6 subject for a pass. In how many ways can a student fail?**

(a) 65 (b) 63 (c) 64 (d) Can’t be determined

**21. There are 7 questions in a question paper. In how many ways can a student solve one or more questions?**

(a) 128 (b) 63 (c) 129 (d) 127

**22. From 5 officers and 7 jawans in how many ways can 4 be chosen to include exactly 2 officers?**

(a) 210 (b) 120 (c) 200 (d) 105

**23. From 6 officers and 10 jawans in how many ways can 5 be chosen to include exactly 1 officers?**

(a) 1290 (b) 1160

(c) 1260 (d) None of these

**24. From 8 officers and 12 jawans in how many ways can 7 be chosen to include exactly 3 officers?**

(a) 27720 (b) 27270

(c) 26620 (d) None of these

**25. In how many ways 12 defferent things can be divided in three sets each having 4 things.**

(a) (b)

(c) (d)

**26. In how many ways 15 defferent things can be divided equally among 5 persons?**

(a) (b) (c) (d)

**27. In how many ways 18 defferent things can be divided equally among 6 persons?**

(a) (b) (c) (d)

**28. In how many ways 20 defferent things can be divided equally among 4 persons?**

(a) (b) (c) (d) None of these

**29. 4 students appear in an examinaiton. In how many ways can the result be announced?**

(a) 15 (b) 16 (c) 17 (d) None of these

**30. 7 students appear in an examinaiton. In how many ways can the result be announced?**

(a) 126 (b) 127 (c) 129 (d) 128

**31. 4 matches are to be played in a chess tournament. In how many ways can their results be decided?**

(a) 81 (b) 16 (c) 27 (d) 64

**32. 5 matches are to be played in a chess tournament. In how many ways can their results be decided?**

(a) 343 (b) 243 (c) 128 (d) None of these

**33. From 4 officers and 8 jawans in how many ways can be 6 chosen to include at least one officer.**

(a) 896 (b) 986 (c) 886 (d) 996

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| **Answer keys** | | | |
| 1. (a)  2. (d)  3. (b)  4. (b)  5. (a)  6. (b)  7. (a)  8. (a)  9. (a) | 10. (a)  11. (c)  12. (a)  13. (a)  14. (b)  15. (b)  16. (c)  17. (a)  18. (a) | 19. (c)  20. (b)  21. (d)  22. (a)  23. (c)  24. (a)  25. (a)  26. (a)  27. (c) | 28. (b)  29. (b)  30. (d)  31. (a)  32. (b)  33. (a) |