

GRE

Quant Reasoning Assessment

P & C and Probability

Total Questions: 60

Duration: 60 Min

SECTION –I PERMUTATION AND COMBINATION

1. In how many ways can the letters of the word ABACUS be rearranged such that the vowels always appear together?

- A. $\frac{6!}{2!}$
- B. $3! * 3!$
- C. $\frac{4!}{2!}$
- D. $\frac{4! * 3!}{2!}$
- E. $\frac{3! * 3!}{2!}$

2. How many different four letter words can be formed (the words need not be meaningful) using the letters of the word "MEDITERRANEAN" such that the first letter is E and the last letter is R?

- A. 59
- B. $\frac{11!}{2! * 2! * 2!}$
- C. 56
- D. 23
- E. $\frac{11!}{3! * 2! * 2! * 2!}$

3. What is the probability that the position in which the consonants appear remain unchanged when the letters of the word Math are re-arranged?

- A. $\frac{1}{4}$
- B. $\frac{1}{6}$
- C. $\frac{1}{3}$
- D. $\frac{1}{24}$
- E. $\frac{1}{12}$

4. There are 6 boxes numbered 1, 2,....6. Each box is to be filled up either with a red or a green ball in such a way that at least 1 box contains a green ball and the boxes containing green balls are consecutively numbered. The total number of ways in which this can be done is

- A. 5
- B. 21
- C. 33
- D. 60
- E. 6

5. A man can hit a target once in 4 shots. If he fires 4 shots in succession, what is the probability that he will hit his target?
- A. 1
 - B. $\frac{1}{256}$
 - C. $\frac{81}{256}$
 - D. $\frac{175}{256}$
 - E. $\frac{144}{256}$
6. In how many ways can 5 letters be posted in 3 post boxes, if any number of letters can be posted in all of the three post boxes?
- A. 5C_3
 - B. 5P_3
 - C. 5^3
 - D. 3^5
 - E. 2^5
7. Ten coins are tossed simultaneously. In how many of the outcomes will the third coin turn up a head?
- A. 2^{10}
 - B. 2^9
 - C. $3 * 2^8$
 - D. $3 * 2^9$
 - E. None of these
8. In how many ways can the letters of the word "PROBLEM" be rearranged to make 7 letter words such that none of the letters repeat?
- A. $7!$
 - B. 7C_7
 - C. 7^7
 - D. 49
 - E. None of these
9. A teacher is making a multiple choice quiz. She wants to give each student the same questions, but have each student's questions appear in a different order. If there are twenty-seven students in the class, what is the least number of questions the quiz must contain?
- A. 5
 - B. 6
 - C. 7
 - D. 8
 - E. None of these

10. A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?
- 1260
 - 210
 - ${}^{10}C_6 * 6!$
 - ${}^{10}C_5 * 6$
11. Badri has 9 pairs of dark Blue socks and 9 pairs of Black socks. He keeps them all in a same bag. If he picks out three socks at random what is the probability he will get a matching pair?
- $(2 * {}^9C_2 * {}^9C_1) / {}^{18}C_3$
 - $({}^9C_2 * {}^9C_1) / {}^{18}C_3$
 - 1
 - None of these
12. How many words of 4 consonants and 3 vowels can be made from 12 consonants and 4 vowels, if all the letters are different?
- ${}^{16}C_7 * 7!$
 - ${}^{12}C_4 * {}^4C_3 * 7!$
 - ${}^{12}C_3 * {}^4C_4$
 - ${}^{12}C_4 * {}^4C_3$
13. When four fair dice are rolled simultaneously, in how many outcomes will at least one of the dice show 3?
- 155
 - 620
 - 671
 - 625
14. If the letters of the word CHASM are rearranged to form 5 letter words such that none of the word repeat and the results arranged in ascending order as in a dictionary what is the rank of the word CHASM?
- 24
 - 31
 - 32
 - 30
15. How many four letter distinct initials can be formed using the alphabets of English language such that the last of the four words is always a consonant?
- $(26^3) * (21)$
 - $26 * 25 * 24 * 21$
 - $25 * 24 * 23 * 21$
 - None of these.

16. In how many ways can the letters of the word EDUCATION be rearranged so that the relative position of the vowels and consonants remain the same as in the word EDUCATION?

- A. $9!/4$
- B. $9!/(4!*5!)$
- C. $4!*5!$
- D. None of these

17. How many ways can 10 letters be posted in 5 post boxes, if each of the post boxes can take more than 10 letters?

- A. 5^{10}
- B. 10^5
- C. $10P^5$
- D. $10C^5$

18. A team of 8 students goes on an excursion, in two cars, of which one can seat 5 and the other only 4. In how many ways can they travel?

- A. 9
- B. 26
- C. 126
- D. 3920

19. There are 5 Rock songs, 6 Carnatic songs and 3 Indi pop songs. How many different albums can be formed using the above repertoire if the albums should contain at least 1 Rock song and 1 Carnatic song?

- A. 15624
- B. 16384
- C. 6144
- D. 240

20. What is the value of $1*1! + 2*2! + 3!*3! + \dots + n*n!$, where $n!$ means n factorial or $n(n-1)(n-2)\dots 1$

- A. $n(n-1)(n-1)!$
- B. $(n+1)!/(n(n-1))$
- C. $(n+1)! - n!$
- D. $(n + 1)! - 1!$

SECTION –II: PROBABILITY

1. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
 - A. $\frac{1}{2}$
 - B. $\frac{2}{5}$
 - C. $\frac{8}{15}$
 - D. $\frac{9}{20}$

2. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?
 - A. $\frac{10}{21}$
 - B. $\frac{11}{21}$
 - C. $\frac{2}{7}$
 - D. $\frac{5}{7}$

3. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?
 - A. $\frac{1}{3}$
 - B. $\frac{3}{4}$
 - C. $\frac{7}{19}$
 - D. $\frac{8}{21}$
 - E. $\frac{9}{21}$

4. What is the probability of getting a sum 9 from two throws of a dice?
 - A. $\frac{1}{6}$
 - B. $\frac{1}{8}$
 - C. $\frac{1}{9}$
 - D. $\frac{1}{12}$

5. Three unbiased coins are tossed. What is the probability of getting at most two heads?
 - A. $\frac{3}{4}$
 - B. $\frac{1}{4}$
 - C. $\frac{3}{8}$
 - D. $\frac{7}{8}$

6. Two dice are thrown simultaneously. What is the probability of getting two numbers whose product is even?
 - A. $\frac{1}{2}$
 - B. $\frac{3}{4}$
 - C. $\frac{3}{8}$
 - D. $\frac{5}{16}$

7. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:
- A. $\frac{21}{46}$
 - B. $\frac{25}{117}$
 - C. $\frac{1}{50}$
 - D. $\frac{3}{25}$
8. In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?
- A. $\frac{1}{10}$
 - B. $\frac{2}{5}$
 - C. $\frac{2}{7}$
 - D. $\frac{5}{7}$
9. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?
- A. $\frac{1}{15}$
 - B. $\frac{25}{57}$
 - C. $\frac{35}{256}$
 - D. $\frac{1}{221}$
10. Two dice are tossed. The probability that the total score is a prime number is:
- A. $\frac{1}{6}$
 - B. $\frac{5}{12}$
 - C. $\frac{1}{2}$
 - D. $\frac{7}{9}$
11. A card is drawn from a pack of 52 cards. The probability of getting a queen of club or a king of heart is:
- A. $\frac{1}{13}$
 - B. $\frac{2}{13}$
 - C. $\frac{1}{26}$
 - D. $\frac{1}{52}$
12. A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is:
- A. $\frac{1}{22}$
 - B. $\frac{3}{22}$
 - C. $\frac{2}{91}$
 - D. $\frac{2}{77}$
13. Two cards are drawn together from a pack of 52 cards. The probability that one is a spade and one is a heart, is:
- A. $\frac{3}{20}$
 - B. $\frac{29}{34}$
 - C. $\frac{47}{100}$
 - D. $\frac{13}{102}$

14. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card?
- A. $\frac{1}{13}$
 - B. $\frac{3}{13}$
 - C. $\frac{1}{4}$
 - D. $\frac{9}{52}$
15. A bag contains 6 black and 8 white balls. One ball is drawn at random. What is the probability that the ball drawn is white?
- A. $\frac{3}{4}$
 - B. $\frac{4}{7}$
 - C. $\frac{1}{8}$
 - D. $\frac{3}{7}$
16. If u joins all the vertices of a heptagon, how many quadrilaterals will u get?
- A. 72
 - B. 36
 - C. 25
 - D. 35
 - E. 120
17. Four students have to be chosen 2 girls as the captain and vice-captain and 2 boys as captain and vice-captain of the school. There are 15 eligible girls and 12 eligible boys. In how many ways can they be chosen if Sunita is sure to be the captain?
- A. 114
 - B. 1020
 - C. 360
 - D. 1848
 - E. 1500
18. A teacher prepares a test. She gives 5 objective type questions out of which 4 have to be answered. Find the total number of ways in which they can be answered if the first 2 questions have 3 choices and the last three have 4 choices.
- A. 255
 - B. 816
 - C. 192
 - D. 100
 - E. 144
19. How many 5 digit numbers are there with distinct digits?
- A. 144
 - B. 27216
 - C. 436
 - D. 6432
 - E. 720

- 20. In how many ways can 15 students be seated in a row such that the 2 most talkative children never sit together?**
- A. $14!14!$
 - B. $15.14!$
 - C. $14!$
 - D. $14!*13$
 - E. $15!$
- 21. In a school 5 colours are allotted to each house. If the flag of Tagore House has to be a sequence of three blocks of different colours, then how many flags can they choose from?**
- A. 9
 - B. 27
 - C. 60
 - D. 20
 - E. 15
- 22. Find the number of words which can be formed using the letters of the word equation if each word has to start with a vowel?**
- A. 40320
 - B. 1260
 - C. 1080
 - D. 400
 - E. 25200
- 23. How many five digit numbers can be formed using the digits 0,2,3,4 and 5, when repetition is allowed such that the number formed is divisible by 2 or 5 or both?**
- A. 100
 - B. 150
 - C. 3125
 - D. 1500
 - E. 125
- 24. A straight road runs from north to south. It has two turnings towards east and three turning towards west. In how many ways can a person coming from east get on the road and go west?**
- A. 2
 - B. 3
 - C. 9
 - D. 6
 - E. 5

25. How many heptagons can be drawn by joining the vertices of a polygon with 10 sides?

- A. 562
- B. 120
- C. 105
- D. 400
- E. 282

26. Four persons enter the lift of a seven storey building at the ground floor. In how many ways can they get out of the lift on any floor other than the ground floor?

- A. 720
- B. 1296
- C. 1663
- D. 360
- E. 2500

27. Ten different letters of an alphabet are given. 2 of these letters followed by 2 digits are used to number the products of a company. In how many ways can the products be numbered?

- A. 52040
- B. 8100
- C. 5040
- D. 1000
- E. 4000

28. If $P(2n+1, n-1) : P(2n-1, n) = 3:5$, find n .

- A. 2
- B. 4
- C. 6
- D. 8
- E. 10

29. A polygon has twenty diagonals. How many sides does it have?

- A. 12
- B. 11
- C. 10
- D. 9
- E. 8

30. A box contains 5 red and 4 blue balls. In how many ways can 4 balls be chosen such that there are at most 3 balls of each colour?

- A. 132
- B. 242
- C. 60
- D. 120
- E. 240

- 31. Six points lie on a circle. How many quadrilaterals can be drawn joining these points?**
- A. 72
 - B. 36
 - C. 25
 - D. 15
 - E. 120
- 32. There are 3 children of a lady. In how many ways is it possible to dress them for a party if the first child likes 3 dresses, second likes 4 and the third likes 5, but the third child had grown out of one of them? Each child has a different set of clothes.**
- A. 11
 - B. 10
 - C. 60
 - D. 48
 - E. 15
- 33. How many three-digit odd numbers can be formed from the digits 1,3,5,0, and 8?**
- A. 25
 - B. 60
 - C. 75
 - D. 100
 - E. 15
- 34. Find the number of words formed by permuting all the letters of the word INDEPENDENCE.**
- A. 144
 - B. 1663200
 - C. 136050
 - D. 6432
 - E. 720
- 35. There are 12 children in a party. For a game they have to be paired up. How many different pairs can be made for the game?**
- A. 46
 - B. 24
 - C. 120
 - D. 66
 - E. 132
- 36. How many different differences can be obtained by taking only 2 numbers at a time from 3, 5,2,10, and 15?**
- A. 10
 - B. 18
 - C. 14
 - D. 16
 - E. 20

37. In a class test there are 5 questions. One question has been taken from each of the four chapters. The first two chapters have 3 questions each and the last two chapters have 6 questions each. The fourth question can be picked from any of the chapters. How many different question papers could have been prepared?

- A. 540
- B. 1260
- C. 1080
- D. 400
- E. 4860

38. How many five digit numbers can be formed using the digits 0,2,3,4, and 5, when repetition is allowed such that the number formed is divisible by 2 and 5?

- A. 100
- B. 150
- C. 3125
- D. 500
- E. 125

39. In how many ways can five rings be worn in 3 fingers?

- A. 81
- B. 625
- C. 15
- D. 243
- E. 125

40. How many pentagons can be drawn by joining the vertices of a polygon with 10 sides?

- A. 562
- B. 252
- C. 105
- D. 400
- E. 282