

WORDS

Answer the questions on the basis of the information given below. A string of three English letters is formed as per the following rules:

- I. The first letter is any vowel.
- II. The second letter is m, n or p.
- III. If the second letter is m, then the third letter is any vowel which is different from the first letter.
- IV. If the second letter is n, then the third letter is e or u. V.

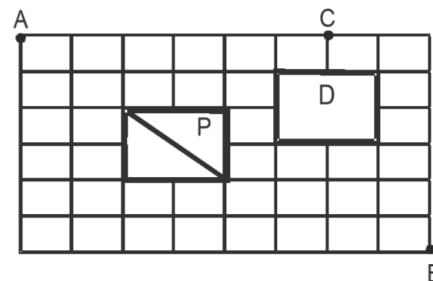
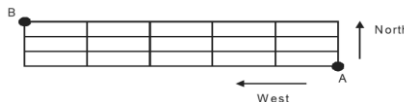
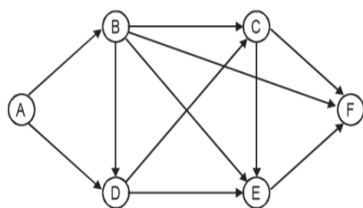
If the second letter is p, then the third letter is the same as the first letter. (2003)

1. How many strings of letters can possibly be formed using the above rules? 1. 40 2. 45 3. 30 4. 35
2. How many strings of letters can possibly be formed using the above rules such that the third letter of the string is e? 1. 8 2. 9 3. 10 4. 11

PATHS

3. The figure below shows the network connecting cities A, B, C, D, E and F. The arrows indicate permissible direction of travel. What is the number of distinct paths from A to F? (2001)

- a)9 b)10 c)11 d)None



4. In the adjoining figure, the lines represent one-way roads allowing travel only northwards or only westwards. Along how many distinct routes can a car reach point B from point A? (2004)

- a)15 b)56 c)120 d)336

The figure below shows the plan of a town. The streets are at right angles to each other. A rectangular park (P) is situated inside the town with a diagonal road running through it. There is also a prohibited region (D) in the town.

5. Neelam rides her bicycle from her house at A to her office at B, taking the shortest path. Then the number of possible shortest paths that she can choose is (2008)

- (1) 60 (2) 75 (3) 45 (4) 90 (5) 72

6. Neelam rides her bicycle from her house at A to her club at C, via B taking the shortest path. Then the number of possible shortest paths that she can choose is (2008)

- (1) 1170 (2) 630 (3) 792 (4) 1200 (5) 936

SELECTION

7. There are 10 points on a line and 11 points on another line, which are parallel to each other. How many triangles can be drawn taking the vertices on any of the line? (1999)

- (a) 1050 (b) 2550 (c) 150 (d) 1045

8. A man has nine friends – four boys and five girls. In how many ways can he invite them, if there have to be exactly three girls in the invitees? (1996)

- (a) 320 (b) 160 (c) 80 (d) 200

Circles

9. Seven men and seven women have to sit around a circular table so that no 2 women are together. In how many different ways can this be done?

- a)6!*7! b)6!*6! c)6!*5! d)6!*4!

10. In how many ways can 8 directors, a vice chairman and a chairman of a firm be seated at a round table, If the chairman has to sit between the vice chairman and the director?

- (a)9! x 2 (b)6! x 2 (c)8! x 2 (d)7! x 2

NUMBERS

11. How many five-digit numbers can be formed using the digits 2, 3, 8, 7, 5 exactly once such that the number is divisible by 125? a. 0 b. 1 c. 4 d. 3
12. How many 5 digit numbers can be formed from 1, 2, 3, 4, 5, without repetition, when the digit at the unit's place must be greater than that in the ten's place? a. 54 b. 60 c. 17 d. $2 \times 4!$
13. Let n be the number of different five-digit numbers, divisible by 4 with the digits 1, 2, 3, 4, 5 and 6, no digit being repeated in the numbers. What is the value of n ? a. 144 b. 168 c. 192 d. None of these
14. Let S be a set of positive integers such that every element n of S satisfies... (**Range based Numbers**)
 I. $1000 \leq n \leq 1200$
 II. every digit in n is odd. Then how many elements of S are divisible by 3? (1) 9 (2) 10 (3) 11 (4) 12

BAGS

A bag contains 3 white and 2 black balls. Another bag contains 2 white and 4 black balls.

15. One ball is taken from first bag and dropped in second bag. Find the probability that a ball selected from bag 2 will be white ball?
16. Two balls is taken from first bag and dropped in second bag. Find the probability that a ball selected from bag 2 will be white ball?

DICES

17. Six dice are thrown, the probability that different number will turn up is:

- (a) $129/1296$ (b) $1/54$ (c) $5/324$ (d) $5/54$

COINS

18. A and B toss a fair coin each simultaneously 50 times. The probability that both of them will not get tail at the same toss is: (a) $(3/4)^{50}$ (b) $(2/7)^{50}$ (c) $(1/8)^{50}$ (d) $(7/8)^{50}$

Matches

19. In a given race the odds in favour of four horses A, B, C, D are 1:3, 1:4, 1:5, 1:6 respectively. Assuming that, a dead heat is impossible, find the chance that one of them wins the race.

- (a) 76% (b) 88% (c) 45% (d) 63%

^{20.} The probability that a person will hit a target in shooting practice is 0.3. If he shoots 10 times, then the probability of his shooting the target is a) 1 b) $1 - (0.7)^{10}$ c) $(0.7)^{10}$ d) $(0.3)^{10}$

21. A speaks truth in 60% of the cases while B speaks truth in 70% of the cases. When they lie they say the same lie. In what percent cases are they likely to contradict each other? A) 30%B) 40%C) 46%D) 54%

22. Probability that a machine is not defective is $1/5$. then probability that out of 5 machines, 4 are defective is ?
 a) $5C_4(4/5)^2(1/5)$ b) $(4/5)^4(1/5)$ c) $5C_4(4/5)^4(1/5)$ d) None

PnC Based

23. I forgot the last digit of a 7 digit telephone number. If I randomly dial the final 3 digits after correctly dialling the first four, then what is the chance of dialling the correct number?

- a) $1/1001$ b) $1/1000$ c) $1/999$ d) $1/990$

24. Seven people seat themselves at a round table. The probability that two distinguished persons will be next to each other is? a) $1/3$ b) $1/2$ c) $1/4$ d) $2/3$

25. Twenty cards are there in a box. 5 of them contain I printed on them, 15 of the remaining have M printed on them. Three cards are drawn at random. Find the probability word IIM is formed?

- a) $1/32$ b) $3/64$ c) $1/64$ d) $3/32$ e) None of these