Directions of Test

Test Name	LPU CA 03 - Mock Test	Total Questions	30	Total Time	50 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Section 1	6	0:10(h:m)	1	1/4
Section 2	6	0:10(h:m)	1	1/4
Section 3	6	0:10(h:m)	1	1/4
Section 4	6	0:10(h:m)	1	1/4
Section 5	6	0:10(h:m)	1	1/4

Section : Section 1

QNo:- 1 ,Correct Answer:- *D*

Explanation:- *The total no. of ways are 3 × 4 × 4 × 4 = 192.*

QNo:- 2 ,Correct Answer:- *B*

Explanation:- *In general, the first digit can be 1-9, the second digit can be 0-9, and the final digit can be 0-9; so there are 9 x 10 x 10 = 900 3-digit numbers in total.*
Of these it is possible to have none, two, or three digits the same.
Let us consider no digits being the same: the first digit can be 1-9, then second digit can be any one of nine digits and the final digit can be any one of eight.
That is, there are 9 x 9 x 8 = 648 3-digit numbers for which no digits are the same.
Clearly there are nine 3-digit numbers for which all the digits are the same: 111, 222, ..., 999.
Hence there are 900 - 648 - 9 = 243 3-digit numbers for which two digits are the same.

QNo:- 3 ,Correct Answer:- *A*

Explanation:- *total number of cases =4! =24*
Favorable cases =3125,1325
Hence required probabilty =2/24=1/12

QNo:- 4 ,Correct Answer:- *A*

Explanation:- *For a number to be divisible by 4, last two digits should be divisible by 4 i.e. 00, 04, 08....96 (25 cases)*
Now for each of the first three digits, there are 10 possibilities (0,1,2...9)
*So 10*10*10*25 =25000*

QNo:- 5 ,Correct Answer:- *D*

Explanation:- *The total no. of ways = 5 ×4 × 3 × 2 × 1 = 120 ways.*

QNo:- 6 ,Correct Answer:- B

Explanation:- Word PENTAGON has total 8 letters. So we have two cases:::
Case I :: When letters O and N are not used.

4 letters out of the remaining 6 letters can be selected in ${}^6C_4 = 15$ ways.
Also these 4 letters can be arranged among themselves in 4! = 24 ways. So total ways = 15 * 24 = 360.

Case II :: When letters O and N are used.

3 types of arrangements are possible ::O N_ _ or _ O N _ or _ _ O N. Also NO can be taken as O and N are together. So remaining two blanks can be filled in ${}^6C_2$ ways as we need to select 2 other letters from possible 6 letters. Also these 2 letters can be arranged themselves in 2! ways. So total ways = ${}^6C_2 * 2! * 3 * 2 = 180$.

So total cases = 360 + 180 = 540.

Section : Section 2

QNo:- 7 ,Correct Answer:- B

Explanation:- The words should be M _ _ _ _ _
And rest of the letters can be arranged in 5! = 120

QNo:- 8 ,Correct Answer:- B

Explanation:- putting all vowels together we have AOE CPSTN
Required no of ways = 6! × 3! = 720 × 6 = 4320

QNo:- 9 ,Correct Answer:- A

Explanation:-
The total number of 5-letter words is 10^5.
The total number of words with 5 distinct letters is 10 × 9 × 8 × 7 × 6 = 30240.
Thus the number of words with at least 1 letter repeated is $10^5 - 30240 = 69760$.

QNo:- 10 ,Correct Answer:- A

Explanation:- Alphabetical order of letters is E, H, M, O, R, T
Number of words beginning with E = 5! = 120
Number of words beginning with H= 5! = 120
Number of words beginning with ME= 4! = 24
Number of words beginning with MH= 4! = 24
Number of words beginning with MOE= 3! = 6
Number of words beginning with MOH = 3! = 6
Number of words beginning with MOR = 3! = 6
Number of words beginning with MOTE = 2! = 2
The next word is MOTHER
So rank of MOTHER = 120 + 120 + 24 + 24 + 6 + 6 + 2 + 1= 309

QNo:- 11 ,Correct Answer:- *B*

Explanation:- *Alphabetical order of letters is A, D, M, N, O, R*
Number of words beginning with A = 5! = 120
Number of words beginning with D= 5! = 120
Number of words beginning with M= 5! = 120
Number of words beginning with N= 5! = 120
Number of words beginning with O= 5! = 120
Number of words beginning with RAD = 3! = 6
Number of words beginning with RAM = 3! = 6
Next words is RANDMO
And then RANDOM
So rank of RANDOM = 120 +120 + 120 + 120 + 120 + 6 + 6 + 1 + 1= 614

QNo:- 12 ,Correct Answer:- *A*

Explanation:-
First make all four females sit, that can be done in 3! ways .
Now which two of the four males are going to sit to the right of females, that can be done in $^4C_2$ *ways. So* $3! \times {}^4C_2 = 36$

Section : Section 3

QNo:- 13 ,Correct Answer:- *A*

Explanation:-
2 people can be arranged in 2! ways, other 10 can be arranged in 10! ways:

Total probability = 11!

$$\text{Required Probability} = \frac{10!\,2!}{11!} = \frac{2}{11}$$

QNo:- 14 ,Correct Answer:- *A*

Explanation:-
Total 10 persons, where x and y will be either side of host. Lets consider host, x and y to be one identity. So in total we can say there are 8 identities. They can be seated on a circular table in (8 - 1)! = 5040 ways
Now x and y can also change their positions in 2! Ways so 5040 × 2 = 10080 ways

QNo:- 15 ,Correct Answer:- *C*

Explanation:-
There are two cases: either the four students will be selected or not. In first case we have to select the remaining 6 students from 11 students and in second case we have to select 10 students from 11 students. So the total number of ways are
$^{11}C_6 + {}^{11}C_{10} = 462 + 11 = 473.$

QNo:- 16 ,Correct Answer:- A

Explanation:-
Case 1: Person who is both engineer and manager is selected:
${}^6C_2 = 15$
Case 2: Person who is both engineer and manager is not selected
${}^3C_2 \times {}^3C_1 + {}^3C_2 \times {}^3C_1 = 18$ (one engineer and two managers or two managers and one engineer)
$15 + 18 = 33$

QNo:- 17 ,Correct Answer:- C

Explanation:- Number of ways (atleast one male) = Total ways – ways (no male) = ${}^{16}C_4 - {}^8C4 = 1820 - 70 = 1750$

QNo:- 18 ,Correct Answer:- B

Explanation:- Property used to solve this question:

The number of non-negative integral solutions of equation $x_1 + x_2 + \text{-------} + x_k = n$ is ${}^{n+k-1}C_{k-1}$
Given question can be rewritten as:
Find number of integral solution of eqn.
$x_1 + x_2 + x_3 + x_4 + x_5 = 36$
where each x_i = number of tickets with i^{th} candidate. Also, each $x_i > 0$ & x_i is even.
Let $x_i = 2yi + 2$; $y_i \geq 0$.
So, given eqn. can be written as
$(2y_1 + 2) + (2y_2 + 2) + (2y_3 + 2) + (2y_4 + 2) + (2y_5 + 2) = 36$
$\Rightarrow 2(y_1 + y_2 + y_3 + y_4 + y_5) = 26$
$\Rightarrow y_1 + y_2 + y_3 + y_4 + y_5 = 13$
$\Rightarrow {}^{13+5-1}C_{5-1} = {}^{17}C_4$

Section : Section 4

QNo:- 19 ,Correct Answer:- A

Explanation:-
Total we have 12 flowers 3 red, 4 yellow and 5 white.
Now first arrange 3 red & 4 yellow
This can be done in $\frac{7!}{3! \times 4!} = 35$ ways
Now select 5 places from among 8 places (including extremes) & put the white flowers there.
This can be done in ${}^8C_5 = 56$.
So the number of ways = $35 \times 56 = 1960$.

QNo:- 20 ,Correct Answer:- B

Explanation:-
In this solution, the notation p / q / r / s / ... represents p beads of one colour, followed by q beads of the other colour, followed by r beads of the first colour, followed by s beads of the second colour etc.
Since the colours alternate, there must be an even number of these sections of beads.
If there are just two sections, then the necklace is 4 / 4 and there is only one such necklace.
If there are four sections, then each colour is split either 2, 2 or 3, 1.
So the possibilities are 2 / 3 / 2 / 1 (which can occur in two ways, with the 3 being one colour or the other) or 2 / 2 / 2 / 2 (which can occur in one way) or 3 / 3 / 1 / 1 (also one way).
Note that 3 / 2 / 1 / 2 appears to be another possibility, but is the same as 2 / 3 / 2 / 1 rotated.
If there are six sections, then each colour must be split into 2, 1, 1 and the possibilities are 2 / 2 / 1 / 1 / 1 / 1 (one way) or 2 / 1 / 1 / 2 / 1 / 1 (one way).
Finally, if there are eight, then the only possible necklace is 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1.
In total that gives 8 necklaces.

Alternate solution: If we consider alternate red and yellow, then there is only 1 way. Similarly, if we consider all 4 reds and all 4 yellows together, there is only 1 way.
If we split the red and yellow beads into different groups, the only way of splitting them is 2, 2 or 3, 1.
In this case, there are 6 possibilities: (2R 1Y 2R 3Y), (2R 2Y 2R 2Y), (3R 3Y 1R 1Y), (1R 3Y 3R 1Y), (3R 1Y 1R 3Y) and (1R 1Y 3R 3Y).
Thus there are 8 different necklaces.

QNo:- 21 ,Correct Answer:- B

Explanation:-
Probability of getting a sum of 6 i.e. (1,5)(5,1)(2,4)(4,2)(3,3) = 5/36
Probability of getting a sum of 7 i.e. (1,6)(6,1)(2,5)(5,2)(3,4)(4,3) =1/6
Probability of A winning will be = $5/36 + 31/36 \times 5/6 \times 5/36 + (31/36 \times 5/6)^2 \times 5/36$ ....
which is infinite GP with first term = 5/36 and common ratio = (31/36) x (5/6)
sum = 30/61
Probability of B winning will be = 1 – 30/61 = 31/61

QNo:- 22 ,Correct Answer:- D

Explanation:- The probability of death for each bullet is 0.4
That means the probability for staying alive is $1-0.4=0.6$
Given, the gangster fires 4 bullets at a inspector
So to stay alive the inspector must miss four bullets.

Hence the probability that the inspector is still alive is $(0.6)\times(0.6)\times(0.6)\times(0.6)=(0.6)^4$

QNo:- 23 ,Correct Answer:- D

Explanation:-
Suppose Ram invites 3 sisters and Sita invites 3 brothers. This can be done in ${}^4C_3 \times {}^4C_3 = 16$ ways. Suppose Ram invites 3 brothers and Sita invites 3 sisters. This can be done in ${}^3C_3 \times {}^3C_3 = 1$ way. Suppose Ram invites 2 sisters and 1 brother and Sita invites 2 brothers and 1 sister. This can be done in $({}^4C_2 \times {}^3C_1) \times ({}^4C_2 \times {}^3C_1) = 324$ ways. Suppose Ram invites 1 sister and 2 brothers and Sita invites 1 brother and 2 sisters. This can be done in $({}^4C_1 \times {}^3C_2) \times ({}^4C_1 \times {}^3C_2) = 144$ ways. Thus the total number of ways is 16 + 1 + 324 + 144 = 485.

QNo:- 24 ,Correct Answer:- D

Explanation:- Since he reported that MI have won and if they actually won, then he is telling a truth whose probability is 3/4.

Section : Section 5

QNo:- 25 ,Correct Answer:- D

Explanation:- Probability that the coin will land with the head up on the fourth toss = 1/2

QNo:- 26 ,Correct Answer:- A

Explanation:- Sample space: HH, HT, TH, TT
Required cases: HH, HT, TH. P(E) = Favorable cases/Total cases, P(E) = ¾
Alternatively, P(E) = 1- (No head) Þ P(E) = 1- ¼ = ¾

QNo:- 27 ,Correct Answer:- D

Explanation:- Favourable no. of cases = [(2, 1) (2, 5) (4, 1) (4, 5) (6, 1) (6, 5)]
So required probability = 6/36 = 1/6

QNo:- 28 ,Correct Answer:- A

Explanation:-
Total sample space = 6 × 8 = 48
Favorable cases when A > B
(3 – 1, 2), 3 on first dice 1, 2 on second dice
Similarly
(4 – 1, 2, 3)
(5 – 1, 2, 3, 4)
(6 – 1, 2, 3, 4, 5)
(8 – 1, 2, 3, 4, 5, 6, 7)
Total favorable cases: 21
Probability = 21/48 = 7/16

QNo:- 29 ,Correct Answer:- B

Explanation:- First card can be of any color, so we take its probability as 52/52.
Second card can be of other 26 cards present = 26/51
Probability that cards are of different colors = (52/52) × (26/51) = 26/51

QNo:- 30 ,Correct Answer:- D

Explanation:- Total number cards = 36, Probability = 36/52 = 9/13