Couting Technique and Probablity

01. $n(n^2-1)$

Take option B

$$\frac{(n+1)!}{(n-2)!} = \frac{(n+1)\,n(n-1)\,(n-2)!}{(n-2)!}$$

$$= (n^2-1)n$$

(B) Answer

02. Entrance = 3

Exit = 4

Total ways = 3×4

$$= 12$$

(A) ans

(3) Total Question = 10

Three Question = 4 choices

4 Question = 5 choices

3 Question = T, F (2 choice

So, $3^4, 4^3, 5^4, 2^3$

(4) KIPS

Start or end with vowel.

$3! + 3$

$6 + 3 = 9$

(A) Ans

(5) Total Alphabet = 26

First choice = 26

Second = 25

3rd = 24

Total ways = $26 \times 25 \times 24$

$= 15600$.

(A)

(6) Total Books = 6

Total ways = $6! = 720$

English books are ~~never~~ Together.

$B_1\ B_2\ B_3\ B_4\ \boxed{E_1\ E_2}$

$5! \times 2! = 120 \times 2 = 240$

So, Never Together

$720 - 240 = 480$

(D)

(7) BANANA

Every Letter Start and End with N.

(N) B A A A (N)

Total ways = $\frac{4!}{3!}$

$= \frac{24}{6} = 4$

(C) Ans

(8) ${}^{n}C_{r} = 7$

Take option.

(C) (7, 6)

${}^{7}C_{6} = 7$

$\frac{7!}{6!(7-6)!} = 7$

$\frac{7 \times 6!}{6!\ 1!}$

$7 = 7$ (C) Ans

(9) $A = \{1, 2, 3, 4 \dots 10\}$

$N = 10$

$r = 4$

$$^{10}C_4 = \frac{10!}{4!(10-4)!}$$

$$= \frac{5\cancel{10} \times \cancel{9}^{3} \times \cancel{8}^{2} \times 7 \times \cancel{6!}}{\cancel{5}\cancel{6}_{\cancel{12}}^{\cancel{24}}(\cancel{6!})}$$

$$= 210$$

(A) ans

(10) Select = 2

Boys = 4

Girls = 4

2 select Nahi krna hai it's means 2B, 1G are left.

$$^{2}C_1 \times {}^{3}C_2$$

3×2

6

(B) Ans

(11) Constant = 8

Vowel = 5

Constant Select = 2

Vowel Select = 2

$$^{8}C_2 \times {}^{5}C_2 \times 4!$$

$$\left(\frac{8 \times 7}{2 \times 1} \times \frac{5 \times 4}{2 \times 1}\right) \times 4!$$

$28 \times 10 \times 24$

6720

(A)

(12) Total = 52 Cards

Red card = 26

King = 2 (b/c two are counted Red)

$$P = \frac{\cancel{28}^{7}}{\cancel{52}_{\cancel{26}}_{13}}$$

Ans

(C)

(13) Outcome $= 2^5 = 32$

At least 3 head.

* HHHTT
* HHHHT
* HHHHH.

$$P = \frac{{}^5C_3}{32} + \frac{{}^5C_4}{32} + \frac{{}^5C_5}{32}$$

$$P = \frac{10+5+1}{32} = \frac{16}{32} = \frac{1}{2}$$

(B) Ans

(14) First friend = 5

Second friend = 4

3rd friend = 3

$5 \times 4 \times 3 = 60$

(B)

(15) Coins = 3

Pocket = 4

Total ways $= 3^4 = 81$

(16) No. of ways 6 Person can be seated in a round Table $= (6-1)! = 120$

if two particular are arrange $= 2! = 2$

So, $3 \times 4!$

$16 \times 3 = 48$ (A) Ans

(17) $\frac{(n-1)!}{2} = \frac{(7-1)!}{2}$

$\frac{6!}{2} = \frac{720}{2} = 360$ (C) Ans

(18) $\frac{n(n-1)}{2} = \frac{(8)(8-1)}{x}$

(19) First Second.

$\frac{26}{52} \times \frac{25}{51} \times \frac{24}{50}$.

$\frac{1}{2} \times \frac{25}{51} \times \frac{12}{25} = \frac{2}{17}$