APRIL 5 Tuesday — 2022 — (4) — ٥ الثلاثاء — ٤ رمضان ١٤٤٣هـ

8) Discreat class → 25 students 2→Ahmed 2→Ibrahim 2→mariam 2→Sally 2→yousef 22→different name

a) How many different 14_student group can formed
1→Ahmed 1→Ibrahim 1→sally 1→yousef 1→mariam
(Solve)

B arrangment not important

$^{n}C_{r}$

A $^{2}C_{1} \times {}^{2}C_{1} \times {}^{2}C_{1} \times {}^{2}C_{1} \times {}^{2}C_{1} = 2\times2\times2\times2\times2 = 32$
O I S y m

$^{20}C_{9} = \frac{20!}{11! \cdot 9!} = 167160$

$= 32 \times 167160 = 5374720$ #

b) 14 students to project-team 2→ahmed 2→mariam 2→sally 2→yousif 2→Ibrahim
(Solve)

arrangment not important

$^{2}C_{2} \times {}^{2}C_{2} \times {}^{2}C_{2} \times {}^{2}C_{2} \times {}^{2}C_{2} = 1$
A m s y I

$^{15}C_{4} = \frac{15!}{11! \cdot 4!} = \frac{13\times14\times15}{1\times2\times3\times4} = 13\times15\times7 = 1365$

$= 1 \times 1365 = 1365$ #

APRIL 6 Wednesday (3)

APRIL 2022

٦ الأربعاء

٥ رمضان ١٤٤٣هـ

٢٨ برمهات ٢٧٣٨ي

5) How many ways to select 3 book from 6 if each of the books are distinct? Solution

Solve

arrangment not important

$n=6 \quad r=3$

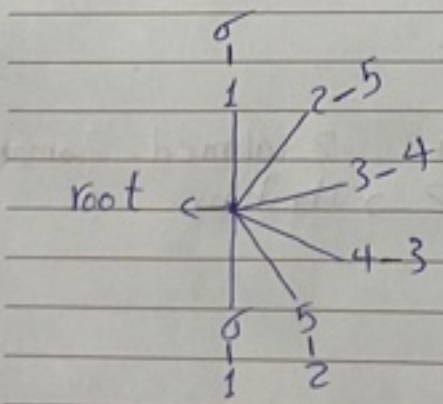
$$nCr = \frac{n!}{(n-r)!\,r!} = \frac{6!}{3!\cdot 3!} = 20 \#$$

6) when you are rolling a pair of (fair) dice three times, what is probability that, least at one of the three tries; you roll a 7?

Solve

pair of dice 1 time

roll = 7



probability in roll pair die 1 times = 12

∴ probability in roll pair die 3 times = 12×3 = 36 possible..

7) How many ways to select 3 books from 6 solutions if there are 2 books that should not both be chosen together?

Solve

arrangment not important

$$\frac{{}^4C_3}{\frac{4!}{1!\cdot 3!}} + \frac{{}^4C_2}{\frac{4!}{2!\cdot 2!}} + \frac{{}^2C_1}{\frac{2!}{1!\cdot 1!}} = 4+6+2 = 12 \#$$

APRIL
7
Thursday
2022
٧
الخميس
٦ رمضان ١٤٤٣هـ
٢٩ برمهات ١٧٣٨ق

3) How many bit strings 5, start and end with 1's?

Solve

| 1 | | | 1 |

0 0 1
0 1 1
1 1 1 = 8
1 1 0 1 0 0
0 0 0 0 1 0

other solve

arrangment important

$1 + 1 + \frac{3!}{2!.1!} + \frac{3!}{1!.2!}$ (1 zero, 2 one) $= 1+1+3+3 = 8$ #

1 Bond + 1 Bond + (2 zero, 1 one)

4) If three awards are given each year to football team members. If there are 30 players this year in this team, and each one of them can receive at most only one award, how many possible way are they?

Solve

arrangment not important

$^{n}C_{r}$ $n=30$ $r=3$

$^{n}C_{r} = \frac{n!}{(n-r)!.r!} = \frac{30!}{27!.3!} = \frac{28 \times 29 \times 30}{2 \times 3} = 4060$ #

Notes

APRIL 8 Friday

الجمعة ٧ رمضان ١٤٤٣هـ

٣٠ ابريل ٢٠٢٢م

2022 Homework1 1st

probability and statistic

S.w

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1) How many ways to choose 2 students From AI Department, that has a population of 250 students?

Solve

arrangment not important → Combinations

$n = 250 \quad r = 2$

$$nCr = {}^{250}C_2 = \frac{n!}{(n-r)! \cdot r!} = \frac{250!}{248! \cdot 2!} = \frac{249 \cdot 250}{1 \times 2} = 31125 \ \#$$

2) How many distinct bit strings can be formed three 0's and two 1's?

Solve

[ ][ ][ ][ ][ ] arrangment important → permutation

repetitive (0) $n_1 = 3$ (1) $n_2 = 2$ $n = 5$

$$nPr = \frac{n!}{n_1! \cdot n_2! \cdots} = \frac{5!}{3! \cdot 2!} = \frac{2 \times 3 \times 4 \times 5}{2 \times 3 \times 2} = 10 \ \#$$

Notes