LGS GROUP OF COLLEGES
A PROJECT OF LAHORE GRAMMAR SCHOOL

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Subject: Stats Test No. MT-2 Date: 02/12/2024

	A	B	C	D
1	○	●	○	○
2	●	○	○	○
3	○	●	○	○
4	○	●	○	○
5	●	○	○	○
6	○	●	○	○
7	○	○	○	●
8	○	○	○	○
9	○	○	○	○
10	○	○	○	○
11	○	○	○	○
12	○	○	○	○
13	○	○	○	○
14	○	○	○	○
15	○	○	○	○
16	○	○	○	○
17	○	○	○	○
18	○	○	○	○
19	○	○	○	○
20	○	○	○	○

Marks Obtained

Subjective Part I

Question No 2

(i)

Sample Space:

A Set consisting of all the possible outcomes of a random experiment is called Sample Space. It is denoted by "S"

For example: of an coin

$S = \{Head, Taill\}$

$S = \{H, T\}$

A die fair cubical die is rolled in..

$S = \{1, 2, 3, 4, 5, 6\}$

(v)

Evalute $\frac{16!}{8!}$

Sol

- $16! = 16 \times 15 \times 14 \times 13 \times 12 \times 11 \times 10 \times 9 \times 8!$
- $8! = 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

$$\frac{16!}{8!} = \frac{16 \times 15 \times 14 \times 13 \times 12 \times 11 \times 10 \times 9 \times 8!}{8!}$$

$$= 16 \times 15 \times 14 \times 13 \times 12 \times 11 \times 10 \times 9$$

$$\frac{16!}{8!} = \boxed{518918400} \text{ Ans}$$

(iii)

Term event:

Any Subset of an Sample Space is called Term event. For example:

When an coin toss the Sample Space is {H,T}.

(vi)

Lower latter:

The Probability of vowels letter is:

$P(\text{vowels}) = 3/10$

(vii)

The getting total of 8 when two fair dice rolled?

Solve

$$P(\text{sum } 8) = \frac{\text{Number of favorable outcomes}}{\text{Total number of possible outcomes}}$$

$$6 \times 6 = 36$$

The Sum of 8.

(2, 6)
(3, 5)
(4, 4)
(5, 3)
(6, 2)

The total 5 favorable outcomes

$$P(\text{sum } 8) = 5/36$$

$P = 5/36$ Ans

(ix)

Determine the probability if Sum 7 or 11 outcomes

Solve

$$P(\text{Sum of 7 or 11}) = \frac{\text{Number of favorable outcomes}}{\text{Total possible outcomes}}$$

$6 \times 6 = 36$

For Sum of 7	The Sum of 11
(6, 1)	(5, 6)
(4, 3)	(6, 5)
(5, 2)	The total outcomes 2
(1, 6)	
(3, 4)	
(2, 5)	
The total outcome 6	

6.

$P = 6 + 2 = 8$

$$P = \frac{8}{36}$$

$$P(\text{Sum of 7 or 11}) = \frac{2}{9} \text{ Ans}$$

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	A	B	C	D		A	B	C	D		A	B	C	D		A	B	C	D
1	○	○	○	○	6	○	○	○	○	11	○	○	○	○	16	○	○	○	○
2	○	○	○	○	7	○	○	○	○	12	○	○	○	○	17	○	○	○	○
3	○	○	○	○	8	○	○	○	○	13	○	○	○	○	18	○	○	○	○
4	○	○	○	○	9	○	○	○	○	14	○	○	○	○	19	○	○	○	○
5	○	○	○	○	10	○	○	○	○	15	○	○	○	○	20	○	○	○	○

Marks Obtained

(X)

Two dices are rolled. If A and B ..... P(A∪B).

Sol

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

Probability of 8 sum..
(2, 6)
(5, 3)
(3, 5)
(6, 2)
(4, 4)
Their are 5 five favorables outcomes $6 \times 6 = 36$

$P(A) = 5/36$

Probability of odd numbers
(1, 1)
(1, 3)
(1, 5)
(3, 1)
(3, 3)
(3, 5)
(5, 5)
Their are 9 favorable outcomes

$P(B) = 9/36$

$P(B) = 1/4$

P(A∩B)
(3, 5)
(5, 3)
2 favorable outcome

$$P(A \cap B) = \frac{2}{36} = \frac{1}{18}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = \frac{5}{36} + \frac{9}{36} - \frac{2}{36}$$

$$P(A \cup B) = \frac{12}{36}$$

$$\boxed{P(A \cup B) = \frac{1}{3}}$$ Sus

Subjective Part II

Q3

Two cards are drawn at random from a well shuffled Pack of 52 ..... ?

i) One is king and other is queen
ii) Both are of the same colour
iii) Both are the different colour.

(i)

Queen cards	King card	Total card's	Drawn
4	4	52	2

P(one king and other is queen)

$$= \frac{\binom{4}{1}\binom{4}{1}}{\binom{52}{2}}$$

$$= \frac{4 \times 4}{1326}$$

$$= \frac{8}{663}$$

(ii)

Black cards	Red cards	Total	Drawn card
26	26	52	2

$$= \frac{\binom{26}{0}\binom{26}{2} + \binom{26}{2}\binom{26}{0}}{\binom{52}{2}}$$

$$\frac{325}{1326} + \frac{325}{1326}$$

$$= \frac{650}{1326}$$

$$= \frac{25}{51}$$

iii) Both are different colours.

$$= \frac{\left(\frac{26}{1}\right)\left(\frac{26}{1}\right)}{\left[\frac{52}{2}\right]}$$

$$= \frac{26 \times 26}{1326}$$

$$= \frac{26}{51} \text{ Ans}$$