# Sem1 Statistics1

Section Id :	64065360606
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14
Number of Questions to be attempted :	14
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653126003
Question Shuffling Allowed :	No

# Question Number : 76 Question Id : 640653845882 Question Type : MCQ Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER I: STATISTICS FOR DATA SCIENCE I (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT? CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

# (IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE <u>TOP</u> FOR THE SUBJECTS REGISTERED BY YOU)

**Options :** 6406532844150. ✓ YES

6406532844151. \* NO

#### Question Number : 77 Question Id : 640653845883 Question Type : MCQ

**Correct Marks : 0** Question Label : Multiple Choice Question

- 1. If an action A can occur in  $n_1$  different ways, another action B can occur in  $n_2$  different ways, then the total number of occurrence of the actions A or B is  $n_1 + n_2$ .
- 2. If an action A can occur in  $n_1$  different ways, another action B can occur in  $n_2$  different ways, then the total number of occurrence of the actions A and B is  $n_1 \times n_2$ .

3. 
$$n! = n \times (n-1) \times (n-2) \times \ldots \times 3 \times 2 \times 1$$

4. 
$${}^{n}P_{r} = \frac{n!}{(n-r)!}$$

5. The number of permutations of n objects where  $p_1$  is of one kind,  $p_2$  is of second kind, and so on  $p_k$  of  $k^{th}$  kind is given by:

$$\frac{n!}{p_1!p_2!\dots p_k!}$$

- 6. The number of ways n distinct objects can be arranged in a circle (clockwise and anticlockwise are different) is equal to (n-1)!
- 7. The number of ways n distinct objects can be arranged in a circle (clockwise and anticlockwise are same) is equal to  $\frac{(n-1)!}{2}$

8. 
$${}^{n}C_{r} = \frac{n!}{r!(n-r)!}$$

- 9. Events  $E_1, E_2, \ldots, E_n$  are said to be exhaustive of a sample space when  $\bigcup_{i=1}^n E_i = S$ .
- 10. Addition Rule of Probability: For any two events  $E_1$  and  $E_2$ ,  $P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$ .
- 11.  $P(E | F) = \frac{P(E \cap F)}{P(F)}; P(F) > 0$
- 12. Multiplication rule of probability: For any two events E and F,

$$P(E \cap F) = P(F) \times P(E \mid F); P(F) > 0$$
$$P(E \cap F) = P(E) \times P(F \mid E); P(E) > 0$$

13. Pairwise Independent Events: The events  $E_1, E_2, \ldots, E_n$  are said to be pairwise independent if the following condition holds:

$$P(E_i \cap E_j) = P(E_i) \times P(E_j), i \neq j = 1, 2, \dots, n$$

#### 14. Law of total probability:

Suppose that events  $F_1, F_2, \ldots, F_k$ , are mutually exclusive and exhaustive; that is, exactly one of the events must occur. Then for any event E,

$$P(E) = \sum_{i=1}^{k} P(E \mid F_i) P(F_i)$$

15. Bayes' Rule:

$$P(F_i | E) = \frac{P(E | F_i) P(F_i)}{\sum_{i=1}^{k} P(E | F_i) P(F_i)}$$

#### **Options**:

6406532844152. < Useful Data has been mentioned above.

6406532844153. \* This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	640653126004
Question Shuffling Allowed :	Yes

# Question Number : 78 Question Id : 640653845884 Question Type : MSQ Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question Which of the following option(s) is(are) true?

#### **Options :**

6406532844154. An event A is said to be independent of another event B, if  $P(A|B) \neq P(A)$ .

6406532844155. For two events A and B,  $P(A \cap B) = P(B) \times P(A \mid B)$ , where P(B) > 0.

6406532844156. For two events A and B,  $P(A \cap B) = P(A) \times P(B|A)$ , where P(A) > 0.

6406532844157. Kevents A and B are said to be disjoint if  $P(A \cap B) = P(A) \times P(B)$ .

Sub-Section Number :	3
Sub-Section Id :	640653126005
Question Shuffling Allowed :	No

#### Question Id : 640653845885 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

#### Question Numbers : (79 to 80)

**Question Label : Comprehension** 

A city has three main taxi companies: Red Taxi, Blue Taxi, and Green Taxi. Historical data shows that 20% of the passengers use Red Taxi, 50% use Blue Taxi, and 30% use Green Taxi. If 5% of the cars from Red Taxi, 4% from Blue Taxi, and 8% from Green Taxi have engine issues.

Based on the given information, answer the given subquestions.

#### Sub questions

#### Question Number : 79 Question Id : 640653845886 Question Type : SA

#### **Correct Marks : 3**

**Question Label : Short Answer Question** 

Find the probability that a randomly chosen passenger gets a taxi with engine issues? Enter the answer correct to three decimal places.

#### Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.051 to 0.057

#### Question Number : 80 Question Id : 640653845887 Question Type : SA

#### **Correct Marks : 3**

**Question Label : Short Answer Question** 

Given that a passenger gets a taxi with engine issues, then find the probability that the passenger took a ride with the Green taxi company? Enter the answer correct to two decimal places.

Response Type : Numeric	
Evaluation Required For SA : Yes	
Show Word Count : Yes	
Answers Type : Range	
Text Areas : PlainText	
Possible Answers :	
0.41 to 0.47	
Sub-Section Number :	4
Sub-Section Id :	640653126006
Question Shuffling Allowed :	No

Question Id : 640653845890 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (81 to 82)

**Question Label : Comprehension** 

There are 200 employees in a company. There are 40 employees who know Python language and 50 employees who know SQL. Out of these, there are 10 who know both Python and SQL. Let  $E_1$  be the event that a randomly selected employee knows Python and  $E_2$  be the event that a selected employee knows SQL.

Based on the given information, answer the given subguestions.

## Sub guestions

# Question Number : 81 Question Id : 640653845891 Question Type : MCQ **Correct Marks : 2 Question Label : Multiple Choice Question**

Are the events  $E_1$  and  $E_2$  independent? **Options**: 6406532844165. Ves 6406532844166. \* No 6406532844167. \* Cannot say anything.

# Question Number : 82 Question Id : 640653845892 Question Type : SA

**Correct Marks : 2** 

**Question Label : Short Answer Question** 

Find the value of  $P(E_1 \cup E_2)$ .

Enter the answer correct up to

one decimal place.

**Response Type :** Numeric Evaluation Required For SA : Yes Show Word Count : Yes **Answers Type :** Equal Text Areas: PlainText **Possible Answers :** 0.4

**Sub-Section Number :** Sub-Section Id : **Question Shuffling Allowed :**  5 640653126007 No

# Question Id : 640653845895 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (83 to 84)

**Question Label : Comprehension** 

A committee of 7 members has to be formed from 9 Men and 4 Women.

Based on the given information, answer the given subquestions.

#### Sub questions

# Question Number : 83 Question Id : 640653845896 Question Type : MCQ

#### **Correct Marks : 2**

**Question Label : Multiple Choice Question** 

In how many ways can this be done when the committee consists of exactly 3 Women?

# **Options :**

6406532844174. **¥**6406532844175. **¥**6406532844176. **¥**6406532844177. ✓ 504

#### Question Number : 84 Question Id : 640653845897 Question Type : MCQ

#### Correct Marks : 3

Question Label : Multiple Choice Question

In how many ways can this be done when the committee consists of at least 3 Women?

#### **Options :**

Question Shuffling Allowed :	Yes
Sub-Section Id :	640653126008
Sub-Section Number :	6
6406532844181. 🍀 Cannot determine.	
6406532844180. 🍀 504	
6406532844179. 🖋 588	
6406532844178. 🏶 544	

# Question Number : 85 Question Id : 640653845898 Question Type : MCQ

#### Correct Marks : 2

Question Label : Multiple Choice Question

In a hockey team consisting of 11 players, each player shakes hands with every other player exactly once before the match begins. How many handshakes occur among the teammates?

#### **Options :**

Yes
640653126009
7

# Question Number : 86 Question Id : 640653845894 Question Type : MCQ Correct Marks : 3

Question Label : Multiple Choice Question

A box contains 3 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one red ball is to be included in the draw?

## **Options :**

6406532844170. ¥ 97 6406532844171. ✓ 100 6406532844172. ¥ 104 6406532844173. ¥ 60

# Question Number : 87 Question Id : 640653845899 Question Type : MCQ

# Correct Marks : 3

# Question Label : Multiple Choice Question

Praveen attempts a question paper of 12 questions. Each question has 4 choices. If he answers the questions randomly, then find the number of ways in which he can attempt the entire paper.

# **Options**:

 $6406532844186. \approx 48$  $6406532844187. \approx 56$  $6406532844188. \checkmark 4^{12}$  $6406532844189. \approx 12^4$ 

# Question Number : 88 Question Id : 640653845900 Question Type : MCQ

#### Correct Marks : 3

Question Label : Multiple Choice Question

In a dinner party, there are 2 males and 5 females who need to be seated around a round table. In how many ways can they be seated so that no two males are seated next to each other?

#### **Options :**

6406532844190. 🍀 420	
6406532844191. ✔ 480	
6406532844192. 🏶 600	
6406532844193. 🍀 680	
Sub-Section Number :	8
Sub-Section Id :	640653126010
Question Shuffling Allowed :	Yes

# Question Number : 89 Question Id : 640653845901 Question Type : MCQ Correct Marks : 4 Question Label : Multiple Choice Question

If 
$$\frac{{}^{10}P_{r+3}}{{}^8P_r} = 90$$
, then what is the value of  ${}^rP_2$ ?

# **Options** :

6406532844194. * 7	
6406532844195. 🏁 21	
6406532844196. 🖋 42	
6406532844197. 🏁 Insufficient information.	
Sub-Section Number :	9
Sub-Section Id :	640653126011
Question Shuffling Allowed :	Yes

#### Question Number : 90 Question Id : 640653845889 Question Type : SA

#### **Correct Marks : 2**

**Question Label : Short Answer Question** 

Pramod goes to a shop to buy some clothes. Shopkeeper shows him 7 shirts, 4 pants and 12 tshirts. If he selects three clothes at random, then find the probability that the randomly chosen clothes are of different type. (Enter the answer correct to two decimal places)

Response Type : NumericEvaluation Required For SA : YesShow Word Count : YesAnswers Type : RangeText Areas : PlainTextPossible Answers :0.16 to 0.22Sub-Section Number :10Sub-Section Id :Question Shuffling Allowed :Yes

# Question Number : 91 Question Id : 640653845893 Question Type : SA Correct Marks : 3

#### Question Label : Short Answer Question

A, B and C are three mutually exclusive and exhaustive events associated with a random experiment. If  $P(A) = p, P(B) = \frac{3}{2}P(A)$  and  $P(C) = \frac{1}{2}P(B)$ , then find the value of p. Enter the answer correct to two decimal places.

Response Type : Numeric Evaluation Required For SA : Yes Show Word Count : Yes Answers Type : Range Text Areas : PlainText Possible Answers :

0.28 to 0.34	
Sub-Section Number :	11
Sub-Section Id :	640653126013
Question Shuffling Allowed :	Yes

# Question Number : 92 Question Id : 640653845888 Question Type : MSQ Correct Marks : 3 Max. Selectable Options : 0

**Question Label : Multiple Select Question** 

Let a sample space  $S = \{1, 2, 3, 4, 5, 6, 7, 8\}$ . Consider the following three events:

 $E = \{1, 2, 5\}, F = \{4, 6, 7\}$  and  $G = \{1, 3, 8\}$ 

Which of the following option(s) is(are) correct?

#### **Options :**

6406532844160. \*  $E \cup F = \{1, 2, 5, 6, 7\}$ 

6406532844161. <br/>  $\checkmark E \cap G = \{1\}$ 

6406532844163. **\*** 
$$E \cap F = \{8\}$$

Section Id :	64065360607
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24
Number of Questions to be attempted :	24
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0