



**SLIATE**

**SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION**

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

*make to a interpretation*

*Jumail - 0039*

**Higher National Diploma in Information Technology**

**Second Year, First Semester Examination – 2022**

**HNDIT3072 – Statistics for IT**

Instructions for Candidates:

**Answer any five (05) questions.**

Every question carries 20 marks

**You are allowed to use non-programable calculator.**

No. of questions : 06

No. of pages : 05

Time : Three (03) hours

**Question 01.**

*easy to understand*

(i). Mention the importance of probability.

(4 marks)

(ii). Suppose you toss a die once and consider the following events;

*n = 2, 1, 2, 0  
P = 0, 5, 3, 3*

A – observe an odd number.

B – observe a number greater than 2.

C – observe 6.

D – observe 3.

(a). Identify the experiment you have done as mentioned in the above. (1 marks)

(b). Find an event of that experiment you mentioned in part (a). (1 marks)

(c). Write the sample space of the experiment in part (a). (1 marks)

(d). Find two (02) mutually exclusive events from the provided details in the question.

(1 marks)

*probability of without blue eyes*

(iii). There are 120 students in a class. If the probability of selected student being a boy is 0.7.

Moreover, the number of students (both boys and girls) with blue-eyes in the class is 40.

(a). What is the probability of the selected student being a girl student? Show the answer using probability rule. (4 marks)

(b). What is the probability of the selected student being a non-blue-eye student?

(4 marks)

(c). If the probability of selected student being a boy with blue-eyes is 0.167, find the probability of the selected student with blue-eyes given that the selected student is a boy. (Hint: probability of the selected student being a boy is 0.7). (4 marks)

*C. 0.7 = 0.16*

*0.533*

[20 Marks]

**Question 02.**

- (i). Define the term "a Probability Distribution". (2 marks)
- (ii). Write two (02) key attributes of Binomial probability distribution. (2 marks)
- (iii). Consider the discrete random variable probability distribution of tossing three coins together given below.

No. of heads (x)	0	1	2	3
P(X)	0.125	0.375	a	0.125

For the above find;

- (a). the value  $a$ . (4 marks)
  - (b). the expected value. (4 marks)
- (iv). A biased coin has a probability of 0.4 of getting a head. Assume the coin is tossed for 3 times. Using Binomial probability distribution, find;  $0.64$ .
- (a). the probability of getting exactly 3 heads. (4 marks)
  - (b). expected value and variance (4 marks)

*class sample*

[20 Marks]

**Question 03.**

- (i). List two (02) importance and two (02) limitation of Statistics. (4 marks)
- (ii). Write 04 of probabilistic sampling methods and describe them in brief. (4 marks)
- (iii). Sample of 30 students is showed no. of questions they have done as follows;

5	10	50	40	12	42	12	50	45	20
30	8	25	28	49	41	36	26	13	44
50	34	22	50	16	1	50	50	30	22

For the above;

- (a). Prepare a frequency distribution by selecting class width as 10 and by taking the first class as 1-10. (4 marks)
- (b). Construct a histogram and a frequency polygon. (4 marks)
- (c). Draw the less than ogive. (4 marks)

[20 Marks]

**Question 04.**

(i). What is the importance of measures of central tendency of a data set? Mention 02 of common measures of central tendency in Statistics. (4 marks)

(ii). No of leaves taken by 10 employees are listed here.

5, 6, 8, 4, 5, 6, 1, 3, 8, 2

For the above find:

(a). The average no of leaves taken by an employee. (1 marks)

(b). The median value of taken leaves. (1 marks)

(c). The mode (1 marks)

(d). How do you interpret/ explain the answer received as mode (in part c)? (1 marks)

(iii). Marks scored by 100 students for Statistics for IT assignment are as follows;

Marks	No. of Students
51 - 55	10
56 - 60	25
61 - 65	17
66 - 70	20
71 - 75	18
76 - 80	10

For the above assignment marks find the followings;

(a). The average mark. (4 marks)

(b). The expected mark in the middle. (4 marks)

(c). The most frequent mark. (4 marks)

[20 Marks]

**Question 05.**

(i). What does is mean by the measures of dispersion in statistics? Write 02 of measures of dispersion. (4 marks)

(ii). "Mean is not a good statistic measure, if outliers are there in the data set". Do you agree with the statement? Justify your answer. (4 marks)

7

(iii). Attendance (in days) of 11 students in the English class is as follows;

15    20    40    3    32    22    51

For the above marks find the followings;

- (a). First and third quartiles. (2 marks)
  - (b). Inter quartile range. (2 marks)
  - (c). The sample variance. (4 marks)
  - (d). The standard deviation. (2 marks)
  - (e). Coefficient of variance (CV). (2 marks)
- [20 Marks]**

**Question 06.**

(i). Define the following terms related to the correlation;

- (a). Positive correlation  $r = 5$  (1 marks)
- (b). Negative correlation  $r = -5$  (1 marks)
- (c). Independent variable *not affect one another.* (1 marks)
- (d). Dependent variable (1 marks)

(ii). Mr. Perera, the HRM manager, did a study on job satisfaction and life satisfaction with his office staff. Participants completed a measure on how job satisfaction they were feeling (on a 1 to 10 scale) and a measure of how satisfied they felt with their lives (measured on a 1 to 20 scale). The table below indicates the participants' scores.

Employee	Job Satisfaction (x)	Life Satisfaction (y)
1	3	6
2	2	2
3	4	9
4	5	10
5	6	15

Considering the provided information;

- (a). draw a scatter plot and find the type of linear correlation. (4 marks)
- (b). find the correlation coefficient. (4 marks)

(iii). Consider the following information.

Production Level (x) (in units)	Profit (y) (Rs. "000")
10	14
20	25
30	40
40	60
50	85
60	100

For the above information find;

(a). regression line using least square regression line  $y$  on  $x$ .

(6 marks)

(b). the expected profit when the production is 100 units.

(2 marks)

[20 Marks]