EXAMINATION PAPER

FACULTY	**:**	**COMPUTER SCIENCE AND MULTIMEDIA**		
COURSE	**:**	**BACHELOR OF INFORMATION TECHNOLOGY (HONS)**		
YEAR/ SEMESTER	**:**	**FIRST YEAR / SEMESTER TWO**		
MODULE TITLE	**:**	**QUANTITATIVE METHODS**		
CODE	**:**	**BIT 125**		
DATE	**:**	**22 –SEPTEMBER, 2019, SUNDAY**		
TIME ALLOWED	**:**	**3 HOURS**		
START	**:**	**1:00 PM**	**FINISH**	**: 4:00 PM**

Instruction to candidates

1. This question paper has THREE (3) Sections.
2. Answer **ALL** questions in Section A, MCQ.
3. Answer **5** questions in Section B, MSAQ.
4. Answer **2** questions in Section C, MEQ.
5. No scripts or answer sheets are to be taken out of the Examination Hall.
6. For Section A, answer in the OMR form provided.

Do not open this question paper until instructed

(Candidates are required to give their answers in their own words as far as practicable)

SECTION A
Multiple Choice Questions
Attempt All Questions **[30×1=30]**

1. **In Statistics, a sample means _____.**
   A. a portion of the sample
   B. a portion of the population
   C. all the items under investigation
   D. a parameter

2. **Which of the following is studied in the inferential statistics?**
   A. The method to make decision about population based on sample results.
   B. How to make decisions on mean, median and mode.
   C. How a sample is obtained from population.
   D. All of the above.

3. **Primary data are _____.**
   A. collected from first hand
   B. collected from second hand
   C. refined form
   D. internal records

4. **Which one of the following is the primary source of data?**
   A. Statistical data
   B. Journal articles
   C. Reviews
   D. Academic books

5. **Quantitative data are _____.**
   A. Non Statistical
   B. Statistical
   C. Unstructured
   D. Exploratory

6. **Cumulative frequency is _____.**
   A. total sum of frequency
   B. total number of classes
   C. running total of the frequency
   D. reference value

7. **It is necessary to find cumulative frequencies in order to draw_____.**
   A. histogram
   B. frequency polygon
   C. frequency cure
   D. ogive curve

8. Median is a measure of_____.

A. Positional average
B. Dispersion
C. Correlation
D. Deviation from central value

9. Which of the following is NOT a measure of dispersion?

A. Mean deviation
B. Standard deviation
C. Quartile deviation
D. 20^{th} percentile

10. The first 25% of values of an ordered series is called:

A. Mean
B. 25^{th} percentile
C. Median
D. Mode

11. Probability can take a value _____.

A. -1 to 1
B. 0
C. 1
D. 0 to1

12. Which of the following relations among the location parameters does NOT hold?

A. Q_2=median
B. P_{50}=median
C. D_5=median
D. D_6=median

13. Correlation coefficient search for:

A. Relationship between two variables
B. Effectiveness of two variables
C. Sufficiency between two variables
D. None of the above

14. If mean and standard deviation of a set of data are 25 and 10 respectively, then coefficient of variation of given data set is:

A. 35%
B. 40%
C. 15%
D. 50%

15. Test of hypothesis H_0: μ=70 vs H_1: μ≠70 leads to:

A. Left-tailed test
B. Right-tailed test
C. Two-tailed test
D. None of the above

16. Hypothesis of no significance difference between true parameter and hypothesized parameter refers to:

A. Alternative hypothesis
B. Estimation
C. Null hypothesis
D. Probability distribution

17. Two events are said to be dependent if:

A. Each outcome has equal chance of occurrence
B. There is no common point in between them
C. One does not affect the occurrence of the other
D. Both the events have only one point

18. If event B has already occurred, what is the probability of A refers to:

A. P( )
B. P( )
C. P(A∩B)
D. P(A∪B)

19. Simple interest can be calculated as:

A. p×n×i
B. p×n
C. p×i
D. p

20. The probability of the intersection of two mutually exclusive events is always:

A. Infinity
B. Zero
C. One
D. None of the above

21. For Binomial distribution with number of trials n and probability of success p, the relation between mean and variance that hold is:

A. Mean ≠ variance
B. Mean ≥ variance
C. Mean ≤ variance
D. Mean > variance

22. Test of hypothesis H_0 : = 50 vs H_1 : leads to:

A. Left tailed test
B. Two tailed test
C. Right tailed test
D. None of the above

23. Parameter of normal probability distribution is:

A. Mode
B. Standard deviation
C. Mean and standard deviation
D. Variance

24. Given that P(B)= 0.4 and P(A∩B)=0.2, probability P(A| B) is equal to:

A. 0.4
B. 0.7
C. 0.5
D. 0.15

25. In normal distribution:

A. Mean, median and mode are equal
B. Mean, median and mode are not equal
C. Mean is always greater than variance
D. Mode is always less than mean

26. Find the total numbers of arrangements of the letters of the word STATISTICS?:

A. 204000
B. 404000
C. 304000
D. 504000

27. Which of the following is NOT a measure of dispersion? :

A. Standard deviation
B. Quartile deviation
C. Mean deviation
D. 50th percentile

28. Student's t-test is applicable when:

A. $N \leq 30$, σ unknown
B. $N \geq 30$, σ unknown
C. $N \geq 30$, σ known
D. $N \leq 30$, σ unknown

29. If X and Y are two varieties, there can be at most:

A. One regression line
B. Two regression line
C. Three regression line
D. Many regression line

30. Formula for determine sample size(n) is given by:

A. $\frac{Z_{tab}{}^2\sigma^2}{E^2}$
B. $\frac{Z_{tab}{}^2\sigma}{E^2}$
C. $\frac{Z_{tab}{}^2\sigma^2}{E}$
D. $\frac{Z\sigma^2}{E^2}$

SECTION B
Short Answers Questions
Answer any five (5) questions out of eight (8) questions [5×6=30]

1. Define Descriptive statistics. Explain any four sources of primary and secondary data in brief. [2+4]

2. The mean of 20 observations is 16.5. If by mistake one observation was copied 12 instead of 21. Find the correct value of mean.

3. During the 9 weeks of session the marks scored by candidates 'A' in computer program course are given below:

A	58	59	60	54	65	66	52	75	69

The mean and standard deviation of Candidate 'B' during the session is 10 and 40. Who should get the price if the consistency of performance be the criterion for awarding?

4. The probability that a new airport will get an award for its design is 0.16, the probability that will get an award for the efficient use of material is 0.24 and the probability that it will get both awards is 0.11. What is the probability that;

A. It will get at least one of the two awards. [3]

B. It will get only one of two awards. [3]

5. In a bolt factory machines X, Y and Z manufacture respectively 25%, 35% and 40% of the total production. Of their output 5%,4% and 2% are defective bolts respectively. A bolt is drawn at random from the production and is found to be defective. What are the probabilities that it was manufactured by:

A. Machine X

B. Machine Y

C. Machine Z?

6. At a checkout counter customers arrive at an average number of 1.5 per minute. Find the probability that:

A. at most four will arrive in any given minute. [3]

B. at least 3 will arrive during an interval 2 minutes. [3]

7. A random sample of 40 students is drawn from a certain campus and their height showed a mean of 68.8 inches and a standard deviation of 2.5 inches.

A. Find standard error of sample means. [3]

B. Construct a 95% confidence interval of mean height of all students of the campus. [3]

8. The breaking strengths of ropes produced by a manufacturer have mean 1800 N and standard deviation 100 N. by a new technique in the manufacturing process, it is claimed that the breaking strength can be increased. To test this claim a sample of 5o ropes is tested and it is found that mean breaking strength is 1850 N. Can we support the claim at $\alpha=0.01$?

SECTION C
Long Answer Questions
Attempt any two (2) questions out of three (3) questions [2×20=40]

1. Ten objects are chosen on random from the large population and their weights are found to be in gms 60, 61, 62, 63, 65, 65, 67, 68, 70, 72.

A. Compute sample mean share and sample standard deviation. [5]

B. Compute standard error of estimate. [5]

C. Construct 95% and 91% confidence limits for mean share. [5]

D. Test the hypothesis that mean price of share is 68 at 5% level of significance. [5]

2.

A. Following are the marks in Statistics (X) and Accountancy (Y) of six students.

X	26	24	24	27	25	23
Y	13	12	14	16	15	11

i. Compute correlation coefficient between them. [5]

ii. Calculate the standard error and interpret its meaning. [5]

B. The monthly bonuses in 100 Rs. of 7 employees with different years of experience were recorded as follows:

Employees	A	B	C	D	E	F	G
Experience year x	1	2	3	4	5	6	7
Monthly bonus y	77	86	94	85	91	98	90

i. Develop the estimating equation of the form y = a + bx for the data given above. [7]

ii. Estimate the monthly bonus when the experience year is 10. [3]

3. The following is the distribution of wage of 500 workers in a factory:

Wage	0-20	20-40	40-50	50-60	60-80	80-100
No. of workers	50	100	150	90	60	50

Required

A. Mean wage of the distribution [3]

B. Median wage of the distribution [4]

C. The percentage of workers getting wage more than 75. [3]

D. Construct histogram and locate mode. [3]

E. Coefficient of quartile deviation. [4]

F. The minimum wage of 25% of richest workers. [3]

******BEST OF LUCK******