

**23U266S**

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Name: .....

Reg. No: .....

**SECOND SEMESTER B.Voc. DEGREE EXAMINATION, APRIL 2024**

(B.Voc Information Technology)

**CC18U GEC2 ST06 – BASIC STATISTICS AND PROBABILITY**

(2018 to 2020 Admissions - Supplementary)

Time: Three Hours

Maximum: 80 Marks

**Part A**

Answer *all* questions. Each question carries 1 mark.

Fill up the blanks:

1. .... is a best measure of dispersion.
2. The measure of central tendency which divides the distribution under a frequency into 10 equal parts is .....
3. The range of Spearman's rank correlation coefficient is .....
4. The term "regression" was introduced by .....
5. If A and B are independent events, then  $P(A/B) = \dots\dots\dots$

Write true or false:

6. The best average used for index numbers is geometric mean.
7. Standard deviation is unaffected by the change of origin.
8. The axiomatic definition of probability was introduced by Sir Francis Galton.
9. If  $F(x)$  is the distribution function of a random variable X.  
Then  $P(a \leq x \leq b) = F(b) - F(a)$ .
10. Sample space is the set of all possible outcomes of a random experiment.

**(10 × 1 = 10 Marks)**

**Part B**

Answer any *eight* questions. Each question carries 2 marks.

11. What is geometric mean?
12. What are partition values?
13. Explain Census.
14. State the properties of standard deviation.
15. What do you mean by curve fitting?
16. Define mean deviation.
17. What is classical definition of probability?
18. What is a scatter diagram?
19. State multiplication theorem.
20. Give an example for a discrete random variable.
21. Define probability density function of a random variable.
22. What is change of variable technique?

**(8 × 2 = 16 Marks)**

### Part C

Answer any *six* questions. Each question carries 4 marks.

23. What are the desirable properties of an ideal measure of central tendency?  
24. Distinguish between multiple correlation and partial correlation.  
25. Compute the mode for the given data:

Class Interval	40-50	50-60	60-70	70-80	80-90
Frequency	12	22	30	20	8

26. Explain the terms (i) Mutually exclusive events (ii) Exhaustive events.  
27. Show that pairwise independence need not imply mutual independence.  
28. State and prove addition theorem.  
29. The two regression lines are  $Y = 100.26 + 0.77X$  and  $X = 1.28Y - 143.7$ . Find  $\bar{X}, \bar{Y}$ .  
30. Three coins are tossed together. Find the probability distribution of the number of heads obtained.  
31. Define distribution function. What are its properties?

(6 × 4 = 24 Marks)

### Part D

Answer any *two* questions. Each question carries 15 marks.

32. Goals scored by two teams A and B in a football season were as follows:

No: of goals scored in a match	No: of matches	
	A	B
0	27	17
1	9	9
2	8	6
3	5	5
4	4	3

Find out which team is more consistent.

33. (a) Explain the principle of least squares.  
(b) Fit a curve of the form  $Y = aX + b$  for the following data

Weight	62	70	72	77
Height	10	15	18	13

34. (a) State and prove Baye's theorem  
(b) In a bolt factory machines, A, B and C manufacture respectively 25%, 35% and 40% of the total. Of their outputs 5, 4, 2 percent are defective bolts. A bolt is drawn at random from the product and is found to be defective. What are the probabilities that it was manufactured by machines A, B and C?  
35. Obtain the two regression lines and hence find the correlation coefficient for the following data.

X	90	82	82	82	81	71	63	63	49	38
Y	75	72	71	71	71	71	50	40	32	32

(2 × 15 = 30 Marks)

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