Mid-West University

Examinations Management Office

Final Examinations -2081

Level: Bachelors/B.Sc. CSIT/Semester: II — F. M: 60

Time: 3hrs. — P. M: 30

Subject: Statistics (STA424)

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks

GROUP-A

(Brief answer questions.)

Attempt all questions **[8×2=16]**

1. What do you understand by frequency distribution? [2]
2. A cyclist covers his first 5 km at an average speed of 10km/hr, another 3km at 8km/hr and the last 2km at 5km/hr. find the average speed of entire journey. [2]
3. The mean of the 100 items was 50. Later on it was found that two items were wrongly taken as 18 and 8 instead of 48 and 18. Find the correct mean. [2]
4. In a distribution mean=80, median=76 and coefficient of skewness=0.72. Find the mode and coefficient of variation. [1+1]
5. If regression coefficient of y on x $(b_{yx}) = -0.7$ and regression coefficient x on y $(b_{xy}) = -1.23$. calculate the coefficient of correlation and interpret the results. [1+1]
6. Best fitted straight line trend of annual production of sugar (in thousand tons) is Y_e =89+2x. Does this trend show an increasing trend? If yes, what is the monthly increase in production?
7. The quarterly average demand of a certain product of four quarters for the year 2016 to 2020 are 250, 125, 300 and 200 respectively. Find out the seasonal indices of different quarters. [2]
8. What do you mean by five number summary? What are its applications in statistics? [1+1]

GROUP-B:

(Descriptive answer questions)

Attempt any FIVE questions. **[5× 4 = 20]**

9. Discuss on applications of statistics in computer science and information technology. [4]
10. Write down the different method of data visualization. How diagrammatic and graphical methods describe your data?
11. The data related to space left in gigabyte of 100 computer of a company were given below.

Free disk space	No of computer	Free disk space	No of computer
0-5	3	20-25	20
5-10	7	25-30	8
10-15	18	30-35	5
15-20	35	35-40	4

Compute mean and standard deviation of free disk space [4]

12. In a certain distribution the first four moments about arbitrary value 4 are -1,5, 17, -30 and 108. Find β_2 and state whether the distribution is leptokurtic, mesokurtic or platykurtic. [4]
13. The following table gives the cost-of-living index numbers for different commodity group together with their respective weights for 2024. The base period is 2020

Group	Group index	Group weight
Food	410	40
Clothing	450	15
Light	300	7
Rent	370	10

Fuel	200	10
Misc.	280	18

Obtain overall cost of living index number. Suppose, a person was earnings Rs. 15000 in 2020, what should be his salary in 2024 so that he can maintain the living standard as that of the 2020 in 2024? [4]

14. Define sample space. The probability that an integrated chip will have defective etching is 0.12, the probability that it will have a creak defect is 0.2 and the probability that it has both defect is 0.02. What is the probability that a newly manufacture chip will have either an etching or crack defect? [1+3]

GROUP-C

(Analytical answer questions)

Attempt any THREE questions. **[3 × 8] = 24**

15. One hundred and twenty students appeared for a certain test and the following marks distribution was obtained. [4+2+2]

Marks	0-20	20-40	40-60	60-80	80-100
Students	10	30	36	30	14

Find:

a. The limits of marks of middle 30% students
b. The percentage of students getting marks more than 75.
c. The number of students who fail if 35 marks are required for passing. [6+1+1]

16. Following example is data set with 8 paired data points showing the relationship between hours coded daily and the number of bugs identified: [5+3]

Hours Coded Daily	1	2	3	4	5	6	7	8
Number of Bugs Identified	10	8	7	5	6	4	3	2

Find the correlation coefficient and test the significant of correlation.

17. Calculate the Fisher ideal index number for the following data and show that it satisfies (i) Time reversal test and (ii) Factor reversal test. [4+2+2]

Commodity	2015		2020	
	Price (in Rs)	Quantity (units)	Price (in Rs)	Quantity (units)
A	8	60	12	58
B	4	110	4	125
C	6	70	8	70
D	12	40	14	38

18. Fit straight line trend by the method of least square to the data given below. Also, find the trend values and predict the sales for the year 2025. [5+2+1]

Year	2018	2019	2020	2021	2022	2023	2024
Sales (000units)	115	126	117	136	144	160	176

Best Wises