

Mid-West University
Examinations Management Office
 Surkhet, Nepal
 End-Semester Examination-2080
 Master of Business Studies (MBS)
 Semester - 1

Subject: Statistics for Business Decisions

Full Marks: 60 Pass Marks: 30

Course Code: MGMT 515

Time: 3: 00 Hours

You are required to answer in your own words as far as applicable. Figures in the margins indicate full marks.

SECTION A: CRITICAL THINKING QUESTIONS (10 X 1 = 10 MARKS)

Answer **ALL** the questions:

1. Define statistics.
2. Define primary and secondary data.
3. What will be the value of median of a moderately asymmetrical distribution if the mean and mode are 30 and 24 respectively?
4. The following results were obtained: Coefficient of variation = 50%
 Karl pearson's coefficient of skewness = 0.5 Standard deviation = 2
 Find mean and mode.
5. The year of origin of the following straight trend line equation of profits in lakhs of rupees is 2008.
 $Y = 35 + 2x$
 Estimate the profit for the year 2015.
6. Prepare a regret table from the given conditional profit table:

Demanded units	Decision Alternatives			
	15	16	17	18
15	150	120	90	90
16	150	160	130	100
17	150	160	170	140
18	150	160	170	180

7. The difference between the upper quartile and lower quartile of a certain frequency distribution is 4 and their sum is 16. Calculate the quartile deviation and its coefficient.
8. The first four moments about the value 5 are 2, 20, 40 and 50 respectively. Calculate the arithmetic mean and variance of the distribution.
9. From the information of prices and quantities of four commodities in the base year 1983 and the current year 1984, the following results are obtained :

$$\sum p_0q_1 = 184, \sum p_1q_0 = 121, \sum p_1q_1 = 192, \sum p_0q_0 = 108$$

Where p_0, p_1, q_0 & q_1 have their usual meaning. Calculate the price index by Fisher's formula.

10. The coefficient of correlation between variable X and Y is 0.9, their covariance is 20 and variance of X is 16. Find the standard deviation of Y.

SECTION B: SHORT ANSWER QUESTIONS (3 X 8 = 24 MARKS)

Answer any **THREE** questions:

11. The mean of 20 items was found to be 10. At the time of checking, it was found that one item 8 was incorrect. Calculate the mean when: [4+4]
 - a. The wrong item is omitted.
 - b. It is replaced by 12.

12. The mean and standard deviation of a set of 100 observations were found to be 40 and 12 respectively. On checking, it was found that two observations were wrongly taken as 23 and 15 instead of 43 and 18. Calculate correct mean and standard deviation. [8]

13. Find kurtosis of the following by the method of moments. [8]

No. of hours worked	1-3	3-5	5-7	7-9
No. of days	3	5	1	1

14. The marks obtained by 10 students in statistics and economics are given below:

Roll no.	1	2	3	4	5	6	7	8	9	10
Marks in statistics	77	54	27	52	14	35	90	25	56	60
Marks in economics	35	58	60	40	50	40	35	56	34	42

Find if there exists any relationship between the marks of these two subjects, also interpret the obtained results and test the significance of correlation coefficient. [8]

15. Fit a straight trend equation for the following data and estimate the sales for 2005 from the following:

Year	1996	1997	1998	1999	2000	2001	2002
Sales (units)	770	880	940	850	910	980	900

The Number of traffic fatalities from drunk driving that the country expects for 1994. [8]

SECTION C: LONG ANSWER QUESTIONS (2 X 13 = 26 MARKS)

Answer any TWO questions:

16. Why is Fisher's index number also called Fisher's Ideal index number? Using the following data, construct Fisher's ideal index, and show that it satisfies factor reversal test and time reversal test. [1+2+10]

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	10	6	12	10
B	12	12	15	15
C	15	25	18	30
D	20	40	25	40
E	13	17	20	15

17. Production of a certain chemical mixture should contain 80 mg chlorides, 28 mg nitrate and 36 mg of sulphate per kilogram. The company can use two substances. Substance X contains 8 mg chlorides, 4 mg nitrates and 6 mg sulphates per gram. Substance Y contains 10 mg chloride, 2 mg nitrates and 2 mg sulphates per gram. Both substances cost Rs. 20 per gram. It is required to produce the mixture using substance X and Y so that the cost is minimized. Formulate the problem as a linear programming problem and solve using the graphic method. [13]

18. From the following bivariate table, compute two regression coefficients, coefficient of variation, coefficient of correlation and estimate the expenditure of person when his income is Rs.4000. [13]

Expenditure (Rs)	Income (Rs)				
	0-500	500-1000	1000-1500	1500-2000	2000-2500
0-400	12	6	8	-	-
400-800	2	18	4	5	1
800-1200	-	8	10	2	4
1200-1600	-	1	10	2	1
1600-2000	-	-	1	2	3

THE END