Mid-West University
Examinations Management Office
Surkhet, Nepal
End-Semester Examinations-2081
Bachelor of Business Studies (BBS)
Semester - II

Subject: Business Statistics -I	Course Code: MGMT 421/321
Full Marks: 60 Pass Marks: 30	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: VERY SHORT ANSWER QUESTIONS (10 X 1 = 10 MARKS)

Answer ALL the questions.

1. What do you mean statistics?
2. Find the median age of 9 students from the following data:
   Age (in years): 20, 18. 25, 22, 20, 24, 21, 26. 18
3. The average wage of the male workers working in a factory is Rs. 80 and the number of male workers is 100. The average wage of the female workers is Rs.70 and their number is 50. Find the average wage of all the workers taken together.
4. The coefficient of variations of two series are 75% and 90% and their standard deviations 15 and 18 respectively. Find their means.
5. Karl Pearson's coefficient of correlation between two variables X and Y is 0.28, their covariance is 7.6. If the variance of X is 9, find the standard deviation of Y series.
6. The regression coefficient of y on x is 3.2 and that of x on y is 0.2, find the correlation coefficient.
7. If $\begin{vmatrix} x-1 & x-2 \\ x & x-3 \end{vmatrix} = 0$, find the value of x.
8. Show that AB is a null matrix, if
   $A = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}, B = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$
9. If $U = \{1,2,3,4,5,6,7,8,9\}$ & $A = \{1,2,3,4,5,6\}$ then find $A \cup A^c$.
10. Two coins are tossed simultaneously. Find the probability of getting at least one head.

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

Answer any THREE questions.

11. Find the geometric mean and harmonic mean from the following data:

Class interval	10-20	20-30	30-40	40-50	50-60
Frequencies	30	75	70	60	15

12. What do you understand by dispersion? From the following distribution, find the most appropriate measure of dispersion. [2+6]

Wages	Below 25	25-29	30-34	35-39	40-44	Above 45
Frequency	5	12	22	25	17	9

13. Define rank correlation coefficient. Calculate the rank correlation coefficient from the following data: [2+6]

X	80	78	75	75	68	67	68	59
Y	12	13	14	14	14	16	15	17

14. Solve the following problem graphically:
    Maximize P = 3x + 2y
    Subject to constraints: $2x - y \le 1$, $x + 2y \le 3$ and $x, y \ge 0$

15. (a) Verify: $A^2 - 4A - 5I = 0$, if $A = \begin{vmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{vmatrix}$, where I and 0 are 3×3 unit and null matrix. [5]

(b) In a statistical investigation of 500 families in certain town, it was found that 40 families had neither a radio set nor a TV one and 320 families had a radio and 190 a TV. How many families are there in that group having both radio and TV sets? [3]

SECTION C: LONG-ANSWER QUESTIONS (2 × 15 MARKS)

Answer any TWO questions.

16. A factory produces two types of electric motors A and B. In an experiment relating to their life, the following results were obtained:

Life (in years)	Number of motors	
	Model A	Model B
0-2	1	5
2-4	9	7
4-6	12	15
6-8	11	19
8-10	8	9

   a. Find which model of motor has greater uniformity. [6]
   b. Calculate the combined mean. [3]
   c. Calculate the combined standard deviation [4]

17. The income and expenditure of 100 families are given below:

Expenditure (in Rs)	Income (in 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

From the above bivariate table, compute:
   a. Two regression coefficients. [5]
   b. The coefficient of correlation between income and expenditure. [3]
   c. Estimate the expenditure of a person when his income is Rs. 4000. [5]

18. A frequency distribution of marks of 100 students is given below. Frequencies corresponding to two groups are missing from the table. The median marks is known to be 49.5.

Marks	0-19	20-39	40-59	60-79	80-99
No. of students	14	?	26	?	16

   a. Find the missing frequencies. [8]
   b. Calculate the limits of marks obtained by the middle of 60% students. [5]

THE END