

Mid-West University  
**Examinations Management Office**  
 Surkhet, Nepal  
 End-Semester Examination-2080  
 Bachelor of Business Studies (BBS)  
 Semester - III

Subject: Business Statistics-II  
 Full Marks: 60 Pass Marks: 30

Course Code: MGMT 433/333  
 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.

- Mention the objectives of regression analysis.
- Given  $n = 8, \Sigma X = 50, \Sigma Y = 40, \Sigma X^2 = 500, \Sigma Y^2 = 260, \Sigma XY = 350$ , find the standard error of estimate.
- From the following payoff table, find the optimistic criterion under profit maximization.

Decision Alternatives (strategies)	States of nature (Demand)		
	$N_1 = 10$	$N_2 = 11$	$N_3 = 12$
$S_1 = 10$	40	40	40
$S_2 = 11$	32	44	44
$S_3 = 12$	24	36	48

- Fit a straight-line trend using method of semi-average for the following data of poultry meat production of Nepal.

Year	2060	2062	2064	2066	2068	2070
Production (in '000 metric tons)	10	12	14	16	20	24

- In the following straight line trend equation of production ('000 tons), the year of origin is considered as 2004.

$$y = 20 + 3.5x$$

Estimate the production for the year 2009.

- From the information of prices and quantities of four commodities in the base year 1983 and current year 1984, the following results are obtained:  $\Sigma p_0 q_1 = 184, \Sigma p_1 q_0 = 121, \Sigma p_1 q_1 = 192, \Sigma p_0 q_0 = 103$ , where  $p_0, q_1, p_1$  and  $q_0$  have their usual meaning. Calculate the price index by Fisher's formula.
- What do you mean by sampling?
- Describe the errors in hypothesis testing.
- If you use a 0.05 level of significance in a (two-tailed) hypothesis test, what will you decide if  $Z_{cal} = 2.21$ ?
- Define:
  - Balanced transportation problem
  - Unbalanced transportation problem

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

Answer any **THREE** questions.

- A coca-cola distributor buys the bottles for Rs. 6 and sells them for Rs. 10 each. All the bottles leftover are worthless. His daily sales of cold drinks is never less than 15 and not more than 20. Prepare pay off table and loss table. What will be the distributor's decision if the criterion adopted be maxi-max criterion?

[6+2]

12. From the data given below find Laspeyre's, Paasche's and Fisher's price index number: [3+3+2]

Commodities	Base year		Current year	
	Price per unit (Rs)	Quantity	Price per unit (Rs)	Quantity
A	2	20	5	15
B	4	4	8	5
C	1	10	2	12
D	5	5	10	6

13. Define transportation problem. Use Vogel's approximation method to find the initial transportation cost from the following transportation problem. [2+6]

Plant	Stores				Available per week
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	
W	29	32	29	26	70
X	27	23	27	27	60
Y	26	25	29	31	90
Requirement per week	60	40	60	20	220
					180

14. Define hypothesis testing. The average height of 40 players who plays basketball is 65 inches with a standard deviation of 2 inches and another set of 40 players who does not play basketball is 64 inches with a standard deviation of 2.3 inches. Test the hypothesis that the players who plays basketball having taller height. [2+6]
15. Given  $n = 6$ ,  $\sum X = 30$ ,  $\sum X^2 = 210$ ,  $\sum Y = 39$ ,  $\sum Y^2 = 271$ ,  $\sum XY = 166$
- a. Find the lines of least square regression. [5]
- b. Find the coefficient of determination and interpret it. [3]

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

Answer any TWO questions.

16. Below are the given annual production of sugar (in '000 tons) of a factory.

Year	2006	2007	2008	2009	2010	2011	2012
Production	77	88	94	85	91	98	90

- a. Fit a straight trend line by the method of least squares and obtain the trend values. [4]
- b. Plot the given figures on a graph and show the trend line. [3]
- c. Do these figures show an increasing trend? If yes, what is the monthly increase in production? [3]
- d. Estimate the production of sugar for the year 2013 and 2014. [3]
17. The city council of Pokhara has gathered the data on number of minor traffic accidents and the number of youth football games that occurred in town over the weekends.

Football games	20	30	10	12	15	25	34
Minor accidents	6	9	4	5	7	8	9

- a. Predict the estimating linear equation to forecast the minor accident from football games. [5]
- b. Predict the number of minor traffic accidents that will occur at weekends during which  $X = 30$ . [2]
- c. Calculate the coefficient of correlation. [3]
- d. Find the standard error of estimate. [3]
18. The manufacturer of electric bulbs claims that have a mean life of 26 months. A random sample of 10 such bulbs gave the following results. [13]
- Life in months: 25, 27, 33, 29, 21, 21, 24, 28, 35 and 30.
- Can you regard the manufacturer's claim to be valid at 5% level of significance?

THE END