

Mid-West University
Examinations Management Office
 Birendranagar, Surkhet
 End Semester (Alternative/Physical) Examination-2078
 Bachelor of Business Administration (BBA)
 Semester - IV

Subject: Business Statistics-II
 Full Marks: 50 Pass Marks: 25

Course Code: MGT 342
 Time: 3:00 Hours

You are required to answer in your own words as far as applicable.

Attempt all of the following Questions:

5×10=50

1. a. Calculate the correlation coefficient for the following height (in inches) of father (x) and their son (y).

| | | | | | | | | |
|----|----|----|----|----|----|----|----|----|
| X: | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 |
| Y: | 67 | 68 | 65 | 68 | 72 | 72 | 69 | 71 |

- b. Fit a trend line to the following data by the method of semi averages and interpret the result.

| | | | | | | | |
|-------------|---------|---------|---------|-----------|---------|---------|---------|
| Fiscal Year | 1996/97 | 1997/98 | 1998/99 | 1999/2000 | 2000/01 | 2001/02 | 2002/03 |
| Output | 12 | 8 | 13 | 10 | 15 | 16 | 12 |

2. a. Find the cost of living index number from the following data.

| | | | | | |
|-----------------|-----|-----|-----|-----|-----|
| Index Number | 550 | 215 | 220 | 150 | 275 |
| Expenditure (%) | 46 | 10 | 7 | 12 | 25 |

- b. Find the optimal assignment for the following cost matrix

| | | | | |
|----------|----------------|----------------|----------------|----------------|
| | Areas | | | |
| Salesman | A ₁ | A ₂ | A ₃ | A ₄ |
| P | 11 | 17 | 8 | 16 |
| Q | 9 | 7 | 12 | 10 |
| R | 13 | 16 | 15 | 12 |
| S | 14 | 15 | 12 | 11 |

3. The following data is related with number of salesman working in a certain concerns. Use the method of least square to fit a straight line trend and calculate trend values. Also estimate the number of salesman in 1995.

| | | | | | |
|-----------------|------|------|------|------|------|
| Year | 1990 | 1991 | 1992 | 1993 | 1994 |
| No. of salesman | 28 | 38 | 46 | 40 | 56 |

OR

Show that Fishers index number satisfied both time reversal test and factor reversal test.

| | | | | |
|-----------|-------|----------|-------|----------|
| | 2062 | | 2063 | |
| Commodity | Price | quantity | Price | quantity |
| P | 5 | 100 | 6 | 150 |
| Q | 4 | 80 | 5 | 100 |
| R | 2.5 | 60 | 5 | 72 |
| S | 12 | 30 | 9 | 33 |

4. SajhaYatayat interested in the relationship between the age of a passenger bus and the annual repair expenses should expect to incur. In order to determine this relationship, SajhaYatayat has accumulated information concerning five buses it currently owns.

| | | |
|---------|--------------------|--|
| Bus No. | Age of bus in year | Repair expenses during last year (Rs.1000) |
| 101 | 8 | 10 |
| 102 | 5 | 7 |
| 103 | 3 | 7 |
| 104 | 3 | 6 |
| 105 | 1 | 4 |

From the above data, estimate the repair expenses for bus no.102 next year.

5. The followings are the partial outputs of the multiple regression with four independent predictor x_1, x_2, x_3 and x_4 with sample size of 12 observation :

| | Coefficient | Standard | T | P-Value |
|----------|-------------|-----------|-------|---------|
| constant | -1.381 | 13.36046 | -0.10 | 0.921 |
| X_1 | 2.852 | 1.506682 | 1.89 | 0.100 |
| X_2 | 30.285 | 15.56271 | 1.95 | 0.093 |
| X_3 | -3.713 | 10.12508 | -0.37 | 0.725 |
| X_4 | 1.72 | 1.1011665 | 1.06 | 0.323 |

$R^2=0.952$

- Using the above developed output, determine the best fitting regression equation for their data.
- What does R^2 measure.
- If $x_1=1800$, $x_2=1$, $x_3=1.5$ and $x_4=6$, what would be the expected value of y ?

OR

The advertisement expenses and sales of a new product are recorded as below.

| | | | | | |
|------------------|----|----|----|-----|-----|
| Ad. Exp. (Rs000) | 1 | 5 | 6 | 8 | 10 |
| Sales (Rs000) | 50 | 60 | 80 | 100 | 110 |

Estimate the sales when the advertisement exp. Is Rs 15000.

The End