Mid-West University

Examinations Management Office

Surkhet, Nepal

End Semester Examination-2082

Level: B.Ed. /VI Semester

Sub: Data Modeling (MATH 461)

Roll No: .....

Group "A" **10 × 1 =10**

Tick (✓) the best answers:

1. Which of the followings describes data modeling?
   a. Designing a website layout
   b. Creating mathematical models
   c. Structuring and organizing data in a database
   d. Performing calculations on data

2. Which of the followings is the range of the correlation coefficient (r)?
   a. 0 to 1 b. -1 to +1
   c. -1 to 0 d. None of them.

3. In the regression equation $Y = a + bX$, the coefficient 'b' represents.....
   a. The Y-intercept b. The slope of the regression line
   c. The mean of X d. The residual value

4. Demography indicates.....
   a. The study of maps and landscapes
   b. The statistical study of human populations
   c. The study of democracy
   d. The study of economic systems

5. Which is the correct value of regression coefficient of x on y (b_{xy})?
   a. $b_{xy} = r \times \frac{\sigma_y}{\sigma_x}$ b. $b_{xy} = r \times \frac{\sigma_x}{\sigma_y}$
   c. $b_{xy} = \sigma_x \times \sigma_y$ d. $b_{xy} = \sqrt{\sigma_x \times \sigma_y}$

6. Which is correct for index number?
   a. A number that shows the exact value of a commodity
   b. A comparative measure expressed in percentage form
   c. A number that replaces prices
   d. A number used to rank countries

7. How to calculate EPPI?
   a. $\sum(pay - off\ value\ for\ each\ strategy \times probabilities)$
   b. $\sum(\frac{pay-off\ value\ for\ each\ strategy}{probability})$
   c. $\sum(diagonal\ pay - off \times probabilities)$
   d. *None of them.*

8. If the correlation coefficient (r) is 0, what does it indicate?
   a. Perfect positive relationship b. Perfect negative relationship
   c. No linear relationship d. Strong nonlinear relationship

9. Which of the followings is a branch of statistics?
   a. Descriptive statistics b. inferential statistics
   c. Industry statistics d. Both a and b

10. Physical data model concerns with.....
    a. Conceptual design
    b. How data is actually stored in the database
    c. Relationships between entities
    d. Business requirements

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End Semester Examination-2082

Level: B.Ed. / VI Semester FM: 60

Time: 3.00 hrs. PM: 30

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Candidates are required to give their answers in their own words as far as practicable.

Attempt All the Questions.

Group 'B' **6×5 = 30**

1. Compute the correlation coefficient for the data. What does this value tell us about the relationship between two variables?

Weight	50	60	73	82	88	91
Height	5	5.3	4	6	5.1	6.3

2. Compute a price index for the following by (i) simple aggregative (ii) average of price relative method by using both A. M. and G.M.

Commodity	A	B	C	D	E	F
Price in 2080	20	30	10	25	40	50
Price in 2081	25	30	15	35	45	55

3. A cold drinks 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 are 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 (a) maxi-max (b) maxi-min and (c) mini-max regret?

OR

Describe about demography including population Growth model: Simple linear model, compound interest model and simple exponential model.

4. Draw a trend line by the method of semi-averages from the following data:

Year	2074	2075	2076	2077	2078	2079	2080	2081
Sales(000' units)	100	105	109	96	102	108	112	114

5. For the following data prove that the Fisher's index satisfies both the Time Reversal and Factor Reversal Test:

Commodity	Price (Base year)	Quantity (Base Year)	Price (Current Year)	Quantity (Current Year)
A	5	50	6	56
B	7	100	10	120
C	10	60	12	60
D	12	30	5	24

6. From the following table, give decision according to (a) maximax criteria (b) maximin criteria.

State of nature	Strategy (S_1)	Strategy (S_2)	Strategy (S_3)
M	4	-2	7
N	0	6	3
O	-5	9	2
P	3	1	4

OR

Write any two components of time series with suitable examples.

Group 'C' **2×10=20**

7. A dairy farm wants to determine the quantity of butter it should produce to meet the demand. Past records have shown in the following demand patterns:

Quantity required (Kg)	15	20	25	30	35	40	50
No. of days demand occurred	6	14	20	80	40	30	10