

MID-WESTERN UNIVERSITY
 FACULTY OF MANAGEMENT
 FINAL EXAMINATION: 2073
 BACHELOR OF BUSINESS STUDIES (BBS)
 SEMESTER - III

Subject: Business Statistics-II
 Full Marks: 100

Course Code: MGMT 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 2 = 20 MARKS)

Answer all questions.

- Q1. Write any two properties of regression coefficients.
- Q2. Define SSE and SSR.
- Q3. Write any two methods to determine seasonal variation.
- Q4. What are the formula to construct the cost of living index?
- Q5. What is difference between pay-offs and pay-off values?
- Q6. Define Paasche's price index number.
- Q7. Define population and samples.
- Q8. What is cluster sampling?
- Q9. Define the method to find an initial solution of transportation problem.
- Q10. Write any two differences of PERT and CPM.

SECTION B: SHORT ANSWER QUESTIONS (6 X 8 = 48 MARKS)

Answer any SIX questions:

- Q11. Calculate means and regression coefficient from the following regression equations: (8)
 $3x + 2y = 26$ and $6x + y = 31$.
- Q12. Define Time Series Analysis. Discuss different components of time series. (3+5)
- Q13. Fit the straight line by the method of least square to the following data. (8)

Years	2000	2001	2002	2003	2004
Value	100	105	115	90	95

- Q14. Given the following matrix.

Strategy (Actions)	State of Nature (Event)			
	A	B	C	D
S1	8,000	0	-10,000	6,000
S2	-4,000	12,000	18,000	-2,000
S3	14,000	9,000	9,000	8,000

Indicate the decision taken by the decision maker under the following approaches:

- (i) Maximax Criterion (4)
 - (ii) Minimax Regret Criterion (4)
- Q15. The mean lifetime of a sample of 400 fluorescent light bulbs produced by a company is found to be 1570 hours with a standard deviation of 150 hours. Test the hypothesis that the mean lifetime of the bulbs produced by the company is at least 1600 hours at 1% level of significance. (8)
 - Q16. A population consists of four numbers 1, 3, 5, 7 and 9. Enumerate all possible samples of size two which can be drawn from the population without replacement. Calculate the mean and variance of population. (4+4)

Q17. The following table gives the information of 100 workers according to gender and nature of work. Test whether nature of work is associated with the gender of the worker. (8)

Nature of work	Skilled	Unskilled	Total
Male	40	20	60
Female	10	30	40
Total	50	50	

Q18. Solve the following assignment problem that minimizes the cost. (8)

Jobs	Workers		
	A	B	C
X	25	31	35
Y	15	20	24
Z	22	19	17

SECTION C: LONG ANSWER QUESTIONS (2X16=32 MARKS)

Answer any TWO questions:

Q19. The data given below on the height and weight of football players;

Height (inches)	68	64	62	65	66
Weight (pound)	132	108	102	115	128

- Calculate: (i) Mean height and weight. (4)
- (ii) Estimate linear regression equation of weight on height. (8)
- (iii) Estimate the weight of player when height is 60 inches. (4)

Q20. Two horses A and B were tested according to the time (In seconds) to run a particular track with the following result.

Horse A	48	50	52	53	53	53	49	54
Horse B	49	50	50	44	47	47	49	55

Test whether the two horses have the same running capacity by using 1% and 5% level of significance. (16)

Q21. Following table shows per unit cost of transportation between warehouses and markets;

Warehouse	Market				Availability
	M_1	M_2	M_3	M_4	
A	9	7	10	8	14
B	8	11	9	11	27
C	13	10	12	10	14
Requirement	15	19	11	10	

Calculate an initial basic feasible solution by using

- a) Least cost method (8)
- b) Vogel's approximation method (8)

$(z_{0.025} = 1.96, z_{0.01} = 2.576, t_{0.05} = 2.228, \chi_{0.05,1}^2 = 1.69)$

