Code No: MB1912/R19

MBA I Semester Regular/Supplementary Examinations, February-2024

MANAGERIAL ECONOMICS

Time: 3 Hours **Max. Marks: 75**

Answer Any* FIVE *Questions one from each unit
Question No. 11 is Compulsory

UNIT-I

1.	a)	Illustrate the concept of discounting principle.	6M
	b)	Illustrate the concept of time perspective with example.	6M
		(OR)	
2.	a)	"Managerial economics is always finding the solutions for managerial problems of a firm". Justify.	6M
	b)	State and explain opportunity cost principle.	6M
		UNIT-II	
3.	a)	Discuss law of demand in detail.	6M
	b)	How do you measure elasticity of demand? Illustrate graphically.	6M
		(OR)	
4.		What is a new product? Explain how did you forecast demand for new products? Illustrate with example.	12M
		UNIT-III	
5.	a)	Explain internal and external economies of scale.	6M
	b)	Discuss Constant Elasticity of Substitution (CES) production function.	6M
		(OR)	
6.	a)	Discuss cost-output relationship in short run.	6M
	b)	Why the law of diminishing returns does operates? Explain with the help of a diagram.	6M
		UNIT-IV	
7.	a)	Define market. Distinguish between perfect and imperfect markets.	6M
	b)	What are the different methods of pricing? Explain.	6M
		(OR)	
8.	a)	What are essential conditions for the practice of price discrimination?	6M
	b)	Discuss in brief about Nash Equilibrium and Prisoner's Dilemma.	6M
		UNIT-V	
9.	a)	Briefly explain about Philips curve.	6M
	b)	Write short notes on Deflation.	6M
		(OR)	
10.	a)	Discuss about Inflation.	4M
	b)	What measures are taken to control inflation? Explain different types and causes of inflation.	8M

11. **CASE STUDY:**

If a commodity demanded before and after price Rs.10 and Rs.9 being 2000 and 2500 units respectively. 15M

Questions:

i. Calculate price elasticity of demand.
ii. How can you analyze the above situation as a manager?
iii. Write the importance of price elasticity of demand in business decision making.

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Code No: QAI01/R20

M. Tech. I Semester Regular/Supplementary Examinations, February-2024

MATHEMATICS FOR ML

Common to AI&ML (AI) and AI (AF)

Time: 3 Hours **Max. Marks: 75**

Answer any FIVE Questions One Question From Each Unit
All Questions Carry Equal Marks

UNIT-I

1.	a	How systems of linear equations are represented? Why are they important in machine learning?	7M
	b	Explain the matrix multiplication operation and its applications in machine learning algorithms.	8M

OR

2.	a	Explain the concept of a solution space for a system of linear equations.	7M
	b	Explore the role of matrix inversion in solving systems of linear equations.	8M

UNIT-II

3.	a	How do inner products play a role in defining the similarity between vectors in machine learning applications?	6M
	b	Explain the role of L1 and L2 norms in regularization techniques commonly used in machine learning algorithms.	9M

OR

4.	a	In machine learning, how is the Euclidean distance between data points calculated, and what geometric interpretation does it have?	7M
	b	Explain how the concept of orthogonality is applied in machine learning algorithms?	8M

UNIT-III

5.	a	Explain the significance of matrix in machine learning.	8M
	b	How are eigenvalues and eigenvectors applied in machine learning?	7M

OR

6.	a	What is Singular Value Decomposition (SVD)? How is it used in machine learning applications?	7M
	b	Discuss the role of eigen decomposition in feature extraction and transformation techniques in machine learning.	8M

UNIT-IV

7.	a	How is the derivative of a univariate function computed? Why is it important in the context of machine learning?	10M
	b	How are gradients computed for vector-valued functions?	5M

OR

8.	a	Explain the concept of partial differentiation and how gradients are computed for multivariate functions.	7M
	b	Explain the role of back propagation in machine learning.	8M

UNIT-V

9.	a	Discuss the significance of the Gaussian distribution in machine learning.	8M
	b	Explain the concept of conjugacy in probability distributions.	7M

OR

10.	a	Discuss the role of learning rates in gradient descent.	7M
	b	Discuss the characteristics of convex functions.	8M

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Code No: M5701/R19

M. Tech. I Semester Regular/Supplementary Examinations, February-2024

CMOS ANALOG IC DESIGN

Common to VLSI (57), VLSID (72), VLSISD (61) and VLSI Micro Electronics (76)

Time: 3 Hours **Max. Marks: 75**

Answer any FIVE Questions One Question From Each Unit
All Questions Carry Equal Marks

UNIT-I

1.	a	Derive Sah Equation describing the current in MOSFET.	7M
	b	Perform the analysis of Common Source Amplifier Stage.	8M
		OR	
2.	a	What are short channel effects and explain them.	7M
	b	Draw the diagram of Cascode Stage and perform the analysis.	8M
		UNIT-II	
3.	a	Derive the expression for the common mode rejection ratio of a differential amplifier.	8M
	b	Write about differential amplifier and its operation.	7M
		OR	
4.	a	Explain the large signal analysis of a differential amplifier.	7M
	b	Derive the output resistance of a cascade current mirror.	8M
		UNIT-III	
5.	a	Derive the expression for transfer function of a source follower.	8M
	b	What are the different types of noise sources?	7M
		OR	
6.	a	Discuss about noise in differential amplifiers.	7M
	b	What is a differential pair? Discuss about its frequency response.	8M
		UNIT-IV	
7.	a	Define feedback and explain its properties.	8M
	b	Discuss about the effect of output resistance on different feedback topologies.	7M
		OR	
8.	a	Explain different types of amplifiers used in feedback.	7M
	b	Explain loading in current-current feedback topology.	8M
		UNIT-V	
9.	a	Explain internal hysteresis method.	8M
	b	Explain about switched capacitor comparator.	7M
		OR	
10.	a	What is regenerative comparator? Explain with a diagram.	7M
	b	Explain about two stage open loop comparator.	8M

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Code No: M5801/R19

M. Tech. I Semester Regular/Supplementary Examinations, February-2024

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Computer Science & Engineering (58)

Time: 3 Hours **Max. Marks: 75**

Answer any FIVE Questions One Question From Each Unit
All Questions Carry Equal Marks

UNIT-I

1. a What is conditional probability? Discuss various theorems of conditional probability in brief. 7M
   b Explain Bayes Theorem. A certain disease has an incidence rate of 2%. If the false negative rate is 10% and the false positive rate is 1%, compute the probability that a person who tests positive actually has the disease. 8M

OR

2. a What is Distribution Function? Give example for a distribution function of a random variable and discrete random variable. 7M
   b If A, B and C have chances of being selected as a manager at private firm is in the ratio 4:1:2. The chances of for them to introduce changes in marketing strategies are 0.3, 0.8 and 0.5, respectively. If a change has taken place, find the probability that it is due to the selection of B. 8M

UNIT-II

3. a What is the reliability factor of a confidence interval? How do confidence intervals help us estimate population parameters? Explain. 7M
   b The following data pertain to the marks in subjects A and B in a certain examination: Mean marks in A=39.5; Mean marks in B=47.5; Standard deviation of marks in A=10.8; Standard deviation of marks in B=16.8. Coefficient of correlation between marks in A and marks in B=0.42. Compute the two lines of regression and explain why there are two regression equations. Give the estimate of marks in B for candidates who secured 50 marks in A. 8M

OR

4. a Differentiate between Unbiased Estimates, Efficient Estimates, Point Estimates and Interval Estimates. 7M
   b In a partially destroyed laboratory record of an analysis of correlation data, the following results only are legible: variance of X is 9, regression equations are $8x - 10y + 66 = 0$, $40x - 18y = 214$.
   Compute (i) the mean values of X and Y. (ii) coefficient of correlation between X and Y. (iii) the standard deviation of Y. 8M

UNIT-III

5. a Two independent sample of sizes 7 and 9 have the following values: 8M

Sample A	10	12	10	13	14	11	10		
Sample A	10	13	15	12	10	14	11	12	11

   Is there a significant difference between means of the two samples?
   b Explain about the Chi-Square Test for Goodness of Fit. 7M

OR

6.		Discuss about the Power of a Test Quality Control Charts.	15M

UNIT-IV

7.	a	Prove that a group consisting of three elements is an abelian group.	7M
	b	Determine GCD (1970, 1066) using Euclidean algorithm.	8M

OR

8.	a	Explain Fermat's theorem and using this theorem, find 3^{201} mod 11.	7M
	b	If a=1820 and b=231, find GCD (a, b). Express GCD as a linear combination of a and b.	8M

UNIT-V

9.	a	Suppose that G is a non-directed graph with 12 edges. Suppose that G has 6 vertices of degree 3 and the rest have degree less than 3. Determine the minimum number of vertices G can have.	7M
	b	Use Euler's formula to show that the graph K3,3 is non-planar.	8M

OR

10.	a	Show that if a planar graph is self-dual, then $\|E\| = 2\|V\| - 2$.	7M
	b	Write an algorithm to determine if a connected graph contains an eulerian path using its adjacency matrix.	8M

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