

PREPARATION OF LESSON PLAN FRAMEWORK

SUBJECT: MATHEMATICS FOR MANAGERS

MODULE –1: BASIC MATHEMATICAL CONCEPTS

UNIT/ SESSION / HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
10 Hours	<ul style="list-style-type: none"> a) Equations – Linear, Quadratic and Simultaneous b) Ratios and Proportions c) Percentage d) Profit and Loss 	<ul style="list-style-type: none"> a) Explanation of various terms b) List of formulae c) Basic Laws d) Applications in business and commerce. e) Problems and solutions. 	<ul style="list-style-type: none"> a) Knowledge of the various terms used. b) To solve Linear, Quadratic and Simultaneous Equations c) To calculate Ratios and Proportions d) To Calculate Percentages e) To calculate Profit or Loss and Profit or Loss % f) Problems on the above 	<ul style="list-style-type: none"> a) Assignments b) Working out on boards c) Oral Test d) Written Test e) MCQ

MODULE –2: INTEREST AND ANNUITIES

UNIT/ SESSION / HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
20 Hours	<ul style="list-style-type: none"> a) Simple Interest b) Compound Interest c) Concept of Time Value of Money d) Doubling Period (Rule of 72 and 69) e) Annuity Immediate f) Future Value of Annuity g) Loan amortization schedule 	<ul style="list-style-type: none"> a) Explanation of various terms b) List of formulae c) Basic Laws d) Applications in business 	<ul style="list-style-type: none"> a) Knowledge of the various terms used. b) To Calculate SI, CI, FV of a Single Amount, 	<ul style="list-style-type: none"> a) Assignments b) Student working out sums on board. c) Oral Test d) Written Test e) Develop an Amortization

	<ul style="list-style-type: none"> h) Capital Recovery Factor i) PV of growing annuity j) Annuity Due k) PV of Perpetuity l) Deferred Annuity Intra-year Compounding and discounting m) Effective Vs Stated Rate 	<ul style="list-style-type: none"> e) Problems and solutions. 	<ul style="list-style-type: none"> Doubling Period, Growth Rate, PV of a single amount, PV of uneven series, Annuity immediate, FV of Annuity, PV of Annuity, loan amortization schedule, PV of growing Annuity, Annuity due, PV of perpetuity, Deferred Annuity Intra-year compounding and discounting, Effective Vs Stated Rate 	<ul style="list-style-type: none"> f) Table for Loan Amount – EMI Calculation. MCQ
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MODULE –3: Bills of Exchange and Conversion of Foreign Currency

UNIT/ SESSION/ HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
08 Hours	<ul style="list-style-type: none"> a) Meanings of Bills of Exchange, Face Value of Bills, True Present Worth, True Discount Value, Date of Drawing, Banker's gain, Banker's discount of a bill, foreign currency, direct and indirect quotes. b) Problems on the above. 	<ul style="list-style-type: none"> a) Explanation of various terms b) List of formulae c) Basic Laws d) Applications in business and commerce. e) Problems and solutions. 	<ul style="list-style-type: none"> a) Knowledge of the various terms used. c) To Calculate Face Value of Bills, True Present Worth, True Discount Value, Date of Drawing, 	<ul style="list-style-type: none"> a) Assignments b) Student working out sums on board. c) Oral Test d) Written Test

			Banker's gain, Banker's discount of a bill, foreign currency, direct and indirect quotes.	
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MODULE –4: Learning Curve

UNIT/ SESSION/ HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
10 Hours	<ul style="list-style-type: none"> a) Meanings of Learning Curve, Learning Curve Ratio, Linear Equations. b) Forecasting of cost and its impact on profit using Learning Curve. c) Problems on the above. 	<ul style="list-style-type: none"> a) Explanation of various terms b) List of formulae c) Basic Laws d) Applications in business and commerce. e) Problems and solutions. 	<ul style="list-style-type: none"> a) Knowledge of the various terms used. b) To Calculate Learning Curve Ratio. c) Forecasting of cost and its impact on profit using Learning Curve. 	<ul style="list-style-type: none"> a) Assignments b) Student working out sums on board. c) Oral Test d) Written Test

MODULE –5: Introduction to Differentiation

UNIT/ SESSION/ HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
12 Hours	<ul style="list-style-type: none"> a) Meanings of Functions, Derivatives. b) Standard Forms, sum and product of two functions. c) Application of Differentiation d) Secondary derivatives and Maxima and minima. e) Applications in Commerce – Cost functions, Revenue functions, Profit function, Break-even point. f) Problems on the above. 	<ul style="list-style-type: none"> a) Explanation of various terms b) List of formulae c) Basic Laws d) Applications in business and commerce. e) Problems and solutions. 	<ul style="list-style-type: none"> a) Knowledge of the various terms used. b) Calculation of Sum and Product of two functions, Cost functions, Revenue functions, 	<ul style="list-style-type: none"> a) Assignments b) Student working out sums on board. c) Oral Test d) Written Test

			Profit function and Break-even Point. c) To solve problems on the above.	
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Step 2- LESSON PLAN PREPARATION HOURLY WISE

Subject Name: MATHEMATICS FOR MANAGERS

Lecture hours: 60

Objective: to enable students to have a grasp of simple arithmetical calculations relating to topics on Commerce and Economics

Sl. No	UNIT & OBJECTIVES	No. of Lecture Hours	Methodology/Instr uctional techniques	Evaluation/ learning confirmation
Module I	Basic Mathematical Concepts: Objective: To understand the Basics of Mathematics and its application.	10		
1.	Simple Equations	1	Lecture, Problems and Solutions	Question and Answer
2.	Quadratic Equations	1	Lecture, Problems and Solutions	Question and Answer
3.	Quadratic Equations	1	Lecture, Problems and Solutions	Question and Answer
4.	Simultaneous Equations	1	Lecture, Problems and Solutions	Question and Answer
5.	Simultaneous Equations	1	Lecture, Problems and Solutions	Question and Answer
6.	Ratios and Proportions	1	Lecture, Problems	Question and

			and Solutions	Answer
7.	Ratios and Proportions	1	Lecture, Problems and Solutions	Question and Answer
8.	Percentages	1	Lecture, Problems and Solutions	Question and Answer
9.	Profit and Loss with Discounts	1	Lecture, Problems and Solutions	Assignment
10.	Revision Test	1	Revision	Test/ Assignment/ Students working sums on the board
Module 2	Interest and Annuities Objective: To understand the basics of Simple Interest, Compound Interest, Time Value of Money and its applications in Accounts, Finance and Economics.	20		
1.	Simple Interest and Problems on Simple Interest	1	Lecture, Problems and Solutions	Question and Answer
2.	Simple Interest and Problems on Simple Interest	1	Lecture, Problems and Solutions	Question and Answer
3.	Simple Interest and Problems on Simple Interest	1	Lecture, Problems and Solutions	Question and Answer
4.	Compound Interest and Problems on Compound Interest	1	Lecture, Problems and Solutions	Question and Answer
5.	Compound Interest and Problems on Compound Interest	1	Lecture, Problems and Solutions	Question and Answer
6.	Compound Interest and Problems on Compound Interest	1	Lecture, Problems and Solutions	Question and Answer
7.	Laws of Logarithm and its application in Compound Interest calculations	1	Lecture, Problems and Solutions	Question and Answer

8.	Future Value of a Single Amount	1	Lecture, Problems and Solutions	Question and Answer
9.	Rule of 72 and 69 – Doubling Period	1	Lecture, Problems and Solutions	Question and Answer
10.	Present Value of a Single Amount	1	Lecture, Problems and Solutions	Question and Answer
11	Present Value of a Single Amount	1	Lecture, Problems and Solutions	Question and Answer
12	Future Value of Annuities	1	Lecture, Problems and Solutions	Question and Answer
13	Future Value of Annuities	1	Lecture, Problems and Solutions	Question and Answer
14	Preparation of Loan Amortization Schedule	1	Lecture, Problems and Solutions	Question and Answer
15	Preparation of Loan Amortization Schedule	1	Lecture, Problems and Solutions	Question and Answer
16	Present Value of growing Annuity	1	Lecture, Problems and Solutions	Question and Answer
17	Problems on Deferred Payments	1	Lecture, Problems and Solutions	Question and Answer
18	Problems on Perpetuity	1	Lecture, Problems and Solutions	Question and Answer
19	Revision	1	Revision	Test/ Assignment/ Students working sums on the board
20	Revision	1	Revision	Test/ Assignment/ Students working sums on the

				board
Module 3	<p>Bills of Exchange and Conversion of Foreign Currency.</p> <p>Objective: To understand the basics of Bills of Exchange and Foreign Currency conversions.</p>	8		
1.	Introduction to Bills of Exchange. Meaning of Banker's Present Worth, True Present Worth, and Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture	Question and Answer
2.	Problems on Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
3.	Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
4.	Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
5.	Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
6.	Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
7.	Banker's Present Worth, True Present Worth, Discounted Value of the Bill, True Discount, Banker's Discount and Banker's Gain.	1	Lecture, Problems and Solutions	Question and Answer
8.	Revision	1	Revision	Test/ Assignment/ Students working sums on the board

Module 4	Learning Curve Objective: Understanding the Meaning of Learning Curve and its applicability in Accounts, Finance and Economics.	10		
1.	Introduction to Learning Curve and Calculation of Learning Curve Ratio.	1	Lecture, Problems and Solutions	Question and Answer
2	Calculation of Learning Curve Ratio.	1	Lecture, Problems and Solutions	Question and Answer
3	Determination of Labour Cost under Table Method and Formula Method	1	Lecture, Problems and Solutions	Question and Answer
4	Determination of Labour Cost under Table Method and Formula Method	1	Lecture, Problems and Solutions	Question and Answer
5	Determination of Labour Cost under Table Method and Formula Method	1	Lecture, Problems and Solutions	Question and Answer
6	Learning Curve Equation and Problems thereon	1	Lecture, Problems and Solutions	Question and Answer
7	Learning Curve Equation and Problems thereon	1	Lecture, Problems and Solutions	Question and Answer
8	Learning Curve Equation and Problems thereon	1	Lecture, Problems and Solutions	Question and Answer
9	Revision	1	Revision	Test/ Assignment/ Students working sums on the board
10	Revision	1	Revision	Test/ Assignment/ Students working sums on the board
Module 5	Introduction to Differentiation	12		

	Objective: To understand the application of Differentiation in Commerce and to solve simple problems on Cost Functions, Revenue Functions, Profit Functions and Break-even Point.			
1.	Introduction to Constants and Variables	1	Lecture	Question and Answer
2.	Introduction to Functions and Types of Functions	1	Lecture	Question and Answer
3.	Introduction to Differentiation	1	Lecture	Question and Answer
4.	Standard Formulae, Functions and Differentials	1	Lecture	Question and Answer
5.	Rules of Differentiations	1	Lecture, Problems and Solutions	Question and Answer
6.	Problems on Differentiations	1	Lecture, Problems and Solutions	Question and Answer
7.	Problems on Differentiations	1	Lecture, Problems and Solutions	Question and Answer
8.	Quotient Rule	1	Lecture, Problems and Solutions	Question and Answer
9.	Introduction and problems on Maxima and Minima	1	Lecture, Problems and Solutions	Question and Answer
10.	Introduction and problems on Application of Differentiation	2	Lecture, Problems and Solutions	Question and Answer
12.	Revision	1	Revision	Test/ Assignment/ Students working sums on the board

TEXT BOOKS:

Sl. No.	Author's Name	Name of the Textbook
1	Dr. Dorai Raj	Business Mathematics
2	Dr. A.K. Arte & R.V. Prabhakar	A Textbook of Business Mathematics
3	Saha	Mathematics for Cost Accountants
4	M. Wilson	Business Mathematics
5	J.K.Singh	Business Mathematics

REFERENCES:

Sl. No.	Author's Name	Name of the Textbook
1	ZamiruddingKhanna	Business Mathematics
2	Sanchethi&Kapoor	Business Mathematics
3	Soni	Business Mathematics