



MADHYANCHAL
PROFESSIONAL UNIVERSITY

PhD Entrance Syllabus for Management

Paper I Mathematics

Linear Algebra: Vector space, basis, linear dependence and independence, matrix algebra, eigen values and eigen vectors, rank, solution of linear equations – existence and uniqueness.

Calculus: Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partial derivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.

Differential Equations: First order equations (linear and nonlinear), higher order linear differential equations, Cauchy's and Euler's equations, methods of solution using variation of parameters, complementary function and particular integral, partial differential equations, variable separable method, initial and boundary value problems.

Vector Analysis: Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stoke's theorems.

Complex Analysis: Analytic functions, Cauchy's integral theorem, Cauchy's integral formula; Taylor's and Laurent's series, residue theorem.

Numerical Methods: Solution of nonlinear equations, single and multi-step methods for differential equations, convergence criteria.

Probability and Statistics: Mean, median, mode and standard deviation; combinatorial probability, probability distribution functions - binomial, Poisson, exponential and normal; Joint and conditional probability; Correlation and regression analysis.

Paper - II

Unit—I

Managerial Economics-Demand Analysis

Production Function

Cost-output relations

Market structures

Pricing theories

Advertising

Macro-economics

National Income concepts

Infrastructure—Management and Policy

Business Environment

Capital Budgeting

Unit—II

The concept and significance of organisational behaviour—Skills and roles in an organisation—Classical, Neo-classical and modern theories of organisational structure—Organisational design—Understanding and Managing individual behaviour personality—Perception—Values—Attitudes—Learning—Motivation. Understanding and managing group behaviour, Processes—Inter-personal and group dynamics—Communication—Leadership—Managing change—Managing conflicts.

Organisational development

Unit—III

Concepts and perspectives in HRM; HRM in changing environment

Human resource planning—Objectives, Process and Techniques

Job analysis—Job description

Selecting human resources

Induction, Training and Development

Exit policy and implications

Performance appraisal and evaluation

Potential assessment

Job evaluation

Wage determination

Industrial Relations and Trade Unions

Dispute resolution and Grievance management

Labour Welfare and Social security measures

Unit—IV

Financial management—Nature and Scope

Valuation concepts and valuation of securities

Capital budgeting decisions—Risk analysis

Capital structure and Cost of capital

Dividend policy—Determinants

Long-term and short-term financing instruments

Mergers and Acquisitions

Unit—V

Marketing environment and Environment scanning; Marketing Information Systems and Marketing research; Understanding consumer and industrial markets; Demand Measurement and Forecasting; Market Segmentation—Targeting and Positioning; Product decisions, Product mix,

Product Life Cycle; New product development; Branding and Packaging; Pricing methods and strategies.

Promotion decisions—Promotion mix; Advertising; Personal selling; Channel management; Vertical marketing systems; Evaluation and control of marketing effort; Marketing of services; Customer relation management;

Uses of internet as a marketing medium—other related issues like branding, market development, Advertising and retailing on the net.

New issues in Marketing.

Unit—VI

Role and scope of production management; Facility location; Layout planning and analysis; Production planning and control—production process analysis; Demand forecasting for operations; Determinants of product mix; Production scheduling; Work measurement; Time and motion study; Statistical Quality Control.

Role and scope of Operations Research; Linear Programming; Sensitivity analysis; Duality; Transportation model; Inventory control; Queueing theory; Decision theory; Markov analysis; PERT/CPM.

Unit—VII

Probability theory; Probability distributions—Binomial, Poisson, Normal and Exponential; Correlation and Regression analysis; Sampling theory; Sampling distributions; Tests of Hypothesis; Large and small samples; t , z , F , Chi-square tests.

Use of Computers in Managerial applications; Technology issues and Data processing in organizations; Information systems; MIS and Decision making; System analysis and design; Trends in Information Technology; Internet and Internet-based applications.

Unit—VIII

Concept of corporate strategy; Components of strategy formulation; Ansoff's growth vector; BCG Model; Porter's generic strategies; Competitor analysis; Strategic dimensions and group mapping; Industry analysis; Strategies in industry evolution, fragmentation, maturity, and decline; Competitive strategy and corporate strategy; Transnationalization of world economy; Managing cultural diversity; Global Entry strategies; Globalisation of financial system

and services; Managing international business; Competitive advantage of nations; RTP and WTO.

Unit—IX

Concepts—Types, Characteristics; Motivation; Competencies and its development; Innovation and Entrepreneurship; Small business—Concepts Government policy for promotion of small and tiny enterprises; Process of business opportunity identification; Detailed business plan preparation; Managing small enterprises; Planning for growth; Sickness in Small Enterprises; Rehabilitation of sick enterprises; Intrapreneurship (organisational entrepreneurship).

Unit—X

Ethics and Management system; Ethical issues and analysis in management; Value based organisations; Personal framework for ethical choices; Ethical pressure on individual in organisations; Gender issues; Ecological consciousness; Environmental ethics; Social responsibilities of business; Corporate governance and ethics.

PAPER -III

General Aptitude (GA)

Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.

Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.