

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
PRINCIPLES OF MANAGEMENT
MGT –481

L	T	P	Cr
3	0	-	3

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

- 1. There will be NINE questions in the question-paper. All questions carry equal marks.**
- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units**

UNIT -I

Meaning, Characteristics and Principles of Management, Management as an Art, Science and Profession, Functions of Management, Corporate Social Responsibility
Communication -Process and Barriers.

UNIT -II

Marketing management-Meaning, Nature, Scope and Functions of marketing Management, Marketing Research, Marketing Mix, Marketing Information system
International Marketing Management- Meaning, Nature and Scope.

UNIT -III

Financial Management-Objectives, Scope and Functions of financial management, Capital Structure, Sources of Finance, Project Management- meaning, Feasibility study of Project, Social Cost Benefit Analysis.

UNIT-IV

Human Resource Management- Meaning, Nature, Scope and Functions of Human Resource Management, Difference between Personal management and Human Resource Management, Job Analysis-meaning and process, Performance Appraisal

Suggested Readings:

- Philip Kotler.(2003). Marketing Management: Analysis, Planning, Implementation and Control. Prentice Hall of India
- Michael, J.E.,Bruce, J.W. and William, J.S. (13th Edition,2004). Marketing Management. Tata McGrawHill, New Delhi.
- Aswathapa, K.; Human Resource and Personnel Management, TMH, 1997
- C.B.Gupta Management Theory and Practice, Sultan Chand and Sons
- D. Cenzo, D.A. & Robbins S.P. : Human Resource Management, 5th ed, NY, 1994
- Pandy I.M Financial Mgt, Vikas Publication
- Parsana Chandra, Financial Mgt, Tata McGraw New Delhi
- Khan M.Y and Jain P.K Financial Mgt, Problem and Cases, Tata McGraw Hill,New Delhi

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

SEMINAR ME-481

L	T	P	Cr	On Semester Evaluation	200
-	-	2	1		

Students will give a presentation on emerging technical topics.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

Major Project

L	T	P	Cr	ME-482	
-	-	12	12	On Semester Evaluation	120
				End Semester Evaluation	80

Project-II will be an extension of Project-I. Students will be required to fabricate the model as per the methodology proposed during Project-I and submit the model with project report for evaluation.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

GENERAL PROFICIENCY AND FITNESS

ME-483

L T P Cr
- - - 1

At the end of each year students will be evaluated on the basis of their performance in various fields. The evaluation will be made by the panel of experts/examiners/teachers to be appointed by the HOD/principal/Director of the College. A specimen performa indicating the weightage to each component/activity is given below :-

Name : _____ College Roll No. _____

Roll No. _____

Branch _____ Year of Admission _____

I. Academic Performance (30 marks)

Marks obtained in the Semester

I
II
III
IV
V
VI
VII

II. Extra Curricular Activities (30 Marks)

(a) Indoor Games _____

(b) Outdoor Games _____

© Essay Competition

Scientific _____

Technical _____

Exhibitions _____

Debate _____

(d) Fine Arts

Drama _____

Dance _____

Music _____

Painting _____

(e) Activities

Hobby Club _____

N.S.S. _____

Hostel Mgt _____

Any other _____

III. Educational tours/visits/Membership of Professional Societies (10 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

IV. Contribution in NSS Social Welfare Floor Relief/draught relief/Adult Literacy mission/Literacy Mission/Blood Donation/Any other Social Service

(10 Marks)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

V. Briefly evaluate your academic & other performance & achievements in the Institution (10Marks)

VI. Performance in Viva voce before the committee (10 Marks)

*Marks obtained I()+II()+III()+IV()+V()+VI() =**Total Marks :

Member

Member

Member

Member

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING) ELECTIVES

POWER PLANT ENGINEERING ME-48E1

L	T	P	Cr	On Semester Evaluation	100
3	1	0	4	End Semester Evaluation	100
				Maximum Time	3 hrs

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UNIT I

Conventional and non-conventional sources of energy: Importance of electrical energy; Geothermal power plants; Tidal power plants; Windmills; Solar power plants; Direct energy conversion systems; Energy sources in India; Recent developments in power plants, current power availability & need of nation.

Hydrology: rainfall, runoff, hydrographs, flow duration curves; Site selection for hydro power plants; Classification of hydro power plants; Storage type hydro power plant and its operation; Estimation of power availability; Selection of water turbines; Combination of hydro power plants with steam plants; advantages and disadvantages of hydro power plants.

UNIT II

Steam Power Plant: Analysis of steam power cycles for power plant application; High pressure boilers- Lamont boiler, Benson boiler, Loeffler boiler; Velox boiler; Super pressure steam power plants; Economizers; Air-preheaters; Super heaters and reheaters; Feed water heaters. General layout of thermal power plant; Site selection for thermal power plant; Coal as fuel, classification of coals, analysis of coal; Coal handling; Dead and live storage; Combustion of coal: coal burning methods, overfeed stokers, underfeed stokers, pulverized fuels and burners. Ash handling and disposal; Dust collectors. Heat balance sheet for thermal power plants, Numerical Problems.

Diesel Power Plant: Introduction; Field of use; Outline of diesel electric power plant; Different systems of diesel power plant; Supercharging of diesel engines; Performance of diesel power plant; Advantages and disadvantages of diesel plants over thermal power plants.

UNIT III

Gas Turbine Power Plant: Elements of plant; Thermal refinements; Performance of plants; Gas turbine characteristics; Comparison with other plants; Combined steam and gas turbine power plants.

Nuclear Power Plant: Basic theory and terminology; Nuclear fission and fusion processes; Fission chain reaction; Moderation; Fertile materials; Nuclear fuels; General components of nuclear reactor; Different types of Reactors; Breeder reactors; Nuclear power plants in India; Disposal of nuclear waste.

UNIT IV

Introduction; Load curves; Different terms and definitions; Effects of variable loads on power plant design and operation

Cost of electrical energy; Selection of type of generation; selection of generating equipment; performance and operating characteristics of power plants; Load division among generators; Tariffs methods for electrical energy, Numerical Problems.

Reference and Text Books:

1. Power Plant Engineering - By Morse
2. Power Plant Engineering - By Domkundwar
3. Power Plant Engineering - By P.C. Sharma
4. Power Plant Technology - By El-Wakil
5. Power Plant Engg. - By P.K. Jag TMG
6. Power Plant Technology - By G.D. Rai

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
NON-CONVENTIONAL MACHINING
ME -48E2

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

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- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units**

UNIT-I

Need for Non-conventional methods, comparison with conventional methods, taking into consideration metal removal rate, applications & advantages, accuracy and surface finish.

Mechanical Methods: Elements of process, metal removal mechanisms, achievable tolerances and surface finish, limitations and applications.

- Ultrasonic Machining
- Abrasive jet Machine
- Water jet Machining

UNIT-II

Electrochemical methods: Electro Chemical Machining, Electrochemical grinding, deburring, honing. Elements of process, metal removal mechanism with process chemistry, work material & electrolyte characteristics, achievable tolerances and surface finishes, application, limitation and advantages.

Chemical Machining: - Resists etchants and their selection, application and advantages.

Thermo Eclectic processes.

UNIT-III

Electric Discharge Machining: - Elements, Various process of EDM, principle and metal removal mechanism, types of electrode materials, feed control system, effect of current and frequency of pulse on material removal rate and surface finish, flushing methods, errors produced by this machining process, achievable tolerances and surface finishes, limitation and applications of the process.

Electric Discharge Machining (EDM), wire cut, elements of process, electrolyte. Tolerances and surface finish achievable. Limitation, advantages and application of EDM.

UNIT-IV

Electron beam machining, Laser beam machining, Plasma arc machining, their elements, principal and metal removal mechanism, process parameters, limitations and applications, achievable tolerances, surface finishes, material application and advantages.

Fundamentals of rapid prototyping.

References & Text books:

- Modern machining processes – by P.C. Pandey and M.S. shan, Tata McGraw Hill publications.
- Manufacturing Science – by A.Ghosh and A. K. Malik, Ellis Horwood
- Nontraditional manufacturing processes – by G. F. Benedict, Maicel Desker, CRC Press
- Advanced Methods of Machining – by J.A.McGeough, Chapman and Hall, Springer
- Electrochemical Machining and Metals – by Rurnyantsev and Devydov, Mir Publications, Moscow.
- Non Conventional Machining, P.K.Misra, Narosa Publishers, New Delhi.
- Non-Traditional Machining Handbook, Carl Sommer, Adrana Publishing Inc, Houston, Texas.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
ROBOTICS
ME-48E3

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

- 1. There will be NINE questions in the question-paper. All questions carry equal marks.**
- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT-I

Robotics:

Introduction, Basic elements, classification, applications and laws of Robotics. Robot physical configuration (co-ordinate system) basic motions, Resolution, accuracy & repeatability, work volume and speed of movement.

UNIT-II

Robot Kinematics:

Introduction, forward & reverse kinematics (Transformation) of three degrees of freedom robot arm and four degrees of freedom manipulator in 3-D. Homogeneous Transformations, kinematics equations using Homogeneous Transformations.

Robot Sensors:

Sensory devices, types of sensors, contact sensors, touch sensors, position and displacement sensors, potentiometer, encoders, LVDT, force & torsion sensor, tactile array sensors, slip sensor, proximity and range sensors, electro-optical imaging sensors.

UNIT-III

Robot Drives, actuators and control:

Functions of drive systems, general types of fluids, pump classification, pneumatic systems, electrical drives, dc motors and transfer functions, stepped motor and drive mechanisms, hydraulic actuators, servo control valves, pneumatic actuators and pneumatic valves.

UNIT-IV

Robot End –Effectors and language:

Classification of end-effectors, drive system for grippers various type of grippers; mechanical, magnetic, vacuum, adhesive, hooks, scoops and other miscellaneous devices.

Robot languages and their classification.

Reference and Text Books:

1. Industrial Robotics -By M.P. Groover, Tata McGraw Hill Education.
2. Robotics technology and Flexible Automation -By S. R. Deb, Tata McGraw Hill Education.
3. Technology of Computer Aided design and manufacturing CAD/CAM -By Surinder kumar, A. K. Jha, Dhanpat Rai & sons.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

ENERGY MANAGEMENT

ME-48E4

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

- 1. There will be NINE questions in the question-paper. All questions carry equal marks.**
- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT-I

Initialization phase, audit and analysis phase, implementation phase, general methodology for building and site energy audit, site survey, methodology, site survey-electrical system, steam and water systems, building survey methodology, basic energy audit instrumentation, measurement for human comfort, description of typical systems-dual duct HVAC system. Multi zone HVAC systems, variable and volume systems, terminal report system, evaporative systems, package system, basic principle governing HVAC system, package system, basic principle governing HVAC system operation, energy management opportunities in HVAC systems, modeling of heating and cooling loads in buildings problems.

UNIT- II

General principles, illumination and human comfort, basic principles of lighting system, typical-illumination system and equipment, fundamentals of single phase and 3 phase A.C. circuits, energy management opportunities for lighting systems, motors and electrical heat, electrical and analysis and their parameters, pack demand control problems.

General principles, process heat, combustion, energy saving in condensate return, steam generation and distribution, automotive fuel control, hot water and water pumping, direct and indirect fired furnaces over, process electricity, other process energy forms-compressed air and manufacturing processes, problems.

UNIT- III

General consideration, life cycle costing, bread-even analysis, cost of money, benefit/cost analysis, payback period analysis, prospective rate of to return, problems.

Environmental conformation, passive design, conservation building envelope design consideration, integration of building system, energy storage problems.

UNIT- IV

Energy management principle involving computers, basics of computer use, analysis-engineering and economic calculations, simulation, forecast, CAD/CAM controls-microprocessor and minicomputers, building cycling and control : industrial power management, problems.

Text & Reference Books:

1. Energy Management Principles by Criag B. Smith, Published by Pergamon Press.
2. Energy systems and developments-Jyoti Parikh, Oxford University Press.
3. Energy-resources, demand and conservation with reference to India. Chaman Kashkari, Tata Mc Graw Hill Co. Ltd.
4. Integrated renewable energy for rural development-proceeding of Natural solar energy convention, Jadavpur University, Calcutta – by H. Salia, S. K. Saha, M. K. Mukerjee, Tata McGraw Hill Publishing Co.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
PNEUMATICS AND HYDRAULIC CONTROLS
ME-48E5

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

- 1. There will be NINE questions in the question-paper. All questions carry equal marks.**
- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT I

Hydraulic systems, pneumatic systems, uses of fluid power, fluid power at work, standard symbols for hydraulic & pneumatic components-ANS, Graphical symbols-composite symbols.

Pressure applied in one direction, pressure applied in both directions, pressure applied and intensified in both directions, advantages of pressure booster installation, causes of failure of boosters, maintenance.

Positive displacement or pressure type reciprocating compressors, velocity or dynamic type compressors, location and installation, air intake, after cooler, air receivers, safety valves, compressor regulators or controls planning a compressed air plant, compressor selection.

UNIT II

Petroleum based fluids, synthetic based fluids, quantity requirement, maintenance, selection of hydraulic fluid, specific weight, viscosity, Say-bolt universal viscometer, viscosity problems, viscosity index, lubricating value, pour point, oxidation and contamination.

Rigid pipe, semi-rigid, flexible piping, general features of piping installation, planning a compressed air distribution system, Installation of rigid, semi-rigid, and flexible piping-manifolds, causes of piping failures.

General features, air filters, pressure regulators, lubricators, combination units, protection of filters and lubricator bowls, mufflers.

UNIT III

Two-way valves, manual control, manual operation, mechanical operation, electrical operation, pilot control, installation, causes of failure, repair & maintenance, three way valves four way valves, installation & maintenance.

Types of flow control, parts' name, installation, causes of failure, repair and maintenance, pressure relief valves, sequence valves, unloading valves, other types of pressure controls.

General types, characteristics of air motors, General features of pneumatic tools. Drills, hammers, hoists, rock drills and paving breakers.

UNIT IV

Gear type motors, Vane type motors, piston type motors, split speed, Schematic diagrams of various types of pneumatic and hydraulic circuits, common causes of failure, dirt, heat, misapplication, improper fluids, faulty, installation, maintenance, improperly designed circuits.

Control systems, differential sensing or error-detecting devices, types of servo systems, characteristics of servo-system

Reference & Text Books:

1. Pneumatics and Hydraulics - By Stewart, Taraporevaia Sone & Co Pvt. Ltd.
2. Industrial Hydraulics - By Pippinger & Hicks, McGan Hill, New York.
3. Hydraulic and Pneumatic Power for Production - By H. L. Stewart, Industrial Press New York.
4. Hydraulic Servo Systems: Analysis and Design - By Marcell Guillon, Butterworths.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
CONCURRENT ENGINEERING
ME- 48E6

L T P Cr
3 1 4

On Semester Evaluation 100
End Semester Evaluation 100
Maximum Time 3 hrs

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units

UNIT -I

Manufacturing Competitiveness: Life Cycle Management, Process Reengineering, Concurrent Engineering, Definition, Modes of Concurrency, Benefits, Co-Operative Work Teams, Types of Current Engineering, Organizations, Management Philosophies

Systems Engineering: Sharing and Collaborating In CE, System Integration, Management And Reporting System

UNIT- II

Information Modeling: Methodology, CE process invariants, various class of information models, merits and demerits

System Design: Conventional design and development process, a transformation model for manufacturing system

UNIT – III

Concurrent Function Deployment: Components of CFD, Limitations Concurrent Product Development, Concurrent Function Development, CFD Methodology Application

CE Metrics and Measures: Metrics of Measurement, Life Cycle Measurement, Simulation and Analysis, Design For X-Ability Assessment Product Quality Assessment

UNIT – IV

Total Value management: TQM, Total Value Management, Methodology, Major Elements, Total Value Management in Product Development Process.

Framework and Architecture: Product Information Management, Concurrent Engineering Architecture.

Text Books:

1. Biren Prasad, “Concurrent Engineering Fundamentals: Integrated Product Development, Vol. I and II, Prentice Hall, New Jersey.

VALUE ENGINEERING
ME-48E7

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

1. There will be NINE questions in the question-paper. All questions carry equal marks.
2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.
3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units

UNIT I

Introduction: Overview- Concepts and Approaches of Value Analysis and Engineering, Importance of Value, Function, Identity, Clarify, Analysis

UNIT II

Evaluation of Value Engineering: Evaluation of Function, Problem Setting System, Problem Solving System, Setting and Solving Management, Decision, Type and Services Problem, Evaluation of Value

UNIT III

Understanding the Decision Environment, Effect of Value Analysis on Other Work in The Business- Life Cycle Cost (LCC), Case Studies

UNIT IV

Value Engineering Team: Coordinator, Designer, Different Services, Definitions, Construction Management Contracts, Effective Organization for Value Work, Function Analysis System Techniques- FAST Diagram, Case Studies.

Text Books:

1. Parker, "Value Engineering Theory", Sundaram publishers

Reference Books:

1. Miles, L.D., "Techniques of Value Engineering and Analysis", McGraw Hill Book Co.
2. Khanna, O.P., "Industrial Engineering and Management", Dhanpat Rai and Sons
 1. orm drilling and boring operation on a Component.

TOTAL QUALITY MANAGEMENT

ME-48E8

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

- 1. There will be NINE questions in the question-paper. All questions carry equal marks.**
- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT-I

Concept of Quality, Quality as the basis of market competition, Historical review, Quality: philosophy of Deming, Juran, Crosby etc. Obstacles, integrating productivity and Quality.
Organization of Quality, Quality council, Total quality culture, quality leadership Quality awards. Total employee environment, Quality circles, attitude of top management, executives and workers, Operators' responsibility of quality, causes of operators' errors, Motivation.

UNIT-II

Introduction to TQM: TQM implementation advantages of TQM, Obstacles to TQM, TQM in services sector.
Concepts of Quality function deployment, cause and effect diagram. SWOT analysis continuous improvement, PDCA cycle, Supplier partnership, supplier certification, Pareto diagram, Schaller diagrams. Benchmarking, Taguchi Quality engineering, Failure mode and effect analysis, Total productive maintenance, Introduction to JIT, JIT Quality management, SQC, SPC, DPR, Kaizen, Six sigma concept.

UNIT-III

Introduction to ISO 9000 series of standards, other quality systems, Implementation, Documentation, Internal audits: Registration, Closing Comments.

UNIT-IV

Beyond ISO 9000 horizon, Introduction to ISO 14000, Series standard concepts of ISO 14001, EMS Benefits, ISO 100m 10014, quality systems.

Text and reference books:

1. Total quality management – by Dale H. Basterfield, et. al. Pearson Education India
2. The essence of Total Quality Management – by: John bank, PHI
3. Total Quality Management – by: Sundra Raju, TMH
4. TQM & ISO 9000- by: K. C. Arora, S.K. Kataria & Sons

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
MANAGEMENT INFORMATION SYSTEM
ME-48E9

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

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- 2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.**
- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT-I

Introduction to MIS? Decision support systems, systems approach, the systems view of business, MIS organization within the company management, organizational theory and the systems approach. Development of organization theory, management and organizational behavior, management information and the system approach. Evolution of an information systems, basic information system decision making and MIS, MIS as a technique for making program decision, assisting information systems, strategic and project planning for MIS, General business planning, appropriate MIS planning.

UNIT-II

Define the problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative conceptual designs and select one system concept, prepare the conceptual design report.

UNIT-III

Inform and involve the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade off criteria, define the subsystems, sketch the detailed operating subsystems and information flow. Determine the degree of automation of each operation, inform and involve the organization again, inputs, and processing, early system testing, software, hardware and tools, propose an organization to operate the system, document the detailed design, revisit the manager-user.

UNIT-IV

Introduction to the Plan Implementation, acquire floor space and plan space layouts, organize for implementation, develop the procedures for implementation, main operating personnel, computer related acquisitions, develop form for data collection and information dissemination, develop the files, test the system cutover, documents the system, evaluate the MIS control and maintain the system, pitfalls in MIS development, Fundamental weaknesses, soft spots in planning, design, problems implementation: The TARPIT.

Text and reference books:

1. Management information system by W.S Jawadekar Tara McGraw Hill.
2. application cases in Management Information Systems by: James Morgan, Tata McGraw Hill Publishing Co.
3. Managing Information Technology Projects by: Taylor, James, Prentice Hall of INDIA.
4. Management Information Systems by: Terry, Lucey, Engage Learning Publishers.
5. Management Information Systems by: Raymond McLeod, Pearsons Education.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)
MECHANICAL ESTIMATION AND COSTING
NC-ME-48E10

L	T	P	Cr	On Semester Evaluation	100
3	1	-	4	End Semester Evaluation	100
				Maximum Time	3 hrs

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- 3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.**

UNIT-I

INTRODUCTION: Related terminology, estimating: Importance and aim, objectives, functions, organization of Estimating department, Estimating procedure, Constituents of Estimation, Costing- Definition, aims, procedure for costing, types of costs, controls, difference between estimating and costing, control of costs, Allowance, Overheads, profit and pricing policy.

COSTING: Elements of costs, costing methodology for raw materials, products and services, Nature of costs: Direct, Traceable and Non traceable, labor indirect expenses, methods of overhead allocation. Elements of costs material, Labour costs, Expense, Direct, Indirect, factory expenses, Selling expenses and Distribution expenses, Components of cost: Overheads, Allocation of on cost (overhead expenses) percentage of Prime cost, Direct labour cost, Direct material cost, Man hour rate, Machine hour rate, Combination of Man hour and machine hour rate, Unit rate method. Determining of cost of raw materials, manufactured products, Wastage.

LABOUR COSTING: Introduction, factors influencing wage rate, methods of wage payments for direct and indirect labour, time wage system, piece rate system, wage incentives: different plans.

UNIT-II

INVENTORY CONTROL: Cost factors in inventory control, inventory carrying cost, ordering cost, EOQ, lead time, safety stock, reorder level, minimum level, maximum level, Types of inventory control systems-perpetual inventory control system, ABC method etc. Valuation of materials issued from store-FIFO, LIFO, etc.

DEPRECIATION & BREAK EVEN ANALYSIS: Introduction, purpose, methods for calculation depreciation-straight line method, Diminishing balance method, sum of year digit method, machine hour basis method, Break-even analysis: Introduction, assumptions in break-even analysis, important terms and definitions, calculation of break-even point, advantages and limitations.

UNIT-III

ESTIMATING: Definition, different types, methods adopted for estimation. Use of standard data, parameter estimating, statistical estimating feedback systems, importance, purpose and functions of estimating menstruation.

ESTIMATION IN MACHINE SHOP & FOUNDRY SHOP: Calculation of volume of machined component, operation time, calculation for turning, knurling, facing, drilling, boring, reaming, threading, milling, tapping, shaping, cutting. Various grinding operations, planning etc. Pattern cost, estimation material labor overheads, estimation of foundry costs, material labour, other costs.

ESTIMATION IN FORGING WELDING AND SHEET METAL WORK: Forging process and types, forge operations, Estimation procedure, estimating losses and time. Welding: Type of welding processes, types of joints. Preparation cost, actual welding cost, material, labor, finishing on cost power cost factors affecting welding cost. Sheet metal work: Operations in sheet metal work, joints, blank layout and size, estimation of time capacity and types of processes.

UNIT-IV

BUDGET AND BUDGETORY CONTROL: Budget objectives, classification of budgeting, budgetary control, securing flexibilities of budgeting, limitation of budget. Operational and capital budgets, cash flow schedules, estimating cost, preparing an annual budget for the Engg. Department.

ENGINEERING CONTRACTING: Introduction, types of contracts. Terms of payments, firm price contracts, cost reimbursable contracts, target of cost contracts, schedule of rate contracts, bill of quantities contracts, compound contracts, contract policy, legal rights and commercial interests.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

Text and reference books:

1. Mechanical Estimating and costing –BY B.P Sinha. Tata McGraw Hill publishing Co. Ltd. N. Delhi
2. Mechanical Estimating and costing TR Banga and S.C.Sharma, Khanna Publishers, Delhi-6
3. Process planning & Cost Estimation By R. Kesoram & others New age international pub, N. Delhi.
4. Handbook of engineering management edited by Dennis lock Butterwork & heinemanky Ltd.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

COMPUTER INTEGRATED MANUFACTURING

ME-48E11

L	T	P	Cr	On Semester Evaluation	100
3	1	-	4	End Semester Evaluation	100
				Maximum Time	3 hrs

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Unit I

INTRODUCTION :The meaning and origin of CIM- the changing manufacturing and management scene - External communication - islands of automation and software-dedicated and open systems-manufacturing automation protocol - product related activities of a company- marketing engineering - production planning - plant operations - physical distribution- business and financial management.

Unit II

Group technology and computer aided process planning: History of group technology- role of G.T. in CAD/CAM integration - part families - classification and coding - DCLASS and MICLASS and OPITZ coding systems-facility design using G.T. - benefits of G.T. - cellular manufacturing, Production Flow Analysis. Process planning - role of process planning in CAD/CAM integration - approaches to computer aided process planning - variant approach and generative approaches - CAPP and CMPP process planning systems.

Unit III

Shop floor control, introduction of FMS, robotics: Shop floor control-phases -factory data collection system - automatic identification methods- Bar code technology-automated data collection system.

FMS, components of FMS, types, FMS workstation, material handling and storage systems. FMS layout -computer control systems-application and benefits.

ROBOTICS: Introduction to Robot configuration, Robot motion, and programming of Robots end effectors, Robot sensors and Robot applications.

Unit IV

CIM implementation and database for CIM: CIM and company strategy - system modeling tools -IDEF models - activity cycle diagram CIM open system architecture (CIMOSA)- manufacturing enterprise wheel-CIM architecture- Product data management, CIM implementation software.

Open system and database for CIM: Open systems-open system inter connection - manufacturing automations protocol and technical office protocol (MAP /TOP) Development of databases -database terminology- architecture of database systems-data modelling and data associations -relational data bases - database operators - advantages of data base and relational database.

Text and Reference books:

1. Mikell.P.Groover “Automation, Production Systems and computer integrated manufacturing”, Pearson Education.
2. Yorem koren, “Computer Integrated Manufacturing System”, McGraw-Hill, 1983.
Ranky, Paul G., “Computer Integrated Manufacturing”, Prentice Hall International.
3. David D.Bedworth, Mark R.Hendersan, Phillip M.Wolfe “Computer Integrated Design and Manufacturing”, McGraw-Hill Inc.
4. Roger Hanman “Computer Intergrated Manufacturing”, Addison – Wesley.
5. Mikell.P.Groover and Emory Zimmers Jr., “CAD/CAM”, Prentice Hall of India Pvt. Ltd., New Delhi.
6. Kant Vajpayee S, “Principles of Computer Integrated Manufacturing”, Prentice Hall of India.
7. Radhakrishnan P, Subramanyan S.and Raju V., “CAD/CAM/CIM”, 2nd Edition New Age International (P) Ltd., New Delhi, 2000.

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

ENTREPRENEURSHIP

ME – 48E12

L	T	P	Cr
3	1	-	4

On Semester Evaluation	100
End Semester Evaluation	100
Maximum Time	3 hrs

Note: -

1. There will be NINE questions in the question-paper. All questions carry equal marks.
2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.
3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units.

UNIT I

Definition and concept of economics, Importance of economics for engineers, present value and future value, Wealth, Goods, Wants, Value and price, capital, money.

Introduction of cost, Elements of cost, Prime cost, Overhead, Factory cost, Total cost, Selling price, Nature of cost, Types of cost.

Definition and concept of depreciation, Causes of depreciation, Methods of calculating depreciation.

UNIT -II

Replacement Problem: Introduction, Reasons, Factor necessary for replacement, Replacement of items which deteriorate, Replacement of machines whose operating cost increases with time and the value of money change with time, methods used in selection of investment and replacement alternatives.

Entrepreneurship, Role of Entrepreneur in Indian economy, Characteristics of an entrepreneur, Types of entrepreneurs, some myths and realities about entrepreneurship

UNIT -III

Introduction of small scale industry, Role and scope of small scale industries, concept of small scale and ancillary industrial undertakings, How to start a small scale industry, Steps in launching own venture, procedure for registration of small scale industries, various developmental agencies-their functions and role in industrial and entrepreneurship development, Infrastructure facilities available for entrepreneurship development in India. Various controlling agencies involved their role and formalities for getting clearances before starting individual venture.

Product design: Introduction, Requirement of a good product design, relation between good product design and product cost, product development approaches, Product development process, Elements of concurrent engineering, quality function development, Rapid prototyping,

UNIT-IV

Financial concept for small-scale industries, financial requirements
Financial support programmer of banks, government financial agencies,
Hire-purchase facilities, alternate sources of finance.

The modern concept of marketing, Definitions, functions and principle of marketing, Marketing research, Advertising, Market survey, Pre-feasibility and feasibility of project. Identification and evaluation of business opportunity, risk involved and preparation of business plan.

Tools for evaluation of techno economic feasibility project report, SWOT analysis

Reference and Text Books:

The practice of Entrepreneurship- By G. G. Meredith, R.E. Nelson and P.A. Neck, ILO

Handbook of Entrepreneurship - By Rao and Pareek

Engineering Economics - By Tarachand, New Chand Publishers.

Industrial Engineering and Management - By Ravi Shankar, Galgotia Publishers

Industrial Engineering and Organization Management - By S.K.Sharma and Savita Sharma, S. K. Kataria & Sons

Industrial Engineering and Management- By O.P. Khanna, Dhanpat Rai & Sons, New Delhi

B.TECH 8th SEMESTER (MECHANICAL ENGINEERING)

8th Semester (Elective & to be offered to all branches)

TECHNOPRENEURSHIP

MGT – 480 E1

L T P Cr
3 0 0 3

On Semester Evaluation : 100

End Semester Evaluation : 100

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to this compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus. Each question will carry 20 marks.

Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Overview:

It takes courage and a certain mindset to become a technopreneur. It also takes interdisciplinary skills and the ability to think differently in order to survive the business. The best way to learn this discipline is to get your hands dirty while learning some useful theories and tips along the way. The Technopreneurship course will guide you through the experience of setting up a small tech-based business. It combines practice, reflection and mentoring to let you get a taste of what it takes to start up a business. Statistically speaking, some will succeed, most won't. What's important in the end is whether you learned your lesson and get up again to start the next venture. This experience will help you learn more about yourself and prepare for real-world technopreneurship.

Objectives:

At the end of the course, participants will be able to start up a technology-based business.

Methodology:

This course relies on adult learning techniques -- experiential, interactive and facilitated. Students will be grouped into project teams. They will go through a series of exercises and projects that will help them create a start up from idea to execution. Optional: groups will be tasked to invite technopreneurs who will speak in class to describe their experience.

UNIT-I

What it takes to be a technopreneur: Qualities of an entrepreneur; Case studies of entrepreneurs and technopreneurs. **Where to get your ideas:** Techniques for generating ideas; Creativity and innovation; Observe the world around you; find a need /problem and make a creative solution.

UNIT-II

What it takes to start up: Bootstrapping ; Prototyping ; Will it make money? **Designing your product / service:** Design thinking; process thinking; Designing services and products; Strategic thinking: external, internal, plans.

UNIT-III

Leading your startup : Self-awareness and self-mastery; Sense of mission; When things get tough (and they always will). **Marketing :** Traditional guerilla marketing techniques; Online marketing: social networking.

UNIT-IV

Funding: (Entrepreneurial Financing sources) ; Assessing financial needs ; Structuring finance ; Sources of finance : Debt-Equity financing alternatives - How venture capitalists (VCs) evaluate and structure deals - How to interface VCs . **Legal stuff:** Property rights; Registering your business; Trade laws.

Text & Reference Books:

- [1] Daniel Mankani. 2003. Technopreneurship: The successful Entrepreneur in the new Economy. Prentice Hall.
- [2] Edward Elgar. 2007. Entrepreneurship, Cooperation and the Firm: The Emergence and Survival of High-Technology Ventures in Europe. Edi: Jan Ulijn, Dominique Drillon, and Frank Lasch. Wiley Pub.
- [3] Lang, J.(2002), The High Tech Entrepreneur's Handbook, Ft.com.
- [4] Weintraut, J.N. and C.Barr(2002), Lightspeed Business, Wiley.
- [5] David Sheff (2002), China Dawn: The Story of a Technology and Business Revolution, Harper Business
- [6] Barringer, B. R. & Ireland R. D. (2007) Entrepreneurship: Successfully Launching New Ventures, 2nd Edition, New Jersey: Prentice Hall.
- [7] Lin, H. W. (2006) Venture Capital Fund Management: A Comprehensive Approach to Investment Practices & the Entire Operations of a VC Firm, Boston: Aspatore Books.