

**SCHEME OF EXAMINATION FOR B.TECH DEGREE COURSE**

**Eighth Semester Examination**

**(Mechanical Engineering)**

S.No	Course No.	Subject	Teaching Schedule				Examination Schedule				Duration of Exam (Hours)
			L	T	P/D	Total	Theory	Sessional	Practical Viva	Total Marks	
1	-----	Departmental Elective- III*	4	1	-	5	100	50	-	150	3
2	-----	Departmental Elective- IV*	3	2	-	5	100	50	-	150	3
3	ME-402E	Entrepreneurship	3	1	-	4	100	50	-	150	3
4	ME-404E	Power Plant Engineering	4	1	-	5	100	50	-	150	3
5	ME-406E	Operational Research	3	1	-	4	100	50	-	150	3
6	ME-408E	Entrepreneurship (Pr)	-	-	2	2	-	50	25	75	3
7	ME-410E	Project –II	-	-	9	9	-	100	100	200	3
8	ME-411E	Seminar	2	-	-	2	-	25	-	25	-
9	ME-412E	Comprehensive Viva-Voce	--	--	--	-	-	50	-	50	3
10	ME-414E	General Fitness & Professional Aptitude	-	-	-	-	-	-	75	75	3
		Total	19	5	11	35	500	475	200	1175	

\* Refer list of Electives.

Under ME-411E some of the students may be evaluated in 7<sup>th</sup> semester and remaining in 8<sup>th</sup> Sem.  
Marks will be added in 8<sup>th</sup> Sem.

**B.TECH VIII<sup>th</sup> SEMESTER  
ENTERPRENURSHIP  
(ME-402E)**

L T P | D  
4 1 5

THEORY: 100 Marks  
SESSIONAL: 50 Marks  
TOTAL: 150 Marks  
TIME: 3Hrs.

**UNIT I:**

Definition and concept, Importance of economics for engineers, present value and future value, Wealth, Goods, Wants, Value and price, capital, money, utility of consumer and producer goods. Introduction, Elements of cost, Prime cost, Overhead, Factory cost, Total cost, Selling price, Nature of cost, Types of cost. Definition and concept, Causes of depreciation, Methods of calculating depreciation.

**UNIT II**

Introduction, Nature of selection problem, Nature of replacement problem, Replacement of items which deteriorate, Replacement of machines whose operating cost increase with time and the value of money also changes 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, 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.

Introduction, Requirement of a good product design, product development approaches, Product development process, Elements of concurrent engineering, quality function development, Rapid prototyping, Various controlling agencies involved -their role and formalities for getting clearance before starting individual venture.

**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:**

1. The practice of Entrepreneurship - By G. G. Meredith, R.E. Nelson and P.A. Neck
2. Handbook of Entrepreneurship - By Rao and Pareek
3. Automobile Engineering -By K.M. Gupta, Umesh Publications
3. Engineering Economics -By Tarachand
4. Industrial Engineering and Management -By Ravi Shankar
5. Industrial Engineering and Organization Management -By S.K.Sharma and Sawita Sharma
6. Industrial Engineering and Management -By O.P. Khanna

Note: Examiner will set eight questions, taking two from each unit. Students will be required to attempt five questions taking at least one from each unit.

B.TECH VIII<sup>th</sup> SEMESTER  
POWER PLANT ENGINEERING  
(ME 404 E)

L T P|D  
4 1 5

THEORY: 100 Marks  
SESSIONAL: 50 Marks  
TOTAL: 150 Marks  
TIME: 3Hrs.

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.

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

Analysis of steam power cycles for power plant application; High pressure boilers- La-Mont 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.

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

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

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.

REFERENCE 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 -Rv El-Wakil

Note: Examiner will set eight questions, taking two from each unit. Students will be required to attempt five questions taking at least one from each unit.

B.TECH VIII<sup>th</sup> SEMESTER  
OPERATION RESEARCH  
(ME 406E)

L T P|D  
3 1 4

THEORY: 100 Marks  
SESSIONAL: 50 Marks  
TOTAL: 150 Marks  
TIME: 3Hrs.

UNIT I:

Development of operations Research, characteristics and scope of operations Research, operations Research in , Models in operations Research, Model Formulation, Types of mathematical models, Limitations of operations Research.

L.P. models, simplex method, the algebra of simplex method. (Minimization and Maximization problems), The big M method, post optimality analysis, essence of duality theory, Application of sensitivity analysis.

UNIT II

Introduction to model, matrix terminology, Formulation and solution of Transportation model (least cost method, Vogel's Approximation method), Least time transportation problem, Assignment problems.

Introduction to net work logic, Numbering of events (Fulkerson Rule), PERT calculations - Forward path, back-ward path. Slack, probability, comparison with PERT, Critical path, Floats. Project cost, crashing the net work, updating (PERT and CPM).

UNIT III

Introduction, applications of simulation, advantages and limitations of simulation technique, generation of random numbers, Time-flow mechanism, simulation languages.

Steps in decision theory approach, Decision Machinery environment, Decision machining under certainty and uncertainty, Decision machining under condition of risk, Decision trees, Minimum enchaind criteria, Advantages and limitations of decision tree solutions, post optimality

Definition of arguments models, comparison with transport model, Mathematical representation of assignment model, Formulation and solution of argument models, variation of the argument model, Alternate optimal solutions

UNIT IV

Introduction, Applications of queuing Theory, Waiting time and idle time costs, single channel queuing theory and multi channel queuing theory with Poisson. arrivals and exponential services, Numerical on single channel and multi channel queuing theory.

Theory of games, competitive games, Rules and Terminology in game Theory, Rules for game theory- saddle point, dominance, mixed strategy (2 x2 games) , mixed strategy (2 x n games or m x 2 games), mixed strategy (3 x3 games), two person zero sum games, n-person zero sum games.

REFERENCE BOOKS:

1. Introduction to operation research - By Hillier and Lieberman, McGraw-Hill
2. Operations Research - By P.K. Gupta and D.S. Hira
3. Linear Programming -By N.P. Loomba

Note: Examiner will set eight questions, taking two from each unit. Students will be required to attempt five questions taking at least one from each unit.

B.TECH VIII<sup>th</sup> SEMESTER  
NON-CONVENTIONAL MANUFACTURING  
(ME 420E)

L T P/D  
4 1 5

THEORY: 100 Marks  
SESSIONAL: 50 Marks  
TOTAL: 150 Marks  
TIME: 3Hrs.

UNIT I

Unconventional machining processes, Rapid prototyping processes, their classification, considerations in process selection.

Ultrasonic Machining:- Elements of process, design of cutting tool, metal removal mechanism, effect of parameters, economic considerations, limitations and applications, surface finish.

UNIT II

Electrochemical Machining

Elements of process, process chemistry, metal removal mechanism, tool design, accuracy, surface finish and work material characteristics, economics advantages, limitations and applications, Electrochemical grinding, debarring and honing, Chemical machining.

Electric Discharge Machining

Principle and mechanism of metal removal, generators, electrode feed control, electrode material, tool electrode design, EDM wire cutting, surface finish, accuracy and applications.

UNIT III

Jet Machining

Principal and metal removal mechanism of abrasive and water jet machining, process variables, design of nozzle, advantages, limitations and applications.

Plasma arc machining, Electron beam machining, laser beam machining, their principles and metal removal mechanism, process parameters, advantages and limitations, applications.

UNIT IV

Rapid Prototyping

Fundamentals, process chain, physics of processes, principles and process mechanism of SLA, SGC, LOM, FDM and SLS processes, their advantages and limitations, applications of RP processes, RP data formats, STL file format, STL file problems, STL file repair, other translators and formats.

Rapid Tooling Process

Introduction, fundamentals, classification, indirect RT processes, Principles of Silicone Rubber Molding, Epoxy Tooling, Spray Metal Tooling, Pattern for Investment Casting, Vacuum Casting, and Vacuum forming processes, direct RT processes, Shape Deposition manufacturing, their advantages, limitations and applications.

REFERENCE BOOKS:

1. Modern machining processes -By P.C. Pandey and M.S. Shan, I MI I.
2. Machining Science -By Ghosh and Mallik, Affiliated East West
3. Nontraditional Manufacturing processes -By G.F. Benedict, Maicel Dekker.
4. Advanced Methods of Machining -By J.A. McGeough, Chapman and Hall.
5. Electrochemical Machining of Metals -By Rurnyantsev and Davydov, Mir Publis.

Note: Examiner will set eight questions, taking two from each unit. Students will be required to attempt five questions taking at least one from each unit

B.TECH VIII<sup>th</sup> SEMESTER  
MANAGEMENT INFORMATION SYSTEM  
(ME 432E)

L T P|D  
4 1 5  
Marks

THEORY: 100 Marks  
SESSIONAL: 50

TOTAL: 150 Marks  
TIME: 3Hrs.

UNIT I

What is MIS? Decision support systems, systems approach, the systems view of business, MIS, MIS organization within the company management organizational theory and the systems approach. Development of organizational theory, management and organizational behavior, management information and the system approach.

Evolution of an information systems, basic information systems, decision making and MIS, MIS as a technique for making programmed decision assisting information systems ( r ) strategic and project planning for MIS : General business planning, appropriate MIS planning-general, MIS planning -details.

UNIT II

Define the problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative conceptual ;designs and select one document the 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

Plan the Implementation , acquire floor space and plan space layouts, organize for implementation, develop, procedures for implementation, train (ho operating personnel, computer related acquisitions, develop forms for data collection and information dissemination, develop the files, test the system, cutover, document the system, evaluate the MIS control and maintain the system ( r). Pitfalls in MIS development : Fundamental weakness, soft spots in planning, design problems, implementation: The TARPIT.

TEXT BOOKS:

1. Management Information system by W.S. JawadeKar - Tata McGraw Hill.

Note: Examiner will set eight questions, taking two from each unit. Students will be required to attempt five questions taking at least one from each unit

B.TECH VIII<sup>th</sup> SEMESTER  
ENTREPRENEURSHIP PRACTICAL  
(ME 408 E)

L T P  
-- 2

Sessional: 50  
Viva: 25  
Total: 75  
Time: 3Hrs

LIST OF EXPERIMENTS:

1. Exercise on assessing the industrial potentiality of any particular area.

Exercise on market survey for product identification and demand estimation of the product.

Exercise on preparation of techno economic feasibility project report.

Presentation and group discussion on techno economic feasibility project report.