

B.Tech. (Eighth Semester) Mechanical Engineering

MET- 402 Entrepreneurship

L	T	P/D	Total	Theory	: 75 marks
3	1	-	9; 4	Sessional	: 25 marks
Duration of Exams. : 03 hours					

1. Engineering Economics:

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.

2. Costing:

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

3. Depreciation:

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

4. Economic analysis of investment and selection of alternatives:

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.

5. Entrepreneurship:

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

6. Small scale Industries:

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.

7. Product planning and Development:

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

8. Financial management:

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

9. Marketing:

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.

10. Preparation of feasibility Project Report:

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

Handbook of Entrepreneurship

- By Rao and Pareek

3. Automobile Engineering

-By K.M. Gupta, Umesh Publications

Engineering Economics

-By Tarachand

Industrial Engineering and Management

-By Ravi Shankar

Industrial Engineering and Organization Management

-By S.K.Sharma and Sawita
Sharma

6. Industrial Engineering and Management

&#-By O.P. Khanna

B.Tech. (Eighth Semester) Mechanical Engineering

MET- 404 Power Plant Engineering

L	T	P/D	Total	Theory	: 75 marks
4	1	-	9; 5	Sessional	: 25 marks
					Duration of Exams. : 03 hours

1. Sources of Energy:

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.

2. Hydro 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.

3. Steam (Thermal) Power Plants:

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.

4. Diesel 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.

5. Gas Turbine Plants:

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

6. Nuclear 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.

7. Fluctuating Loads on Power Plants:

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

8. Economic Analysis of Power plants and Tariffs:

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 and Text Books:

1. Power Plant Engineering

- By Morse

Power Plant Engineering

- By Domkundwar

3. Power Plant Engineering

-By P.C. Sharma

Power Plant Technology

-By El-Wakil

B.Tech. (Eighth Semester) Mechanical Engineering

MET- 406 Operation Research

L	T	P/D	Total	Theory : 75 marks
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3	1	-	9; 4	Sessional : 50 marks
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Duration of Exams. : 03 hours

1. **Introduction :**

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

2. **Linear Programming:**

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.

3. **Transportation & Assignment:**

Introduction to model, matrix terminology, Formulation and solution of

Transportation model (least cost method, Vogel's Approximation method) , Least time transportation problem, Assignment problems.

4. **Net Work Analysis:**

Introduction to net work logic, Numbering of events (Fulkersen 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).

5. Simulation:

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

6. Decision Analysis:

Steps in decision theory approach, Decision machinery environment, Decision machining under certainty and uncertainty, Decision machining under conditions of risk, Decision Trees, minimum enchaind criteria , Advantages and limitations of decision tree solutions, post-optimality.

Definition of arguments models, comparison with transport models, Mathematical representation of assignment models, Formulation and solution of Arguments models, Variations of the Argument models, Alternate optimal solutions.

7. Queuing Theory:

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.

8. Game 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 and Text Books:

Introduction to operation research

- By Hillier and Lieberman,
McGraw-Hill

Operations Research

- By P.K. Gupta and D.S. Hira

Linear Programming

-By N.P. Loomba

B.Tech. (Eighth Semester) Mechanical Engineering

MET- 408 Entrepreneurship Dev.(Practical)

L T P/D Total
voce : 25 marks

Viva-

- - 2 9; 2
Sessional : 50 marks

Duration of Exams: 3 hrs.

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.

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MET- 410 Project-II

L T P/D Total
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Theory : 75 marks

Sessional : 100 marks

Duration of Exams. : 03 hours

The student is expected to finish the remaining portion of the project.

B.Tech. (Eighth Semester) Mechanical Engineering

MET- 411 Seminar

L	T	P/D	Total	Sessional	: 50 marks
-	-	2-	9; 2		

*Student will give another talk on some new technical topics