


CMR Institute of Technology, Bangalore		
Department: Mechanical Engineering		
Semester: 05	Section: A & B	
Management And Entrepreneurship	10AL51	Lectures/week: 05
Course Instructor: Mr. Trishul.M.A		
Course duration: 25 July 2016 – 19 November 2016		

Lesson Plan

# Class	Chapter Title/ Reference Literature	Topic Covered	Percentage of portion covered	
			Reference	Cumulative
1-9	Management TB1: 2.1 to 2.11	Management: Introduction, Meaning, nature and characteristics of Management, Scope and Functional areas of management, Management as a Science, art of profession-Management & Administration Roles of Management, Levels of Management, and Development of Management Thought early management approaches Modern management approaches.	12.5%	12.5%
10-19	Planning TB1: 3.1 to 3.8	Planning: Nature, importance and purpose of planning process Objectives, Types of plans. Decision making Importance of planning steps in planning & planning premises Hierarchy of plans.	12.5%	25%
20- 27	Organizing & Staffing TB1: 4.1 to 4.8	Organizing And Staffing: Nature and purpose of organization Principles of organization Types of organization, Departmentation Committees, Centralization Vs Decentralization of authority and responsibility, Span of Control - MBO and MBE Nature and importance of staffing-Process of Selection & Recruitment.	12.5%	37.5%
28-35	Directing & Controlling TB1 : 6.1 to 6.6 & 7.1 TO 7.4	Directing & Controlling: Meaning and nature of directing Leadership styles, Motivation Theories, Communication, Meaning and importance - coordination, meaning and importance and Techniques of Co Ordination. Meaning and steps in controlling, Essentials of a sound control system, Methods of establishing control.	12.5%	50%

36-42	Entrepreneur TB1: 12.1 to 12.13	Entrepreneur: Meaning of Entrepreneur; Evolution of the Concept; Functions of an Entrepreneur, Types of Entrepreneur, Entrepreneur – an emerging. Class. Concept of Entrepreneurship ,Evolution of Entrepreneurship, Development of Entrepreneurship; Stages in entrepreneurial process; Role of entrepreneurs in Economic Development; Entrepreneurship in India; Entrepreneurship, its Barriers.	12.5%	62.5%
43-48	Small Scale Industries TB1: 13.1 to 13.15	Small Scale Industries: Definition; Characteristics; Need and rationale; Objectives; Scope; role of SSI in Economic Development. Advantages of SSI, Steps to start and SSI - Government policy towards SSI; Different Policies of SSI; Government Support for SSI during 5 year plans. Impact of Liberalization, Privatization, Globalization on SSI Effect of WTO/GATT Supporting Agencies of Government for SSI, Meaning, Nature of support; Objectives; Functions; Types of Help; Ancillary Industry and Tiny Industry.	12.5%	75%
49-56	Institutional Support TB1: 14.1 to 14.14	Institutional Support: Different Schemes; TECKSOK; KIADB; KSSIDC; KSIMC; DIC Single Window Agency; SISI; NSIC; SIDBI; KSFC.	12.5%	87.5%
57-62	Preparation of project TB1: 15.1 to 15.16	Preparation Of Project: Meaning of Project; Project Identification; Project Selection; Project Report; Need and Significance of Report; Contents; Formulation; Guidelines by Planning Commission for Project report; Network Analysis; Errors of Project Report; Project Appraisal. Identification of business opportunities: Market Feasibility Study; Technical Feasibility Study; Financial Feasibility Study & Social Feasibility Study.	12.5%	100%


Syllabus for Internal Assessment Tests (IAT)*

Sessional #	Syllabus
T1	Class # 01 – 35
T2	Class # 36 - 56

* See calendar of events for the schedules of IATs.

LITERATURE:

Book Type	Code	Author & Title	Publication info	
			Edition & Publisher	ISBN #
Text Book	TB1	NVR Naidu Management & Entrepreneurship	1 st edition, I.K.International Publishing house	978-81-906757-8-9
Text Book	TB2	Poornima .M. Charantimath Entrepreneurship development	2 nd edition, Pearson	978-81-317-5919-6
References	RB1	P.C.Tripathi, P.N.Reddy & Principles of management	4 th edition, Tata Mcgraw Hill	978-0-07-022088-1
References	RB2	Stephen Robbins & Fundamentals of Management	7 th edition ,PHI	9780136007104

CMR Institute of Technology, Bangalore		
Department(s): Mechanical Engineering		
Semester: 05	Section(s): A & B	
Computer Aided Machine Drawing	10ME52	Lectures/week: 06
Course Instructor(s): Prof. Rajendra Prasad Reddy		
Course duration: 25 th July 2016 – 19 th Nov. 2016		

Lesson Plan

Lecture#	Book& Sections	Topics	Portions coverage %	
			Individual	Cumulative
1-6	TB1: 1.1-1.6	1) Introduction: Elements subjected to uniaxial, biaxial and triaxial stresses	10	10
7-19	TB1: 2.1-2.18	2) Design for static and Impact strength: Simple stresses, FOS, Combined stresses, Theories of failure, Stress concentration, Impact strength, Illustrative examples	20	30
20-27	TB1: 3.1-3.7	3) Design for Fatigue strength: Types of Fatigue stresses, SN curve, Endurance limit, Fatigue stress concentration factor, Goodman's and Soderberg's relationships and illustrative examples	12	42
28-36	TB1: 5.1-5.12	5) Design of shafts: Solid and Hollow shafts subjected to various loads and illustrative examples	12	54
37-49	TB1: 7.1-7.19	7) Riveted and Welded joints: Types of joints, failure of joints, and joint efficiency, Eccentric loading in Riveted and welded joints	20	74
50-56	TB1: 8.1-8.10	8) Power Screws: Stress in power screws, efficiency, self locking, Illustrative examples	10	84
57-60	TB1: 4.1-4.10	4) Threaded fasteners: Stresses in threaded fasteners, effect of initial tension, bolted joints and illustrative examples	8	92
61-64	TB1: 6.1-6.20	6) Cotter and Knuckle joints, Keys and couplings: Design of joints, keys and splines, illustrative examples	8	100

Syllabus for Internal Assessment Tests (IAT)*

IAT #	Syllabus
IAT-1	Class # 01 – 19
IAT-2	Class # 20 – 49
IAT-3	Class # 50 – 64


* See calendar of events for the schedules of IATs.

Literature:

Book Type	Code	Author & Title	Publication information	
			Edition // Publisher	ISB
Text Book	TB1	JBK Das Design of Machine Elements	I st edition,2013 Sapna Book House	9788128003066
Text Book	TB2	VB Bhandari Design of Machine Elements	5 th edition, Tata McGraw-Hill	9780070681798
Reference	RB1	Hall,Halowenko Machine Design	5 th edition, Tata McGraw-Hill	9780070634589
Reference	RB2	PC Sharma,Aggarwal Machine Design	12thedition,2012 Kataria & sons	

Note: From time to time, assignments will be posted on

<https://sites.google.com/a/cmrit.ac.in/b-rajendra-prasad-reddy>

CMR Institute of Technology, Bangalore			 CMR INSTITUTE OF TECHNOLOGY
Department: Mechanical Engineering			
Semester: 05	Section(s): A and B		
Subject: Energy Engineering	10ME53	Lectures/week: 05	
Course Instructor(s): Mr. Darshan M B			
Course duration: 01 Aug 2016 – 20 Nov 2016			

LESSON PLAN

Class #	Chapter Title / Reference Literature	Topic	Percentage of portion covered	
			Reference	Cumulative
1	TB2 : 1.1 to 1.14 TB1:1.3, 1.7	Different Types of Fuels used for steam generation,	13.5%	13.5 %
2		Equipment for burning coal in lump form, stokers, different types,		
3		Oil burners, Advantages and Disadvantages of using pulverized fuel,		
4		Equipment for preparation and burning of pulverized coal, unit system and bin system.		
5		Pulverized fuel furnaces, cyclone furnace,		
6		Coal and ash handling,		
7		Generation of steam using forced circulation, high and supercritical pressures.		
8	TB2 : 2.1 to 2.8	A Brief Account Of Benson, Velox Schmidt Steam Generators.	13.5%	27%
9		Chimneys: Natural, forced, induced and balanced draft		
10		Calculations and numerical involving height of chimney to produce a given draft.		
11		Cooling towers and Ponds.		
12		Accessories for the Steam generators such as Superheaters, De-superheater,		
13		control of superheaters		
14		Economizers, Air preheaters and re-heaters.		
15	TB2: 4.1 to 4.10	Hydrographs, flow duration and mass curves,	11.5%	39.5%
16		Unit hydrograph and numericals.		
17		Storage and pondage		
18		Pumped storage plants, low, medium and high head plants,		
19		Penstock, water hammer, surge tanks, gates and valves.		
20		General layout of hydel power plants.		
21	TB2: 7.1 to 7.5 TB1: 7.6 RB2:7.1 to7.5	Tides and waves as energy suppliers and their mechanics	11.5%	51%
22		Fundamental characteristics of tidal power, harnessing tidal energy, limitations.		
23		Principle of working, Rankine cycle, problems associated with OTEC.		
24		Principle of working, types of geothermal station with		


		schematic diagram		
25		Problems associated with geothermal conversion		
26		scope of geothermal energy		
27	TB2: 8.1 to 8.6	Photosynthesis, photosynthetic oxygen production, Energy plantation.	11.5%	62.5%
28		Biogas production from organic wastes by anaerobic fermentation		
29		classification of bio gas plants		
30		factors affecting bio gas generation		
31		Thermo chemical conversion on bio mass,		
32		types of gasifiers		
33	TB2: 3.1 to 3.7	Applications of Diesel Engines in Power field	11.5%	74%
34		Method of starting Diesel engines		
35		Auxiliaries like cooling and lubrication system		
36		filters, centrifuges		
37		Oil heaters, intake and exhaust system		
38	Layout of diesel power plant.			
39	TB2: 6.1 to 6.12	Solar Extra terrestrial radiation and radiation at the earth surface, radiation-measuring instruments	14.5%	88.5%
40		working principles of solar flat plate collectors		
41		solar pond and photovoltaic conversion (Numerical Examples).		
42		Properties of wind, availability of wind energy in India, wind velocity and power from wind		
43		major problems associated with wind power		
44		wind machines; Types of wind machines and their characteristics		
45		horizontal and vertical axis wind mills		
46		coefficient of performance of a wind mill rotor (Numerical Examples).		
47	TB2: 5.1 to 5.9	Principles of release of nuclear energy; Fusion and fission reactions. Nuclear fuels used in the reactors.	11.5%	100%
48		Multiplication and thermal utilization factors.		
49		Elements of the nuclear reactor; moderator, control rod, fuel rods, coolants.		
50		Brief description of reactors of the following types- Pressurized water reactor, Boiling water reactor		
51		Sodium graphite reactor, Fast Breeder reactor, Homogeneous graphite reactor and gas cooled reactor		
52		Radiation hazards, Shieldings, Radioactive waste disposal		

Syllabus for Sessionals:

Sessional #	Syllabus
T1	Class # 01 – 14
T2	Class # 14 – 36
T3	Class # 37 – 46

Literature:

Book Type	Code	Author & Title	Publication info	
			Edition&Publisher	ISBN #
Text Book	TB1	P.K.Nag, "Power Plant Engineering"	2 nd edition, TMH	
Text Book	TB2	Domkundwar, "Power Plant Engineering"	DhanpathRai sons, 2003	
References	RB1	R.K.Rajput, "Power Plant Engineering"	Laxmi Publication, New Delhi	
References	RB2	G. D. Rai, "Non Conventional Energy sources"	Khanna Publishers	
References	RB3	B H Khan, "Non Conventional Energy sources"	TMH, 2007	
References	RB4	A W Culp Jr., "Principles of Energy Conversion"	1996, TMH	

CMR Institute of Technology, Bangalore		
Department: Mechanical Engineering		
Semester: 05	Sections: A & B	
Dynamics of Machines	10ME54	Lectures/week: 06
Course Instructor: Mr. VINAY.M.N		
Course duration: 25 th , July 2016 - 19 th Nov. 2016		

Lesson Plan

Lecture #	Chapter Title / Reference Literature	Topics	Portions coverage %	
			Individual	Cumulative
01	UNIT 3: Friction and Belt Drives TB1,TB2,EXM1 & EXM2	Definitions, Types of friction and laws of friction	12.5%	12.5%
02		Ratio of belt tensions, centrifugal tension and power transmitted		
03		Ratio of belt tensions, centrifugal tension and power transmitted		
04		Belt drives and Flat belt drives		
05		Belt drives and Flat belt drives		
06		Belt drives and Flat belt drives		
07		Belt drives and Flat belt drives		
08		Belt drives and Flat belt drives		
09		Friction in pivot and collar bearings		
10		Friction in pivot and collar bearings		
11	UNIT 4: Balancing of Rotating Masses TB1,TB2,EXM1 & EXM2	Static and dynamic balancing	12.5%	25%
12		Balancing of single rotating mass by balancing masses in same plane and in different planes		
13		Balancing of single rotating mass by balancing masses in same plane and in different planes		
14		Balancing of several rotating masses by balancing masses in same plane and in different planes		
15		Balancing of several rotating masses by balancing masses in same plane and in different planes		
16		Balancing of several rotating masses by balancing masses in same plane and in different planes		
17		Balancing of several rotating masses by balancing masses in same plane and in different planes		
18		Balancing of several rotating masses by balancing masses in same plane and in different		

		planes		
19		Balancing of several rotating masses by balancing masses in same plane and in different planes		
20		Balancing of several rotating masses by balancing masses in same plane and in different planes		
21	UNIT 6: Governors TB1,TB2,EXM1 & EXM2	Introduction, Types of governors	12.5%	37.5%
22		Force analysis of Porter governor		
23		Force analysis of Porter governor		
24		Force analysis of Porter governor		
25		Force analysis of Porter governor		
26		Force analysis of Hartnell governor		
27		Force analysis of Hartnell governor		
28		Force analysis of Hartnell governor		
29		Controlling force, Stability, Sensitiveness. Isochronism, Effort and Power		
30	UNIT 7: Gyroscope TB1,TB2,EXM1 & EXM2	Vectorial representation of angular motion, Gyroscopic couple	12.5%	50%
31		Effect of gyroscopic couple on plane disc		
32		Effect of gyroscopic couple on ship		
33		Effect of gyroscopic couple on ship		
34		Effect of gyroscopic couple on ship		
35		Effect of gyroscopic couple on aeroplane		
36		Stability of two wheelers		
37		Stability of four wheelers		
38		Stability of four wheelers		
39	UNIT 1: Static Force Analysis TB2,EXM1 & EXM2	Introduction, Static equilibrium. Equilibrium of two and three force members. Members with two forces and torque. Free body diagrams	12.5%	62.5%
40		Static force analysis of four bar mechanism with and without friction		
41		Static force analysis of four bar mechanism with and without friction		
42		Static force analysis of slider-crank mechanism with and without friction		
43		Static force analysis of slider-crank mechanism with and without friction		
44		Principle of virtual work		
45	UNIT 5: Balancing of Reciprocating Masses TB1,TB2,EXM1	Introduction, Inertia effect of crank and connecting rod	12.5%	75%
46		Inertia effect of crank and connecting rod		
47		Balancing in single cylinder engine,		
48		Balancing in multi cylinder-in line engine		

	& EXM2	(primary & secondary forces)		
49		Balancing in multi cylinder-in line engine (primary & secondary forces)		
50		Balancing in V-type engine		
51		Balancing in V-type engine		
52		Balancing in Radial engine – Direct and reverse crank method		
53		Balancing in Radial engine – Direct and reverse crank method		
54	UNIT 2: Dynamic Force Analysis TB1,TB2,EXM1 & EXM2	Introduction	12.5%	87.5%
55		D'Alembert's principle, Inertia force, inertia torque.		
56		Dynamic force analysis of four-bar mechanism and slider crank mechanism		
57		Dynamic force analysis of four-bar mechanism and slider crank mechanism		
58		Dynamic force analysis of four-bar mechanism and slider crank mechanism		
59		Dynamically equivalent systems		
60		Dynamically equivalent systems		
61		Turning moment diagrams and flywheels		
62		Fluctuation of Energy. Determination of size of flywheels		
63	UNIT 8: Analysis of Cams TB1,TB2,EXM1 & EXM2	Analysis of Tangent cam with roller follower	12.5%	100%
64		Analysis of Tangent cam with roller follower		
65		Analysis of Circular arc cam operating flat faced and roller followers		
66		Analysis of Circular arc cam operating flat faced and roller followers.		
67		Analysis of Circular arc cam operating flat faced and roller followers		
68		Undercutting in cam		


Syllabus for Internal Assessment Tests (IAT)*

IAT #	Syllabus
IAT-1	Class # 01 – 20
IAT-2	Class # 21 - 44
IAT-3	Class # 45 - 68

* See calendar of events for the schedules of IATs.

Literature:

Book Type	Code	Author & Title	Publication info	
			Edition & Publisher	ISBN No.
Text Book	TB1	Theory of Machines Sadhu Singh	Pearson Education, 2 nd Edition, 2007	
Text Book	TB2	Theory of Machines Rattan S.S.	Tata McGraw Hill Publishing Company Ltd, 3 rd Edition, 2009	
Reference Book	RB1	Mechanism and Machine Theory A.G.Ambekar	PHI, 2007	
Reference Book	RB2	Theory of Machines & Mechanisms J.J. Uicker, G.R.Pennock, J.E. Shigley.	OXFORD 3 rd Edition, 2009	
Extra Material	EXM1	Theory of Machines R.S Khurmi	Eurasia publishing house, 1 st Edition	
Extra Material	EXM2	Dynamics of Machines J.B.K Das	Sapna Book House, 3 rd Edition	

CMR Institute of Technology, Bangalore			
Department: Mechanical Engineering			
Semester: 05	Section: A		
Manufacturing Process-III		10ME55	Lectures/week: 05
Course Instructor(s): Mr. Sagar M Baligidad			
Course duration: 25 July 2016 – 19 Nov 2016			

Lesson Plan

Lecture #	Book & Sections	Topics	Portions coverage %	
			Individual	Cumulative
1-7	TB1: 21-2.7 & 3.1-3.4	Introduction And Concepts: Classification of metal working processes, characteristics of wrought products, advantages and limitations of metal working processes. Concepts of true stress, true strain, triaxial & biaxial stresses. Determination of flow stress. Principal stresses, Tresca & Von-Mises Criteria Mises yield criteria, concepts of plane stress & plane strain.	12.5%	12.5 %
8-13	TB1: 15.1-15.12	Effects Of Parameters: Temperature, strain rate, friction and lubrication, hydrostatic pressure in metalworking, Deformation zone geometry, workability of materials, Residual stresses in wrought products.	12.5%	25%
14-20	TB1:19	Drawing: Drawing equipment & dies, expression for drawing load by slab analysis, power requirement. Redundant work and its estimation, optimal cone angle & dead zone formation, drawing variables, Tube drawing, classification of tube drawing, simple problems. Cokeless cupola, cupola charge calculations,	12.5%	37.5%
21-26	TB1: 18	Extrusion: Types of extrusion processes, extrusion equipment & dies, deformation, lubrication & defects in extrusion. Extrusion dies, Extrusion of seamless tubes. Extrusion variables, simple problem	12.5%	50%
27-32	TB1:17	Rolling: Classification of Rolling processes. Types of rolling mills, Expression for Rolling load. Roll separating force. Frictional losses in bearing, power required in rolling, Effects of front & back tensions, friction, friction hill. Maximum possible reduction. Defects in rolled products. Rolling Variables, simple problems.	12.5%	62.5%
33-39	TB1:20	Sheet & Metal Forming: Forming methods dies & punches, progressive die, compound die, combination die. Rubber forming. Open back inclinable press (OBI press), piercing, blanking, bending, deep drawing, LDR in drawing, Forming limit criterion, defects of drawn products, stretch forming. Roll bending & contouring, Simple problems	12.5%	75 %
40-47	TB2:8	High Energy Rate Forming Methods: Principles, advantages and Applications, explosive forming, electro hydraulic forming, Electromagnetic forming. Powder Metallurgy: Basic steps in Powder metallurgy brief description of methods of production of metal powders, conditioning and blending powders, compaction and sintering application of powder metallurgy components, advantages and limitations.	12.5%	87.5%

47-52	TB1:16	Forging: Classification of forging processes. Forging machines & equipment. Expressions for forging pressures & load in open die forging and closed die forging by slab analysis, concepts of friction hill and factors affecting it. Die-design parameters. Material flow lines in forging. Forging defects, Residual stresses in forging. Simple problems.	12.5%	100%
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Syllabus for Internal Assessment Tests (IAT)*

IAT #	Syllabus
IAT-1	Class # 01 – 20
IAT-2	Class # 21 – 40
IAT-3	Class # 41 – 60

* See calendar of events for the schedules of IATs.


Literature:

Book Type	Code	Author & Title	Publication information	
			Edition // Publisher	ISBN
Text Book 1	TB1	1. Mechanical metallurgy (SI units) , G.E. Dieter,	Mc Graw Hill, pub.2001	0-07-100406-8
Text Book 1	TB2	Manufacturing Process – III , Dr. K.Radhakrishna	Sapna Book House, 2009.	--
Reference Book	RB1	Materials and Processes in Manufacturing , E.paul, Degramo, J.T. Black, Ronald,	A.K. Prentice -hall of India 2002	--
Reference Book	RB2	Principles of Industrial metal working process , G.W. Rowe	CBSpub. 2002	--
Reference Book	RB3	Manufacturing Science , Amitabha Ghosh & A.K. Malik	East -Westpress 2001	--
Reference Book	RB4	Technology of Metal Forming Process , Surendra kumar,	PHI –2008	

Note: From time to time, assignments will be posted on

<https://sites.google.com/a/cmrit.ac.in/sagarmb9033/course-offered/>

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CMR Institute of Technology, Bangalore			 CMR INSTITUTE OF TECHNOLOGY
Department: Mechanical Engineering			
Semester: 05	Section(s): A & B		Lectures/week: 06
Subject: Turbo Machines	10ME56		
Course Instructor(s): Mr. Joseph Sajan			
Course duration: 25 th July to 19 th November 2016			

LESSON PLAN

Class No.	Chapter Title / Reference Literature	Topic	Percentage of portion covered	
			Reference	Cumulative
1	Unit – 1 TB1	Introduction to subject	12%	12%
2		Definition of turbomachine, parts of turbomachines, Classification		
3		Comparison with positive displacement machines		
4		Application of first law of thermodynamics to turbomachines		
5		Application of second law of thermodynamics to turbomachines		
6		Dimensionless parameters and their physical significance		
7		Problems		
8		Effect of Reynolds number; Specific speed		
9		Unit quantities, Model Studies		
10		Problems		
11	Unit – 3 TB1	Euler Turbine equation, Velocity Triangles	12%	24%
12		Alternate form of Euler turbine equation – components of energy transfer;		
13		Degree of reaction; velocity triangles for various degree of reaction		
14		General analysis of a Turbo machine – effect of blade discharge angle on energy transfer and degree of reaction;		
15		General analysis of centrifugal pumps and compressors – Effect of blade discharge angle on performance;		
16		Theoretical head – capacity relationship		
17		Problems		
18		Problems		
19		Problems		
20		Problems		
21	Unit – 4 TB1	Axial flow compressors and pumps – general expression for degree of reaction;	12%	36%
22		velocity triangles for different values of degree of reaction		
23		General analysis of axial and radial flow turbines – Utilization factor; Vane efficiency;		
24		Relation between utilization factor and degree of reaction		
25		condition for maximum utilization factor – optimum blade speed ratio for different types of turbines		
26		Problems		
27		Problems		
28		Problems		
29		Problems		

30	Unit – 5 RB2	Classification, Compounding – Need for compounding, method of compounding.	14%	50%			
31		General Velocity Diagrams for Impulse Turbine, Blade efficiency and stage efficiency					
32		Condition for maximum utilization factor/blade efficiency for single stage, Problems					
33		Problems					
34		Problems					
35		Condition for maximum utilization factor/blade efficiency for multi stage, Problems					
36		Problems					
37		General Velocity Diagrams for Reaction Turbine, Degree of Reaction					
38		Condition for maximum efficiency for 50% Reaction turbine/Parson's Turbine					
39		Problems					
40		Problems					
41		Reaction Staging					
42		Unit – 6 RB3			Classification, Different efficiencies of Hydraulic Turbines	12%	62%
43					Pelton Wheel, Work done by Pelton wheel		
44	Problems						
45	Problems						
46	Reaction Turbine, Draft Tubes						
47	Work done and efficiencies of Francis Turbine						
48	Problems						
49	Problems						
50	Kaplan Turbine, Working Proportions						
51	Problems						
52	Problems						
53	Unit – 7 RB3	Classification and parts of centrifugal pump, different heads and efficiencies of centrifugal pump	12%	74%			
54		Minimum speed for starting the flow					
55		Cavitation					
56		Priming, Pumps in Series and Parallel					
57		Problems					
58		Problems					
59	Unit – 8 TB1	Centrifugal Compressors: Stage velocity triangles, slip factor	12%	86%			
60		power input factor, Stage work, Pressure developed					
61		stage efficiency and surging and problems.					
62		Axial flow Compressors: Expression for pressure ratio developed in a stage					
63		work done factor, efficiencies and stalling					
64		Problems					
65	Unit – 2 TB2	Static and Stagnation states- Incompressible fluids and perfect gases	14%	100%			
66		Overall isentropic efficiency, stage efficiency (their comparison)					
67		polytropic efficiency for both compression and expansion processes					
68		Reheat factor for expansion process					

Syllabus for Sectionals:

Sessional No.	Syllabus
T1	Class No. 01 – 29
T2	Class No. 30 – 58
T3	Class No. 59 – 68

Literature:

Book Type	Code	Author & Title	Publication info	
			<i>Edition & Publisher</i>	<i>ISBN #</i>
Text Book	TB1	An introduction to energy conversion- Volume III , V. Kadambi and Manohar Prasad	New age intl. 2008	9788122431896
Text Book	TB2	Turbines, compressors and fans , S.M. Yahya	Tata McGraw Hill, II edition, 2002	9780070707023
Reference Book	RB1	Principles of turbo machines , D.G. Shepherd	Elsevier 2005	1856174093
Reference Book	RB2	Thermal engineering , R.K.Rajput	Laxmi publications 2010	9788131808047
Reference Book	RB3	Fluid mechanics and machinery , R.K.Bansal	Standard book house 2008	9789380358406