

BHAVNAGAR UNIVERSITY

B.E. SEM III (Elec.)

E- 301 APPLIED MATHEMATICS

W.E.F July-2006

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL	
HOURS PER WEEK			THEORY	HOURS	PRACT/ORAL	TERM WORK	MARKS
THE.	TUT.	PRACT.	MARKS		MARKS	MARKS	
4	--	--	100	3	--	--	100

- (1) **ORDINARY DEFFERENTIAL EQUATION OF HIGHER ORDER** : Definition complete solution, operator D, complementary function, Inverse operator, Rules for finding particular integral, Cauchy's and Lengendre's linear equation, simultaneous linear quations with constant coefficiants, Application to engineering problems such as forced damped oscillations, electrical circuits etc.
- (2) **FOURIER SERIES** : Euler's formula, Dirichlet's conditions, functions having points of discontinuity, change of interval, expansion of odd or even periodic functions, Half range series.
- (3) **LAPLASE TRAMSTFORM** : Introduction, Transform of elementary functions, properties of L. T. existence conditions, Inverse Transform, Transform of derivatives, Transform of integrals, multiplication by tn, devision by t, convolution theoram, Application to solution od diffrential equation.
- (4) **INTEGRAL TRANSFORM** : Introduction, Definition, fourier integral, Fourier transform, convolution theoram for F- transform parsel's identity, Relation between Fourier and laplace Transform, F-transform of the derivative of a function, application of transform to boundary value problems.
- (5) Series solution of differential equation of the type
 $P_0 \frac{d^2y}{dx^2} + P_1 \frac{dy}{dx} + P_2y = 0$
- (6) **PARTIAL DIFFERENTIAL EQUATION WITH APPLICATION** : Formation of p.d.e, Particular and complete interal, Equation solvable by direct integration Linear equation of first order, Non linear equation of first order, Homogeneous linear equation with constant coefficients, Methods of separation of variables, Boundry value problems, solution of wave equation, one dimensional heat flow problems,solution of Laplace's equation (two dimension)

BOOKS :

1. Higher engineering Mathematics by B.S. GRAWAL
2. A. text book of Applied Mathematics by P.N. WARTILCAR/J.N.WARTILCAR.
3. Engg. Mathematics by G. V. KUMBHOJKAR II/III
4. Advance Engg. Mnathematics by CHANDRIKA PRASAD.

BHAVNAGAR UNIVERSITY

B.E. SEM III (Elec.)

E- 302 NETWORK ANALYSIS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL	
HOURS PER WEEK			THEORY	HOURS	PRACT/ORAL	TERM WORK	MARKS
THE.	TUT.	PRACT.	MARKS		MARKS	MARKS	
4	--	02	100	3	25	25	150

- (1) Network topology definitions, tie set & cut set tables source transformation dot convention principles of duality.
- (2) Network equations :- Mesh/loop current and node voltage analysis equations for coupled circuits.
- (3) Initial conditions in elements, procedure for evaluating initial conditions.
- (4) Solution of circuit equations by replace transform transient analysis of R-L, R-C Circuits, R.L.C. Circuits.
- (5) Waveform synthesis, initial & final value theorems.
- (6) Network theorems :Thevenins, Nortons, super position Millman, reciprocity & max. power transfer.
- (7) Impedance function - concept of complex freq. transform impedance * transform circuits.
- (8) Network functions for one part & two parts, calculation of network functions, poles & zeros. Time domain behavior.
- (9) Two-ort parameters :- relationship of two port variables; admittance, impedance, transmission and hybrid parameters. Relationship between parameter sets. Series parallel combinations of two port networks.
- (10) Properties of positive real function, necessary and sufficient conditions. Basic synthesis procedure.

Practical / Term work shall be based on the subject.

- Book
- (1) Network analysis - M.E. Van Veikenbery.
 - (2) Network analysis - G.K. Mithal
 - (3) Network synthesis - M.E. Van Veikenbery.
 - (4) Network analysis - Rao

BHAVNAGAR UNIVERSITY
B.E. SEM III (Elec.)
E- 303 ELECTRICAL MACHINES

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL	
HOURS PER WEEK			THEORY	HOURS	PRACT/ORAL	TERM WORK	MARKS
THE.	TUT.	PRACT.	MARKS		MARKS		MARKS
4	--	2	100	3	25		25
150							

D.C.Machine : Principle of D.C.Generator and motor, construction, type of generator, Equation, voltage build up process, critical resistance and speed performance equation and efficiency, effect of

E.M.F. characteristic of generator, armature reaction on terminal voltage.

D.C.Motor : Type of motors, torque equation, characteristics, losses and efficiency, starting & speed control, Armature reaction and commutation.

Transformer: Construction and principle of single-phase transformer operation at no load diagram, equivalent circuit, losses and efficiency, efficiency by direct load test and

and on load, vector regulation determination of regulation & indirect test method.

Alternator : Construction and principle of operation, E.M.F. equation, distribution and armature reaction, synchronous impedance, voltage Method, synchronizing.

pitch factor, regulation, regulation by syn.Imp.

Poly phase induction motor: Rotation magnetic field, construction, type of motors, operation, vector diagram, torque and power equation

principle of performance calculation.

ELECTRICAL TECHNOLOGY

Books B.L. Theraja Vol. – II
A/C Machine by M.G.Say
D.C.Machine by Clayton.

BHAVNAGAR UNIVERSITY

B.E. SEM III (Elec.)

E- 304 LINEAR ELECTRONICS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL	
HOURS PER WEEK			THEORY	HOURS	RACT/ORAL	TERM WORK MARKS	
THE.	TUT.	PRACT.	MARKS		MARKS	MARKS	
4	--	02	100	3	25	25	150

1. BASIC AMPLIFIER STAGES AT LOW FREQUENCIES

Waveforms for a sinusoidal input ,The operation point of a BJT,BJT biasing for integrated circuits, The Widlar current source, Three-transistor current sources, Discrete component BJT biasing – analysis, Discrete component biasing- design,FET biasing, Linear analysis of transistor circuits, The common-emitter amplifier, The emitter follower, The common-base amplifier, Comparison of BJT amplifier configurations, The common-emitter amplifier with an emitter resistance, FET amplifier stages, Cascaded BJT amplifiers, Compound (composite) transistor stages,

2. FREQUENCY RESPONSE OF AMPLIFIERS

Frequency response characteristics, Step response of amplifiers, The common-emitter short-circuit current gain, The generalized gain function, The high-frequency response of a common-emitter stage, The gain-bandwidth product, The common-source stage at high frequency, Emitter and source followers at high frequencies, The time-constant method for obtaining the response, The frequency response of cascaded stages, The cascode (CE-CB) amplifier, The operational amplifier at high frequency, The effect of coupling and bypass capacitors.

3. FEEDBACK AMPLIFIERS

Classification and representation of amplifiers, The feedback concept, The ideal feedback amplifier, Properties of negative-feedback amplifiers, Impedance in feedback amplifiers, Properties of feedback amplifier topologies, Approximate analysis of a feedback amplifier, General analysis of feedback amplifiers, Impedance in feedback amplifiers revisited

The shunt-feedback triple, The shunt-series pair, The series-shunt pair, The series triple, General analysis of multistage feedback amplifiers, Multi-loop feedback amplifiers

4. STABILITY AND RESPONSE OF FEEDBACK AMPLIFIERS

Effect of feedback on bandwidth,Stability,Tests for stability,Compensation,Frequency response of feedback amplifiers- The double pole transfer function,Phase margin of a two-pole feedback amplifier, Three pole feedback amplifier response,Approximate analysis of a multi-pole feedback amplifier, Approximate analysis of the open-loop poles, Compensation revisited.

5. I.C. FABRICATION

Monolithic integrated circuit technology, the planar process, bipolar transistor fabrication, fabrication of FET, CMOS technology, Monolithic diodes, Metal semiconductor contact, IC resistors, IC capacitors, IC packing, characteristics of IC components, microelectronic circuit layout.

6. POWER SUPPLIES

Supply characteristics, Shunt regulators, Series regulators, Monolithic regulators, Switching regulators, Current boosters, DC to DC convertors.

The practical and term work shall be based on syllabus.

Books :-

1. Microelectronics by Jacob Millman & Arvin Grabel
2. Electronic devices & circuits by Millman & Halkias , MGH.
3. Electronic circuits by Schilling below ,MGH.
4. Electronic devices & circuits by Mottershed.
5. Electronic devices & circuits by Mohammed S .Ghausi.

BHAVNAGAR UNIVERSITY
B.E. SEM III (Elec.)

E- 305 THERMAL & HYDRALIC PRIME MOVERS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL	
HOURS PER WEEK			THEORY	HOURS	RACT/ORAL	TERM WORK MARKS	
THE.	TUT.	PRACT.	MARKS		MARKS	MARKS	
4	--	02	100	3	25	25	150

- (1) Classification, Application, Uses, Comparison, Performance & Line diagrams of Steam turbines, Gas turbines and Hydraulic turbines.
- (2) IC Engines :- Classification, fuels, cooling, lubrication, their performance.
- (3) Air motors and compressors - Working principles and operation.
- (4) High pressure boilers: Construction & Working.
- (5) Energy Situation : Non-conventional renewable energy source, potential of renewable energy sources.
- (6) Solar radiation, terrestrial solar radiation balance, generalized
Transmission scattering by atmosphere, absorption of solar radiation, direct solar radiation.
- (7) Low temperature solar radiation collector, flat plate collectors, optical characteristics of the absorber and the cover, HWB collector model, low temp. Applications of solar energy, solar swimming systems, solar drying, basic drying parameters solar heat pump, solar refrigeration and air conditioning. Solar thermal generation. Photovoltaic energy conservation
- (8) Wind energy, tidal and ocean thermal energy conversion. Geothermal energy conversion.

Note : Term work shall be based on the above syllabus.

Reference books (1) Hydraulic machines - R.C. Patel and A.D. Pandya

(2) Heat Engines – Balleny

(3) Theory of machines – R.S. Khurmi.

4)Renewable energy sources and conservation technology

By- N.K. Bansal, Kleemann and Meliss published by Tata McGraw-Hill Public. Ltd., New Delhi

BHAVNAGAR UNIVERSITY
B.E. SEM - III ELECTRICAL

E – 306 COMMUNICATION SKILLS

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pract/Oral Marks	T/W Marks	
			Marks	Hour			
0	0	2	0	0	25	25	50

1. Correct uses of Tenses.
2. Common error in English language.
3. English vocabulary improvement.
4. Rapid reading with correct pronunciations.
5. Group discussion.
6. Dialogue writing
7. Essay – writing.
8. Speech presentation.

BOOKS FOR REFERENCE ;

1. English Grammar and composition by wren & Martin.
2. English conversation for all occasion's sndha publication pvt.ltd.n.delhi.
3. Group discussion at a glance sndha ppublication n.delhi.
4. Common errors in English language IIMs publication n.delhi.
5. English vocabulary for all IIMs publications.