MIET

Model Institute of Engineering & Technology

NAAC Accredited

[SYLLABUS FOR ECE]

[SEMESTERWISE COURSE DISTRIBUTION AND PAPERWISE OUTLINE OF BACHOLOR OF ENGINEERING IN ELECTRONICS AND COMMUNICATION]

FOR EXAMINATIONS TO BE HELD IN DECEMBER, 2010 ONWARDS
UNIVERSITY OF JAMMU, JAMMU

COURSE OF STUDY FOR BE IST SEMESTER ENGINEERING
BRANCH: COMMON TO ALL BRANCHES

Course No.	Course Name	Lecture	Tutorial	Pract.	**Marks**			
					Theory	Sessional	Practical	Total
MTH -101	Engg. Math-1	3	2	-	100	25	-	125
PHY -102	Engg. Phy-I	3	1		100	25	-	125
CHM -103	Engg. Chem-I	3	1		100	25	-	125
M -104	Engg. Mech	3	1		100	25	-	125
HUM -105	Comm. Skills	3	1	-	100	25	-	125
M-106	Engg. Graphics	1	-	3	100	-	50	150
PHY -107	Engg. Physics Lab.	-	-	2	-	-	50	50
CHM -108	Engg. Chemistry Lab	-	-	2	-	-	50	50
M -109	Engg. Mech. Lab.	-	-	2	-	-	50	50
M -110	WS Technology	1	-	3	-	-	75	75
Total		17	6	12	600	125	275	1000

UNIVERSITY OF JAMMU
FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER
BRANCH: COMMON FOR ALL BRANCHES
COURSE TITLE: ENGINEERING MATHEMATICS-I
COURSE NO.MTH-101
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS		
3	2	0	**Theory**	Sessional	**Practical**
			100	25	**0**

SECTION-A

1. Differential Calculus**: Successive differentiation, Leibnitz theorem (without proof), Partial differentiation with errors and approximations, Eular's theorem on homogeneous functions, Taylor's and Maclaurin's series of two variables, Maxima and Minima of functions of two variables, Asymptotes, Double points, curvature, Curve tracing in Cartesian, polar and parametric forms.**

2. Integral Calculus**:- Definite integrals with important properties, differentiation under the integral sign, Gamma, Beta and error functions with simple problems, applications of definite integrals to find length, area, volume and surface area of revolutions, transformation of coordinates, double and triple integrals with simple problems.**

SECTION-B

1. Complex Trignometry**: Hyperbolic functions of a complex variable, Inverse Hyperbolic functions, Logarthmic function of a complex variable, Summation of series by C+ iS method.**
2. **Ordinary Differential Equations: Differential equations of first order and first degree: Exact and non-exact differential equations, Linear and Bernoulli's differential equations. Higher order linear differential equations: Complementary solution, particular integral and general solution of these equations, variation of parameters technique to find particular integral of second order differential equations, Cauchy's and Lagrange's differential equations. Applications of Ordinary Differential Equations to simple Electrical and Mechanical Engg. problems.**
3. **Solid Geometry: Sphere, Intersection of sphere and plane, tangent plane property, cone and cylinder, related problems to right circular cone and cylinder.**

Books Recommended

1. **Engineering Mathematics by B.S. Grewal, Khanna Publications, New Delhi**
2. **Calculus and Analytic Geometry by Thomas and Finney, Addision Weslay, Narosa.**
3. **Differential Calculus by S. Narayan, New Delhi**
4. **Integral Calculus by S. Narayan, New Delhi.**

NOTE**: There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.**

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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

B.E Ist Semester (Common Course) Maximum Marks:125

Subject: Engineering Physics-I	**L**	**T**	**P**	Theory	Sessional
Course No.PHY-102	**3**	**1**	**2**	**100**	**25**

Duration of Exam: 03 hours

SECTION-A

UNIT-1	**MATHEMATICAL PHYSICS**	**NO. OF LECTURES**	**WEIGHTAGE**
	Review of Vector Algebra, Scalar and Vector fields, Gradient of a Scalar field, Divergence and curl of a vector field and their physical significance, solenoidal fields, Guass Divergence theorm, Stokes theorem and their applications, Vector Identities	10	25%
UNIT-II	**ELECTROMAGNETIC FIELDS AND WAVES**		
	Guass's law in vector notation (differential and integral forms), Applications of Guass's law to find electric fields due to a long straight charged wire, Cylindrical and Spherical charge distributions. Derivation of Ampere's Circuital law, Application of Ampere's circuital law to find magnetic intensity due to long cylindrical wire, due to a long solenoid. Differential & Integral form of Faraday's law of electromagnetic induction, Equation of continuity, Displacement current and its significance, Maxwell's field equations (differential and integral forms), Betaron, Electromagnetic wave propagation in free space (e.m wave equations for $\xrightarrow[E]{}$ & $\xrightarrow[B]{}$ fields for free space and their solutions (plane wave solution), velocity of e.m. waves, Relation between E_o & B_o . Definition of Poynting Vetor, Poynting theorem.	16	25%
	SECTION-B		
UNIT-III	**APPLIED OPTICS**		
	Interference in thin films (by reflection and transmission of light), Theory of Newton's rings by reflected light, Determination of wave length and refractive index of monochromatic light by Newton's theory. Fraunhoffer & Fresnel's diffractions Fresnel's half period zones and rectilinear propagation of light, Fraunhoffer diffraction due to a single slit, plane diffraction grating & its theory for secondary maxima and minima. Unpolarized and polarized light, Nicol Prism, Mathematical representation of polarization of different types, Quarter & half wave plates.	12	20%
UNIT-IV	**OSCILLATIONS**		
	Free damped and forced oscillations and their differential equations, Logarithmic decrement, power dissipation & Quality factor, ultrasonic waves and their production by Piezoelectric method and applications (General)	05	15%
UNIT-V	**FIBRE OPTICS**		
	Propagation of light in fibres, numerical aperture, Single mode and multimode fibres, General applications	05	15%

TUTORIALS

S.NO.	TOPICS	UNIT NO.
T-1	Numerical problems based on vector analysis	I
T-2	Numerical problems on Gradient of Scalar fields	I
T-3	Numerical problems on Divergence of Vector fields	I
T-4	Numerical problems on Curl of vector fields	I
T-5	Numerical problems based on Guass divergence theorem and Stokes Theorem	I
T-6	Numerical problems based on the applications of Guass's Law	II
T-7	Numerical problems based on the applications of Ampere's law	II
T-8	Numerical problems pertaining to the applications of Faraday's law	II
T-9	Numerical problems pertaining to the applications of Interference phenomenon, Formation of Newton's rings	III
T-10	Numerical problems pertaining to the applications of diffraction and polarization phenomenon	III
T-11	Numerical problems based on the applications of SHM, damped and forced motion of bodies and applications of ultrasonic	IV
T-12	Numerical problems based on the applications of Fibre optics	V

NOTE: SETTING OF QUESTION PAPER (Instructions for examiners)

i) The question paper will consist of two sections\
   a) Section-1
   &
   b) Section-II

ii) Section-I Comprises of Unit-I and Unit-II
Section-II Comprises of Unit-III, Unit-IV and Unit-V

iii) Number of questions to be set in the paper =8 (eight)
(Four from each section) as per weightage

iv) Number of questions to be attempted =5 (five)
(Selecting at least two from each section)

BOOKS RECOMMENDED

S.NO.	TITLE	AUTHOR
1.	Vector Analysis	Spiegal
2.	Mathematical Physics	Rajput & Gupta
3.	Physics	Reisnick & Hatliday
4.	Optics	Brijlal & Subramaniam
5.	Sound	Subramaniam
6.	Sound	Khanna & Bedi
7.	Fibre Optics	Ghatak, Tyagrajan

UNIVERSITY OF JAMMU
FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER
BRANCH: COMMON TO ALL
COURSE TITLE: ENGG. CHEMISTRY
COURSE NO.:CHM-103
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS		
3	1	2	**Theory**	Sessional	**Practical**
			100	25	**50**

SECTION - A

1. SPECTROSCOPY

UV Spectroscopy – Electronic transitions, spectrum, shift of bonds with solvents for double bonds, carbonyl compounds and aromatic compounds.
IR-Spectroscopy – Introduction, brief idea about instrumentation, applications and interpretation of IR Spectra, characterization of functional groups and frequency shift associated with structural changes.
'H-NMR Spectroscopy – Theory of 'H-NMR Spectroscopy, equivalent and non-equivalent protons, chemical shift, spin-spin coupling, spin-spin splitting, H'-NMR spectrum of a few organic compounds.

2. EXPLOSIVES
Introduction, classification and types of explosives, requirement for good explosives, preparation and uses of following explosives – Nitrocellulose, TNT, Dinitrobenzene, Picric Acid, Nitroglycerine and Dynamite, Gun Power, RDX, Tetracene.

SECTION - B

1. STEREOCHEMISTRY:-
Optical isomerism, recemerization, asymmetric synthesis, methods for resolution of racemic mixture, enantiomerism and diasteroisomerism.

2. ALLOYS
Introduction, purpose of making alloys, preparation of alloys, classification of alloys. (Ferrous and non-ferrous alloys), alloy steels & copper alloys.

3. LUBRICANTS
Definitions, functions of lubricants, mechanism of lubrication, classification of lubricants (Lubricating oils, semi solid lubricants, solid lubricants) synthetic lubricants, flash and fire points, oiliness, cloud and pour points.

4. DYES AND DRUGS
Classification of dyes and its applications. Define drug and give the applications of following drugs.
a) Narcotics b) Tranquilizers c) Antipyretics d) Antibiotics

FORMAT OF QUESTION PAPER
Total No. of Questions = 08
Questions to be attempted = 05
(Minimum Two from Each Section A & B)

Books Recommended :

1. **Engineering Chemistry — Jain & Jain**
2. **Engineering Chemistry — Sharma, B.K.**
3. **Engineering Chemistry — Dara, S.S.**
4. **Organic Chemistry — Bahl, B.S.**
5. **Organic Chemistry — Soni, P.L.**
6. **Organic Chemistry — Jain, M.K.**
7. **Spectroscopy of Organic Compounds — Silverstain**
8. **Spectroscopy of Organic Compounds — Kalsi, P.S.**

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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS : B.E. IST SEMESTER
BRANCH: COMMON TO ALL
COURSE TITLE: ENGINEERING MECHANICS
COURSE NO.M-104
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS		
3	1	2	**Theory**	Sessional	**Practical**
			100	25	**50**

SECTION-A (STATICS)

Scope and basic concepts (Rigid body, force, units, etc), concept of free body diagram, Resultant of Co-planar concurrent forces in a plane and space, moment of force, Principle of Moments, Coplanar and spatial applications. Virtual work method and its applications.

Equilibrium and its equations for a planar and spatial systems, Analysis of trusses, Method of joints and sections.

Theory of friction, its laws and applications (inclined plane). Square threaded screws, Bolt friction, Centroids and center of gravity, centroids of lines and composite areas, centroids determined by integration.

Moment of inertia, Area M.O.I, Transfer theorems, Polar M.O.I, Product of inertia, Principal M.O.I, Mohr's circle for area M.O.I, Transfer theorems and axes M.O.I of composite bodies.

SECTION-B (DYNAMICS)

Kinematics of a particle rectilinear motion, motion curves, Rectangular components of curvilinear motion, Flight of Projectile, Normal and tangential components of acceleration, Radial and transverse components, Newton's Laws. D'Alembert's Principle.

Kinematics of rigid bodies: Types of rigid body motion, Angular motion, fixed axis rotation, Analysis of plane motion and its applications, Instantaneous center and Instantaneous axis of rotation.

Kinetics of Particle: Translation, Analysis of a particle as a rigid body.

Kinetics of rigid bodies: Equations of plane motion, fixed axis rotation, Rolling bodies, General plane motion, Impulse and momentum in plane motion, Angular momentum.

RECOMMENDED BOOKS

1.	**Engineering Mechanics (Statics & Dynamics)**	**Beer and Johnson**
2.	**Engineering Mechanics (Statics & Dynamics)**	**Mariam and Kraige**
3.	**Engineering Mechanics (Statics and Dynamics)**	**Timoshenko and Young**
4.	**Engineering Mechanics (Statics and Dynamics)**	**Ferdinand L Singer.**

NOTE : There shall be total eight questions, four from each section. Five questions will have to be attempted selecting atleast two from each section. Use of calculator is allowed.

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B.E IST SEMESTER
BRANCH: COMMON TO ALL
TITLE: COMMUNICATION SKILLS
COURSE NO: HUM-105
DURATION: 3 HOURS

L	T	P	MARKS
3	1	-	THEORY: 100
			SESSIONALS: 25

Exercises in comprehension, grammar vocabulary, usage, pronunciation, spelling and composition based on the following texts:

i. Contemporary English Prose
Edited by Menon
Oxford University Press

ii. Developing English Skills
Edited by Thanker, Desai and Purani
Oxford University Press

Or

English through Reading-II
Edited by Bhasker and Prabhu

Note: Test-I carries 50% weightage in the question paper and Text-II carries 50% weightage
Question Paper:

1. Six short answer questions on comprehension to be set from Text-I. Students expected to answer any three in about 150 words each (30 marks)
2. Phrases and idioms from text I to be used in sentences. Hundred percent choices to be given (20 marks)
3. Completing a paragraph of which the first two or three short Sentences are given (10 marks)
4. Exercise on tenses from Text II (5 marks)
5. Exercises on active/passive transformation from Text-II (5 marks)
6. Forming verbs or adjectives or nouns from the given words-text-II (5 marks)
7. Propositions from text-II (5 marks)
8. Matching words and their meanings Text-II (5 marks)
9. Forming words ending in-ify,-ize,-tion, ec. From Text-II (5 marks)
10. Filling in the blanks with a given set of words in brackets-Text-II (5 marks)
11. Questions on miscellaneous exercises from Text-II such as Question tags - articles etc.

or

Marking Stress or Syllable in given words. (5 marks)

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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

CLASS: B.E. IST SEMESTER
BRANCH: COMMON TO ALL
COURSE TITLE: ENGINEERING GRAPHICS
COURSE NO.Eng-106
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS		
1	0	3	**Theory**	Sessional	**Practical**
			100	0	**50**

UNIT-1

Introduction: Conventional lines and signs used in Engineering Drawing, Printing and Lettering, Curves used in Engineering Practice: Cycloidals, Involutes, Spirals and Hellices, Locus of a point on simple mechanisms.

Theory and practice of Orthographic projections.
Projection of points and Lines: Projections of points and lines in different quadrants w.r.t principle reference planes, Finding of true length, True inclinations and traces of lines.
Projection of Planes: Projections of a plane w.r.t. the principle planes in simple and inclined positions. Rotation method and the Auxiliary plane method. Space relation of a plane and a line. To locate a point on a plane given its projections. Parallel relation of lines and planes. Shortest distance between a line and a plane.

UNIT-2

Projection of Solids: Classification and main features-Prisms and Pyramids. Projection of solids inclined to both the reference planes by (1) Rotation Method, and (II) Auxiliary plane method. Projection of solids in combination (Co-axial) in simple and inclined positions.
Sectioning of Solids: Object of sectioning, Types of cutting planes, True shape of section, Auxiliary views of sections of multiple co-axial solids in simple and titled conditions.

UNIT-3
Interpenetration of Solids and Intersection of Surface: Intersection of geometrical solids/hollow sections, Tracing of lines of intersection by line method and by section method.
Development of Surfaces: Classification of surfaces, Methods of development-Straight line method and Radial line method, Development of solids and hollow sections in full or part development of transition pieces. To draw projections from given development.

UNIT-4
Isometric Projection: Isometric scale, Isometric axes and Isometric planes, Isometric projection of solids and simple machine blocks.
Orthographic Projections: Orthographic projection of simple blocks (First & Third angles), to draw the third view from given two views. Missing lines in projection.

RECOMMENDED BOOKS

1.	**Engineering Drawing**	**N.D Bhatt**
2.	**Practical Geometry**	**V. Laxminarayan & GEV**
3.	**Engineering Graphics**	**K.L. Narayanan & P. Kamaish**
4.	**Principles of Engineering Graphics**	**P.E Giesecks**
5.	**Engineering Graphics**	**Frederic & Michelle.**

NOTE **At least two questions to be attempted from Unit-I and at least one question from each of the Units-II, III and IV in the theory examination paper.**

B.E Ist Semester	Maximum Marks
Subject: Engineering Physics Lab-I	Sessional
Course No.: PHY-107	50

S.No.	Experiment No.	Title of Experiment
1.	**Exp-I**	To plot a graph between the distance of the knife edges from the center of gravity and the time period of a compound pendulum. From the graph, find **a) Acceleration due to gravity** **b) Radius of gyration and the moment of inertia of the bar about an axis through the center of gravity.**
2.	**Exp-II**	To find the dispersive power of a given prism using a spectrometer.
3.	**Exp-III**	To find the refractive index of a given liquid using a hollow prism
4.	**Exp-IV**	To find the focal lengths of a convex mirror and a concave lens using a convex lens and a concave mirror respectively.
5.	**Exp-V**	To find the frequency of A.C mains using an electrical vibrator.
6.	**Exp-VI**	To draw the V-I characteristics of a forward and reverse bias P-N junction diode.
7.	**Exp-VII**	To study the common base characteristics of PNP junction transistor.
8.	**Exp-VIII**	To study the common emitter characteristics of PNP junction transistor.
9.	**Exp-IX**	To study the common base characteristics of NPN junction transistor.
10.	**Exp-X**	To study the common Emitter characteristics of NPN junction transistor.
11.	**Exp-XI**	To evaluate the value of Planck's constant.
12	**Exp-XII**	To study the characteristics of a Solar Cell.

NOTE: A minimum of six experiments is to be performed in a semester.

BOOKS RECOMMENDED

	TITLE	**AUTHOR**
1.	**Practical Physics**	Warsnop & Flint
2.	**Practical Physics**	Chauhan & Singh (Vol. I & Vol. II)
3.	**B.Sc. Practical Physics**	C.L Arora

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COURSE NO. CHM – 108

CHEMISTRY PRACTICAL :

1. **Determine the percentage of $CaCO_3$ in precipitated chalk. You are provided with IN HCl and 0.IN NaOH.**
2. **To analyse the given antacid tablets.**
3. **Determine Volumetrically the %age purity of given sample of Ferrous sulphate, x gms of which have been dissolved per litre provided N/10 $KMnO_4$**
4. **Determine Volumetrically the number of molecules of water of crystallization present in the given sample of Mohr's salt, x gms. of which have been dissolved per litre provided N/10 $K_2Cr_2O_7$ (using an external indicator).**
5. **Determine Volumetrically the percentage of Cu in a sample of $CuSO_4$ crystals, Z gms of which have been dissolved per litre, provided 0.IN $Na_2S_20_3$.**
6. **To determine the coefficient of viscosity of an unknown liquid using Ostwald Viscometer.**
7. **Determine the surface tension of a unknown liquid using Stalagmometer.**
8. **To prepare a pure and dry sample of Aspirin**
9. **To prepare a pure and dry sample of Glucosazone**
10. **Determine the method of purification of organic compounds by coloumn chromatography.**
11. **Determine the aniline point of a given lubricating oil.**

Books Recommended :

1. **Experimental Engineering Chemistry Shashi Chawla**
2. **Lab. Manual on Engg. Chemistry Basin, S K & Sudha Rani**

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COURSE NO. M-109

Engg. Mechanics Lab

Lab work shall be based on theory course of Engineering Mechanics Paper

CLASS : B.E. IST SEMESTER
BRANCH: COMPUTER ENGG., CIVIL ENGG., MECH. ENGG., ELECTRICAL ENGG., ELECTRONICS & COMM. ENGG.
COURSE TITLE: WORKSHOP TECHNOLOGY
COURSE NO.WS-110

L	T	P	MARKS		
1	0	3	**Theory**	Sessional	**Practical**
			0	0	**75**

Course Content:

Introduction to workshop as a fabrication unit. Information regarding various material of construction i.e Ferrous and Non-Ferrous, wood, plastics, etc. Basic fabrication process i.e castings, Mechanical working, welding and machining.

Wood working and pattern making practice, Information about working hand and wood working machines, various methods of joining of wooden parts for the fabrication of patterns, Pattern materials and allowances, pattern construction procedures, preservation of patterns.

Moulding and casting practice. Sand Moulding, Natural foundry sands and synthetic sands, preparation of moulding sands, mould making procedure, cast iron and aluminum and pouring, melting crucible process, Extraction of Castings.

Cold and hot working processes, basic tolls and equipment used in mechanical working. Forging furnace operation, Smith forgoing operations.

Books**:**

1. **Manufacturing process and materials by Campbell.**
2. **Manufacturing Process by P.N. Rao**
3. **Workshop Technology by Hajra and Chowdhary Vol.I**

Shop Practice:

Unit-1 Pattern Making:
- **i) Baring block pattern**
- **ii) Split pattern of "bench Vice" (Sliding Jaw).**

Unit-II Moulding and Casting
Moulding and Castings of Patterns at Unit I.

Unit-III Hand forging of:

- **i) Haxagonal headed bolt from a cylindrical rod.**
- **ii) Cubical Block from a Cylindrical section.**

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS
COURSE OF STUDY FOR BE 2ND SEMESTER ENGINEERING
BRANCH: COMMON TO ALL BRANCHES

Course No.	Course Name	Lecture	Tutorial	Pract	**Marks**			
					Theory	Sess.	Pract	Total
MTH –201	Engineering Math-1I	4	2	-	100	25	-	125
PHY -202	Engineering Phy-II	3	1	-	100	25	-	125
CHM -203	Engineering Chem-II	3	1	-	100	25	-	125
COM -204	Computer Programming	3	1	-	100	25	-	125
HUM-205	Engineering Economics	3	1	-	100	25	-	125
M -206	Machine Drawing-I	1	-	3	100	25	-	125
M -207	Workshop Technology-II	1	-	3	-	-	75	75
PHY –208	Engineering Physics II Lab	-	-	2	-	-	50	50
CHM –209	Engineering Chemistry II Lab	-	-	2	-	-	50	50
COM –210	Computer Programming Lab	-	-	2	-	-	75	75
Total		18	6	12	600	150	250	1000

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks:125

Course No: MTH-201	**L**	**T**	Theory	Sessional
Course Title: Engg. Math-II	**4**	**2**	**100**	**25**

Branch : Common to all branches
Duration of Exam: 3 hours

SECTION-A

1. Introduction to infinite series & sequences:- Convergence and divergence of a series, Leibnitz test, p-test, comparison test, Cauchy's root test, D' Alembert Ratio Test, Raabe's Test, Logarithmic test, alternating series..
2. Fourier Series: Introduction, Euler's formulae, sufficient conditions for a Fourier expansion, functions having points of discontinuity, change of intervals. Odd and even functions, Fourier expansion of Odd and even periodic functions, half range series, typical wave forms, Parseval's formula, complex form of Fourier -series.
3. Power Series Solutions of Second order O.d.e: Analytic function, ordinary point, singular point, regular and irregular singular points of o.d.e. Y " +P(x)Y' + Q(x)Y=0, Series solution of such differential equations about an ordinary point, Frobenius series solution about a regular singular point.

SECTION-B

2. First Order partial differential equations:-
   Formation of p.d.e, First order linear p.d.e, Non-Linear p.d.e. of Ist order, solution by Charpit's method, Four Standard forms of non-linear p.d.e with reference to Charpit's technique.

3. Higher Order Linear p.d.e: Homogenous and Non-homogenous higher order linear partial differential with constant coefficient inverse operator I/f (D,D'), Rules for finding P.I and C.F, Non-Linear equations of 2nd order. Application of p.d.e, method of separation of variables to solve equations of vibrations of strings (or one dim wave equation), one dim and two dim heat flow equations, Laplace equations, transmission line).

4. Matrices & determinants: Introduction, Rank of matrix, Elementary transformations, Elementary matrices, Inverse using elementary transformation, Normal form of a matrix, Vector spaces, Linear dependence and independence of vectors, consistency of linear system of equations, linear and orthogonal transformations, Eigen values and Eigen vector, Properties of Eigen value, Cayley Hamilton Theorem, Reduction to diagonal form, Reduction of quadratic form to canonical form, complex matrices.

BOOKS RECOMMENDED

1. Advanced Engineering Mathematics by R.K. Jain, S.R.K Iyenger, 2nd edition, Narosa, New Delhi.
2. Higher Engineering Mathematics by Dr. B.S. Grewal
3. Engineering Mathematics by Dr. Bhopinder Singh
4. Engineering Mathematics by B.S. Grewal Khanna Publication, New Delhi.
5. Partial differential equations by Singhania

Note : There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E IInd Semester (Common Course) Maximum Marks:125

Course No. PHY-202	**L**	**T**	Theory	Sessional
Course Title : Engineering Physics-II	**3**	**1**	**100**	**25**

Branch : Common to all branches
Duration of Exam: 3 hours

UNIT-1	RELATIVISTIC DYNAMICS	**NO. OF LECTURES**	**WEIGHTAGE**
	Concept of Relativity, Frames of reference, Galilean Transformations, Michelson and Morley's experiment, Postulates of Special Theory of relativity, lorentz transformations, Length Contraction, Time dilation, variation of mass with velocity (Velocity addition), mass energy equivalence ($E^2=P^2c^2+m_o^2c^4$).	10	25%
UNIT-II	WAVE-PARTICLE DUALITY		
	Black Body radiation spectrum (Characteristics & Energy distribution), Wien's laws, Rayleigh Jeans Law excluding mathematical derivations, ultraviolet Catastrophe, Planck's hypothesis and Planck's radiation law, Explanation of black body radiation characteristics on the basis of Planck's law, photon concept. Compton effect, derivation of the direction of emission and the change in wavelength of scattered photons, direction of recoil electron and discussion of observed results. Debroglie's hypothesis, concept of matter waves, Davisson & Germer's experiment, wavepacket, Phase and Group velocity, Heisenberg's uncertainty principle. Experimental illustration of uncertainty principle using single slit.	12	25%
UNIT –III	QUANTUM MECHANICS		
	Wave function definition, interpretation and significance of wave function, Schrodinger's wave equations (Steady-State and time dependent) for 1-dim case, concept of operators and expectation values, Applications of Schrodinger's equation (Time independent) to a) Particle in a 1-dimensional box of infinite height, b) single step potential barrier, c) Tunnel effect, d) Quantum Mechanical harmonic oscillator with concept of Zero point energy.	14	25%
UNIT-IV	SOLID STATE PHYSICS		
	Intrinsic & extrinsic semi-conductors, Fermi & impurity levels, Impurity compensation, charge neutrality equation and semi-conductor conductivity. Einstein's relation, drift and diffusion current. Introductory concepts of advanced materials viz; conducting polymers dielectric materials, Nanomaterials, Smart materials and High T_c materials.	7	15%
UNIT-V	LASERS		
	Principle of Laser action, population Inversion, Einstein's Coefficients, He-Ne & Ruby Lasers, Holography	5	10%

TUTORIALS

B.E IInd Semester
Subject: Engg: Physics-II
Course No.Phy-202

S.NO.	TOPICS	UNIT NO.
T-1	Numerical problems based on Length contraction & time dilation	I
T-2	Numerical problems based on variation of mass, energy mass equivalence etc.	I
T-3	Numerical problems pertaining to energy spectrum of Black body radiations, Wien's displacement/R-J laws, Planck's law	II
T-4	Numerical problems based on photo-electric effect, work functions	II
T-5	Numerical problems based on Compton effect, recoil energy of electron etc.	II
T-6	Numerical problems based on the characteristics of De-broglie waves, Davisson-Germer's Expt.	II
T-7	Numerical problems related to Heisenberg's uncertainty principle	II
T-8	Numerical problems based on Schrodinger's wave equation, expectation values of certain physical quantities and operators	III
T-9	Numerical problems to find the Eigen function and eigen values for particle in a box	III
T-10	Numerical problems to find the reflection and transmission co-efficients for a particle penetrating a potential barrier	III
T-11	Simple numerical problems based on finding the bandgaps in semi-conductor materials etc.	IV
T-12	Simple numerical problems based on finding the energy level difference in Lasers etc.	V

NOTE: SETTING OF QUESTION PAPER (Instructions for Examiners)

i) The question paper will consist of two sections

a) Section-I
&
b) Section-II

ii) Section-I Comprises of Unit-I and Unit-II
Section-II Comprises of Unit-III, Unit-IV and Unit-V

iii) Number of questions to be set in the paper =8 (eight)
(Four from each section as per weightage)

iv) Number of questions to be attempted =5 (five)
(Selecting at least two from each section)

BOOKS RECOMMENDED

	TITLE	**AUTHOR**
1)	Modern Physics	Beiser
2)	Modern Physics	Blatt
3)	Modern Physics	Gupta & Gupta
4)	Basic Electronics	Millman & Halkias
5)	Material Science	S.L. Kakani, Amit Kakani

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks:125

Course No: CHM-203	**L**	**T**	Theory	Sessional
Course Title: Engg. Chem-II	**3**	**1**	**100**	**25**

Branch : Common to all branches
Duration of Exam: 3 hours

SECTION-A

1. **ENVIRONMENTAL CHEMISTRY :**
Concept of Environmental chemistry, segments of environment (a brief idea about atmoshphere, hydrosphere and lithosphere)

AIR POLLUTION – Introduction, Types of air pollution and control of air pollution.

WATER POLLUTION : Introduction, Sources of water pollution and methods of controlling water pollution.

CHEMICALS AND METAL TOXICOLOGY (Biochemical effects of Pb, Hg, As, Zn, Cd, Ni, Se, CN, O_3 and pesticides in brief on man).

2. **INORGANIC CEMENTING MATERIALS** :
Cement and Lime – Introduction, classification of lime, manufacture and properties of lime, setting and hardening of lime.

Cement, types of cement, manufacture of Portland cement, setting and hardening of cement.

3. **WATER TREATMENT**
Introduction, types of water, softening of water by different processes, chemical methods and sterilization, priming and foaming, sludge and scale formation, determination of hardness of water by soap titration method and EDTA method. Radioactivity of water, numericals on hardness and softening of water.

SECTION-B

1. **PLASTICS:**
Introduction, importance of plastics and uses, classification of plastics, moulding constituents of a plastic, moulding of plastics into articles (compression moulding, injection moulding, transfer moulding and extrusion moulding) Preparation , properties and uses of following plastic materials:
a) Polymethyl methacrylate b) Epoxy resins c) Alkyd resins.

2. **RUBBER**
Introduction , types of rubber, treatment of latex, vulcanization of rubber, preparation, properties and uses of following synthetic rubber: Buna-S, Buna-N & Butyl rubber.

3. **PAINTS**

Introduction, requisites of a good paint, constituents of a paint, manufacture of a paint, properties and uses of important white pigments such as white lead, Zinc oxide and Lithophone.

BOOKS RECOMMENDED :

1.	Engineering Chemistry	Jain & Jain
2.	Engineering Chemistry	Sharma, B.K.
3.	Engineering Chemistry	Dara, S.S.
4.	Engineering Chemistry	Shashi, Chawla
5.	Organic Chemistry	Bahl, B.S.
6.	Environmental Chemistry	De, A.K.
7.	Textbook of Environmental Chemistry	Tyagi & Mehra
8.	Polymer Science	Gowrikar, V.R. etal.

Note : There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

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FOR EXAMINATION TO BE HELD IN JUNE 2011 ONWARDS

CLASS: B.E 2nd SEMESTER
BRANCH: COMMON FOR ALL BRANCHES
COURSE TITLE: COMPUTER PROGRAMMING USING C
COURSE NO: COM –204
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS Theory	MARKS Sessionals
3	1	-	100	25

SECTION-A

1. Basic structure of Computer, Stored Program Concept, Binary Arithmetic – Addition, Subtraction, Multiplication, Data Representation – Fixed and Floating Point, Semiconductor Memories.

2. Introduction to C, Data Types, Constants, Variables, Expressions, Statements, Operators, Data Input and Output.

3. Control Statements, Arrays, Recursion, Storage Classes, Library Functions.

SECTION-B

4. Functions, User Defined Data Types, Structures, Unions, Passing Structure to Functions.

5. Pointers, Operation on Pointers, Passing Pointers to Functions, Data Files – Opening, Closing, Creating Data Files

Books Recommended:-

1. Programming With C - Byron Gottfried.
2. Programming With C - E. Balaguruswamy.
3. C The Complete Referance – Herbert Schildt.
4. Let us C - Yashwant Kanitkar.
5. Digital Computer Fundamentals - Thomas C. Bartee.
6. Digital Computer Design - V . Rajaraman.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E. 2nd Semester Maximum Marks: 125
Course No. HUM-205 Theory Sessional
Course Title: Engineering Economics **L T** **100** **25**
Branch: Common to all branches **3 1**
Duration of Exam : 3 Hours

SECTION-A

UNIT-1

	Definitions of Economics
	a) Science of Wealth
	b) Science of Material Welfare
	c) Science of Scarcity
	Economic System
	a) Features of Capitalism
	b) Features of Socialism
	c) Features of Mixed Economy
UNIT-II	
	Consumer Behaviour
	a) Cardinal Utility Analysis: The Concept and Utility Maximisation: Laws of Diminishing Marginal Utility and Equi-Marginal Utility.
	b) Ordinal Utility Analysis: Meaning and Properties of Indifference Curves and Utility Maximization.
	Demand Theory:
	a) Meaning of Demand and law of Demand
	b) Factors Affecting Demand
	c) Elasticity of Demand (Price Elasticity, Income Elasticity and Cross Elasticity)
	d) Demand Forescasting
	SECTION-B
UNIT-III	
	Theory of Production:
	a) Factorsof Production and Production Function.
	b) Isoquants : Meaning & Properties
	c) Law of Variable Proportions & Returns to scale
	Costs and Cost Analysis
	a) The Concept of Marginal, Average, Fixed and Variable Costs.
	b) The Shape of Fixed, Average and Marginal Cost Curves (short run)
	Market and Market Structures
	a) Meaning and Feature of Perfect Competition, Monopolistic Competition, Oligopoly and Monopoly.
	b) Price Determination Under Perfect competition and monopoly.
UNIT-IV	
	Some commonly used Economic Concepts
	a) Meaning, Types and Methods to Control Inflation.
	b) Concept of Stock Market

	c) Meaning & Concept of National Income	
	d) Functions of Commercial Bank & Central Bank	
	e) Features of Development and Under Development	
	f) Meaning & Phases of Trade/Business Cycle	
	g) Index Number : Construction and difficulties in measurement of Index Number.	
BOOKS RECOMMENDED		
1.	K.K.Dewett	: Modern Economic Theory
2.	H.L Ahuja	: Advanced Economic Theory
3.	M.L. Jhingan	: Macro Economics
4.	P.N Chopra	: Business Economics/Advanced Eco. Theory

Note: There shall be total eight questions, four from each section. Each question carry 20 marks. Five questions will have to be attempted, selecting atleast two from each section. Use of calculator is allowed.

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E. 2nd Semester Maximum Marks: 125
Course No. M-206 Theory Sessional
Course Title: Machine Drawing-I **L P** **100** **25**
Branch: Common to all branches **1 3**
Duration of Exam : 3 Hours

SECTION-A

1. I.S. Code for Machine Drawing.
2. Types of Sections and Recommended Scale, Dimensioning and Sectioning of Machine elements.
3. Drawing and sketching of machine elements in Orthographic Projections.
4. Different types of Joints: Riveted joints, Threaded fasteners, Knuckle joint, Cotter Joints: Gib and Cotter, Sleeve and Spigot.
5. Stud assembly, Pipe joints including expansion joint.
6. Shaft pulley, cone pulley, Fast and loose pulley, etc.

SECTION-B

1. Simple assemblies: Shaft couplings and Clutches, Muff Coupling, Split muff, Flange Couplings: Solid and Flexible, Protected and Unprotected, Universal Coupling.
2. Bearings: Pedestal bearing including Hanger bearings, Pivot bearing and Swivel bearing.

RECOMMENDED BOOKS:-

1. Machine Drawing — P.S. Gill
2. Machine Drawing — Sidheshwar and Kannaih
3. Machine Drawing — N.D. Bhatt

NOTE:-

1. There will be Six questions in all, five from **Section- A** (each of 15 marks) and one Compulsory question of 55 marks from **Section - B.**

2. Students are required to attempt Four questions in all, three form Section-A and one compulsory question involving assembly from **Sections–B**.

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks : 75

Course No: M-207	**L**	**P**	Prac/Lab
Course Title: Workshop Technology-II	**1**	**3**	**75**

Branch : Common to all branches
Duration of Exam : 3 Hours

WELDING SHOP

1. Introduction to Welding as a fabrication process, Welding application and general safety precautions.
2. Introduction to Gas and Arc welding processes.
3. Preparation of single V-butt joint by Gas and Arc welding processes.
4. Preparation of double V-butt joint, Lap joint, Tee joint and Corner joint by Gas and Arc welding processes.

FITTING SHOP

1. Assembly of Snap fitting of flat pieces (Male, Female).
2. Assembly and fitting of two L-shaped rectangular flat pieces.

SHEET METAL SHOP

1. Introduction to sheet metal tools.
2. Practice of making regular geometrical and traditional shapes in sheet metal, which includes:
    a) Square elbow
    b) Tee joint
    c) Funnel making
    d) Tray and riveted handle.

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks : 50
Course No: PHY-208 **P** Prac/Lab
Course Title: Engineering Physics Lab-II **2** **50**
Branch : Common to all branches
Duration of Exam : 3 Hours

S.NO.	EXPERIMENT NO.	TITLE OF EXPERIMENT
1.	Exp-1	To determine the wavelength of sodium light using a plane diffraction grating.
2.	Exp-II	To find the wavelength of a monochromatic source of light using Fresnel's Biprism.
3.	Exp-III	To determine the specific rotation of sugar using laurent's half shade polarimeter.
4.	Exp-IV	Verification of Faraday's laws.
5.	Exp-V	To find the wavelength of monochromatic light using Newton's rings Apparatus.
6.	Exp-VI	To find the co-efficient of self-induction of a coil by Anderson's bridge using head phone.
7.	Exp-VII	To determine the value of e/m for electron by a long solenoid (Helical method).
8.	Exp-VIII	To find the impedance of LCR series and parallel circuits.
9.	Exp-IX	To study the Zener diode characteristics.
10.	Exp-X	To find the specific resistance of given wire by using carry Foster's Bridge.
11.	Exp-XI	To find the wavelength of He-Ne gas laser.
12.	Exp-XII	To find the diameter of a thin wire using He-Ne gas laser.

NOTE: AT LEAST A MINIMUM OF SIX EXPERIMENTS IS TO BE PERFORMED IN A SEMESTER.

BOOKS RECOMMENDED

	TITLE	AUTHOR
1.	B.Sc Practical physics	C.L. Arora
2.	Practical Physics	Worsnop & Flint
3.	Practical Physics	Chauhan & Singh (Vol.I & Vol. II)

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks : 50
Course No: CHM-209 **P** Prac/Lab
Course Title: Engineering Chemistry Lab-II **2** **50**
Branch : Common to all branches
Duration of Exam : 3 Hours

EXPERIMENTS

1. Determine the total hardness of a sample of water by complexometric method (using EDTA).
2. Determine the chloride content in supplied water sample using Mohr's method (Argentometric method).
3. Determine dissolved oxygen in the given sample of water (winkler's method).
4. Determine the free chlorine in the given sample of water.
5. Determine the acidity of a given water sample.
6. Determine the alkalinity of a given water sample.
7. Determine the percentage of calcium oxide in cement.
8. Organic Analysis: Identify the following organic compounds (preparation of at least one derivative).
    a) Carboxylic acids
    b) Compounds containing alcoholic and phenolic OH groups
    c) Aldehydes & Ketones
    d) Carbohydrates
    e) Amides, amines, anilides and nitro compounds
    f) Hydrocarbons
    g) Compounds containing sulphur or halogen

LIST OF BOOKS RECOMMENDED

1. Experimental Engineering Chemistry — Shashi Chawla
2. Lab. Manual on Engineering Chemistry — Basin, S K & Sudha Rani
3. A Manual of Practical Engineering Chemistry — Dr. Rajinder Kumar

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FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester Maximum Marks : 75
Course No: COM-210 **P** Prac/Lab
Course Title: Computer Programming Using C Lab. **2** **75**
Branch : Common to all branches
Duration of Exam : 3 Hours

The practicals will be based on the topics covered under Theory Syllabus. The Students are required to perform at least 15 Programs.

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COURSE SCHEME
FOR B.E. 3rd SEMESTER E&C ENGG.
FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

Course		Curriculum Hrs/Week			Marks			
Course No.	**Course Name**	**L**	**T**	**P**	**Theory**	**Sessional**	**Practical**	**Total**
ECE-301	Electronics Devices & Circuits-I	3	2	0	100	50	--	150
ECE-302	E. M. Theory	3	2	0	100	50	--	150
MTH-311	Engineering Mathematics-III	3	2	0	100	50	--	150
M-314	Thermal Engineering	3	2	0	100	50	--	150
EE-301	Principle of Electrical Engg.	3	2	0	100	50	--	150
EE-302	Network Analysis	3	2	0	100	50	--	150
EE-308	Electrical/Electronics Workshop	0	0	3	---	--	50	50
EE-309	Basic Electrical Engg. Lab	0	0	3	---	--	50	50
	Total	**18**	**12**	**06**	**600**	**300**	**100**	**1000**

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			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**

L	T	P	THEORY	SESSIONAL
3	2	0	100	50

CLASS: BE 3RD SEMESTER
BRANCH: E&C, EE, AEI
COURSE NO: ECE-301
COURSE TITLE: ELECTRONIC DEVICES & CIRCUITS-1
DURATION OF EXAM: 3 HOURS.

SECTION - I

SEMICONDUCTOR PHYSICS:

Structure of atoms, Energy band diagram, Metal, insulator and semiconductor, Intrinsic & extrinsic semiconductors, Direct & indirect semiconductors, Bond in semiconductor & effect of temperature on semiconductors, Hole & Electron description, Charge densities in semiconductor, Generation & recombination of charge carrier, Law of mobility & conductivity, Current densities in semiconductors, Mass action law, Current density, Drift & diffusion currents, Hall effect, Hall coefficient & its applications. Continuity equation, Fermi level in intrinsic and extrinsic semi conductors, Numerical problems.

SEMICONDUCTOR DIODES:

Introduction to P-N junction diodes, Equivalent circuit & symbol, P-N junction as rectifier, Ohmic contact, Short circuit & open circuit P-N junction diodes, Current components in P-N junction diode & law of junction, Volt ampere characteristics, Temperature dependence of V-1 characteristics, Diode capacitances, Static & dynamic resistances, Concept of load line, Zener diode and its break down phenomena, Tunnel diode, Schottky diode, LED, photo diode, varactor diodes.

SECTION - II

RECTIFIERS & FILTERS:

Half wave, Full wave & bridge rectifiers with necessary derivations, Voltage regulation ,Capacitor filter, Inductor filter, L-C filter with necessary derivation for ripple factor, Bleeder resistor, Numerical problems.

DIODE CLIPPER & CLAMPER CIRCUITS:

Diode series & shunt clippers, Clipping at two dependent levels, Diode comparator circuit, Clamping circuits, Clamping at certain voltage level, steady state output waveform for a Sq. wave input, Clamping circuit theorem, Diode sampling gates.

LINEAR WAVE SHAPING CIRCUITS:

RC (both high pass & low pass), RLC circuits & their response to various waveform such as sinusoidal step Voltage, Pulse, Square wave, Ramp etc. RC circuit as differentiation & integration.

BOOKS RECOMMENDED:

01.	Integrated Electronics	By Millman Halkias
02.	Electronics Devices	By Bolystead
03.	Electronics Devices	By Malvino Leach
04.	Pulse, Digital & Switching Wavefrom	By Millman & Taub
05.	Pulse Circuits	By D.A. Bell
06	Solid state electronics devices	By B.G.streetman

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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L	T	P	MARKS THEORY	SESSIONAL
3	2	0	100	50

CLASS: BE 3RD SEMESTER

BRANCH: E&C, EE
COURSE NO: ECE-302
COURSE TITLE: E.M.THEORY
DURATION OF EXAM: 3 HOURS.

SECTION - A

ELECTROSTATICS: Revision of vector analysis with Cartesian, Spherical & polar coordinates, Coulomb's law, Electric field, Electric flux density, Gauss's law, Divergence theorem. Electrostatics potential, Potential gradient, Gradient operator, Conductors, Method of images, Energy density in electrostatics field, Electric field in dielectric media, Capacitance, Solution of Electrostatic problems using Poisson's & Laplace equation.

MAGNETOSTATICS: Biot-Savart's & Ampere's circuital law, & their applications, Stroke's theorem, Magnetic flux density, Magnetic potential, Force on a moving charge, Torque on a closed circuit, Energy density in the magnetic field.

SECTION - B

TIME VARYING FIELD & MAXWELL EQUATION: Faraday's laws, Displacement current, Maxwell equation in point & integral form, Application of Maxwell equation to circuits, Resonant cavity, Radiation antennas, Rotating magnetic field theory.

UNIFORM PLANE WAVE: Wave motion in free space & in perfect dielectric, Plane wave in lossy dielectric, Pyonting vector, Propagation in good conduction, Skin effect, Reflection of uniform plane wave, Standing wave ratio, Polarization.

TRANSMISSION LINE: Basic principles of T.L, Equivalent ckt of T.L, Basic transmission line equation, Input impedence, infinite T.L, Characteristics impendence (Zo), Propagation constant, atienuation constant, Phase constant, open and short circuits T.L, Reflection and its coefficient, S.W.R.

BOOK RECOMMENDED:

01.	Engineering Electromagnetic	By Jseph A. Edminister
02.	Introduction to Electromagnetic	By Griffith
03.	Foundation Electromagnetic	By Reitz et al
04.	Engineering Electromagnetic	By Jr. Hyat

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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L	T	MARKS	
		Theory	*Sessionals*
3	*2*	**100**	**50**

CLASS: B.E 3RD SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE TITLE: ENGINEERING MATHEMATICS – III
COURSE No. MTH-311

DURATION OF EXAM: 3 HOURS

SECTION - I

LAPLACE TRANSFORMS:
Laplace Transforms, Inverse Laplace Transforms, Properties of Laplace Transforms, LT of unit step function, Impulse function, Periodic function, Initial value theorem, Final value theorem, Convolution theorem, Application of LT to solve linear differential equations and convolution type integral equations.

INTEGRAL TRANSFORMS AND FOURIER INTEGRALS:
Integral transforms and Fourier Integrals Fourier integral theorem, Fourier sine and cosine Integrals, and their inverses.

SECTION - II

SPECIAL FUNCTIONS**:**
Special Functions Legendre polynomials, Rodgrigue's formula, Recurrence formulae, generating function, Orthogonality of Legendre polynomials, Bessel function of Ist kind. Recurrence formulae, generating function, Orthoganality of Bessel function.

BOOLEAN ALGEBRAS:
Boolean Algebras, Lattices, Finite Boolean algebra, C.N.F and D.N.F, Application of Boolean algebra to switching theory.

Books Recommended:-

01. Higher Engineering Mathematics — B.S. Grewal
02. Boolean Lattices — V.K. Khanna
03. Engineering Mathematics-III — Bhopinder Singh

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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HOURS / WEEK			MARKS	
L	T	P	Theory	Sessional
3	2	0	100	50

CLASS: B.E. 3RD SEMESTER
BRANCH: ELECTR. & COMM. ENGG, ELECTRICAL ENGG.,
COURSE TITLE: THERMAL ENGINEERING
COURSE NO: M-314
DURATION OF EXAMINATION: 3 HOURS.

UNIT-1

Thermodynamics: Dimensions and units, Basic concepts, Zeroth Law, Temperature scale. First Law of Thermodynamics for closed system and open system, applications, general energy equation for steady flow.
Second Law of Thermodynamics, Reversible and Irreversible processes, Carnot cycle, Clausius theorem, Entropy, entropy change, Clausius inequality, Principle of increase of entropy.
Ideal gases and process calculations.

UNIT-2

Principles of Refrigeration, Vapour compression cycle, Components of Vapour compression systems, COP and related calculations

UNIT-3

BOILERS: Fire tube and Water tube boilers- description and special features, fields of application.

UNIT-4

Properties of steam and process calculations.
Vapour Power Cycles: Carnot's cycle, Rankine cycle, and elementary cycle calculations.
Nozzles: Types, Nozzle efficiency, Critical pressure ratio, Throat and exit areas.

RECOMMENDED BOOKS:-

1.	Heat Engineering	Vasandani & Kumar	--Metropolitan Book Co.
2.	Engineering Thermodynamics	Gupta & Prakash	--Nek Cahnd
3.	Engineering Thermodynamics	PK Nag	--Tata McGraw Hill

NOTE: There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from from each Unit. Use of Steam tables, Mollier diagram, Refrigeration tables & charts and a scientific calculator will be allowed in the examination hall.

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FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

HOURS / WEEK			MARKS	
L	**T**	**P**	**Theory**	**Sessional**
3	**2**	**-**	**100**	**50**

CLASS: B.E. 3RD SEMESTER
BRANCH: ELECTRICAL ENGG.,
COURSE TITLE: PRINCIPLES OF ELECTRICAL ENGINEERING
COURSE NO.: EE-301
DURATION OF EXAMINATION: 3 HOURS.

SECTION - I

Electric Circuit Laws and D.C. Circuits, loop and Nodal methods Superposition Principle, Series Parallel transformation. Star-Delta Transformation. Thevinin's Theorem. Norton's Theorem. Maximum Power Transfer Theorem. A.C circuits: - Basic definition vector and complex number representation. Solution of sinusoidally excited R.L.C Circuits. Concept of Active and Reactive Power.

SECTION - II

Steady state A.C three phase's circuits. Measurement of power in three phase balance circuits. Single phase transformers; no load and on load vector diagrams; regulation and efficiency.

BOOKS RECOMMENDED:

1. **Principle of Electrical Engineering by Del Toro**
2. **Electrical Technology by H. Cotton**
3. **Basic Electrical Engineering by Higgin Bootham et al.**
4. **Electrical Technology by E. Hughes**
5. **Elements of Electrical Engineering by M.M.Louis**
6. **Electric Circuit Theory by J.A. Edminister**

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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HOURS / WEEK			MARKS	
L	T	P	Theory	Sessional
3	2	-	100	50

CLASS: B.E. 3RD SEMESTER
BRANCH: ELECTRONICS & COMM ENGG.,
COURSE TITLE: NETWORK ANALYSIS
COURSE NO.: EE - 302
DURATION OF EXAMINATION: 3 HOURS.

SECTION - I

Network elements and circuits, Topological description of network. Formulation of network equation. Laplace transforms technique. Network functions for one-port and two-port network.

SECTION II

Pole zero configurations. Parameters of two-port networks. Response of networks for step and sinusoidal inputs, Filters. Foster's reactance theorem and Cauer forms: response analysis.

BOOKS RECOMMENDED:

1. Networking Analysis and Synthesis by Kuo
2. Network Analysis by Van Valkenburg
3. Network Fields and lines by Ryder

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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HOURS / WEEK			MARKS
L	T	P	
	-	3	50

CLASS: BE 3RD SEMESTER
BRANCH: E&C
COURSE NO: EE-308
COURSE TITLE: ELECTRICAL & ELECTRONICS WORKSHOP

Unit-I

Study of Wires & Cables: Study of various type of wiring, Cost estimation for wiring of a single storied building having light & power circuits, Method of earthing & measurement of earth resistance, Electrical shock precautions & treatment, jointing of wires & cables, Soldering of joints, Wiring practices in PVC, Conduit system of wiring, Control of fluorescent lamp circuit power & ordinary circuits suitable for domestic wiring.

Unit-II

Familiarization with Various Electronic Components: Resistor, Capacitors,

Transistors, Diodes IC's, Transformer, Assembly of signal phase, Full wave rectifier circuit with capacitor filter, Assembling the common emitter amplifier circuit, Assembling the following circuit comprising of IC's on a bread board, Like timer circuit using IC 555 & Fabrication on General purpose PCB (to get familiar with soldering techniques).

BOOK RECOMMENDED:

01. Electrical Wiring & Estimation By S.I. Uppal

NOTE: The Electronic circuit diagram may be provided to the students. The operation of the circuit need to be explained. The purpose of the exercise is to familiarize the student to assemble a given Electronic circuits & to solder the joints

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HOURS / WEEK			
L	T	P	MARKS
-	-	3	50

CLASS: BE 3RD SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE NO: EE-309
COURSE TITLE: BASIC ELECTRICAL ENGINEERING LAB.

1) **Verification of Kirchoff's Laws.**
2) **Verification of Superposition Theorem.**
3) **Verification of Thevinin's Theorem.**
4) **Verification of Reciprocity Theorem.**
5) **Verification of Maximum Power Transfer Theorem.**
6) **Measurement of current in various branches of RLC series-parallel circuit.**
7) **Single phase power measuring by using a Wattmeter.**
8) **Study of three-phase A.C Circuits with Star and Delta connected Load.**
9) **Study of single phase transformers. Determination of voltage Ratio, Turns Ratio and Polarity Test. Open circuit and short circuit test of given single phase transformer. Determination of regulation and efficiency.**

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COURSE SCHEME
FOR B.E 4TH SEMESTER ELECTRONICS & COMMUNICATION ENGG.
FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011, & 2012

Course		Curriculum Hrs/Week			Marks			
Course No.	**Course Name**	**L**	**T**	**P**	**Theory**	**Sessional**	**Practical**	**Total**
ECE-401	Electronics Devices & Circuits-II	3	2	0	100	40	--	140
MTH-411	Engg. Mathematics-IV	3	2	0	100	40	--	140
COM-411	Object Oriented Programming using C++	3	2	0	100	40	--	140
EE-411	Electrical M/C,s	3	2	0	100	40	--	140
M-413	Electrical Engg. Material	3	2	0	100	40	--	140
EE-402	Control System	3	2	0	100	40	--	140
COM-412	Object Oriented Programming Lab	0	0	2/2	---	--	40	40
EE-408	Control System Lab	0	0	2/2	---	--	40	40
EE-412	Electrical Machine Lab	0	0	2/2	---	--	40	40
ECE410	Electronics Devices & Circuits-II Lab	0	0	2/2	---	--	40	40
	Total	**18**	**12**	**06**	**600**	**240**	**160**	**1000**

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS THEORY	SESSIONAL
3	2	0	100	40

CLASS: BE 4TH SEMESTER
BRANCH: ECE, EE, AEI
COURSE NO: ECE-401
COURSE TITLE: ELECTRONIC DEVICES AND CIRCUITS-II
DURATION OF EXAM: 3 HOURS

SECTION - I

BIPOLAR JUNCTION TRANSISTOR: Introduction, Transistor basics (unbiased & biased transistor), Generalized transistor equation, Transistor current components, Early effect, Ebber-Moll Model,Transistor configurations & characteristics, Reach through & avalanche phenomena, numerical problems.

TRANSISTOR BIASING: Introduction, Need for Biasing, Type of biasing circuits with necessary derivations, Load line concept t (AC & DC), Bias stabilization (S, S' S"), Thermal runway, Bias Compensation Techniques.

FIELD EFFECT TRANSISTOR: Introduction, Construction of JFET, Operation, Symbol, JFET- Characteristics, JFET Parameters and their relationship, Biasing methods of FET, with necessary derivations. Comparison between JFET and BJT & MOSFET, FET small signal model, Frequency response of FET amplifier, Low frequency model of Common Source & Common drain Amplifiers & their analysis. MOSFET (Depletion & enhancement), Characteristics, Symbol and Operation.

SECTION - II

HYBRID PARAMETERS: Introduction, Two port network, hybrid model for CE, CB, & CC configuration with necessary derivations, Analysis of transistor CE amplifier with & without emitter resistance, Determination of h-parameters from characteristics, Miller theorem, approximation model of h- Parameter, Amplifiers and their analysis using h-parameters.

SINGLE & MULTISTAGE AMPLIFIERS: Need for cascading, Two stage cascade amplifiers, N-stage cascade amplifiers, Gain of multistage amplifiers in decibels, Techniques for improving input resistance (Darlington transistor, Bootstrap emitter follower, Cascode amplifiers), Method of coupling multistage amplifiers (RC coupling, DC coupling, transformer coupling), Frequency response of an amplifiers, Effect of emitter & bypass capacitors on the bandwidth & frequency response of a cascaded amplifiers, Square wave testing of an amplifier, Bandwidth of multistage amplifiers.

BOOKS RECOMMENDED:

01. Integrated Electronics By Millman Halkais
02. Electronics Devices By Bolystead
03. Electronics Devices By Malvino Leach

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS THEORY	SESSIONAL
3	2	0	100	40

CLASS: BE 4TH SEMESTER
BRANCH: ECE, EE
COURSE NO: MTH--411
COURSE TITLE: ENGINEERING MATHEMATICS - IV
DURATION OF EXAM: 3 HOURS

SECTION - I

THEORY OF COMPLEX VARIABLES: Functions of a complex variable, Limits, Continuity, Derivative, Analytic function, Cauchy-Riemann equations, Conformal mappings, Standard Transformation, Bilinear transformation, Line integral, Cauchy's theorem, Cauchy's integral formula, Cauchy's inequality, Liouville's theorem, Taylor and Laurent series expansions, Poles and singularities, Contour integration, Residue theorem, Evaluation of Real Integrals using residue theorem, and Contour integration.

SECTION - II

NUMERICAL METHODS: Definition of operators, Finite and divided difference, Newton's and Lagrange's Interpolation formulas, Numerical differentiation and Numerical integration, Trapezoidal and Simpson's one-third Rule.

Numerical Solutions of Algebraic and Transcendental Equations by Regula Falsi, Newton-Raphson and direct iterative methods, Solution of difference equations, solution of differential equations by Picard's method, Euler's method, Modified Euler's method, Taylor's method, Runge-Kutta method.

BOOKS RECOMMENDED:

01. Advance Engineering Mathematics by Jain & Iyengar
02. Numerical Methods in Engg. & Science by B.S. Grewal
03. Difference Calculus (New Edition) by S.C. Sexena
04. Engineering Mathematics by S.S. Sastri

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS THEORY	SESSIONAL
3	2	0	100	40

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE TITLE: OBJECT ORIENTED PROGRAMMING C++
COURSE NO. COM –411

DURATION OF EXAM: 3 HOURS

SECTION - 1

1. **Review of Pointers:** Passing parameters, Array of Pointers, Character Pointers. Programming Techniques: Unstructured, Procedural, Modular. Introduction to objects, object & cohesion. (30)
2. Overview of C++, Object Oriented programming, Encapsulation, Polymorphism, Inheritance, Console I/O, C++ Comments.
   Classes, Metaclass, Abstract class, Public and private variables, Constructor and Destructor Functions, Constructors taking parameters, Object pointers, In-Line Functions, Automatic Inlining, Friend Functions, This Pointer, New & Delete, Array of Objects.
   (50)

SECTION-II

1. Function Overloading, Overloading Constructor Functions, Operator overloading, Overloading Binary and Unary Operators, Overloading Relational & logical Operators. (30)
2. Inheritance, Using Protected Members, multiple inheritance, Virtual Base Classes, Introduction to Virtual Functions. (30)
3. C++, I/O Basics, Ifstream, Ofstream, Fstream, Open(), Close(), EOF(), Binary I/O, Get(), Put(), Read(), Write(), Random Access, Seekg(), Seekp(), Tellg(), Tellp(). (20)

BOOKS RECOMMENDED:

1. Turbo C++ by Robert Lafore.

REFERENCE BOOKS:

1. Programming in C++ by Balaguruswamy.
2. C++ the Complete Referance by Herbert Schildt.
3. Mastering C++ by K.R. Venugopal & T. Ravishankar & Raj Kumar.

NOTE: There shall be total Eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**
3	**2**	**0**	**100**	**40**

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE TITLE: ELECTRICAL MACHINES
COURSE NO. EE –411
DURATION OF EXAM: 3 HOURS

SECTION - I

D.C. GENERATORS: Operating principle, constructional features, E.M.F equation, Armature reaction and commutation, operating characteristics losses and efficiency.

D.C. MOTORS: Operating principle, back EMF, Torque equation, Starters, speed control, operating characteristics, and their applications.
TRANSFORMERS: Principle of operation, Vector diagram, Regulation efficiency parallel operation tap changing auto transformer.

SECTION - II

SYNCHRONOUS GENERATORS: Principle of operation, E.M.F equation, Leakage reactance, Vector diagram, Voltage regulation by EMF and MMF method.

SYNCHRONOUS MOTORS: Principle of operation, Vector diagram, V-curves and inverted V-curves, method of starting and their applications.

INDUCTION MOTORS: Principle of operation, TYPES OF MOTORS, Equivalent circuits, Torque and power calculations, No load and blocked rotor test, speed control, Method of starting and their applications.

SPECIAL A.C. MACHINES: Repulsion motors, A.C series motors, Universal motor, single phase induction motor and their applications.

BOOKS RECOMMENDED:

1) A.Langsdrof — Theory of A.C Machines
2) Clayson and Hancock — Principles of D.C. Machines
3) M.G. Say — Performance and design of A.C Machines
4) H.A. Cotton — Advanced Electrical Technology

NOTE: There shall be total eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	-	100	40

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE TITLE: ELECTRICAL ENGINEERING MATERIALS
COURSE NO. M –413
DURATION OF EXAM: 3 HOURS

UNIT-1

Classification of Engineering materials (with special reference to Electrical and Electronics engineering materials), Engineering requirements of materials.
Crystal structure-- space lattice, Bravais lattice, Miller indices of cubic and hexagonal systems, closed-packed plane and directions, Packing in solids, voids, diamond cubic structure, packing in conic solids, crystal imperfections, point defect, line defect, surface defects (in brief).

UNIT-2

Solid solutions, Hume-Rothery rule, phase diagrams, binary phase diagrams, Fe-C phase diagrams, Alloys, alloys transformations, properties of various alloys, applications of Iron – silicon, Iron-nickel and Iron-cobalt alloys, heat treatment processes- annealing, normalizing, hardening, case-hardening etc.

UNIT-3

Conductors- Free electron theory, equation of conductivity, conducting materials, material requirement for contact resistors, precision resistors, thermometers, heating elements, transmission line etc.

Semi-conductors—Band theory, equation for conductivity, zone theory (for explaining energy gaps), types of semi-conductors, semi-conductor materials, method of glowing, technique for producing single crystal, zone referring technique.

UNIT-4

Magnetism, types of magnetisms, dipole moment, domains, ferrimagnetism, anti-ferromagnetism, ferrite magnets, soft and hard magnetic materials and heat treatment cycles.
Dielectric materials, polarization, types, dielectric strength, dielectric losses etc., Piezo-electric effect, ferro-electric materials, optical properties of materials.

RECOMMEENDED BOOKS:-

1.	Electrical Engineering Materials	AJ Dekker.
2.	Material Scince and Engineering	V Rahghvan.
3.	Electrical Engineering Materials	PC Kapoor.
4.	Electrical Engineering Materials	NITTTR, Madras

NOTE: There shall be total Eight questions, Two from each Unit. Five questions have to be attempted selecting at least One from each Unit. Use of calculator is allowed.

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			MARKS	
L	**T**	**P**	**THEORY**	**SESSIONAL**
3	**2**	**-**	**100**	**40**

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE TITLE: CONTROL SYSTEM
COURSE NO. EE –402
DURATION OF EXAM: 3 HOURS

SECTION- I

Introduction to linear control systems, open loop and closed loop control systems. Modeling of physical systems, transfer functions.
Block diagram representation of control systems and signal flow graphs. Time domain analysis for first and second order control systems. Performance specification for Kp, Ka, Kv, PID controllers.

SECTION-II

Stability study by means of Routh-Horowitz criterion, Nyquist criterion blue plot and Bode diagram approach, Frequency domain analysis Nichol's chart.
Servo components DC and AC servo meters, AC tachometers, Synchro-transmitters-receivers and synchro control transformer magnetic amplifiers.

BOOKS RECOMMENDED:

1)	OGATA,	Modern control Engg.	P.HALL PUB.
2)	KUO,	Automatic control systems	P.HALL PUB.
3)	NAGRATH & M. GOPAL,	Control system Engg.	

NOTE: **There shall be total eight questions, four from each section. Five questions have to be attempted selecting at least two questions from each section. Use of calculator is allowed.**

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L	T	P	MARKS
-	-	2	40

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMM. ENGG.
COURSE TITLE: OBJECT ORIENTED PROGRAMMING LAB.
COURSE NO. COM-412

The Practicals will be based on Computer Languages Theory Syllabus. The students are required to submit at least 10 Programs covering at least 2 programs from each unit.

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS
-	-	2/2	40

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMM. ENGG.
COURSE TITLE: CONTROL SYSTEM LAB.
COURSE NO. EE - 408

1. Transient response of Second order system comprising R.L&C finding therefore maximum overshoot, rise time, settling time, damping factor/ratio natural undamped frequency.

2. Frequency response of a first order and second order system comprising RC, RLC and draw the Bode plots and Nyquist Plots.

3. Transient response of a first, second and higher order Pneumatic servo system.

4. Transient response of a first, second and higher order Hydraulic system.

5. To find the torque speed, torque voltage characteristics of a servo motor and determine its transfer function.

6. Study of synchros, transmitter, receiver and control transformer. Voltage angular wave forms and zeroing.

7. To simulate a second and higher order system on an analog simulator and find its transient response to step, ramp and other input functions.

8. Study of a demonstration servo system (both open & closed) loop comprising error detector, amplifier, a motor cum load having a tachofeed back.

9. Study of phase lag and phase lead networks.

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS
-	-	2/2	40

CLASS: B.E 4TH SEMESTER
BRANCH: ELECTRONICS & COMM. ENGG.
COURSE TITLE: ELECTRICAL MACHINE LAB.
COURSE NO. EE - 412

1. **To study the magnetic characteristics of a D.C. Machines at various operating speeds and finds the operating point of D.C. shunt machine from the same.**

2. **To determine the load characteristics of a D.C. Shunt generator and find its overall efficiency.**

3. **To determine the Torque speed characteristics of a D.C. Shunt motor and compound motor (Short & long shunt). Also study of these using armature control and field control.**

4. **To study the torque/speed characteristics of a D.C. series motor using various field tappings.**

5. **To find the efficiency and study various losses of D.C. Machines using Hopkinson test.**

6. **To study a single phase transformer, its Voltage ratio and turns ratio relationship. Perform open & short circuit test to determine losses, efficiency and voltage regulation and also its various parameters.**

7. **To perform polarity test on single phase transformers for parallel operation and study the load sharing of two parallel operated transformers.**

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FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

L	T	P	MARKS
-	-	2/2	40

CLASS: BE 4TH SEMESTER
BRANCH: ECE, EE, AEI
COURSE NO: ECE-410
COURSE TITLE: ELECTRONICS DEVICES & CIRCUITS-II LAB
DURATION OF EXAM: 3 HOURS

List of Practicals

1. **To study the operation characteristics of the P.N. junction, Ge /Si (Forward & Reverse Characteristics).**

2. **To study the operation characteristics of Zener diode (Forward & Reverse Characteristics).**

3. **Half wave Rectifier.**

4. **Full wave / Bridge Rectifier.**

5. **To study the operation characteristics (Input / Output) of PNP / NPN Transistor (Common Emitter / Common Base).**

6. **To study the frequency response of signal amplifier (CE/CB).**

7. **To study the characteristics of FET.**

8. **Determination of h parameter from transistor characteristics.**

9. **Design of self Bias circuits using BJT.**

10. **Design of self Bias circuits using FET.**

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COURSE SCHEME
FOR B.E 5TH SEMESTER ELECTRONICS & COMMUNICATION ENGG.
FOR EXAMINATION TO BE HELD IN December-2010 onwards

Course		Curriculum Hrs/Week			Marks			
Course No.	Course Name	L	T	P	Theory	Sessional	Practical	Total
ECE-501	Electronics Devices & Circuits-III	3	2	0	100	40	--	140
ECE-502	Communication Engg.-I	3	2	0	100	40	--	140
ECE-503	Digital Electronics	3	2	0	100	40	--	140
ECE-504	Linear Integrated Circuits	3	2	0	100	40	--	140
ECE-505	Random Process & Noise	3	2	0	100	40	--	140
ECE-506	Electronic Meas. & Instrumentation	3	2	0	100	40	--	140
ECE-511	E.D.C.- III Lab	0	0	2	---	--	40	40
ECE-512	Digital Electronic Lab	0	0	2/2	---	--	40	40
ECE-513	L.I.C. Lab	0	0	2	---	--	40	40
ECE-514	Electronic Meas. & Instrumentation Lab	0	0	2/2	---	--	40	40
Total		18	12	06	600	240	160	1000

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For Examination to be held in December-2010 onwards

				Marks	
Class: BE 5th Semester					
Branch: ECE/AEI	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-501	**3**	**2**	**0**	**100**	**40**

Course Title: Electronic Devices and Circuits-III
Duration of Exam: 3 Hours

Section-A

Transistor at High Frequencies: Introduction, Hybrid (Pie) model, Relation between hybrid pie & h-parameters, Validity of hybrid-pie-model, Variation of hybrid-pie-parameters, Current gain with & without resistive load, Gain bandwidth product, Single stage CE transistor amplifiers response, Emitter Follower at high frequency, Common Drain amplifier at high frequency.

Feedback Amplifier: Classification of amplifiers, Limitation of basic amplifier, Distortion in amplifier, need for feedback, Feedback concept, Advantages of negative feedback, Ways of introducing negative feedback in amplifiers, Gain with & without feedback, Effect of negative feedback on input – output resistance & bandwidth amplifiers, Their respective analysis for feedback amplifiers, Procedure for analysis of feedback amplifiers, Analysis of different Topologies.

Oscillators: Introduction, Necessity of oscillator, Gain with feedback, Barkhausein criteria, Requirements of oscillator, Types of oscillators, RC oscillators & phase shift oscillators, Wien bridge oscillators, LC oscillators, with necessary derivations to determine gain required for oscillation & frequency of oscillation, Amplitude & frequency stability of oscillators, Crystal oscillators, Multivibrators: Monostable, Astable, Bistable, (with necessary derivations), using transistors.

Section-B

Power Amplifiers: Introduction, General features of power transistor, Difference between power transistor & a voltage amplifier, Need for power amplifier, Classification of power amplifiers with necessary load lines concept & derivations (Efficiency, power dissipation), Class A, B & AB amplifier, their types & analysis, Cross over distortion & its remedy, Determination of harmonic distortion, Heat sinking for power transistor, Monolithic power amplifier, Tuned amplifier – Introduction, Classification of tuned amplifiers (single tuned & double tuned) with respective analysis.

Voltage Regulator: Introduction & necessarily of voltage regulators, Difference between unregulated & regulated power supply, Factor affecting unregulated power supply, Stabilization, Basic representation of voltage regulators Type of voltage regulators-series & shunt voltage regulators, Series voltage regulators using emitter follower & its expressions for Sv & Ro, Preregulators, Short circuit protection-simple & fold back current limiting, Zener regulators, & its analysis, Monolithic regulators.

NOTE:- There shall be total 8 questions, four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section.

Books Recommended:

01. Integrated Electronics By Millman Halkias
02. Electronics Devices By Boylstead
03. Electronics Devices By Malvino Leach

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FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

				Marks	
Class :BE 5th Semester					
Branch: ECE	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-502	**3**	**2**	**0**	**100**	**40**

Course Title: Communication Engg- I
Duration of Exam: 3 Hours

Section-A

AM Modulation: Introduction to Elect. Comm. System, Concept & need for modulation, Definition of signal to noise ratio & noise figure, (periodic & non-periodic signals), Spectral analysis of signal-Fourier series & Fourier Transforms, Representation of AM, Frequency spectrum of AM wave, Power relation in AM wave, Modulation & Demodulation of AM, SSB techniques, Balanced modulator, Type of SSB including VSB, ISB, Modulation & Demodulation of SSB signals.

Angle Modulation: Theory of FM, Representation & frequency spectrum of FM, Pre-Emphasis, De-Emphasis, Wide band & Narrow band FM, Generation & detection of FM signal, Comparison with PM & AM.
Receiver: TRF receivers, Superhetrodyne receiver, Receiver characteristics- sensitivity, selectivity, Image frequency & its Rejection, Double spotting.

Section-B

Pulse Modulation: Techniques, sampling theorem, Natural & flat top sampling, principle, generation & detection of PAM, PWM, PCM, DM, ADM, Time division multiplexing, Frequency division multiplexing.

T.V. Engg: Element of a T.V systems, Pick up & Display tube of monochrome T.V Image Continuity-Interlace scanning, VSB modulation & its need in T.V. system. Essential of colour T.V. Three colour theory, Luminance Hue & saturation, Pick up (i.e Camera) & Display tube of colour T.V system.

Books Recommended:

01. Electronics Comm. System By G. Kennedy
02. Principles of Comm. System By Taub & Schilling
03. Monochrome & Coloured T.V. By R.R. Gulati

Reference Book:

Communication System By Simon Haykins

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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For Examination to be held in December-2010 onwards

				Marks	
Class :BE 5th Semester					
Branch: ECE / AEI	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-503	**3**	**2**	**0**	**100**	**40**

Course Title: Digital Electronic
Duration of Exam: 3 Hours

Section-A

Number System, Radix conversion, Arithmetic with base other than ten, Data representation – fixed & floating points, Binary codes – weighted/Non weighted codes, Error detecting & correcting code (Hamming code), Alphanumeric code, Subtraction of signed/unsigned number.

Logic Gates, Boolean algebra, Simplification of Boolean expressions, Minimization techniques, Karnaugh map (up to five variables), Simplification of Logic families – RTL, DTL, TTL, ECE & MOS families and their characteristics.

Section-B

Combinational logic circuits: Half and Full adders, Subtractors, BCD Adder, Comparators, Multiplexer, Realization of function using MUX, Demultiplexer, Decder, Encoder, Code converters, General problems, PLA, Design of combinational circuit using PLA & PAL.

Introduction to sequential logic circuits, Synchronous and Asynchronous operation, Flip-Flops – R-S, J-K, D, T & Master-Slave flip-flop, Conversion of flip-flops, Shift registers, Analysis of asynchronous & synchronous sequential counter, Design of sequential logic circuits, Problem formulations, State minimization techniques.

NOTE:- There shall be total 8 questions, four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:

01. Digital Electronics By R.P Jain
02. Digital Electronics & Microcomputer By R.K. Gaur
03. Computer System Architecture By M.M. Mano
04. Digital Electronics By Jamini & K.M. Backward

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For Examination to be held in December-2010 onwards

				Marks	
Class :BE 5th Semester					
Branch: ECE / AEI	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-504	**3**	**2**	**0**	**100**	**40**
Course Title: Linear Integrated Circuits					
Duration of Exam: 3 Hours					

Section-A

Basic Operational Amplifier: Basic differential amplifiers, Its working & types, Transfer characteristics, small signal analysis of differential amplifier, Using h-parameter, Differential gain & common – mode gain, Constant current basic circuit, Constant current source/current mirror circuit, Level shifting techniques active load, Output stage.

Ideal & Practical Op-Amp & their Characteristics: Ideal voltage transfer curve, Open – loop Op-amp configurations, Op-amp as inverting, Non-inverting amplifier, Differential amplifiers using one and two Op-amp, Op-amp Characteristics, Measurement of Op-amp parameters, Offset voltage compensating n/w, Frequency response of internally compensating Op-amp, High frequency Op-amp equivalent circuit, Open loop & close loop frequency response, Circuit

stability, Slew rate its cause.

Section-B

Op-Amp & its Applications, DC & AC Amplifier, AC amplifier with single power supply, Peaking amplifier, Summing, Scaling & Averaging amplifiers, Differential input / Differential output amplifier, High input impedance circuit, Active filters, Integrator, Differentiator, Instrumentation amplifier,

Waveform generators Sq. wave, Triangular, save tooth, Sine wave generator, Op-amp, as clipper, Clamper & comparator circuits, Sample / hold circuit, Comparator characteristics, Voltage limiter, Zero crossing detector, Digital & analog converter, Binary weighted resistor, R-2R resistor type D/A converters, A/D converters & its types-successive approximation type,

Phase-Locked Loops & Timers: Block diagram, Operation & applications

NOTE:- There shall be total 8 questions, four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:

01.	Op-Amp & Linear Integrated Circuit	By Ramakant A. Gayakwad
02.	Linear Integrated Circuit	By Wixer
03.	Linear Integrated Circuit	By Tobey Graeme & Huelsomen
04.	Op-Amp Design Application	By Dailey
05.	Design with Op-Amp	By Franco

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester

Branch: ECE	**L**	**T**	**P**	**Marks**	
				Theory	**Sessional**
Course No: ECE-505	**3**	**2**	**0**	**100**	**40**

Course Title: Random Processes & Noise

Duration of Exam: 3 Hours

Section-A

Spectral Analysis: Fourier series, Representation of Signal & System, Sampling function, Response of a linear system, Normalised power, Power spectral, Density, Fourier transformer, convolution, Perseval's theorem, Correlation (Auto & cross)

Random Variable & Processes: Probability, Random variable, Probability density function, Variance, Tchebvcheff's inequality, Gaussian probability density, Rayleigh probability density, Correlation between random variable, Central-limit theorem, Random process.

Section-B

Noise: Source of Noise, Type of Noise, Frequency domain representation of Noise, Superposition of Noise, Mixing involving Linear filtering, noise effect of a filter on spectral density of Noise, Noise bandwidth, quadrature components of Noise, Resistor Noise, Noise temperature, Noise filter, Probability of error, Optimum filter, White Noise, The matched filter, Probability of error of the matched filter.

Information Theory: Discrete Messages, The concept of amount of information, Entropy, Shannon's theorem, Channel-Capacity, Bandwidth & S/N tradeoff, information rate, Capacity of a Gaussian channel.

NOTE:- There shall be total 8 questions, four from each section. Five questions have to be

attempted by the students selecting atleast two questions from each section**.**

Book Recommended:-

01.	Principle of Communication System	Taub & Shilling
02.	Communication System	Lathi
03.	Communication System	Haykin

Reference Book:-

01.	Random Process	Peebles
02.	Communication System	Singh & Sapre

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester **Marks**

Branch: ECE	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-506	**3**	**2**	**0**	**100**	**40**

Course Title: Electronic Meas. & Inst.

Duration of Exam: 3 Hours

Section-A

Measurement & Error: Introduction to Measurement & Instrumentation, Types of instrumentation & measurement, Sensitivity, resolution, Accuracy, Precision, significant figures, Absolute & relative errors, Types of errors, Probability of errors, Limiting errors, Linearity.

Analog Instruments: Analog multimeter, Analog voltmeter, Analog ammeter, Analog ohmmeters & their design analysis, Ac voltmeter using rectifiers, True RMS responding voltmeter, Wave analyzers, (simple & heterodyne), Harmonic distortion analyzer (Tuned circuits heterodyne), Loading effect of voltmeter, Electronic multimeter,

Digital Instruments: Digital voltmeter, Digital multimeter, Digital LCR & measurements, Special frequency meters & application, Shielding & grounding, Q meter, Vector impedance meter, Vector voltmeter, RF power & Voltage measurement.

Section-B

Oscilloscopes: Block Diagram, CRT, Probes, Deflection amplifier & delay line, Automatic time base, Dual trace Oscilloscope, Sweep modes, Measurement of voltage, Frequency & phase pulse measurement,

Special Oscilloscope: CRT storage target characteristics, Sampling Oscilloscope, Digital storage Oscilloscope, Spectrum analysis.

Transducers: Introduction, Selection of transducers, Resistive transducers, Strain gauges, Thermistor & thermometer, LVDT, Load cells, Piezo Electric transducers, Photo voltaic, Frequency generation transducer.

Bridge: Introduction, Wheat stone bridge, Kelvin bridge, Guarded wheat stone bridge, AC bridge & their application, Maxwell bridge, Hay bridge, Schering bridge, Wagner ground connection, Unbalance conditions.

NOTE:- There shall be total 8 questions, four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:

01.	Electronic Instrument & Measurement Technique	By Copper W.D & Helfric A.
02.	Electrical & Elect. Measurement Instrumentation	By A.K.Sawhney
03.	Electronic instrumentation	By H.S. Kalsi

Reference Book

Electronic Instrumentation & Measurement By Oliber B.M & Cage J.M

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester

	L	T	P	Practical
Branch: ECE/AEI				
Course No: ECE-511	**0**	**0**	**2**	**40**

Course Title: E.D.C Lab

Duration of Exam: 3 Hours

List of Practical

01. Determination of voltage gain, Input / output resistance of amplifiers using with & without feedback.

02. Determination of Distortion output power incase of push pull class-B amplifier.

03. Determination of frequency response of class-C tuned amplifier.

04. Study of signal stage class-A power amplifier & determine output power & efficiency.

05. Study of complimentary symmetry pushpull amplifier.

06. Design & determination of stability factor series of zener shunt Regulator / IC Regulator.

07. Design of voltage regulator using series pass transistor.

08. Study of Collpitt, Clapp, Hartley, Weinbridge, Phase regulator & Determine the frequency of output waveform.

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester

Branch: ECE/AEI	**L**	**T**	**P**	**Practical**
Course No: ECE-512	**0**	**0**	**2/2**	**40**
Course Title: Digital Electronic Lab				
Duration of Exam: 3 Hours				

List of Practical

01. Verification of truth tables of logical gates AND / OR / NOT, NAND, NOR, EXOR, EXNOR, gates.

02. Implementation of Boolean expression using AND, OR, NOT, NAND, & NOR logic.

03. Implementation of Decoder, Encoder using IC's & gates.

04. To implement half adder, half subtractor, full adder, full subtractor using different IC's & gates.

05. Implementation of multiplexer, Demultiplexer using IC's & gates.

06. Design of BCD to seven segment display using logical gates & IC's.

07. To design & verification of truth table of SR, JK, MS-JK Flip Flops.

08. To design various asynchronous counters using flip flops, gates & IC's.

09. To design various synchronous counters using flip flops, gates & IC's.

10. To design & Verify the Truth tables of shift Registers.

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester

Branch: ECE	**L**	**T**	**P**	**Practical**
Course No: ECE-513	**0**	**0**	**2**	**40**
Course Title: L.I.C Lab				
Duration of Exam: 3 Hours				

List of Practical

01. Design of OP-amp as closed loop Inverting, Non-Inverting, amp voltage follower & Inverter.

02. Design of Op-Amp as summer, Scaling, Averaging using Invertering amplifier & Non-Invertering amplifier.

03. Design & study of Op-Amp as clipper, clamper circuit.

04. Design of Op-Amp as Square wave generator.

05. Design of Op-Amp as Integrator & Differentiator.

06. Design of Op-Amp as low pass filter & high pass filter.

07. Design of IC 555 timer as Monostable Multivibrator & Astable Multivibrator.

08. Study of IC – LF 398 N sample & hold circuit & show the waveform on CRO.

09. Design of OP-Amp as Schmitt trigger.

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester

Branch: ECE	**L**	**T**	**P**	**Practical**
Course No: ECE-514	**0**	**0**	**2/2**	**40**

Course Title: Electronic Meas. & Inst. Lab
Duration of Exam: 3 Hours

List of Practical

01. Study of analog multimeter (Voltmeter, Ammeter, & Current meter)

02. Study of Rectifier type instruments

03. Study of Analysers (Wave, Spectrum & Distortion)

04. Study of Digital multimeter

05. Study of LCR Q meter

06. Study of frequency meter

07. Study of Oscilloscope, Measurement of frequency, Phase, Amplitude using lissajous pattern, Digital storage & Sampling Oscilloscope

08. Study of Transducers: LVDT, Strain, RTD, Thermocouple, Load

cell, Photo voltage & Frequency generation transducers

09. Study of Bridge: wheat stone, Kelvin, AC bridge

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COURSE SCHEME

FOR B.E 6TH SEMESTER ELECTRONICS & COMMUNICATION ENGG.
FOR EXAMINATION TO BE HELD IN June-2011 onwards

Course		Curriculum Hrs/Week			Marks			
Course No.	Course Name	L	T	P	Theory	Sessional	Practical	Total
ECE-601	Microprocessor	3	2	0	100	40	---	140
ECE-602	Digital Signal Processing	3	2	0	100	40	---	140
ECE-603	Communication Engg.-II	3	2	0	100	40	--	140
ECE-604	Microwave Engineering	3	2	0	100	40	--	140
ECE-605	Computer Org. & Arch.	3	2	0	100	40	--	140
EE-603	Power Electronics-I	3	2	0	100	40	---	140
ECE-606	Microprocessor Lab	0	0	2	---	---	40	40
ECE-607	Communication Lab	0	0	2/2	---	---	40	40
EE-606	Power Electronics Lab	0	0	2/2	---	---	40	40
ECE-608	Microwave Lab	0	0	2			40	40
Total		**18**	**12**	**06**	**600**	**240**	**160**	**1000**

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For Examination to be held in June-2011 onwards

Class :BE 6th Semester
Branch: ECE/AEI/EE
Course No: ECE-601
Course Title: Microprocessor
Duration of Exam: 3 Hours

			Marks	
L	**T**	**P**	**Theory**	**Sessional**
3	**2**	**0**	**100**	**40**

Section-A

1. Microprocessor 8085 pin diagram, Architecture, Addressing modes, Instruction set, Instruction format, Timing diagram, Programming techniques with additional instructions, looping, Counting design of counters & time delays, debugging & memory mapping.

2. Stack & Subroutines, Advanced subroutines concept, Call & Ret instructions, Advanced programming (Code conversions, BCD addition/subtraction, Multiplication etc), 8085 interrupts & process….

Section-B

1. Interfacing I/O devices, Basic interfacing concept, Interfacing with scanned multiplexed displays & LCD's, Interfacing output displays, Interfacing i/p devices, Memory mapped i/o design, Memory wait states & access time.

2. Serial I/O data communication, Basic concepts in serial I/O, 8085 serial I/O lines – SID & SOD, Synchronous & asynchronous data communication, Software controlled asynchronous serial I/O.

3. Interfacing to 8085 Microprocessor: PPI – 8155 I/O & timer, PPI – 8255 (mode-0, 1, 2 & BSR), PID 8279 keyboard/display interface, PIC 8259, DMA controller 8257/8237.

NOTE:- There shall be total 8 questions of 20 marks each four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:

01. Microprocessor Architecture Programming & App. By Ramesh Gaonkar
02. Introduction to Microprocessor By Aditya P. Mathur
03. The Intel Microprocessor By Brey
04. Fundamental of Microprocessor & Microcomputers By B. Ram
05. Microprocessor and Interfacing By D.V. Hall

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For Examination to be held in June-2011 onwards

				Marks	
Class: BE 6th Semester					
Branch: ECE/AEI	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-602	**3**	**2**	**0**	**100**	**40**
Course Title: Digital Signal Processing					
Duration of Exam: 3 Hours					

Section-A

Discrete Time Signal & System:-

Introduction, Classification of discrete time signal, Discrete time system, Frequency domain representation, Analysis of linear time Invariant system, Properties of LTI system, System described by difference equations, Correlation of discrete time system, Recursive & Non-recursive structures, Realization of Digital linear systems.

The Z-Transform:-

Introduction, Defination,Properties of Z-Transform, Evaluation of the Inverse Z-Transform, Realisation of Digital Linear Systems.

Section-B

Discrete & Fast Fourier Transform:-

Introduction, Properties of DFT, Linear convolution using DFT, Circular convolution, Discrete time Fourier transform (DTFT), Fast fourier transform (FFT), FFT Algorithms – Decimation in time FFT algorithms & decimation in frequency algorithms, Computational consideration.

Digital Filter Design:-

Generation consideration, Design of FIR filter, Design of IIR filter-Impulse Invariant method, Bilinear transformation Application of DSP, Radar, Image processing.

NOTE:- There shall be total 8 questions of 20 marks each four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:-

01. Digital Signal Processing by S. Salivaharan
02. Digital Signal Processing by John G. Proakes
03. Digital Signal Processing by O.P. Verma

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For Examination to be held in June-2011 onwards

				Marks	
Class :BE 6th Semester					
Branch: ECE	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-603	**3**	**2**	**0**	**100**	**40**
Course Title: Communication Engg.-II					
Duration of Exam: 3 Hours					

Section-A

1. **Digital Modulation Techniques:** Introduction, Types of digital modulation techniques, FSK, ASK, BPSK, DPSK, QPSK generation and reception, Differentially encoded PSK (DEPSK), M-ray PSK, MSK, Comparison of digital modulation techniques.

2. **Spread Spectrum Modulation:** Introduction, DS spread spectrum, CDMA, Frequency hopping spread spectrum, Generation of PN sequences, Acquisition & tracking of a FH & DS signal.

Section-B

1. Introduction to Linear block code – hadamard, Hamming code, Convolution codes – code tree, Trellis & state diagram for a convolution encoder, Decoding method of convolution code – viterbi algorithm.

2. **Telephone Switching Systems:** Dialling Techniques, Classification of switching systems, Central switching, Traffic load, Grade of service Switching matrices, Time Division multiplexed switch, Time slot Intercharge, Combination time & space switch.

NOTE:- There shall be total 8 questions of 20 marks each four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Text Books:

01.	Principle of Communication Systems	By Taub & Schilling
02.	Digital Communication	By Das, Mullick & Chaterjee
03.	Telecommunication switching systems and Networks	By T. Vishwanathan

Reference:

01.	Analog & Digital Communication	By Simon Haykins

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For Examination to be held in June-2011 onwards

				Marks	
Class :BE 6th Semester					
Branch: ECE	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-604	**3**	**2**	**0**	**100**	**40**
Course Title: Microwave Engg.					
Duration of Exam: 3 Hours					

Section –A

1. **Microwave Wave Guides:-** Rectangular wave guides, solution of wave equation in rectangular coordinates,TE &TM modes in rectangular wave guides, power transmission in rectangular wave guides.
   Circular Wave Guides:- Solution of wave equation in cylindrical coordinates, TE, TM & TEM modes in circular wave guides, power transmission in circular wave guides. Excitation modes.

2. **Microwave components:-** Cavity resonators, Re-entrant cavities, Wave guides tees, magic tee, hybrid rings, wave guide corners, bends & twists, directional couplers, hybrid couplers, ferrite devices circulator isolator & gyrator.
   Microwave Measurements:- frequency measurement, measurement of power, attenuation measurement, measurement of phase shift, measurement of voltage standing wave ratio(VSWR), measurement of impedance.

Section –B

1. **Microwave Linear-beam Tubes:-**Limitation of vacuum tubes, Klystrons, Velocity modulation, Bunching process, Output power & beam loading, Multi cavity klystron, Reflex klystrons, Helix traveling wave tubes(TWTs), Coupled cavity traveling wave tubes.
   Microwave Crossed-Field Tubes:- Magnetrons Oscillator, Forward wave crossed-field amplifiers(FWCFA), Backward wave crossed field amplifiers (amplitron), Backward wave crossed field oscillator(Carinotron).

2. **Microwave Transistor:-** Tunnel diodes & field effect transistors, Physical structures, principle of operation, microwave characteristics, power frequency transmission of three devices, (TEDS) Gunn effect diode-GAS diode, LSA diodes, InP diodes, CdTe diodes.
   Avalanche Transit Time Devices:- Principle of operation, characteristics, Physical structure, power output & efficiency of following devices, Impatt diodes, Trapatt diodes & Baritt diodes, Parametric devices.

NOTE:- There shall be total 8 questions of 20 marks each four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:-

1. Microwave devices & Circuits — Samuel Y . Liao
2. Foundation of Microwave Engg. — R.E.Collin

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For Examination to be held in June-2011 onwards

				Marks	
Class :BE 6th Semester					
Branch: ECE	**L**	**T**	**P**	**Theory**	**Sessional**
Course No: ECE-605	**3**	**2**	**0**	**100**	**40**

Course Title: Computer Organisation & Architecture
Duration of Exam: 3 Hours

Section-A

1. Basic structure of Computers, Stored program concept, ALU-hardware for arithmetic operation like addition, Subtraction, multiplication, division, Faster algorithms and their implementation, Hardware and Microprogrammed control units.

2. Memory Organisation:- Basic concept, Memory hierarchies, Main memory, RAM, ROM Memory design, DPROM, Secondary storage memory, FDD, Winchester disk, Magnetic tape, WORM, CDROM, Optical memory, Virtual memory, Cache memory.

Section-B

1. Processor Design:- Processing unit, Internal bus structure, Concept of memory, Location, Address, Addressing modes, Instruction formal, Instruction execution.

2. I/O Operation:- Peripheral devices, I/O addressing, Data transfer, Interrupt driven I/O & direct memory modes.

3. Parallel Processing:- Basic concept & type of parallel processor, Introduction to Multiprocessor.

NOTE:- There shall be total 8 questions of 20 marks each four from each section. Five questions have to be attempted by the students selecting atleast two questions from each section**.**

Books Recommended:-

01.	Computer Organisation	V. Carl Hamacher
02.	Computer System Architecture	Morris Mano
03.	An Introduction to Computer	A.P. Malvino
04.	Microprocessor Architecture Prog. & Application	Gaonkar
05.	Computer Architecture & Organisation	J.P. Hayes
06.	Digital Electronic & Principle	Thomas Bartee
07.	Structure Computer Organisation	A.S. Tanenbaum

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FOR EXAMINATION TO BE HELD IN MAY, 2010 ONWARDS

Class: B.E. 6th Semester
Branch: E.E./E.C.E

				Marks	
Course No: EE-603	**L**	**T**	**P**		
Course Name: Power Electronics-I	**3**	**2**	**0**		
Duration of Exam.: 3 Hours				**Theory**	**Sessional**
				100	**40**

SECTION: A

I) SCR: Basic theory of Operation, Characteristics : Static & Dynamic, ratings, protection, series and parallel operation, Family of SCR: TRIAC, LASCR, SUS, GTO firing circuits: R, R-C, UJT

II) Line commutated converters: Single and three phase, half and full wave with R L E loads with / without freewheeling diode. Methods of forced commutations: (Class A-F)

SECTION: B

I) AC phase control: Operation of Single phase, Half and Full wave AC controller with R & R-L Load, Integral cycle control.

II) Choppers; principle and basic chopper circuits. Steady–state Analysis of chopper circuits. Commutation in Chopper circuits

III) Inverters, series, parallel and bridge inverters and voltage control.

BOOKS RECOMMENDED:

1. M.Ramamoorty: "Power Electronics"
2 P.S. Bimbra " Power Electronics"

NOTE: There will be eight questions of 20 marks each. Students are required to attempt five questions selecting at least two question from each Section.

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For Examination to be held in June-2011 onwards

Class: BE 6th Semester

Branch: ECE/EE/AEI	**L**	**T**	**P**	**Practical**
Course No: ECE-606	**0**	**0**	**2**	**40**

Course Title: Microprocessor Lab

List of Experiment

01. Programs of data transfer group and block transfer of data from Source memory to destination memory.

02. Programs on Arithmetic, Logical group of instruction, Multiplication of two unsigned 8 bit number & factorial of a number.

03. Programs on time delay & counters.

04. Advanced programming such as binary to ASCII, Vice versa & BCD addition.

05. Study of 8255-PPI interfacing card, 8257-DMA controller interfacing card, 8259-PIC interfacing card, 8253-Timer & counter interfacing card.

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For Examination to be held in June-2011 onwards

Class :BE 6th Semester
Branch: ECE **L T P Practical**
Course No: ECE-607 **0 0 2/2 40**
Course Title: Communication Lab

List of Experiments

01. To plot the response of RF Tuned Amp.
02. To find the modulation index of AM signal.
03. Hardware realization of AM demodulation circuit.
04. Hardware realization of FM modulation circuit using IC 8038.
05. To plot the response of IF transformer.
06. Hardware realization of sample & hold circuit.
07. Hardware realization of ASK modulation.
08. Study of PCM & TDM signal.

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For Examination to be held in June-2011 onwards

Class :BE 6th Semester
Branch: E.E./E.C.E.
Course No : EE-606 **L T P**
Course Name: Power Electronics Laboratory **- - 2/2**

Marks
Practical - 40

List of experiments

1. SCR Triggering circuits.
2. Forced Commutation Circuits in Converters.
3. SCR Phase Control Circuits.
4. Triac Phase Control Circuits.
5. Fully Controlled Single - Phase thyristor bridge.
6. SCR DC Circuit breaker.
7. Zero Voltage switching.
8. Voltage Commutated DC chopper.

9. Current commutated DC chopper.
10. Microprocessor based three – phase thyristor bridge.
11. Series connected single – phase converters.
12. Series inverters.
13. Converter fed drive.
14. Chopper fed drive.

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For Examination to be held in June-2011 onwards

Class :BE 6th Semester

Branch: ECE	**L**	**T**	**P**	**Practical**
Course No: ECE-608	**0**	**0**	**2**	**40**

Course Title: Microwave Engg. Lab

List of Practical

01. To study and draw the following characteristics of Reflex Klystron.

02. To determine the frequency and wave length in Rectangular wave guide.

03. Determine the standing-wave ratio & reflection coefficient.

04. To measure an unknown impedance with smith chart.

05. To study the following characteristics of Gunn diode.
    i. V-I Characteristics.
    ii. Output power & frequency as a function of voltage.

06. To drawn the Radiation pattern of a Horn Antenna.

07. To calculate the Coupling Factor & directivity using a directional coupler.

08. To study the following Tees:-
    i. E-Plane Tee.
    ii. H-Plane Tee.

09. Study of Magic Tee
    to study the Isolator & Circulators.

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COURSE SCHEME
FOR B.E 7TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

Course No.	Name of the Course	Hours Per Week			Marks				% Change
		L	T	P	Theory	Sessional	Practical	Total	
ECE-701	Microprocessor-II	3	2	--	100	50	--	150	100%
ECE-702	VLSI Design & Technology	3	2	--	100	50	--	150	100%
Elective-I ECE-703	(A) Wireless Communication (B) Optical Fibre Communication	3	2	--	100	50	--	150	100%
HUM-712	Industrial Management	3	2	--	100	50	--	150	100%
ECE-704	Industrial Training	--	--	--	--	--	50	50	0%
ECE-705	Minor Project	--	--	9	--	--	150	150	0%
ECE-706	Seminar	--	--	3	--	--	100	100	0%
ECE-711	Microprocessor-II Lab	--	--	2	--	--	50	50	50%
ECE-712	VLSI Lab	--	--	2	--	--	50	50	100%
Total		**12**	**8**	**16**	**400**	**200**	**400**	**1000**	

Remarks: 1. Under revised scheme, Microprocessor – II (ECE-701) is introduced in place of Microprocessor-8086 and applications (ECE-702), VLSI Design and technology (ECE-702) is introduced in place of Microwave Engineering (ECE-703), Elective-I consisting of Wireless Communication (ECE-703(A)) and Optical Fibre Communication ECE-703(B) is introduced in place of Elective –II consisting of television Engineering ECE-704(A) and Electronic Circuit Design with I.C's (ECE-704(B)), code of Industrial Management is changed from (ECE-701) to (HUM-712).

2. Under revised scheme, code and name of Microprocessor Lab. (ECE-708) has been changed to Microprocessor – II Lab (ECE-711), VLSI Lab (ECE-712) is introduced in place of Microwave Engineering Lab (ECE-709) and code of Industrial Training has been changed from (ECE-707) to (ECE-704).

UNIVERSITY OF JAMMU, JAMMU.

COURSE SCHEME
FOR B.E 7TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

Course No.	Name of the Course	Hours Per Week			Marks			
		L	T	P	Theory	Sessional	Practical	Total
ECE-701	Microprocessor-II	3	2	--	100	50	--	150
ECE-702	VLSI Design & Technology	3	2	--	100	50	--	150
Elective-I ECE-703	(A) Wireless Communication (B) Optical Fibre Communication	3	2	--	100	50	--	150
HUM-712	Industrial Management	3	2	--	100	50	--	150
ECE-704	Industrial Training	--	--	--	--	--	50	50
ECE-705	Minor Project	--	--	9	--	--	150	150
ECE-706	Seminar	--	--	3	--	--	100	100
ECE-711	Microprocessor-II Lab	--	--	2	--	--	50	50
ECE-712	VLSI Lab	--	--	2	--	--	50	50
Total		**12**	**8**	**16**	**400**	**200**	**400**	**1000**

Note: Students have to select one course from Elective I.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ECE/AEI ENGINEERING
COURSE NO: ECE-701
COURSE TITLE: MICROPROCESSOR-II
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Microprocessor 8086 pin diagram, Architecture, Instruction format & set, Introduction to assembly language programming & techniques, 8086 string instructions & programming, Passing parameters using procedures & macros, Nested procedures & macros, Assembler directives.

8086 Timing diagrams, 8086 interrupts, 8086 in minimum & maximum mode configuration, Bus connection & its remedy, closely & loosely coupled configuration.

Section-B

8087 math coprocessor, Pin diagram, Architecture, Instruction set, Interfacing to 8086, Introduction to 8089 I/O processor, Pin diagram, Architecture, Instruction set, Interfacing with 8086, Data sharing through memory management.

Interfacing 8255 with 8086, Interfacing of 8279 with 8086, Interfacing of USART 8251 with 8086, Memory interfacing with 8086.

Introduction, Architecture, Pin diagram of Usart-8251, 80286, 80386, 80486 & Pentium processor, Use of RISC & CISC instructions.

Books Recommended:-

01. Microprocessor & Interfacing Programming by Douglas V Hall
02. Microprocessor Architecture & Programming by Ramesh Gaonkar
03. Microprocessor Systems by Liu Gibson
04. The Intel Microprocessor by Brey

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-702
COURSE TITLE: VLSI DESIGN & TECHNOLOGY
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

An Overview of Silicon Semiconductor Technology: **Wafer processing, Oxidation, Etching, Epitaxy, Deposition, Ion-mplantation, Lithography, Diffusion and Metallization.**
MOS Technology: NMOS fabrication and CMOS fabrication using N-Well, P-Well & Twin-Tub processes, VLSI Design flow-Design specification, Design Entry, Final Simulation.

MOSFET: **Structure and operation, Current voltage characteristics, MOSFET scaling and Non-ideal current voltage effects, Layout design rules, CMOS inverter layout design.**

Section-B

NMOS and CMOS Inverter: CMOS inverter of operation, Design of CMOS inverter, Switching characteristics of CMOS inverter, Calculation delay times, Switching power dissipation of CMOS inverter.

Combinational & Sequential MOS Logic Circuits: **Simple CMOS logic circuits, Gates Multiplexers, Adders, Sequential MOS logic circuits: Latch circuits and flip flops.**

NOTE:- There shall be four questions of 20 marks in each section. Students will have to attempt atleast two questions from each section. Use of calculator is allowed.

Recommended Books:-

01.	Basic VLSI Design	Douglas A. Pucknell & K. Eshraghian
02.	Principles of CMOS VLSI Design	Neil H.E Weste & K. Eshraghian
03.	VLSI Fabrication Principles	S.K. Gandhi
04.	VLSI Technology	S.M. Sze
05.	Circuit Design for CMOS VLSI	J.P. Uyemura
06.	CMOS Digital ICs Analysis & Design	Sung-Mo Kang & Yusuf Lablebici

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-703(A) ELECTIVE-I
COURSE TITLE: WIRELESS COMMUNICATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Introduction to Wireless Communication: Examples of different wireless system, communication system- Cordless Telephone systems, Cellular Telephone system, Introduction to 2G and 3G wireless Network.

The Cellular Concept: Introduction, frequency reuse, Handoff strategies, Co channel interference and system capacity, Adjacent channel capacity, Improving Coverage and capacity - Cell splitting, Sectoring.

Multiple Access Techniques: Introduction, TDMA, FDMA, CDMA, SDMA,

Modulation Technique: BPSK, QPSK, π/4QPSK, MSK, GMSK Transmission & detection.

Section-B

Mobile Radio Propagation: Free space propagation model, Small scale Multipath propagation, Parameters of Mobile Multipath channels, Types of small scale fading, Rayleigh Distribution, Ricean Distribution, Diversity techniques -Space Diversity, Frequency Diversity, Rake Receiver, Introduction to SISO & MIMO (Multiple I/P Multiple O/P systems).

Wireless System & Standards: GSM - Features, Architecture, Channel types, CDMA Digital Cellular standard (IS-95) - Forward & Reverse CDMA channels, Introduction to Bluetooth, Wi-Fi, Wi-mac.

Books Recommended:-

01. Wireless Communication : by T.S. Rappaport
02. Personal & Mobile Communication : by R. Panday
03. Mobile Communication Engg. by W.C.Y. Lee Tata McGraw Hill

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-703(B) ELECTIVE-I
COURSE TITLE: OPTICAL FIBRE COMMUNICATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Overview of Optical Fiber Communication: **Block diagram of Fiber Optical Comm. system, Evolution of fiber optic system, Elements of transmission link, Nature of light, Basic optical laws, Advantages and Disadvantage of optical fiber Communication.**

Optical Fiber Structure and Waveguiding: **Mode and configuration, Fiber types, Rays and modes, Step-index fiber structure, Wave equation for step index fiber, Modes in step index fiber, Graded index fiber structure, Numerical Aperture of fibers.**

Signal Degradation in Optical Fiber: **Attenuation, Absorption, Scattering and bending losses, signal degradation in fiber, Group delay, Material dispersion, Waveguide dispersion, Intermodal & intermodal dispersion, Pulse broadening in graded index fiber.**

Section-B

Fiber Material Fabrication and Connectors: **Glass fibers, Halide glass, Chalgenide glass, Plastic fiber, Fiber fabrication, Outside vapor phase oxidation, modified chemical vapor deposition, Plasma activated chemical vapor deposition, Double crucible method, optical fiber connectors, Requirements of good design, Connector types, Single mode fiber connector.**

Optical Sources and Detectors: **LED—materials used, structure, Power, Modulation and quantum efficiency, Laser diode—material, structure and efficiency, Photodiode-PIN--Principle. Avalanche photodiode, Principle, Detector response time.**

Optical Amplifier: **Semiconductor amplifier, External pumping and gain-erbium doped amplifiers, Amplification mechanism.**

Applications: **Optical WDM, TDM networks and their switching, SDH/SONET, Optical ATM.**

Book Suggested :-

01. Optical Fiber Communication principles and practice by J.Senior
02. Optical Fiber Communication by Gerd Keiser

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: COMPUTER ENGG / ECE
COURSE NO: HUM-712
COURSE TITLE: INDUSTRIAL MANAGEMENT
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section A

Entrepreneurship**: - Definition and types, Qualities of good Entrepreneurs - Role of Entrepreneurs in the economic development of a country. Entrepreneurship as a career option for technocrats in India, Schemes and policies for entrepreneurship development, Product Selection.**

Legal Forms of Industrial Ownership:

a) Sole Proprietorship.
b) Partnership.
c) Joint Stock Company.

Industrial Development in India after Independence: Scope for further growth of Industry, Industrial Policy of India. Economic reforms - to accelerate Industrial development, Eco- reforms.

Industrial Relations :

1) Workers participation in management.
2) Trade Union: Objectives, Present Position, and Weakness.
3) Industrial Conflict, Sources and managing conflict
4) Collective Bargaining.

Section B

Meaning & Scope of Management: Scientific Management, Functions of Management, Features of management, Administration Vs Management**.**

Management Objectives: Definition of Objectives, Characteristics, Types, MBO – Definition, Process, Benefits & Limitations**.**

Authority: Sources of Authority, Limits to authority, Delegation of authority, Process, Advantages, Obstacles.

Decision Making: - Meaning, Importance & steps in Decision making.

Departmentation: Need & Importance, Basis or pattern of Departmentation- Organization lines, staff, functional.

Personnel Management: Importance & main functions of Personal department**.**

Wage Administration & Job Enrolment: - Methods of wage payments, Job Analysis, Job Specification and Description, Job Evaluation. Methods of job evaluation.

Books Recommended:

1. George Terry – Principles of Management.

2. M.C. Shukla. – Business & Industrial Organisation.
3. Kortz & O'Donnel - Management

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-711
COURSE TITLE: MICROPROCESSOR-II LAB
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	2	50

List of Practical

01. Write a program to calculate the factorial of a number.
02. Write a program for the addition of two numbers.
03. Write program to find average of two numbers.
04. Write a program to find the sum of numbers in the array & store it in Register or Memory.
05. Write a program to find the greatest number from a given array.
06. Write a program find the smallest number from a given array.
07. Write a program for arranging numbers in ascending order.
08. Write a program for arranging numbers in descending order.
09. Write a program to search an element from a given array.
10. Write a program to convert BCD number into its binary equivalent number.
11. Write a program to move a string from one location to another.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION

COURSE NO: ECE-712
COURSE TITLE:VLSI LAB
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	2	50

List of Practical's

01. Write atleast six programs for combinational and sequential circuits using VHDL / verilog Hardware Description Languages.
02. Layout design of a CMOS Inverter.
03. Layout design of 3-input Universal Gate.
04. Implementation of a 4-bit full adder.
05. Layout design of 4x1 multiplexer**.**

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-706
COURSE TITLE: SEMINAR

L	T	P	MARKS
0	0	3	100

This will involve a detailed study of a topic of interest reproduced in the candidate's own style. For this, a student has to prepare a seminar by doing proper survey of literature, compilation of information so gathered and then presentation of the same followed by question-answer session. The report of which has to be submitted by the student well before the conduct of seminar. The handout submitted by the student will be in accordance with the standards of technical papers.

Guidelines and evaluation of Seminar in 7th semester:
The topic of the Seminar is to be finalized and approved by the departmental committee by the end of 6th Semester. The committee shall have a convener and atleast two members.

Distribution of Marks:
Total Marks for Seminar Evaluation = 100 marks
1) Project Report = 30 marks
2) Presentation = 50 marks
3) Attendance = 20 marks.

Award of Marks:
- Marks Under (1) will be awarded by the Seminar Incharge.
- Marks Under (2) and (3) will be awarded by the Departmental committee

constituted for the purpose.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-705
COURSE TITLE: MINOR PROJECT

L	T	P	MARKS
0	0	9	150

The project will be assigned to the students towards the end of 6th semester and will start working on those projects at the commencement of their 7th semester. The topic of the project will be decided as per the developments taking place in the field of Electronics and Communication Engineering.

This may require complete literature survey, design, fabrication, simulation of some models and/or some preliminary laboratory experiments etc. The same project shall be extended to 8th semester.

Distribution of Marks as per University statues:

Total Marks for End semester Evaluation	=	150 marks	
1) Presentation/ Demonstration	=	45 marks	30%
2) Viva-voce	=	45 marks	30%
3) Actual work done	=	60marks	40%

Award of Marks

- Marks under (1) and (2) will be awarded by the Departmental committee constituted comprises of convener and atleast two members.
- Marks under (3) will be awarded by the Project Guide/supervisor concern.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-704
COURSE TITLE: INDUSTRIAL TRAINING

L	T	P	MARKS
0	0	0	50

Students are required to undertake 4 to 6 weeks Practical Training during the summer vacations in the field of Electronics & Communication in Govt./Semi-Govt./Private sector. Thereafter, each student shall be required to submit a report on the practical training to the concern HOD for evaluation.

Guidelines for evaluation of Practical Training:

The evaluation shall be done by the departmental committee by the end of 7th semester. The committee shall have a convener and atleast two member.

Distribution of Marks as per the University statues:

Total Marks for Evaluation = 50 marks

i)	Report	= 20	40%
ii)	Viva-Voce	= 15	30%
iii)	Miscellaneous Marks	= 15	30%

Due weightage will be given to those who have opted Industrial Training outside the State as well as keeping in view the profile of that Industry.

Award of the Marks:

Marks under (i), (ii) & (iii) will be awarded by the departmental committee constituted for the purpose.

UNIVERSITY OF JAMMU, JAMMU

COURSE SCHEME
FOR B.E 8TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

Course No.	Name of the Course	Hours Per Week			Marks				% Change
		L	T	P	Theory	Sessional	Practical	Total	
ECE-801	Microcontroller & their Applications	3	2	-	100	50	---	150	100%
ECE-802	Antenna & Radar Engineering	3	2	-	100	50	---	150	100%
Elective-II ECE-803	(A) Satellite Communication (B) Electronics Circuit Design with IC's (C) Nanotechnology (D) Computer Networks & Communication	3	2	-	100	50	---	150	100%
Elective-III ECE-804	(A) Digital Image Processing (B) Neural Networks & Fuzzy Systems (C) Biomedical Electronics & Instrumentation	3	2	-	100	50	---	150	100%
ECE-811	Microcontroller Lab	--	--	2	--	--	50	50	100%
ECE-805	Major Project	--	--	14	--	--	350	350	0%
Total		**12**	**8**	**16**	**400**	**200**	**400**	**1000**	

Remarks: Under revised scheme, course code of Microcontroller and their Applications has been changed from ECE-803(B) to ECE-801, Antenna and Radar is introduced in place of Radar Systems, Elective-II (ECE-803) consisting of new subjects Satellite Communication ,Electronics Circuit Design with IC's, Nanotechnology, Computer Networks & Communication have been introduced in place of Elective-III (ECE-803). Elective-III (ECE-804) consisting of Digital Image Processing, Neural Networks & Fuzzy Systems, Biomedical Electronics & Instrumentation have been introduced in place of Elective –IV consisting of Digital Processing & Computer Networks and Communication .**ii)** Under revised scheme, Microcontroller Lab having code ECE-811 is introduced.

UNIVERSITY OF JAMMU, JAMMU

COURSE SCHEME

FOR B.E 8TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING

FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

Course No.	Name of the Course	Hours Per Week			Marks			
		L	T	P	Theory	Sessional	Practical	Total
ECE-801	Microcontroller & their Application	3	2	-	100	50	---	150
ECE-802	Antenna & Radar Engineering	3	2	-	100	50	---	150
Elective-II ECE-803	(A) Satellite Communication (B) Electronics Circuit Design with IC's (C) Nanotechnology (D) Computer Networks & Communication	3	2	-	100	50	---	150
Elective-III ECE-804	(A) Digital Image Processing (B) Neural Networks & Fuzzy Systems (C) Biomedical Electronics & Instrumentation	3	2	-	100	50	---	150
ECE-811	Microcontroller Lab	--	--	2	--	--	50	300
ECE-805	Major Project	--	--	14	--	--	350	100
Total		**12**	**8**	**16**	**400**	**200**	**400**	**1000**

Note: Students have to select one course each from Elective -II and Elective-III.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ECE/AEI
COURSE NO: ECE-801
COURSE TITLE: MICROCONTROLLER & THEIR APPLICATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section – A

Role of Microcontrollers- 8 bit Microcontrollers, architecture of Intel 8031/8051/8751, hardware processing, instruction set-simple programs.

Peripheral interface: Interrupts, Applications, automobile turn Indicator, Small DC Motor Control.

16- Bit Microcontroller: Intel 8096, architecture, modes of Operations, Addressing modes, instruction set, simple programs.

Section- B

Peripheral Functions of 8096: Interrupt structure, Timers, High Speed Inputs and Outputs, analog Interface, PWM output, serial Ports, Port status and Control Resistors, Watch Dog Timer.

AVR Microcontroller Series: Architecture, Instruction set and assembly language programming, Advantage of using RISC Microcontroller, Architectural features of different variant, System Design based on PIC and AVR.

Books Recommended:-

01. The 8051 Microcontroller (architecture, Programming and Applications)
By: Kenneth J. Ayala -----Penram International.

02. The 8051 Microcontroller and Embedded Systems-
By: Muhammed Ali Mazidi & Janice Gillispie Mazdi.

03. Design with Microcontroller
By: John B. Peatman (Tata McGraw Hill Publications)

04. ARM system development guide
By: Andrew-n-sloss & Dominic Symes Publisher –Morgan Aausamann.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-802
COURSE TITLE: ANTENNA & RADAR ENGINEERING
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

ANTENNA PARAMETERS -Basic ideas of properties of antennas, Radiation patterns, directional properties of dipole antennas, Antenna gain, Antenna aperture and its relation to gain, antenna terminal impedance, self and mutual impedance. Elementary ideas about self and mutual impedance, front to back ratio, antenna beam width and bandwidth, antenna efficiency, antenna beam area, polarization, Antenna temperature and signal to noise ratio, Reciprocity theorem & application

RADIATION: Retarded potentials, radiation from an oscillation, Dipole in free space, induction and radiation fields, Radiated power from a current element, radiation resistance, short antennas, radiation from a quarter wave monopole and half wave dipole.

ANTENNA ARRAYS –Various forms of arrays, Arrays of two point sources, linear arrays of n-point sources, pattern multiplication Arrays of equal amplitude and spacing (Broadside and end fire arrays), array factor, directivity and beam width, Steered phase array

Section-B

PRACTICAL ANTENNAS- Types of antennas, (a) VLF and LF antennas (Hertz and Marconi Antennas), medium frequency antenna and Rhombic antennas, Loop antennas,
(b) VHF, UHF and SHF antennas: Folded dipole antennas, Yagi-uda antenna, slotted and horn antennas, helical antennas, Turnstile antenna, Log periodic antenna, Antenna with parabolic reflecter.

RADAR : Radar Block diagram and operation, radar frequencies, application of radar, radar equation, Prediction of range, minimum detectable signal, receiver noise, transmitter Power, pulse repetition frequency and range ambiguity, antenna parameters, system losses and Propagation effects.

RADAR SYSTEM: Doppler effect and its application to CW radar, FM CW Radar altimeters, MTI and pulse doppler radar, tracking radar, Advance Radar, Pulse compression, Chip Radar, Synthetic Aperture Radar, Hologram Radar,

Text Book:-

1. J. D. Kraus, "Antennas, "McGraw Hill.
2. Antennas Theory and Design, C.A. Balanis, Raw & Harper.
3. Introduction to Radar Systems, by Merill. I Skolnik.
4. Radar Principles, Technology & Applications Byron Edde

Reference Book:-

1. F.C. Jordan & B.C.Balmann, "Electromagnetic waves & radiating System", P.H.I.
2. Antennas and Radio wave propagation, Collins, R.E., McGraw Hill.
3. Digital Satellite Communications (Second Edition) Tri, T.Ha. 1990.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-803(A) ELECTIVE-II
COURSE TITLE: SATELLITE COMMUNICATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Introduction: Evolution and growth of Communication Satellite, Principle of Satellite Communication, Different types of Satellite, Adv. and Disadv. of Satellite Communication, Frequency Allocation and Band spectrum.

Orbital Mechanics: Equation of the orbit, Locating the Satellite in the orbit and with respect to earth, Telemetry, Tracking and command systems, Transponder, Earth station subsystem--LNA, HPA.

Section-B

Satellite link Design – Introduction, Basic Transmission theory, System Noise temperature, C/N and G/T ratio, Uplink design, Down link design.

Multiple Access Techniques-- Introduction, TDMA – Frame structure, Frame efficiency, Super frame, Burst structure, FDMA – Demand assigned FDMA, SPADE system.

Satellite Applications – VSAT, MSAT, DB S system , GPS system.

Textbook:-

01 Digital Satellite Communications (Second Edition) Tri, T. Ha. 1990.
02 Satellite Communications by T. Pratt
03 Satellite Communications by Dennis Roddy

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-803(B) ELECTIVE-II
COURSE TITLE: ELECTRONICS CIRCUIT DESIGN WITH IC's
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Basic Design Consideration: Including thermal and PCB design, Design of basic discrete amplifier.

I.C Regulators: Series voltage regulator using Amp types, shunt regulators using Op Amp, Switching regulator using Op Amp, Dual voltage regulator, Op Amp current regulator, Monolithic adjustable voltage regulators, Fixed voltage (three terminal) regulators, Dual tracking regulators, Hybrid regulators, Current sensing and current feedback protection, Design examples.

Amplifier: Op Amp used as A.F. amplifiers, Monolithic audio amplifiers, Programmable linear (PA) amplifiers, Operational voltage amplifiers (OVAs), Operational transconductance amplifiers (OTAs), Chopper stabilized Op Amp, Differential amplifier, Logarithmic amplifier, Current difference (CD) amplifier, Design examples.

Section-B

Wave Form Generators: Quadrature oscillator using a 747 dual Op-Amp, VCO using (i) dual 789 Op-Amp, (ii) Op-Amp and 555 timer, Voltage controlled multivibrator, Voltage to frequency converter, Monolithic V/F converter, Crystal oscillator using (i) CA 3000 differential amplifier (ii) Cs (iii) Comparator LIC, Triggered saw tooth generator, Monostable multivibrator circuit, Staircase ramp generator, LM 122 precision timer, Design examples.

Digital System: D/A converter-DA switches, Current mode switching principle, Monolithic D/A converter using current mode switching, A/D converter-successive approximation converter, Dual slope integrator ADC, Sample and hold circuits, Frequency synthesizers, Programmable digital generator. Design examples.

Comparator and Multipliers: Comparator characteristics, Application of comparator-zero crossing detector, Level detector, Window detector, Logic interface circuit using comparator, Digital transmission isolator using comparator, Logarithmic multipliers, Variable transconductance amplifier. Design examples.

BOOKS RECOMMENDED:

01. Linear Integrated Circuits — Thomas Young, John Wiley & Sons
02. Linear Integrated Circuits Manual (i ii, & iii) — National Semiconductor
03. Linear Applications Handbook — National Semiconductor

04.	Designing with Op-Amplifier	Franco
05.	Operational Amplifiers	Dailey (Tata MeGraw)
06.	Regulated Power Supply Handbook	Taxax Inc.
07.	Operational Amplifiers Design & Applications	Tobey, Grame Huelsman

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-803(C) ELECTIVE-II
COURSE TITLE: NANOTECHNOLOGY
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Introduction
Introduction to nanoscale science and technology, why nanoscience and nanotechnology? Length energy and time scales, nanostructure types and properties, electronic and optical properties of materials, top down approach to nanolithography. Spatial resolution of optical, deep ultraviolet, X-ray, electron beam and ion beam lithography.

Quantum Mechanics
Band gap engineering, Quantum confinement of electrons in semiconductor nano structures, One dimensional confinement (Quantum wires), Two dimensional confinement (Quantum wells), three dimensional confinement (Quantum dots) and Bottom up approach, Single electron transistors, coulomb blockade effects in ultra small metallic tunnel junctions.

Section-B

Molecular Techniques:
Molecular Electronics, Chemical self-assembly, carbon fullerenes and nanotubes, Self assembled mono layers, MWNT (Multiwalled nanotubes) Applications in biological and chemical detection.

Surface analytical instrumentation techniques for nanotechnology:
Atomic scale characterization techniques, scanning probe microscopy, scanning tunneling microscopy and atomic force microscopy.

Application: Introduction to Nanoelectronics, Nanobioteb

Text Book:
1. Beenaker and Van Houten “Quantum Transport in Semiconductor Nanostructures in Solid state Physics” Ehernreich and Turnbell, Academic press, 1991

References
1. David Ferry “ Transport in Nano structures” Cambridge University press 2000
2. Y. Imry “ Introduction to Mesoscopic Physics, Oxford University press 1997

3. S. Dutta " Electron Transport in Mesoscopic systems" Cambridge University press
4. H. Grabert and M. Devoret "Single charge Tunneling" Plenum press 1992

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-803(D) ELECTIVE-II
COURSE TITLE: COMPUTER NETWORKS & COMMUNICATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Introduction: Goal of Network, Network classification (LAN, MAN, WAN), Topology signification of layered models, Reference models OSI & TCP/IP and comparison.

Data Communication: Synchronous and asynchronous, Encoding techniques, (NRZ, RZ, Manchester, AMI), Transmission media, Guided and unguided, Switching techniques-circuit switching, Message switching, Packet switching-datagram & virtual circuit, Example physical lager protocol-RS232, Error detection and correction, flow control stop and wait protocol, Sliding window protocol, Example protocol HDLC.

Medium Access Control: Access Techniques FDMA, TDMA, Media Access control-ALOHA, Slotted ALOHA, CSMA, CSMA/CD, LAN protocol IEEE 802.3.

Section-B

Routing and Congestion Control: Routing algorithm-Shortest path algorithm flooding distance vector routing, Link state routing, Congestion control virtual circuit subnets, Congestion control in datagram subnets leaking bucket algorithm,

Internet Protocol: IP addressing, Address resolution protocol (ARP), Reverse ARP, Subnetting & supernetting.

Network Security: Cryptography, Data encryption standard (DES), DES chaining, public key algorithm.

Network Applications: Introduction to Email, FTP, Telenet, WWW, DNS.

Textbook:-

01. Computer Networks by Andrew S. Tanenbaum

Reference

01. Data Communication & Computer Networks by William D. Stallings
02. Computer Networking by Behrouz A. Forouzn

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-804(A) ELECTIVE-III
COURSE TITLE: DIGITAL IMAGE PROCESSING
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS THEORY	MARKS SESSIONAL
3	2	0	100	50

Section -A

Digital Image Processing Fundamentals: Fundamental concepts of image processing, Image sensing & acquisition, Image sampling & quantization, since basic relationship between pixels.

Image Enhancement in Spatial and Frequency Domain:- Basic gray level transformation, Histogram processing, Basics of spatial filter ,smoothing & sharpening filters.

2-D Fourier Transform & DFT & their properties, Filtering in frequency domain, smoothing & sharpening filters

Section-B

Image Restoration & Segmentation:- **A** model of image degradation & restoration process, Linear position invariant degradation ,estimating degradation function, Inverse filtering.

Detection of discontinuities & Edge Linking Thresholding

Image Compression:- Coding, interpixel & Psychovisual redundancy, Error free compression – valuable length coding, Lossy compression, Lossy prediction coding.

Object Recognition: Pattern & pattern classes optimum statically classifies & neural networks.

Books:-

01. Digital Image Processing : Rafaelc Ganzalez & Richard Woods
02. Digital Image Processing Using Matlab : Ganzalez & Woods
03. Fundamentals of Digital Image Processing: A.K. Jain

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ECE/AEI
COURSE NO: ECE-804(B) ELECTIVE-III
COURSE TITLE: NEURAL NETWORKS & FUZZY SYSTEMS
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS THEORY	MARKS SESSIONAL
3	2	0	100	50

Section-A

Neural Networks Characteristics: History of development in Neural Networks Principles, Artificial Neural Net terminology, Model of a neuron, Topology and types of learning supervised, Unsupervised.

Learning Rules: The perception, Linear reparability, Basic learning laws, Hebb's rule, Delta rule, Widrow & Hoff LMS learning rule, Correlation learning rule, Instars and out star learning rules. Unsupervised learning, Competitive learning, K-Meams clustering algorithm, Kohonen's feature maps.

Different Neural Networks: Basic learning laws in RBF nets, Back propagation algorithm, Feed forward networks, ART networks.

Section-B

Application of Neural Nets: Pattern recognition applications of BPN, Associative memories, Vector.

Fuzzy Logic: Basic concepts of Fuzzy Logic, Fuzzy vs Crisp set, Linguistic variables, Membership function, Operayion of Fuzzy sets, Fuzzy IF-THEN rules, Variable inference, Techniques, Defuzzication techniques, Basic fuzzy inference algorithm, Applications of fuzzy logic, Fuzzy system design, Implementation of fuzzy system.

Recommended Books

01. Artificial Neural Networks Zurada
02. Artificial Neural Networks Vegna Narayanan
03. Neural Networks Simon Haykin

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-804(C) ELECTIVE-III
COURSE TITLE: BIOMEDICAL ELECTRONICS & INSTRUMENTATION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section-A

Introduction to Bio-Medical Instrumentation: Basic Medical Instrumentation system, Sources of Bio Medical signal, Origin of Bio electric potential, ECG.EEG,EMG, Skin contact impedance and its measurement, Electrode for ECG-limb electrodes, Floating electrodes, Pregelled disposable electrodes for EEG & EMG.

Anatomy and Physiology: Anatomy of heart, Cardiovascular system (Physiology), Conduction system of heart, Anatomy of brain, Nervous system (Physiology).

Bio-Medical Recorders: ECG recorder (Basic and Microprocessor Based), EEG recorder (EEG machine & 10-20 electrode system) and EMG recorder, ECG lead configuration & electrode placement, Phonocardiography.

Section-B

Medical Imaging Instrumentation: X-rays-Introduction, Generation of X-ray and X-ray machine Ultrasound-Introduction, Basic pulse echo system, A scan- Echo-encephalography, Echo-ophthalmoscope, M-scan-Echo-cardiograph, B-scan-linear, Sector, Compound scan, Biological effects of ultrasounds.

Therapeutic Instrument: Cardiac pacemakers, need for pacemakers, External pacemakers (continuous & on-demand), Voltage, Current, & current limited voltage pacemakers, Implantable pacemakers i.e fixed rate, Demand and its types.
Cardiac defibrillators, their need, de defibrillators, Implantable defibrillators, pacer-cardiovertor defibrillators.

Patient Safety: Electric shock lazard, Leaking currents, Test instruments for checking safety parameters of Biomedical equipments.

BOOKS RECOMMENDED:

1. Handbook of Biomedical Instrumentation by R.S.Khandpur.
2. Biomedical Instruments: Theory and Design by Walter Welko- Witiz and Sid Doutsch

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-811
COURSE TITLE: MICROCONTROLLER LAB
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	2	50

Programs to be introduced:

01. Program to display a message “Excell” on the first line & a message “_____” on 2nd line using LCD display.

02. Program to output incrementing date on D_0 to D_7 on output part in a Continuous loop with some delay.

03. Program to switch on & switch off the relays on output port simultaneously with delay in between.

04. Program to display a message “_____” by pressing reset key. Now press any key, the code will be echoed on Computer Screen.

05. Program to display a message "_____" on the seven segment display with a delay.

06. Program to output the date FA, F6, F5, & F9 on four winding in a continuous loop with delay of a stepper motor.

07. Program to scan Eight keys & display its binary code on LED's.

08. Program to output logic '1'- logic 'O' alternatively on Eight LED's with delay between by making the eight LED's flash.

09. Write a program to convert digital voltage 5v and display using D/A converter.

10. Write a program to convert analog voltage of 5v and display using A/D converter.

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FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION
COURSE NO: ECE-805
COURSE TITLE: MAJOR PROJECT
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	14	350

The student will complete their assigned project work initiated in 7th semester under course No.ECE-705 and submit a detailed project report individually to the Head of the department.

Guidelines for evaluation of Project work in 8th semester:

Sub-distribution of marks:

- For External Examiner : 100
- For Internal Examiner : 250

Sub distribution of internal Marks:

- Mark distribution of internal Project work as per the University statues shall be based on:

  a. Viva-Voce = 75 30%
  b. Presentation = 75 30%

c.	Report	=	100	40%
	Total	=	250	