MIET

Model Institute of Engineering & Technology

NAAC Accredited

[SYLLABUS FOR EE]

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

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

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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	05	15%

	waves and their production by Piezoelectric method and applications (General)		
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

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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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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

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. (5 marks)

or

Marking Stress or Syllable in given words.

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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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FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

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

			Theory	*Sessional*
Course No: MTH-201	**L**	**T**		
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 2^{nd} 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.	12	25%

	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.		
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

UNIVERSITY OF JAMMU, JAMMU

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011

B.E 2ND Semester *Maximum Marks: 125*

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

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

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.

UNIVERSITY OF JAMMU

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 ELECTRICAL ENGINEERING

FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010, & 2011

Course		Curriculum Hrs/Week			Marks				%age Change
Course No.	**Course Name**	**L**	**T**	**P**	**Theory**	**Sessional**	**Practical**	**Total**	
ECE-301	Electronics Devices & Circuits-I	3	2	0	100	50	--	150	40%
ECE-302	E. M. Theory	3	2	0	100	50	--	150	10%
MTH-311	Engineering Mathematics-III	3	2	0	100	50	--	150	05%
M-314	Thermal Engineering	3	2	0	100	50	--	150	25%
EE-301	Principle of Electrical Engg.	3	2	0	100	50	--	150	5%

EE-302	Network Analysis	3	2	0	100	50	--	150	0%
EE-308	Electrical/Electronics Workshop	0	0	3	---	--	50	50	10%
EE-309	Basic Electrical Engg. Lab	0	0	3	---	--	50	50	0%
	Total	**18**	**12**	**06**	**600**	**300**	**100**	**1000**	**----**

Remarks: i) New Course with Title **Electronics Devices and Circuits –I (ECE-301)** is allotted to Solid State Devices (ECE-301) with **40% Change**.

ii) New Course Code allotted to Theory/Lab. Courses as per following details

Course No. as per Earlier Scheme	Title	New Course Code Allotted as per Revised Scheme
MTH-301	Engineering Mathematics-III	MTH-311
M-309	Thermal Engineering	M-314
EE-303	Electrical/Electronics Workshop	EE-308
EE-304	Basic Electrical Engineering Lab.	EE-309

UNIVERSITY OF JAMMU, JAMMU.

COURSE SCHEME

FOR B.E 3RD SEMESTER ELECTRICAL ENGINEERING

FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010, & 2011

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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FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

L	T	P	MARKS 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 & rectifier rectifying 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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FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

			MARKS	
L	T	P	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 - I

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 - II

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, Radiation antennas, Rotating magnetic field theory.

UNIFORM PLANE WAVE:

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

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 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.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

L	T	MARKS	
		Theory	Sessionals
3	2	100	50

CLASS: B.E 3RD SEMESTER
BRANCH: ELECTRICAL ENGINEERING
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.

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

CLASS: B.E. 3RD SEMESTER
BRANCH : ELECTRICAL ENGINEERING
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 2009, 2010 & 2011

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

CLASS: B.E. 3RD SEMESTER
BRANCH: ELECTRICAL ENGINEERING
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.

UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

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

CLASS: B.E. 3RD SEMESTER
BRANCH: ELECTRICAL ENGINEERING
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. Pole zero configurations.

SECTION II

Parameters of two-port networks. Response of networks for step and sinusoidal inputs, Frequency response plots. Two-port networks and 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 of 20 marks each. Students are required to attempt five questions selecting at least two questions from each section. Use of calculator is allowed.

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FOR EXAMINATION TO BE HELD IN DECEMBER 2009, 2010 & 2011

	HOURS / WEEK			
T	P	MARKS	-	-
	3	50		

CLASS: BE 3RD SEMESTER
BRANCH: ELECTRICAL ENGINEERING
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: ELECTRICAL ENGINEERING
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 ELECTRICAL ENGINEERING
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COURSE NO.	COURSE NAME	CURRICULUM HRS/WEEK			MARKS				%age Change
		L	T	P	Theory	Sess,	Pract.	Total	
MTH-411	ENGINEERING MATH-IV	3	2	0	100	40	-	140	30%
EE-401	ELECTRICAL MACHINE - I	3	2	0	100	40	-	140	20%
ECE-401	ELECTRONIC DEVICES & CIRCUITS –II	3	2	0	100	40	-	140	20%
EE-402	CONTROL SYSTEM	3	2	0	100	40	-	140	30%
EE-403	ELECTRICAL MEASUREMENTS-I	3	2	0	100	40	-	140	10%
M-413	ELECTRICAL ENGG. MATERIALS	3	2	0	100	40	-	140	50%
ECE-410	ELECTRONIC DEVICES & CIRCUITS –II LAB	0	0	2	-	-	40	40	0%
EE-406	ELECTRICAL MACHINES LAB-I	0	0	2	-	-	40	40	0%
EE-407	ELECTRICAL MEASUREMENT LAB	0	0	2/2	-	-	40	40	0%

EE-408	CONTROL SYSTEM LAB	0	0	2/2	-	-	40	40	0%
	TOTAL	18	12	6	600	240	160	1000	

Remarks: i) New Course with Title **Electronics Devices and Circuits –II (ECE-401)** is allotted to Electronics-I (ECE-401) with **20% Change**.

ii) New Course Code allotted to Theory/Lab. Courses as per following details:

Course No. as per Earlier Scheme	**Title**	**New Course Code Allotted as per Revised Scheme**
MTH-402	Engineering Mathematics-IV	MTH-411
EE-404	Electrical Engineering Materials	M-413
ECE-403	Electronics Devices & Circuits _-II Lab	ECE-410

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COURSE SCHEME FOR
B.E. 4TH SEMESTER ELECTRICAL ENGINEERING
For Examination to be held in JUNE 2010, 2011 & 2012

COURSE NO.	COURSE NAME	CURRICULUM HOURS/WEEK			MARKS			
		L	T	P	Theory	Sessional	Practical	Total
MTH-411	ENGINEERING MATH-IV	3	2	0	100	40	-	140
EE-401	ELECTRICAL MACHINE - I	3	2	0	100	40	-	140
ECE-401	ELECTRONIC DEVICES & CIRCUITS –II	3	2	0	100	40	-	140
EE-402	CONTROL SYSTEM	3	2	0	100	40	-	140
EE-403	ELECTRICAL MEASUREMENTS-I	3	2	0	100	40	-	140
M-413	ELECTRICAL ENGG. MATERIALS	3	2	0	100	40	-	140
ECE-410	ELECTRONIC DEVICES & CIRCUITS –II LAB	0	0	2	-	-	40	40
EE-406	ELECTRICAL MACHINES LAB-I	0	0	2	-	-	40	40
EE-407	ELECTRICAL MEASUREMENT LAB	0	0	2/2	-	-	40	40
EE-408	CONTROL SYSTEM LAB	0	0	2/2	-	-	40	40
	TOTAL	18	12	6	600	240	160	1000

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			MARKS	
L	T	P	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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L	T	P	MARKS Theory	Sessional
3	2	-	100	40

CLASS: B.E. 4TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO. : EE-401
COURSE TITLE: ELECTRICAL MACHINE – I
DURATION OF EXAM: 3 HOURS

UNIT-I: DIRECT CURRENT MACHINES (GENERATOR & MOTORS)

General introduction, Principal of operation of D.C. machines, Construction of D.C. machines, Armature windings, Types of D.C. machines (Generator & Motors), E.m.f. and Torque equations, power stages and efficiency, commutation and armature reaction, characteristics of D.C. generators, parallel operation, torque and speed of D.C. motor, characteristics of D.C. motors, speed control and starting of D.C. motors. Braking and application of D.C. machines. Testing of D.C. machines.

UNIT-II: TRANSFORMERS

(1) Single phase transformers: Introduction, classification, construction, E.m.f. equation, phasor diagram, Equivalent circuit model, losses and efficiency, voltage regulation, Transformer test (open circuit and short circuit). All day efficiency, polarity test, parallel operation of single phase transformers. Auto transformers.
(2) Three phase transformer: Construction, 3-phase transformer connections, phase conversion, parallel operation of 3-phase transformer, rating of transformers.

BOOKS RECOMMENDED:

1) A.S.Langsdorf: Theory of A.C. Machines.

2) I.G. Nagrath & D.P. Kothari Electrical Machines.

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	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 (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 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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			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-recievers 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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			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	-	100	40

CLASS: B.E. 4TH SEMESTER
BRANCH: ELECTRICAL
COURSE NO. : EE-403
COURSE TITLE: ELECTRICAL MEASUREMENT-I
DURATION OF EXAM: 3 HOURS

SECTION – I

MEASUREMENT OF RESISTANCE

Measurement of low resistance: - Potentiometer method, Kelvin double bridge.

Measurement of medium resistance: - Ammeter-voltmeter method, Substitution method, Wheatstone bridge, applications of Wheatstone bridge.

Measurement of high resistance: - Loss of charge method, Meggar method.

GLAVANOMETERS

D'Arsonval Galvanometer: - Construction, working principle, equation of motion, critical resistance.

A.C. BRIDGES

Measurement of Inductance using:- Maxwell's Inductance-Capacitance bridge, Anderson's bridge Campbell's bridge, Measurement of Capacitance using De-Sauty's bridge, Schering bridge Measurement of Frequency using Wein's bridge.

POTENTIOMETERS

DC Potentiometers: - Crompton's Potentiometer, Vernier Potentiometer, uses of DC Potentiometers.

A.C Potentiometers: - Drysdale polar Potentiometer, uses of AC Potentiometers.

SECTION – II

MEASURING INSTRUMENTS

Classification, effects utilized in measuring instruments.

Indicating instruments:- Deflection, controlling and damping forces, various dampings.

Ammeters and Voltmeters:- Moving coil, moving iron and electrodynamics type ammeter and voltmeters, electrostatic voltmeter, Errors in Ammeters and Voltmeters.

Extension of instrument range: - Ammeter shunts, Voltmeter multipliers, C.T & P.T.

MEASUREMENT OF POWER

Wattmeter measurement in single phase A.C. circuits, Wattmeter errors.

Measurement of three phase power by three wattmeter, two wattmeter, and one wattmeter method.

MEASUREMENT OF ENERGY

Energy meters for A.C. circuits, Theory of Induction type meters. Single phase Induction type Watt-hour meters, construction, theory and operation.

BOOKS RECOMMENDED:

1. "Electrical Measurements and measuring instruments" by Golding Widdis.
2. "A course in Electrical and Electronics Measurement & instrumentation" by A.K. Sawhney.

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	-	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	A.J. Dekker.
2.	**Material Scince and Engineering**	**V Rahghvan.**
3.	Electrical Engineering Materials	P.C. 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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L	T	P	MARKS
-	-	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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CLASS: B.E. 4TH SEMESTER

	L	T	P	MARKS
BRANCH: ELECTRICAL				
COURSE NO. : EE-406	**0**	**0**	**2**	**40**

COURSE TITLE: ELECTRICAL MACHINES LAB-I

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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CLASS: B.E. 4TH SEMESTER

BRANCH: ELECTRICAL ENGINEERING	**L**	**T**	**P**	**MARKS**
COURSE NO. : EE-407	**0**	**0**	**2/2**	**40**

COURSE TITLE: ELECTRICAL MEASUREMENT LAB.

1. Measurement of R. L. & C by using RLC bridge instruments.
2. Measurements of Resistance by using
    a) Wheatstone bridge.
    b) Kelvin's Double Bridge.
3. Study of various types of Multimeters.
4. Demonstration of M.C., M.I. and Dynometer type instruments.
5. Measurement of self inductance, mutual inductance and coupling coefficient of
    a) Transformer windings and

b) Air-cored coils.

6. Extension of the range of Ammeter, Voltmeter, and Wattmeter, using Shunt/series resistance and instrument transformers.
7. Calibration of single phase energy meter by
   a) Direct loading
   b) Phantom loading at various points.
8. Calibration of three phase energy meter using standard Wattmeter.
9. Measurement of Capacitance using Schering Bridge.
10. a) Measurement of Power factor at Consumers terminals.
    b) Measurement of Maximum KVA demand of a consumer.
    c) Measurement of A.C. Potentials using A.C. Potentiometer.

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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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COURSE SCHEME FOR B.E. 5 TH SEMESTER ELECTRICAL ENGINEERING FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

COURSE NO	Course Name	HOURS/ WEEK			MARKS THEORY	SESSIONAL	PRACT-ICALS
		L	T	P			
EE-501	Electrical Machines-II	3	2	-	100	40	-

EE-502	Design of Power Apparatus	3	2	-	100	40	-
ECE-507	EDC-II	3	2	-	100	40	-
COM-511	Object Oriented Programming using C++	3	2	-	100	40	-
ECE-509	Communication Engineering	3	2	-	100	40	-
C-507	Hydraulic & Hydraulics Machine	3	2	-	100	40	-
EE-503	Electrical machine-II Lab.	-	-	2/2	-	-	40
ECE-516	EDC –II Lab.	-	-	2	-	-	40
COM-512	Object Oriented Programming Lab	-	-	2		-	40
ECE-515	Comm. Engg. Lab	-	-	2/2	-	-	40
	Total:	**18**	**12**	**6**	**600**	**240**	**160**

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering
Course No: EE-501
Course Name: ELECTRICAL MACHINES-II
Duration of Exam: 3 Hours

	L	T	P
	3	2	0

Marks:
Theory: 100
Sessional: 40

SECTION-A

Alternators: Types and **constructional features –emf equation-rotating magnetic field-armature reaction-load characteristics-predetermination of regulation by synchronous impedance method, Ampere turn method, zero power factor method and ASA method.**
Basic ideas of two reactor theory-direct and quadrature axis reactance and their determination-phasor diagram and regulation of salient pole alternators-Expression for power developed as function of torque angle-Parallel operation of alternators.

Synchronous Motors: Synchronous machines on infinite bus bars-phasor diagram-V and inverted-V curves, current and power circle diagrams-Hunting and its suppression, starting methods, synchronous condenser, reluctance motors.

SECTION-B

Polyphase induction motors: types and constructional features, principle of operation, phasor diagram, equivalent circuit, slip- torque characteristics, effect of rotor resistance, circle diagram, starting and speed control, induction generator.

Single phase induction motors- types and constructional features- principle of operation-equivalent circuit based on double revolving filed theory-universal motor-F.H.P. motor.

TEXT Books

1. **Punchetin, Lloyd and Cenrad. Alternating current machines M/s Asia Publishing Home.**
2. **P.K. Mukerjee & S. Chakarvati –Electrical Machines- Dhanpat & Sons.**
3. **A.S. Langsdrof, Theory of alternating current machinery, M/s McGraw Hill Book Co.,**
4. **S.K. Sen- Rotating Electrical Machinery, Khanna Publishers, New Delhi.**
5. **Del Toro 'E' Machines.**

REFERENCE BOOK

M.G. Say, Alternating Current Machines- Asia Publishing Home.
Fizerald and Kingsley, Electrical Machines, McGraw Hill Co.

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering
Course No: EE-502
Course Name: DESIGN OF POWER APPARATUS
Duration of Exam.: 3 Hours

	L	T	P
	3	2	0

Marks	
Theory:	100
Sessional:	40

SECTION: A

Design of Transformers:

Design of single phase transformer :- Output of transformer, Output equation, Relation between Core area and weight of Iron & Copper, Design for minimum cost, Method adopted for securing voltage distribution, width of window for optimum output, Window dimension.

Design of three phase transformer :- Output of transformer, Output equation, Ratio of iron loss to copper loss, Relation between core area and weight of iron and copper, Design for minimum cost, Design for minimum loss or maximum efficiency, Design of core, Design of windings, window space factor, window dimension, design of yoke, Design of Tank with tubes.

Design of D.C. Machines:

Basic Design Principles, Armature Design, Design of Field system, Design of Inter poles, Design of Commutation and Brushes, Losses and efficiency.

SECTION-B

Induction Motors:

Design of 3-phase Induction Motor: Output equation, choice of average flux density in air gap, Choice of ampere conductors per meter, Efficiency and power factor, Main dimensions, stator Winding, Turn per phase, stator conductors, Area of stator slots, Length of mean turn.

Design of 1-Phase Induction Motor: Output equations, Choice of specific loading, Main dimensions.

Synchronous Machines:

Design of salient Pole Machine: output equation, Choice of specific Magnetic Loading, Choice of specific electric loading, Main dimensions, length of air gap, Armature design, length of mean turn, Elimination of Harmonics, Estimation of air gap length, Design of rotor, height of pole, Deign of field winding.

Books Recommended:

01. Electrical Machine Design by A.K. Sawhney

02. Electrical Machine Design by R.K. Aggarwal

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester

Branch: Electrical Engineering

				Marks	
	L	T	P	Theory	Sessional
Course No: ECE-507	3	2	0	100	40

Course Title: Electronics Devices & Circuits-II

Duration of Exam: 3 Hours

Section-A

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, Necessarily of oscillator, Gain with feedback, Barkhausein criteria, Types of oscillators, Collpitts clapp, Hartley , phase shift oscillators & wein bridge oscillator with necessary derivations to determine gain required for oscillator & frequency of oscillation, Crystal oscillators.

Power Amplifiers: Introduction, General features of power transistor, Difference between power and voltage amplifier, Need for power amplifier, Classification of power amplifiers with necessary load lines concept & derivations (Efficiency, power dissipation), Crossover distortion & its remedy, Determination of harmonic distortion, Single ended, & push-pull amplifiers, Monolithic power amplifier,

Section-B

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

Operational Amplifiers: Operational amplifiers, Block diagram characteristics of ideal & practical operational amp, Inverting & non-inverting amplifier configuration, Application of Op-amp, Summing & difference amplifier, Voltage follower, Differenentiator, Integrator, Peak detector, comparator ,zero crossing detector, Schmitt trigger, Square wave generator, Triangular wave generator, Saw tooth wave generator.

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted selecting at least two questions from each section.

Books Recommended:

01.	Integrated Electronics	By J. Millman & C.C. Halkias
02.	Electronics Devices & Circuits	By Millman & Halkias
03.	Electronics Devices & Circuits	By Robert Bolysted
04.	Op-Amp. & Linear IC,s	By Ramakant & Gayakwad
05.	Design with Op-Amp.	By Franco

UNIVERSITY OF JAMMU

FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS

CLASS: B.E 5TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE TITLE: OBJECT ORIENTED PROGRAMMING USING C++
COURSE No. : COM-511
DURATION OF EXAM: 3 HOURS

L	T	P	MARKS	
			Theory	Sessionals
3	2	-	100	40

SECTION A

Review of Pointers: Passing parameters, Array of Pointers, Character Pointers.
Programming Techniques: Unstructured, Procedural, Modular. Introduction to objects, object & cohesion

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.

SECTION B

Function Overloading, Overloading Constructor Functions, Operator overloading, Overloading Binary and Unary Operators, Overloading Relational & logical Operators.

Inheritance, Using Protected Members, multiple inheritance, Virtual Base Classes, Introduction to Virtual Functions.

C++, I/O Basics, Ifstream, Ofstream, Fstream, Open(), Close(), EOF(), Binary I/O, Get(), Put(), Read(), Write(), Random Access, Seekg(), Seekp(), Tellg(), Tellp().

Textbook:-
1.Turbo C++ -by Robert Lafore.

Recommended 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 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

Class: B.E. 5th Semester

				Marks	
Branch: Electrical Engg.	L	T	P	Theory	Sessional
Course No: ECE-509	3	2	0	100	40

Course Title: Communication Engg.
Duration of Exam: 3 Hours

SECTION-A

Introduction to Elect. Comm. System, Concept & need for modulation, Definition of signal to noise ratio & noise figure, Representation of signal & system (periodic non-periodic etc.), 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, Modulation & demodulation of SSB signals.

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.

SECTION-B

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

Information Theory: Information rate, Entropy, Source-coding & coding Efficiency, Shannon-Fano coding, Huff-man coding, Channel capacity theorem.

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted selecting at least two questions from each section.

Books Recommended:

01. Electronics Comm. System By G. Kennedy
02. Principles of Comm. System By. Taub & Schilling

Reference Book

01. Communication System By Simon Haykins

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering
Course No: C-507
Course Name: HYDRAULIC & HYDRAULIC MACHINES
Duration of Exam.: 3 Hours

L	T	P
3	2	0

Marks
Theory: 100
Sessional: 40

SECTION: A

Pressure exerted by liquids, hydrostortic pressure on immersed bodies, simple monometers, kinematics of flow, Bernoulli's theorem, flow measuring devices like venturimeter, Pitot tube orfice plate. Discharge measurement-flow through orfice and mouthpiece, coefficients of discharge and velocity.

Flow through pipes, hydraulic gradient, Darcy-Weisback formula, equivalent diameter of pipes, transmission of power through pipes, two- reservoir and three reservoir problem etc.

Flow through open channels, chozy's amd Manning's formulae, design of economic section etc.

SECTION: B

Impact of jets on flat and curved surfaces, impact of jets on fixed and moving vanes, velocity triangles, work done and efficiency.

Turbines- their types, unit quantities, specific speed, work done, power & efficiency, selection of turbines, penstocks. Dimensional analysis, principles of similarity, models & prototypes.

Typical turbine installation, layout of power house, pumps-types, working of centrifugal pump, selection of pumps.

TEXT BOOKS:

1. **Fluid Mechanics by victor L. Streeter & τ. Bengamin Wylies**
2. **Engineering fluid mechanics by R.J. Garde & A.C. Mirajgaoker**
3. **Theory of application to fluid mechanics by K. Subramaniam**
4. **Fluid Mechanics by Shames.**

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering

Course No: EE-503	L	T	P
Course Name: ELECTRICAL MACHINES-II LAB.	-	-	2/2

Marks:
Sessional: 40

SYLLABUS

UNIT-I: Synchronous Machines:

1. **Determination of voltage regulation of a 3-phase synchronous generator/alternator by E.M.F., M.M.F. & A.S.A. method (Non-Salient Poletype).**
2. **Determination of positive, negative and zero sequence reactance's of 3-phase synchronous machine.**
3. **Determination of V curves of a 3- phase synchronous Motor.**
4. **Power Angle characteristics of a 3-phase synchronous machine.**
5. **Determination of various direct and quadrature Axis reactance's of an Alternator.**
6. **Study of parallel operation & synchronization of 3-phase synchronous generators.**

UNIT-II: Induction Machines:

7. **Determination of operating characteristics of a single phase induction motor.**
8. **Speed control of 3-phase Induction motor by varying supply frequency & of 3-phase slip Ring Induction motor by Rotor Impedance Control.**
9. **Determination of complete Torque/Slip or Torque/Speed characteristics of a 3-phase Induction-motor.**
10. **To study the Torque/Sped, Voltage/Speed, characteristics of a single phase repulsion motor & universal motor.**

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering

	L	T	P	Practical
Course No: ECE-516	3	2	0	40

Course Title: EDC-II Lab

List of Practicals

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

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

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

04. Study of single 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 shift oscillator & Determine the frequency of output waveform.

09. Study of Op-amp as Adder, Subtractor, Differentrator, Integrator, Differential Amp, Comparator, Invertor, Non-Inverting amplifier, Peak detector, Sq. wave generator.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering

	L	T	P	Practical
Course No: ECE-515	0	0	2/2	40

Course Title: Communication Engg. Lab

List of Experiments

01. To plot the response of RF Tuned Amp.
02. To find the modulation under 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 signal

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2010 ONWARDS

Class: B.E. 5th Semester
Branch: Electrical Engineering

	L	T	P	Practical
Course No: COM-512	0	0	2	40

Course Title: Object Oriented Programming Lab

The Practical's 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 of Theory Course.

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COURSE SCHEME

FOR B.E. 6 TH SEMESTER ELECTRICAL ENGINEERING
FOR EXAMINATION TO BE HELD IN JUNE, 2011 ONWARDS

COURSE NO	Course Name	HOURS/ WEEK			THEORY	SESSIONAL	PRACTICALS	TOTAL
		L	T	P				
HUM-601	Organizational Behaviour	3	2	0	100	40	-	140
EE-602	Power System-I	3	2	0	100	40	-	140
EE-603	Power Electronics-I	3	2	0	100	40	-	140
EE-604	Control System-II	3	2	0	100	40	-	140
ECE-601	Microprocessor	3	2	0	100	40	-	140
EE-605	Electronics Measurement	3	2	0	100	40	-	140
EE-606	Power Electronics Lab	-	-	2	-	-	40	40
ECE-606	Microprocessor Lab	-	-	2/2	-	-	40	40
EE-607	Power System-I Lab.	-	-	2/2	-	-	40	40
EE-608	Electronics Measurement Lab.	-	-	2	-	-	40	40
Total		18	12	6	600	240	160	1000

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FOR EXAMINATION TO BE HELD IN JUNE, 2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

Courses No.: HUM-601	L	T	P
Course Name: Organisational Behaviour	3	2	0
Duration of Exam.: 3 Hours	Marks:		
	Theory:	100	
	Sessional:	40	

SECTION-A

BASIC CONCEPT OF ORGANIZATIONAL BEHAVIOR

1) Individual Difference: Meaning, Factors & implications of individual difference
2) Motivation: Concept & importance
   Theories of motivation: Maslow's need hearachy
   Herzberg's motivation hygience theory
   Mcclelland's need theory
3) Personality: Concept & determinants of personality
4) Perception attitude: Meaning, definition, perceptual process, internal and external factors in perceptual selectivity

MANPOWER PLANNING

1) Manpower planning: Definition, objectives, importance, steps & factors affecting manpower planning.
2) Recruitment & selection process : Meaning, sources, scientific selection, selection procedure
3) Training & placement: Need, importance, methods
4)

SECTION-B

ORGANISATION DYNAMICS:

1) Organisation: Meaning, definition, need & principles, formal & informal organization
2) Organisation structure: Line, Line & staff, functional organizational structure
3) Authority: Concept,kinds, sources,limits
4) Power: Importance, sources,traits,bases
5) Organisational change: Meaning,forces,resistance to change,measures of overcoming resistance to change
6) ORGANISATIONAL CONFLICT:
CONCEPT,SOURCES,CONFLICIT RESOLUTIONMANAGEMENT:
1) Organisation & environment interface: Introduction, nature of environment---- General & Task environment, Environment uncertainity, strategies to deal with environment
2) Scientific management: Meaning, principles, advantages & criticism
3) Ftigue: Casuses & ways of eradicating fatigue
4) Accidents: Casuses of accidents & accident prevention

Books Recommended:

Keith Davis	Organizational behaviour (Humane behaviour at work)
B.P. Singh	Organisational theory & behaviour
T.N. Chabbra,Parag Diwan, I.N. Aggarwal	Organisational Behaviour
L.M. Parsad	Organisational Behaviour

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted, selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN JUNE,2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

Courses No.: EE-602	L	T	P
Course Name: Power System– I	3	2	0
Duration of Exam.: 3 Hours	Marks:		
	Theory:	100	
	Sessional:	40	

SECTION-A

D.C. & A.C Distribution Systems:
Introduction to a Power System (an overall view). Distribution Systems- Feeder, Distribution, service mains. Classification of distribution system. Various types of D.C. and A.C. distributors, Voltage drop calculations.

Overhead AC Transmission Lines Parameters:
Types of conductors, bundling of conductors, Resistance calculations, skin effect, proximity effect. Inductance and Capacitance of single phase, 3-phase, single circuit and double circuit lines.

Interference of Power Lines with Communication Lines:
Electrostatic and electromagnetic effects.

SECTION-B

Performance Of Transmission Lines:
Representation and performance of short, medium and long lines. A,B,C,D constants, surge impedance, Feranti effect.

Insulators for Overhead Lines:
Materials for insulators, types of insulators, potential distribution over a string of suspension insulators, methods for equalizing the potential.
Corona:
Visual and critical disruptive voltage conditions effecting corona, power loss due to corona, practical considerations.

REFERENCE BOOKS:
1. C.W. Stevenson: "Elements of power System Analysis"
2. H. Cotton and H. Barber: ' Transmission and distribution of Electric Energy'
3. C.L. Wadhwa: ' Electric Power System'

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted, selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN JUNE,2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

	L	T	P
Course No: EE-603			
Course Name: Power Electronics-I	3	2	0

Duration of Exam. 3 Hour

Marks:
Theory: 100
Sessional: 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 and 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, four from each section. Five questions are to be attempted, selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN JUNE, 2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

	L	T	P
Course No: EE-604			
Course Name: Control System –II	3	2	0

Duration of Exam. 3 Hour

Marks:
Theory: 100
Sessional: 40

SECTION-A

i) Concept of state, state variable and state space representation. Transfer function for ordinary differential equations. Solution of state equation, controllability and observeability of the linear time invariant systems, effect of pole –zero cancellation on system controllability and observeablility.
ii) Non Linear Stability, Basic stability theorems, Liapunov’s stability analysis

SECTION-B

i) Introduction to multivariable control systems. Data sampling, re- construction of signals, Z –transform, Z- inverse transform, differential equations, Z transform

analysis of sampled data control system. Z-S domain relationship , stability analysis of discrete system by Jury's stability test and Bilinear transformation.

ii)Introduction to non linear system, common physical non linearity. Phase plane method. Singular points. Limit cycles. Describing function. Derivation of describing function, dead zone and saturation, relay with dead zone and hysteresis , back lash.

Books Recommended:

01. Discrete Time Control System by K. Ogata
02. Automatic Control System by B.C. Kuo
03. Modern Control System by D.C. Dorf & R.H. Bishop

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted, selecting at least two questions from each section.

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FOR EXAMINATION TO BE HELD IN JUNE,2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

Course No.: EE- 605	L	T	P
Course Name: Electronics Measurements	3	2	0
Duration of Exam.: 3 Hours	Marks:		
	Theory: 100		
	Sessional: 40		

SECTION-A

MAGNETIC MEASUREMENT: A.C. AND D.C.:

Determination of hystersis, loop permeability and Iron loss measurements, separation of losses. Ferromagnetic properties.

Signal Analysers:

Introduction, Wave Analysers- Frequency selective wave analyzer, Heterodyne wave Analyser, Distortion Analysers. Spectrum Analyser- Basic Spectrum analyzer, Spectral Displays, Spectra of different signals.

Oscilloscopes:

Introduction- CRO, cathode ray tube, Block diagram of CRO, deflection amplifier and delay line, source and coupling of trigger generator, Automatic time base. Dual trace Oscilloscopes, sweep modes, Measurement of voltage, frequency & phase.

SECTION-B

Phase and frequency measurements:

Power Factor Meters: Single- phase and three- phase Electrodynamometer power factor meter, Moving iron power factor meters.

Frequency meters: Mechanical resonance type frequency meter.

Electrical resonance type frequency meters:- Weston type frequency meter, Ratiometer type frequency meter, Saturable core type frequency meter.

Transducers:

Introduction, Principles of operation, Classification of transducers. Summary of factors influencing the choice of transducer, Qualitative treatment of Strain Guage, LVDT, Thermocouple, Piezo-electric crystal and photoelectric transducers.

High Voltage Measurements:

Measurement of RMS and peak value of voltage.

References:

1. Electrical Measurements by Golding.
2. Electronic Measurements by Petit and Terman.
3. J.A. Alloca, Electronic Instrumentation-PH 1987.
4. B.H. Oliver & J.M. Cage.

NOTE: There will be eight questions of 20 marks each, four from each section. Five questions are to be attempted, selecting at least two questions from each section.

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For Examination to be held in June-2011 onwards

				Marks	
Class :BE 6th Semester					
Branch: ECE/AEI/EE	L	T	P	Theory	Sessional
Course No: ECE-601	3	2	0	100	40
Course Title: Microprocessor					
Duration of Exam: 3 Hours					

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

UNIVERSITY OF JAMMU

FOR EXAMINATION TO BE HELD IN JUNE,2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

Course No : EE-606	L	T	P
Course Name: Power Electronics Laboratory	-	-	2

Duration of Exam.: 3 Hour

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: B.E. 6th Semester
Branch: Electrical Engg.

Course No : EE-607	L	T	P
Course Name: Power System-I Laboratory	-	-	2/2

Duration of Exam.: 3 Hour

Marks:
Practical: 40

LIST OF EXPERIMENTS:

1. Performance Characteristics of a Short Transmission Line.
2. Performance Characteristics of a Medium Power Transmission Line.
3. Performance Characteristics of a long Power Transmission Line.
4. Study of all types of Overhead Line Conductors.
5. Study of all types of Overhead Line Insulators.
6. Study of Corona formation of High Voltage Overhead Lines.

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FOR EXAMINATION TO BE HELD IN JUNE,2011 ONWARDS

Class: B.E. 6th Semester
Branch: Electrical Engg.

Course No.: EE- 608	L	T	P
Course Name: Electronics Measurements Lab.	-	-	2

Duration of Exam.: 3 Hour

Marks:
Sessional: 40

List of experiments

01. Measurement of displacement.
02. Measurement of force.
03. Measurement of temperature.
04. Measurement of pressure.
05. Measurement of flow
06. Digital measurement of A.C. Voltage.
07. Digital measurement of D.C. voltage.
08. Digital measurement of Low Resistance.
09. Digital measurement of Medium & High Resistance.
10. Digital measurement of Electrical power.

11. Measurement of phase & frequency.

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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.

UNIVERSITY OF JAMMU, JAMMU

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

Course No.	Name of the Course	Hours / Week			Marks			
		L	T	P	Theory	Sessional	Practical	Total
EE-701	Switchgear & Protection	3	2	--	100	50	--	150
EE-702	Power System-II	3	2	--	100	50	--	150
EE-703	Non Conventional Energy Resources	3	2	--	100	50	--	150
Elective-I EE-704	(A) Advanced Electrical Machine (B) Power Station Practice	3	2	--	100	50	--	150
EE-705	Minor Project	2	0	4	--	--	150	150
EE-706	Seminar	--	--	5	--	--	100	100
EE-707	Industrial Training	--	--	--	--	--	50	50
EE-708	Protection Lab.	--	--	2	--	--	50	50
EE-709	Power System-II Lab.	--	--	2	--	--	50	50
Total		**14**	**8**	**13**	**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: ELECTRICAL ENGINEERING
COURSE NO: EE-701
COURSE TITLE: SWITCHGEAR AND PROTECTION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Switching Surges, traveling waves, surge impedance, open and short-circuited lines, reflected and transmitted waves.

Relay principles and types, general equations for relays, phase and amplitude comparator, static over current, directional and distance relays, carrier current protection, protection of transformers, Alternators, bus bars and lines.

SECTION-B

Circuit breaker: principle of arc interruption, recovery and restriking voltage, RRRV, current chopping, Bulk and minimum oil CB, Vacuum interrupters, rating and testing of CBs, HRC fuses.

Causes of over voltages, over voltage protection, ground wires, protection against surges, surge absorbers, rating of lighting arresters.

Neutral grounding, effectively grounded system, resonant grounding.

Books Recommended:

1. A Course in Electrical Power by Soni Gupta & Bhatnagar
2. Electric Power System by C.L. Wadhwa
3. Travelling Waves by Bewley
4. Power System Engg. by Nagrath & Kothari

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 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-702
COURSE TITLE: POWER SYSTEMS-II

DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Underground Cables: Introduction, general construction of cables insulating materials for cables, classification of cables, insulation resistance and capacitance of a single core cable, Dielectric stress, most economical diameter of conductor, Grading of cables, capacitance of 3-core cables, measurement of C_c and C_e, current carrying capacity of underground cables, thermal resistance of cables, Permissible current loading, types of cables faults.

Per unit representation of power system.

SECTION-B

Insulation Co-ordination : Introduction, Coordination of system insulation, basic approach to insulation coordination in power systems, selection of arrester rating, insulation coordination between lines and substation, choice of insulation levels for substation equipments.

Symmetrical components and their applications to unsymmetrical fault calculations.

Books Recommended:

1) Elements of Power System Analysis by Stevenson
2) A Course in Electrical Power by Soni and Bhatnagar
3) A Course in Electrical Power by C.L. Wadhwa.

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 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-703
COURSE TITLE: NON-CONVENTIONAL ENERGY RESOURCES
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Introduction: Different forms of energy, classification of energy Resources, Classification of Non-conventional Energy Resources, relative merits & demerits.

Solar Thermal Energy: Solar radiation Flat plate collectors, their materials, application and performance. Eocussing of collectors, their materials, application and performance, solar thermal power plant, thermal energy storage and cooling limitations.

Types of solar photovoltaic cells & its working.
Wind Energy: The power in the wind, Forces on Blades & Torque of windmill, Aerodynamics, Wind Power Plant, Merits & Demerits of wind power generation.

SECTION-B

Magneto-Hydrodynamics (MHD): Principles of working MHD power plant performance and limitations.

Bio Energy: Biomass & Biogas, Availability, Conversion process of Biomass, Biogas generation, Anaerobic Digestion.

Geothermal Energy: Resources of geothermal energy, thermodynamics of GTEC, Electrical Conversion, non-electrical conversion, Environmental consideration.

Books Recommended:

1. A course in Electric Power by Soni Gupta & Bhatnagar
2. Energy Conservation by Goswami
3. Non-Conventional Energy Resources by Hasan, Saeed, D.K. Sharma

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 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-704(A) ELECTIVE-I
COURSE TITLE: ADVANCED ELECTRICAL MACHINES
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Commutator Machines: Effect of injected emf in the rotor circuit of 3-phase inductor motor, slip power, constant torque and constant H.P. Drive, Kramer control, Schrage motor construction, principle of operation, characteristics and applications.
Single-phase series motor: torque expression plain series motor (Universal motor), phasor diagram commutation, operation on A.C. and D.C. supplies, Compensated series motor phase diagram and commutation.
2-phase A.C. Servomotor: Requirements for control applications: Development of equivalent Circuit: Torque-speed Characteristics and transfer function.

SECTION-B

Unbalanced operation of 3-phase induction motor-Expression for sequence impedance matrix, analysis with stator unbalance for unbalanced supply and faulty operation such as open- circuit stator phases, analysis for rotor unbalance.
Synchronous Machine Dynamic Modelling: Introduction, park's transformation, flux linkage, voltage and torque equations, Formation of state- space equations, transient and sub-transient inductances and time constants.
Dynamic Model of 3-phase induction motor.

Books Recommended:

1) Performance and design of commutator machines- Openshaw Taylog Wheeler & Co.
2) Symmetrical Components: Wagen & Evans
3) Power System Control & stability: P.M. Anderson-A.A. Foud (Galgotia.)
4) Advance Electrical Machine by P.S. Bhimbra.

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
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CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-704(B) ELECTIVE-I
COURSE TITLE: POWER STATION PRACTICE
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

1. Choice of Generating Power stations and choice of units, major electrical equipments in power stations.
2. Types of substations, Key diagrams.
3. Commissioning and operation of alternators. Parallel operation, control of unit, emergency operation.

SECTION-B

1. Automatic Voltage regulators, Voltage control and reactive power requirements.
2. Frequency Control.
3. Power Plant Instrumentation, Safety and maintenance

Books Recommended:

1. Power Station Practices by M.V. Dashpandey
2. Power Station Practices by Soni, Gupta.

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, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-705
COURSE TITLE: MINOR PROJECT

L	T	P	MARKS
2	0	4	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 Electrical 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.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-706
COURSE TITLE: SEMINAR

L	T	P	MARKS
0	0	5	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.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-707
COURSE TITLE: INDUSTRIAL TRAINING

L	T	P	MARKS
0	0	0	50

The students are required to take practical training during summer vacations for about 4 to 6 week duration in Industries related to Electrical Engineering. After completion of the training, the student should submit a training report in the department for evaluation purpose.

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:

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

Due weightage will be given those who have opted / undertaken outside the state & profile of the Industry.

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

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-708
COURSE TITLE: PROTECTON LABORATORY
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	2	50

LIST OF EXPERIMENTS

1. Study of an induction disc type over current Relay.
2. To plot the time-current characteristics of an over current Relay.
3. To plot the operating characteristics of a percentage Differential Relay.
4. To plot the operating characteristics of a state over current Relay.
5. To study the operation of a Buchholz's Relay.
6. To plot the operating characteristics of an impedance/Mho type distance Relay.
7. To plot the operating characteristics of a given M.C.B.
8. To study the various parts of a given Air Circuit Breaker.
9. To study the various parts of a given Oil Circuit Breaker.
10. To study the grounding system provided in the Laboratory.
11.

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FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

CLASS: BE 7TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-709
COURSE TITLE: POWER SYSTEM-II LABORATORY
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	2	50

LIST OF EXPERIMENTS

1. To study the various types of underground Cable samples.
2. To derive positive sequence component of given sample of phase current/phase voltage.
3. To derive negative sequence component of a given samples of phase currents/Phase voltage.
4. To derive zero sequence components of a given samples of phase currents/phase voltages.
5. To derive the zero sequence impedance of a given transformer.
6. To derive the positive, negative and zero sequence impedance of a given alternator.

UNIVERSITY OF JAMMU, JAMMU

COURSE SCHEME
FOR B.E 8TH SEMESTER ELECTRICAL 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
HUM- 812	Industrial Engg. & Production Management	3	2	--	100	50	--	150
EE-802	Power System-III	3	2	--	100	50	--	150

Elective-II EE-803	(A) High Voltage Engineering (B) EHV Transmission (C) Power System operation & control (D) Utilization of Electric Energy	3	2	--	100	50	--	150
Elective-III EE-804	(A) Computer aided Design of Electric Machines (B) Industrial Drives (C) Advanced Power Electronics (D) Static Relay	3	2	--	100	50	--	150
EE-805	Major Project	--	--	12	--	--	350	350
EE-806	P.C. Laboratory	--	--	4	--	--	50	50
Total		**12**	**8**	**16**	**400**	**200**	**400**	**1000**

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

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FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: HUM-812
COURSE TITLE: INSUSTRIAL ENGG. & PRODUCTION MANAGEMENT
DURATION OF EXAM: 3 HOURS

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

Section - A

Management : Concept of management scientific management, Management function, Principles of Planning, Organizing and directing Power, authority, responsibility and accountability organization structure span of control, Essential of controlling, process, elements and forms of controlling.

Decision Making: Meaning process scientific decision making.

Non- quantitative techniques in decision making- Intuition, facts experience, considered opinions.

Decision making under risk & uncertainty.

Basic concepts of network construction (PERT & CPM).

Concept of Total Quality Management (TQM).

Section – B

Production planning and control: Scope and objectives, functions of production planning and control.

Product life cycle.

Concept of just in Time Production (JIT).

Inventory Control: Objectives of carrying Inventories.

Classification, Function of Inventories

Simple EOQ Model

Plant location and Layout: Factors influencing location, need for layout , types of layout, process layout, product layout.

Merits & Demerits of layout.

Quality Control: Functions & Scope of quality control.

Books Recommended:

1. Koontz : Principles and practice of Management
2. N.D. Vohra : Quantitative Techniques in Management
3. Wiest and Levy : A Management guide to PERT and CPM.
4. Hiller and Lieberman : Introduction to operations research.
5. Samuel Dllon : Production Planning and Control.
6. Sharma, Bhalla & Gupta : Principles of Management.
7. O.P. Khanna : Industrial Engineering.

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.

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

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-802
COURSE TITLE: POWER SYSTEM-III
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Network Equations: Introduction, Network model formulation, Formation of Y bus by singular transformation.

Load flow studies: Introduction, Gauss- Siedel method, Newton- Raphson method, Decoupled load flow studies, comparison of load flow methods.

Stability Steady State/Transient stability: Introduction, Dynamics of synchronous machines, power angle equation, node elimination technique, simple systems, steady state stability, transient stability, equal area criterion, numerical solution of swing equations, multi machines stability, factors effecting transient stability.

SECTION-B

Optimum Power System: Introduction, optimal operation of generators on a bus bar, optimal unit commitment, reliability considerations, optimal generation scheduling, power system security, maintenance scheduling, power system reliability.

Surge performance of transmission lines.

Books Recommended:

1. Power System Analysis by Stevenson
2. Power System Analysis by Nagrath & Kothari
3. Power System Analysis by C.L. Wadhwa
4. Traveling Waves by Bewley
5. Electrical Power by Bhatnagar/Soni

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: ELECTRICAL ENGINEERING
COURSE NO: EE-803 (A) ELECTIVE-II
COURSE TITLE: HIGH VOLTAGE ENGINEERING
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Breakdown of gases:
Kinetic theory of gases production of charged particles in gases, collision ionization, thermal ionization, photo ionization, production of charged particles on solid surface.

Uniform and non-uniform fields, Impulse breakdown of gases, lighting phenomena compresses gases, Electronegative gases and vacuum.
Breakdown of liquid and solid Dielectrics.

Generation of H.V.A.C, D.C and Impulsive voltages.
Cascade transformers, H.V. rectifier circuits, electrostatic generator, impulse generator, equivalent circuit and waveshape control switching surge generators, high frequency generator, laboratory earthing and safety measures.

SECTION-B

Measurement of H.V.A.C, D.C. and Impulsive Voltages.
Sphere gaps, E.S. Voltmeters, Resistance potential dividers, Capacitance potential dividers, Mixed potential dividers, C.R.O.,

Insulation Design Principles.
Classification of insulating materials, composite dielectrics, fields plotting, H.V bush, awarding and shields insulation coordination.

H.V. Testing
I.S.I Specifications, D.C.A.C. High frequency and impulse testing of insulators/bushing/transformers/arrestors, generators and cables.

Books Recommended:

1. High Voltage Engg. by C.L. Wadhwa

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: ELECTRICAL ENGINEERING
COURSE NO: EE-803 (B) ELECTIVE-II
COURSE TITLE: EHV TRANMISSION
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Introduction, need for EHV Transmission, use of bundled conductors, conductor surface gradients, radio noise from EHV lines, insulation requirement of EHV line, electrostatic field of EHV lines, design of EHV lines, Shunt and series compensation, tuned power lines.

SECTION-B

Development of H.V.D.C Transmission system-an overview, economic comparison, types of D.C. links, advantages of D.C transmission, operation of converters and inverters, CC and CEA Control, reactive KVA requirement, two terminal of parallel operation of DC and AC lines, use of thyristors, field of application and circuit breaking.

Books Recommended :

1 EHV-AC Transmission by Beghamudrae
2. HVDC Power Transmission Systems by K.R. Padiyar

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: ELECTRICAL ENGINEERING
COURSE NO: EE-803 (C) ELECTIVE-II
COURSE TITLE: POWER SYSTEM OPERATION & CONTROL
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Steady state operation, real and reactive power balance and their effects on system operation. Optimum operating strategies, optimum dispatch neglecting losses. Development of loss formulae, optimum dispatch including losses.

SECTION-B

Optimum load flow. Optimal operation of hydrothermal systems. Automatic generation control for single and multi-area cases. Real time control.

Books Recommended:

1. Power System Operation & Control by A.J. Wood
2. Power System Engineering by Nagrath & Kothari

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: ELECTRICAL ENGINEERING
COURSE NO: EE-803 (D) ELECTIVE-II
COURSE TITLE: UTILIZATION OF ELECTRICAL ENERGY
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Electrical Utilization. (a) Braking of Motors. (b) Choice of Motors

Traction: Various system of electric traction, feeding of distribution systems, traction motors, series parallel control of train movement, mechanical consideration, trolleys and trams. Electrical cranes and passenger lifts.

SECTION-B

Heating and welding: resistance ovens, inductor and dielectric heating, Arc furnaces, Electrical Welding and methods of control.

Illumination: Nature and production of light. Photometric definitions. Incandescent lamps, arc and discharge lamps. Design of illumination schemes for indoor and outdoor uses. Flood lighting.

Books Recommended:

1. Utilization of Electrical Energy by J.B. Gupta
2. Utilization of Electrical Energy by H. Pratap

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: ELECTRICAL ENGINEERING
COURSE NO: EE-804(A) ELECTIVE-III
COURSE TITLE: COMPUTER-AIDED DESIGN OF ELECTRICAL MACHINES
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Computer Aided Basic Considerations ; standards and standardizations specifications; construction and materials; class and duty.
Main dimensions and output equations of transformer and rotating machines; specific loading, separation of parameters.
Magnetic Circuits and Electrical circuit calculations.

SECTION-B

Computer Aided Design of transformers and rotating machine.
Computers in design, computer algorithms and flow charts for magnetic circuit and electrical circuit quantities, heating and cooling performance calculations. Complete computer-aided design of transformer and 3-phase induction motors.

Books Recommended:

1. Principle of Electrical Machine with computer Programme – S.K. Sen Oxford.
2. Computer-aided design of Electrical Machines- M. Ramamoorthy

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
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CLASS: BE 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-804 (B) ELECTIVE-III
COURSE TITLE: INDUSTRIAL DRIVES
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Drives and their classification, speed torque characteristics of industrials equipment; Four-quadrant operation of electric motors, speed-torque characteristics of shunt, series, compound and induction motors under running and braking operation, starting and braking control of induction motors.

SECTION- B

Automatic starting control principles; typical automatic starting breaking and reversing control circuits of shunt series and induction motor using magnetic contactors. Master switches and relays.

BOOKS RECOMMENDED:

1. Electrical Drives by Chilkin
2. Electrical Drives by G.K. Dubey
3. Electrical Drives by S.K. Pillay

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: ELECTRICAL ENGINEERING
COURSE NO: EE-804 (C) ELECTIVE-III
COURSE TITLE: ADVANCED POWER ELECTRONICS
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Review of thyristor and its control circuits, SCR firing circuits, Controlled Rectifiers. Effect of Load and Source inductance, Harmonics of output voltage and Input current of Single quadrant converter.

Four qua-drant converter. Non circulating current and circulating current operation, cycloconvertor. O/P voltage of cycloconvertor with cosine modulating signal & sinusoidal reference single

A.C regulators, choppers single quadrant. Two quadrant and four quadrant chopper, control strategies,. Time domain Analysis

SECTION-B

Inverter, voltage source, bridge inverter, current source inverter

Power factor Control, Power factor Improvement, Harmonic Control of converter fed system. Measurement and sensing in thyristerized system, PLG and its application. Computer simulation studies of chopper converter & inverters.
BOOKS RECOMMENDED:

1. M.Ramamoorty: “Power Electronics”
2. P.S. Bimbra “ Power Electronics”

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: ELECTRICAL ENGINEERING
COURSE NO: EE-804 (D) ELECTIVE-III
COURSE TITLE: STATIC RELAY
DURATION OF EXAM: 3 HOURS.

			MARKS	
L	T	P	THEORY	SESSIONAL
3	2	0	100	50

SECTION-A

Philosophy of power system protection and its requirements-conventional Vs static relays-generalized characteristics and operational equations of relay-steady state and transient performance of signal deriving elements, signal mixing techniques and measuring techniques CTs and PTs in relaying schemes-saturation –stabilizing resistors.

Static relay circuit using analog and digital ICs for overcurrent, differential and directional relays.

Static relay circuits for generators loss of field, under frequency, desistance, impedance, reactance , mho and reverse power relays.

SECTION-B

Static relay circuits for carrier current protection – steady state and transient behaviour of static relays-testing and maintenance of relays-tripping circuits using thyristors.

Microprocessor based relay-hardware and software for the measurement of voltage, current, frequency and phase angle, Microprocessor based implementation of overcurrent, directional, impedance and mho relays.

Books Recommended:

1. VAN.C.Warrington “Protective Relays-Their Theory and Practice’, Vols. I & II, Chapman & Hall Ltd. London.
2. T.S. MADHVAN RAO, “Power system Protection –Static Relays’ MCGRAW Hill, New Delhi.
3. RAM.B, Fundamentals of Microprocessors and Microcomputers”, M/S Dhanpat Rai and Sons, New Delhi.

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 JUNE, 2012 ONWARDS

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-805
COURSE TITLE: MAJOR PROJECT
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	12	350

The student will complete their assigned project work initiated in 7th semester under course No.
EE-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	

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

CLASS: BE 8TH SEMESTER
BRANCH: ELECTRICAL ENGINEERING
COURSE NO: EE-806
COURSE TITLE: P.C. LABORATORY
DURATION OF EXAM: 3 HOURS.

L	T	P	MARKS
0	0	4	50

The following problems are to be worked out by the students with the help of a computer.

1. Load flow Analysis of a given power system by G.S. Technique
2. Load flow analysis of a given power system by N.R. Technique
3. Fault analysis of a given power system

Books Recommended:

1. "Computer Analysis of a Power System" by Stag El. Abid.