SYLLABUS FOR ECE

SEMESTERWISE COURSE DISTRIBUTION AND PAPERWISE OUTLINE OF BACHELOR OF ENGINEERING IN ELECTRONICS AND COMMUNICATION
FOR EXAMINATIONS TO BE HELD IN DECEMBER, 2010 ONWARDS
UNIVERSITY OF JAMMU, JAMMU

COURSE OF STUDY FOR BE 1ST SEMESTER ENGINEERING
BRANCH: COMMON TO ALL BRANCHES

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>Lecture</th>
<th>Tutorial</th>
<th>Pract.</th>
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MIET

SYLLABUS FOR ECE

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

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

<table>
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<td>Theory Sessional Practical</td>
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</table>

SECTION-A

1. **Differential Calculus**: Successive differentiation, Leibnitz theorem (without proof), Partial differentiation with errors and approximations, Euler’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, Logarithmic function of a complex variable, Summation of series by C+ iS method.


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**

3. Differential 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.
# UNIVERSITY OF JAMMU
**FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS**

**B.E Ist Semester (Common Course)**

Subject: Engineering Physics-I  
Course No.: PHY-102  
Duration of Exam: 03 hours

**Maximum Marks: 125**

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
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<tr>
<td>A</td>
<td><strong>MATHEMATICAL PHYSICS</strong></td>
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<tr>
<td>I</td>
<td>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 theorem, Stokes theorem and their applications, Vector Identities</td>
<td></td>
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<td>II</td>
<td>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 &amp; 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 $E$ &amp; $B$) fields for free space and their solutions (plane wave solution), velocity of e.m. waves, Relation between $E_o$ &amp; $B_o$. Definition of Poynting Vetor, Poynting theorem.</td>
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<td>B</td>
<td><strong>APPLIED OPTICS</strong></td>
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<td>III</td>
<td>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 &amp; Fresnel’s diffractions Fresnel’s half period zones and rectilinear propagation of light, Fraunhoffer diffraction due to a single slit, plane diffraction grating &amp; its theory for secondary maxima and minima. Unpolarized and polarized light, Nicol Prism, Mathematical representation of polarization of different types, Quarter &amp; half wave plates.</td>
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<td>IV</td>
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<td></td>
<td>Free damped and forced oscillations and their differential equations, Logarithmic decrement, power dissipation &amp; Quality factor, ultrasonic waves and their production by Piezoelectric method and applications (General)</td>
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<td>V</td>
<td><strong>FIBRE OPTICS</strong></td>
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<td>Propagation of light in fibres, numerical aperture, Single mode and multimode fibres, General applications</td>
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<td>T-1</td>
<td>Numerical problems based on vector analysis</td>
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<td>T-2</td>
<td>Numerical problems on Gradient of Scalar fields</td>
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<td>T-3</td>
<td>Numerical problems on Divergence of Vector fields</td>
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<td>T-5</td>
<td>Numerical problems based on Guass divergence theorem and Stokes Theorem</td>
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<td>Numerical problems pertaining to the applications of Faraday’s law</td>
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<td>T-9</td>
<td>Numerical problems pertaining to the applications of Interference phenomenon, Formation of Newton’s rings</td>
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<td>Numerical problems pertaining to the applications of diffraction and polarization phenomenon</td>
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<td>T-11</td>
<td>Numerical problems based on the applications of SHM, damped and forced motion of bodies and applications of ultrasonic</td>
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<td>T-12</td>
<td>Numerical problems based on the applications of Fibre optics</td>
<td>V</td>
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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 (Four from each section) as per weightage =8 (eight)

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

BOOKS RECOMMENDED

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>TITLE</th>
<th>AUTHOR</th>
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<tr>
<td>1.</td>
<td>Vector Analysis</td>
<td>Spiegel</td>
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<td>2.</td>
<td>Mathematical Physics</td>
<td>Rajput &amp; Gupta</td>
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<td>3.</td>
<td>Physics</td>
<td>Reisnick &amp; Hatliday</td>
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<td>4.</td>
<td>Optics</td>
<td>Brijlal &amp; Subramaniam</td>
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<td>Sound</td>
<td>Subramaniam</td>
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<td>6.</td>
<td>Sound</td>
<td>Khanna &amp; Bedi</td>
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<tr>
<td>7.</td>
<td>Fibre Optics</td>
<td>Ghatak, Tyagrajan</td>
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# UNIVERSITY OF JAMMU

FOR EXAMINATIONS TO BE HELD IN DECEMBER 2010 ONWARDS

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

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## 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.

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 diastereoisomerism.

2. **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.
7. Spectroscopy of Organic Compounds Silverstain
8. Spectroscopy of Organic Compounds Kalsi, P.S.
UNIVERSITY OF JAMMU
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

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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 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

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

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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 (30 marks)
   from Text-I. Students expected to answer any three in about 150 words each
2. Phrases and idioms from text I to be used in sentences. (20 marks)
   Hundred percent choices to be given
3. Completing a paragraph of which the first two or three short (10 marks)
   Sentences are given
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, etc. 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 (5 marks)
   Question tags - articles etc.
   or
   Marking Stress or Syllable in given words.
UNIT-1

Introduction: Conventional lines and signs used in Engineering Drawing, Printing and Lettering, Curves used in Engineering Practice: Cycloidal, 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 (I) 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
   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.
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<tr>
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<th>Title of Experiment</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Exp-I</td>
<td>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.</td>
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<tr>
<td>2.</td>
<td>Exp-II</td>
<td>To find the dispersive power of a given prism using a spectrometer.</td>
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<tr>
<td>3.</td>
<td>Exp-III</td>
<td>To find the refractive index of a given liquid using a hollow prism.</td>
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<tr>
<td>4.</td>
<td>Exp-IV</td>
<td>To find the focal lengths of a convex mirror and a concave lens using a convex lens and a concave mirror respectively.</td>
</tr>
<tr>
<td>5.</td>
<td>Exp-V</td>
<td>To find the frequency of A.C mains using an electrical vibrator.</td>
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<tr>
<td>6.</td>
<td>Exp-VI</td>
<td>To draw the V-I characteristics of a forward and reverse bias P-N junction diode.</td>
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<tr>
<td>7.</td>
<td>Exp-VII</td>
<td>To study the common base characteristics of PNP junction transistor.</td>
</tr>
<tr>
<td>8.</td>
<td>Exp-VIII</td>
<td>To study the common emitter characteristics of PNP junction transistor.</td>
</tr>
<tr>
<td>9.</td>
<td>Exp-IX</td>
<td>To study the common base characteristics of NPN junction transistor.</td>
</tr>
<tr>
<td>10.</td>
<td>Exp-X</td>
<td>To study the common Emitter characteristics of NPN junction transistor.</td>
</tr>
<tr>
<td>11.</td>
<td>Exp-XI</td>
<td>To evaluate the value of Planck’s constant.</td>
</tr>
<tr>
<td>12.</td>
<td>Exp-XII</td>
<td>To study the characteristics of a Solar Cell.</td>
</tr>
</tbody>
</table>

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

BOOKS RECOMMENDED

<table>
<thead>
<tr>
<th>TITLE</th>
<th>AUTHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Practical Physics</td>
<td>Warsnop &amp; Flint</td>
</tr>
<tr>
<td>2. Practical Physics</td>
<td>Chauhan &amp; Singh (Vol. I &amp; Vol. II)</td>
</tr>
<tr>
<td>3. B.Sc. Practical Physics</td>
<td>C.L Arora</td>
</tr>
</tbody>
</table>
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$_2$Cr$_2$O$_7$ (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$_2$S$_2$O$_3$.

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 column chromatography.

11. Determine the aniline point of a given lubricating oil.

Books Recommended:

1. Experimental Engineering Chemistry Shashi Chawla
Lab work shall be based on theory course of Engineering Mechanics Paper

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 tools 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-I 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) Hexagonal headed bolt from a cylindrical rod.
   ii) Cubical Block from a Cylindrical section.
<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>Lecture</th>
<th>Tutorial</th>
<th>Pract</th>
<th>Theory</th>
<th>Sess.</th>
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<tbody>
<tr>
<td>MTH -201</td>
<td>Engineering Math-II</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>100</td>
<td>25</td>
<td>-</td>
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<tr>
<td>PHY -202</td>
<td>Engineering Phy-II</td>
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<td>1</td>
<td>-</td>
<td>100</td>
<td>25</td>
<td>-</td>
<td>125</td>
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<tr>
<td>CHM -203</td>
<td>Engineering Chem-II</td>
<td>3</td>
<td>1</td>
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<td>3</td>
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<td>100</td>
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<td>125</td>
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<td>HUM-205</td>
<td>Engineering Economics</td>
<td>3</td>
<td>1</td>
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<td>100</td>
<td>25</td>
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<td>125</td>
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<tr>
<td>M -206</td>
<td>Machine Drawing-I</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>100</td>
<td>25</td>
<td>-</td>
<td>125</td>
</tr>
<tr>
<td>M -207</td>
<td>Workshop Technology-II</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>PHY –208</td>
<td>Engineering Physics II Lab</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>50</td>
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<tr>
<td>CHM –209</td>
<td>Engineering Chemistry II Lab</td>
<td>-</td>
<td>-</td>
<td>2</td>
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<td>-</td>
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<td>50</td>
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<tr>
<td>COM –210</td>
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<td>2</td>
<td>-</td>
<td>-</td>
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<td>75</td>
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<td><strong>Total</strong></td>
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<td>6</td>
<td>12</td>
<td>600</td>
<td>150</td>
<td>250</td>
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</table>
UNIVERSITY OF JAMMU, JAMMU

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester
Course No: MTH-201
Course Title: Engg. Math-II
Branch : Common to all branches
Duration of Exam: 3 hours

Maximum Marks:125
L T Theory Sessional
4 2 100 25

SECTION-A

1. Introduction to infinite series & sequences:- Convergence and divergence of a series, Leibnitz test, p-test, comparison test, Cauchy’s root test, D’ Alembert Ratio Test, Raabe’s Test, Logarithmic test, alternating series..

2. Fourier Series: Introduction, Euler’s formulae, sufficient conditions for a Fourier expansion, functions having points of discontinuity, change of intervals. Odd and even functions, Fourier expansion of Odd and even periodic functions, half range series, typical wave forms, Parseval’s formula, complex form of Fourier -series.

3. Power Series Solutions of Second order O.d.e: Analytic function, ordinary point, singular point, regular and irregular singular points of o.d.e. Y ” +P(x)Y ‘ + Q(x)Y=0, Series solution of such differential equations about an ordinary point, Frobenius series solution about a regular singular point.

SECTION-B

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

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


BOOKS RECOMMENDED

2. Higher Engineering Mathematics by Dr. B.S. Grewal
3. Engineering Mathematics by Dr. Bhopinder Singh
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.
### UNIVERSITY OF JAMMU, JAMMU

**FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS**

**B.E IInd Semester (Common Course)**

Course No. PHY-202  
Course Title : Engineering Physics-II  
Branch : Common to all branches  
Duration of Exam: 3 hours

<table>
<thead>
<tr>
<th>UNIT</th>
<th>RELATIVISTIC DYNAMICS</th>
<th>NO. OF LECTURES</th>
<th>WEIGHTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIT-I</td>
<td>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_0^2c^4).</td>
<td>10</td>
<td>25%</td>
</tr>
</tbody>
</table>

**UNIT-II WAVES-PARTICLE DUALITY**

| UNIT-II | Black Body radiation spectrum (Characteristics & Energy distribution), Wien’s laws, Rayleigh Jeans Law excluding mathematical derivations, ultraviolet Catastrophe, Planck’s hypothesis and Planck’s radiation law, Explanation of black body radiation characteristics on the basis of Planck’s law, photon concept. Compton effect, derivation of the direction of emission and the change in wavelength of scattered photons, direction of recoil electron and discussion of observed results. Debroglie’s hypothesis, concept of matter waves, Davisson & Germer’s experiment, wavepacket, Phase and Group velocity, Heisenberg’s uncertainty principle. Experimental illustration of uncertainty principle using single slit. | 12 | 25% |

**UNIT-III QUANTUM MECHANICS**

| UNIT-III | 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**

| UNIT-IV | 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 Tc materials. | 7 | 15% |

**UNIT-V LASERS**

| UNIT-V | 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**

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

**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**

<table>
<thead>
<tr>
<th>TITLE</th>
<th>AUTHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Modern Physics</td>
<td>Beiser</td>
</tr>
<tr>
<td>2) Modern Physics</td>
<td>Blatt</td>
</tr>
<tr>
<td>3) Modern Physics</td>
<td>Gupta &amp; Gupta</td>
</tr>
<tr>
<td>4) Basic Electronics</td>
<td>Millman &amp; Halkias</td>
</tr>
<tr>
<td>5) Material Science</td>
<td>S.L. Kakani, Amit Kakani</td>
</tr>
</tbody>
</table>
UNIVERSITY OF JAMMU, JAMMU

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester
Maximum Marks: 125
Course No: CHM-203
Course Title: Engg. Chem-II
Branch: Common to all branches
Duration of Exam: 3 hours

SECTION-A

1. **ENVIRONMENTAL CHEMISTRY**: Concept of Environmental chemistry, segments of environment (a brief idea about atmosphere, 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 TOXICOLgy** (Biochemical effects of Pb, Hg, As, Zn, Cd, Ni, Se, CN, O3 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 Lithophane.

**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

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>MARKS</th>
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<tbody>
<tr>
<td>3</td>
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<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>

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.


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.
4. Let us C - Yashwant Kanitkar.

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 EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

<table>
<thead>
<tr>
<th>B.E. 2nd Semester</th>
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<tbody>
<tr>
<td>Course No. HUM-205</td>
<td>Theory 100</td>
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<tr>
<td>Course Title: Engineering Economics</td>
<td>Sessional 25</td>
</tr>
<tr>
<td>Branch: Common to all branches</td>
<td>Duration of Exam: 3 Hours</td>
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</table>

<table>
<thead>
<tr>
<th>UNIT-I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definitions of Economics</td>
</tr>
<tr>
<td>a) Science of Wealth</td>
</tr>
<tr>
<td>b) Science of Material Welfare</td>
</tr>
<tr>
<td>c) Science of Scarcity</td>
</tr>
<tr>
<td>Economic System</td>
</tr>
<tr>
<td>a) Features of Capitalism</td>
</tr>
<tr>
<td>b) Features of Socialism</td>
</tr>
<tr>
<td>c) Features of Mixed Economy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIT-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Behaviour</td>
</tr>
<tr>
<td>Demand Theory:</td>
</tr>
<tr>
<td>a) Meaning of Demand and law of Demand</td>
</tr>
<tr>
<td>b) Factors Affecting Demand</td>
</tr>
<tr>
<td>c) Elasticity of Demand (Price Elasticity, Income Elasticity and Cross Elasticity)</td>
</tr>
<tr>
<td>d) Demand Forecasting</td>
</tr>
</tbody>
</table>

### SECTION-B

<table>
<thead>
<tr>
<th>UNIT-III</th>
</tr>
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<tbody>
<tr>
<td>Theory of Production:</td>
</tr>
<tr>
<td>a) Factorsof Production and Production Function.</td>
</tr>
<tr>
<td>b) Isoquants : Meaning &amp; Properties</td>
</tr>
<tr>
<td>c) Law of Variable Proportions &amp; Returns to scale</td>
</tr>
<tr>
<td>Costs and Cost Analysis</td>
</tr>
<tr>
<td>a) The Concept of Marginal, Average, Fixed and Variable Costs.</td>
</tr>
<tr>
<td>b) The Shape of Fixed, Average and Marginal Cost Curves (short run)</td>
</tr>
<tr>
<td>Market and Market Structures</td>
</tr>
<tr>
<td>a) Meaning and Feature of Perfect Competition, Monopolistic Competition, Oligopoly and Monopoly.</td>
</tr>
<tr>
<td>b) Price Determination Under Perfect competition and monopoly.</td>
</tr>
</tbody>
</table>

### UNIT-IV

<p>| Some commonly used Economic Concepts |
| a) Meaning, Types and Methods to Control Inflation. |
| b) Concept of Stock Market |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>c) Meaning &amp; Concept of National Income</td>
<td></td>
</tr>
<tr>
<td>d) Functions of Commercial Bank &amp; Central Bank</td>
<td></td>
</tr>
<tr>
<td>e) Features of Development and Under Development</td>
<td></td>
</tr>
<tr>
<td>f) Meaning &amp; Phases of Trade/Business Cycle</td>
<td></td>
</tr>
<tr>
<td>g) Index Number : Construction and difficulties in measurement of Index Number.</td>
<td></td>
</tr>
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</table>

**BOOKS RECOMMENDED**

1. K.K.Dewett : Modern Economic Theory  
2. H.L Ahuja : Advanced Economic Theory  
3. M.L. Jhingan : Macro Economics  

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

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E. 2nd Semester
Course No. M-206
Course Title: Machine Drawing-I
Branch: Common to all branches
Duration of Exam : 3 Hours

Maximum Marks: 125
Theory Sessional
L P 100 25

SECTION-A

2. Types of Sections and Recommended Scale, Dimensioning and Sectioning of Machine elements.
3. Drawing and sketching of machine elements in Orthographic Projections.
5. Stud assembly, Pipe joints including expansion joint.
6. Shaft pulley, cone pulley, Fast and loose pulley, etc.

SECTION-B

2. Bearings: Pedestal bearing including Hanger bearings, Pivot bearing and Swivel bearing.

RECOMMENDED BOOKS:-

1. Machine Drawing P.S. Gill

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.
WELDING SHOP

1. Introduction to Welding as a fabrication process, Welding application and general safety precautions.
2. Introduction to 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.
## UNIVERSITY OF JAMMU, JAMMU

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

**B.E 2ND Semester**

Course No: PHY-208  
Course Title: Engineering Physics Lab-II  
Branch: Common to all branches  
Duration of Exam: 3 Hours

Maximum Marks : 50

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

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

**BOOKS RECOMMENDED**

<table>
<thead>
<tr>
<th>TITLE</th>
<th>AUTHOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. B.Sc Practical physics</td>
<td>C.L. Arora</td>
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<tr>
<td>2. Practical Physics</td>
<td>Worsnop &amp; Flint</td>
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MIET [SYLLABUS FOR ECE]

UNIVERSITY OF JAMMU, JAMMU

FOR EXAMINATIONS TO BE HELD IN JUNE, 2011 ONWARDS

B.E 2ND Semester
Course No: CHM-209
Course Title: Engineering Chemistry Lab-II
Branch : Common to all branches
Duration of Exam : 3 Hours

Maximum Marks : 50
P Prac/Lab

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
3. A Manual of Practical Engineering Chemistry Dr. Rajinder Kumar
<table>
<thead>
<tr>
<th>B.E 2ND Semester</th>
<th>Maximum Marks : 75</th>
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<tr>
<td>Course No: COM-210</td>
<td>P Prac/Lab</td>
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<tr>
<td>Course Title: Computer Programming Using C Lab.</td>
<td>2 75</td>
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<tr>
<td>Branch : Common to all branches</td>
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</tr>
<tr>
<td>Duration of Exam : 3 Hours</td>
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</tbody>
</table>

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

**COURSE SCHEME**

**FOR B.E. 3rd SEMESTER E&C ENGG.**

**FOR EXAMINATION TO BE HELD IN DECEMBER 2011 ONWARDS**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
<th>L</th>
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<th>P</th>
<th>Theory</th>
<th>Sessional</th>
<th>Practical</th>
<th>Total</th>
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<td>Electronics Devices &amp; Circuits-I</td>
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<td>2</td>
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<td>50</td>
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<td>ECE-302</td>
<td>E. M. Theory</td>
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<td>2</td>
<td>0</td>
<td>100</td>
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<td>Engineering Mathematics-III</td>
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<td>2</td>
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<td>50</td>
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<td>M-314</td>
<td>Thermal Engineering</td>
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<td>100</td>
<td>50</td>
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<tr>
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<td>Principle of Electrical Engg.</td>
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<tr>
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<td>Electrical/Electronics Workshop</td>
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<td>Basic Electrical Engg. Lab</td>
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<td>6</td>
<td>600</td>
<td>300</td>
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<td>1000</td>
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</table>
SECTION - I

SEMICONDUCTOR PHYSICS:

SEMICONDUCTOR DIODES:
Introduction to P-N junction diodes, Equivalent circuit & symbol, P-N junction as rectifier, Ohmic contact, Short circuit & open circuit P-N junction diodes, Current components in P-N junction diode & law of junction, Volt ampere characteristics, Temperature dependence of V-I 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 Waveform 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.
BRANCH: E&C, EE  
COURSE NO: ECE-302  
COURSE TITLE: E.M.THEORY  
DURATION OF EXAM: 3 HOURS.

SECTION - A

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

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

SECTION - B

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

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

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

BOOK RECOMMENDED:
01. Engineering Electromagnetic  
By Joseph A. Edminister
02. Introduction to Electromagnetic  
By Griffith
03. Foundation Electromagnetic  
By Reitz et al
04. Engineering Electromagnetic  
By J r. Hyat

NOTE: There will be eight questions of 20 marks each, four from each section.  
Students are required to attempt five questions selecting atleast two  
questions from each section. Use of Calculator is allowed.
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, Rodrigue’s formula, Recurrence formulae, generating function, Orthogonality of Legendre polynomials, Bessel function of 1st kind. Recurrence formulae, generating function, Orthogonality 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.

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

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

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

UNIT-I
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

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 Steam tables, Mollier diagram, Refrigeration tables & charts and a scientific calculator will be allowed in the examination hall.

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

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

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

SECTION - I

SECTION - II

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
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 2011 ONWARDS

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

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

DURATION OF EXAMINATION: 3 HOURS.

SECTION - I

SECTION II

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

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

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

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

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

Unit-I

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

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

<table>
<thead>
<tr>
<th>HOURS / WEEK</th>
<th>L</th>
<th>T</th>
<th>P</th>
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CLASS: BE 3RD SEMESTER
BRANCH: ELECTRONICS & COMMUNICATION ENGG.
COURSE NO: EE-309
COURSE TITLE: BASIC ELECTRICAL ENGINEERING LAB.

1) Verification of Kirchoff’s Laws.
2) Verification of Superposition Theorem.
3) Verification of Thevinin’s Theorem.
4) Verification of Reciprocity Theorem.
5) Verification of Maximum Power Transfer Theorem.
7) Single phase power measuring by using a Wattmeter.
8) Study of three-phase A.C Circuits with Star and Delta connected Load.
### UNIVERSITY OF JAMMU, JAMMU.

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

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Name</th>
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<th>P</th>
<th>Theory</th>
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<td>ECE-401</td>
<td>Electronics Devices &amp; Circuits-II</td>
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<td>MTH-411</td>
<td>Engg. Mathematics-IV</td>
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<td>Object Oriented Programming using C++</td>
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<td>Electrical Engg. Material</td>
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<td>Control System</td>
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UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

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.


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, Cascade amplifiers), Method of coupling multistage amplifiers (RC coupling, DC coupling, transformer coupling), Frequency response of an amplifier, 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.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE 2010, 2011 & 2012

MARKS
L T P THEORY SESSIONAL
3 2 0 100 40

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

SECTION - I


SECTION - II


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.
DURATION OF EXAM: 3 HOURS

SECTION - I


2. Overview of C++, Object Oriented programming, Encapsulation, Polymorphism, Inheritance, Console I/O, C++ Comments. Classes, Metaclass, Abstract class, Public and private variables, Constructor and Destructor Functions, Constructors taking parameters, Object pointers, In-Line Functions, Automatic Inlining, Friend Functions, This Pointer, New & Delete, Array of Objects. (50)

SECTION-II

1. Function Overloading, Overloading Constructor Functions, Operator overloading, Overloading Binary and Unary Operators, Overloading Relational & logical Operators. (30)

2. Inheritance, Using Protected Members, multiple inheritance, Virtual Base Classes, Introduction to Virtual Functions. (30)

3. C++, I/O Basics, Istream, Ostream, Fstream, Open(), Close(), EOF(), Binary I/O, Get(), Put(), Read(), Write(), Random Access, Seekg(), Seekp(), Tellg(), Tellp(). (20)

BOOKS RECOMMENDED:

1. Turbo C++ by Robert Lafore.

REFERENCE BOOKS:

1. Programming in C++ by Balaguruswamy.
2. C++ the Complete Referance by Herbert Schildt.

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.


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

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

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

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

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

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

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, antiferromagnetism, 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.

RECOMMENDED BOOKS:-
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.

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

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

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

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

BOOKS RECOMMENDED:
1) OGATA,
2) KUO,
3) NAGRATH & M. GOPAL,

Modern control Engg. P.HALL PUB.
Automatic control systems P.HALL PUB.
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.
The Practicals will be based on Computer Languages Theory Syllabus. The students are required to submit at least 10 Programs covering at least 2 programs from each unit.

UNIVERSITY OF JAMMU, JAMMU

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.


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.

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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**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.
## UNIVERSITY OF JAMMU

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

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UNIVERSITY OF JAMMU.
For Examination to be held in December-2010 onwards

Class: BE 5th Semester
Branch: ECE/AEI
Course No: ECE-501
Course Title: Electronic Devices and Circuits-III
Duration of Exam: 3 Hours

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

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

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

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


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

Books Recommended:
01. Integrated Electronics By Millman Halkias
02. Electronics Devices By Boylstein
03. Electronics Devices By Malvino Leach
**Class : BE 5th Semester**

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Course Title: Communication Engg- I

Duration of Exam: 3 Hours

### Section-A

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

**Angle Modulation:** Theory of FM, Representation & frequency spectrum of FM, Pre-Emphasis, De-Emphasis, Wide band & Narrow band FM, Generation & detection of FM signal, Comparison with PM & AM.

**Receiver:** TRF receivers, Superhetrodyne receiver, Receiver characteristics- sensitivity, selectivity, Image frequency & its Rejection, Double spotting.

### Section-B

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

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

### Books Recommended:

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

### Reference Book:

Communication System By Simon Haykins

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

**UNIVERSITY OF JAMMU.**

For Examination to be held in December-2010 onwards
Section-A

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

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

Section-B

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

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

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

Books Recommended:

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

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For Examination to be held in December-2010 onwards

Class : BE 5th Semester
Branch: ECE / AEI
Course No: ECE-504
Course Title: Linear Integrated Circuits
Duration of Exam: 3 Hours

Section-A

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

stability, Slew rate its cause.

Section-B

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

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

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

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

Books Recommended:

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

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For Examination to be held in December-2010 onwards

Class :BE 5th Semester Marks
Branch: ECE Theory Sessional
Course No: ECE-505 3 2 0 100 40
Course Title: Random Processes & Noise
Duration of Exam: 3 Hours

Section-A

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


Section-B


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

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

**Book Recommended:-**

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

**Reference Book:-**

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

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**UNIVERSITY OF JAMMU.**

For Examination to be held in December-2010 onwards

**Class : **BE 5th Semester

**Branch: ECE**

**Course No: ECE-506**

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**Course Title: **Electronic Meas. & Inst.

**Duration of Exam:** 3 Hours

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**Section-A**

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

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

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

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**Section-B**

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

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

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

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

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

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

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

UNIVERSITY OF JAMMU.
For Examination to be held in December-2010 onwards

Class : BE 5th Semester
Branch: ECE/AEI
Course No: ECE-511
Course Title: E.D.C Lab
Duration of Exam: 3 Hours

List of Practical

01. Determination of voltage gain, Input / output resistance of amplifiers using with & without feedback.
02. Determination of Distortion output power incase of push pull class-B amplifier.
03. Determination of frequency response of class-C tuned amplifier.
04. Study of signal stage class-A power amplifier & determine output power & efficiency.
05. Study of complimentary symmetry pushpull amplifier.
06. Design & determination of stability factor series of zener shunt Regulator / IC Regulator.
07. Design of voltage regulator using series pass transistor.
08. Study of Collpitt, Clapp, Hartley, Weinbridge, Phase regulator & Determine the frequency of output waveform.

UNIVERSITY OF JAMMU.
For Examination to be held in December-2010 onwards

Class : BE 5th Semester
List of Practical

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

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

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

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

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

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

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

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

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

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

UNIVERSITY OF JAMMU.
For Examination to be held in December-2010 onwards

List of Practical

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

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

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

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

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

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

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

09. Design of OP-Amp as Schmitt trigger.

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UNIVERSITY OF JAMMU.

For Examination to be held in December-2010 onwards

Class : BE 5th Semester
Branch: ECE
Course No: ECE-514
Duration of Exam: 3 Hours

List of Practical

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

02. Study of Rectifier type instruments

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

04. Study of Digital multimeter

05. Study of LCR Q meter

06. Study of frequency meter

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

08. Study of Transducers: LVDT, Strain, RTD, Thermocouple, Load
cell, Photo voltage & Frequency generation transducers

09. Study of Bridge: wheat stone, Kelvin, AC bridge
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UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

Class: BE 6th Semester
Branch: ECE/AEI/EE
Course No: ECE-601
Course Title: Microprocessor
Duration of Exam: 3 Hours
**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 at least 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: BE 6th Semester
Branch: ECE/AEI
Course No: ECE-602
Course Title: Digital Signal Processing
Duration of Exam: 3 Hours

Section-A

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

The Z-Transform:

Section-B

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

Digital Filter Design:

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 at least two questions from each section.

Books Recommended:
01. Digital Signal Processing by S. Salivaharan
02. Digital Signal Processing by John G. Proakes
03. Digital Signal Processing by O.P. Verma
Section-A


Section-B

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

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

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

Text Books:

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

Reference:

01. Analog & Digital Communication By Simon Haykins
UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

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

Section –A

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

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

Section –B

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

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

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

Books Recommended:-
1. Microwave devices & Circuits                      Samuel Y. Liao
2. Foundation of Microwave Engg.                   R.E.Collin
UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

Class : BE 6th Semester            Marks
Branch: ECE                               L    T    P    Theory Sessional
Course No: ECE-605                        3    2    0    100    40
Course Title: Computer Organisation & Architecture
Duration of Exam: 3 Hours

Section-A
1. Basic structure of Computers, Stored program concept, ALU-hardware for arithmetic operation like addition, subtraction, multiplication, division, Faster algorithms and their implementation, Hardware and Microprogrammed control units.
2. Memory Organisation:- Basic concept, Memory hierarchies, Main memory, RAM, ROM Memory design, DROM, Secondary storage memory, FDD, Winchester disk, Magnetic tape, WORM, CDROM, Optical memory, Virtual memory, Cache memory.

Section-B
1. Processor Design:- Processing unit, Internal bus structure, Concept of memory, Location, Address, Addressing modes, Instruction formal, Instruction execution.
2. I/O Operation:- Peripheral devices, I/O addressing, Data transfer, Interrupt driven I/O & direct memory modes.
3. Parallel Processing:- Basic concept & type of parallel processor, Introduction to Multiprocessor.

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

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

UNIVERSITY OF JAMMU
FOR EXAMINATION TO BE HELD IN MAY, 2010 ONWARDS

Class: B.E. 6th Semester
Branch: E.E./E.C.E
Course No: EE-603
Course Name: Power Electronics-I
Duration of Exam.: 3 Hours

Marks
Theory Sessional
100    40

SECTION: A

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

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

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

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

BOOKS RECOMMENDED:

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

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

UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

Class: BE 6th Semester
Branch: ECE/EE/AEI
Course No: ECE-606
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.
For Examination to be held in June-2011 onwards
List of Experiments

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

UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

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

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.
8. Voltage Commutated DC chopper.
10. Microprocessor based three-phase thyristor bridge.
12. Series inverters.
13. Converter fed drive.

UNIVERSITY OF JAMMU.
For Examination to be held in June-2011 onwards

Class: BE 6th Semester
Branch: ECE
Course No: ECE-608
Course Title: Microwave Engg. Lab

L T P Practical
0 0 2 40

List of Practical

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

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

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

04. To measure an unknown impedance with smith chart.

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

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

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

09. Study of Magic Tee
to study the Isolator & Circulators.
## UNIVERSITY OF JAMMU, JAMMU

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

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

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

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

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**Note:** Students have to select one course from Elective I.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARDS

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

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

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

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

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

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

Books Recommended:-

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

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

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

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**Section-A**

An Overview of Silicon Semiconductor Technology: Wafer processing, Oxidation, Etching, Epitaxy, Deposition, Ion-implantation, Lithography, Diffusion and Metallization.


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

**Section-B**

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

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

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

**Recommended Books:**

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

**NOTE:** There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN DECEMBER, 2011 ONWARD

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

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</table>

Theory

Section-A

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

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

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

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

Section-B

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


Books Recommended:-

01. Wireless Communication : by T.S. Rappaport
02. Personal & Mobile Communication : by R. Panday
NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

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

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

MARKS

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Section A

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

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


Section B

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


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

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

Book Suggested :-

01. Optical Fiber Communication principles and practice by J. Senior
02. Optical Fiber Communication by Gerd Keiser
NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.

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

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

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Section A

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

Legal Forms of Industrial Ownership:
- a) Sole Proprietorship.
- b) Partnership.
- c) Joint Stock Company.

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

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

Section B

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


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

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

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

Personnel Management: Importance & main functions of Personal department.


Books Recommended:

3. Kortz & O’Donnel - Management

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

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

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

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List of Practical

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

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

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

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

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 at least 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
The project will be assigned to the students towards the end of 6th semester and will start working on those projects at the commencement of their 7th semester. The topic of the project will be decided as per the developments taking place in the field of Electronics and Communication Engineering. This may require complete literature survey, design, fabrication, simulation of some models and/or some preliminary laboratory experiments etc. The same project shall be extended to 8th semester.

**Distribution of Marks as per University statues:**

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<td>2) Viva-voce</td>
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<td>3) Actual work done</td>
<td>= 60 marks  40%</td>
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Award of Marks

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

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

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

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

Guidelines for evaluation of Practical Training:

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

Distribution of Marks as per the University statues:

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks</th>
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<tr>
<td>Total Marks for Evaluation</td>
<td>50</td>
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<tr>
<td>i) Report</td>
<td>20</td>
<td>40%</td>
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<tr>
<td>ii) Viva-Voce</td>
<td>15</td>
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<tr>
<td>iii) Miscellaneous Marks</td>
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<td>30%</td>
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</table>
Due weightage will be given to those who have opted Industrial Training outside the State as well as keeping in view the profile of that Industry.

**Award of the Marks:**
Marks under (i), (ii) & (iii) will be awarded by the departmental committee constituted for the purpose.
### UNIVERSITY OF JAMMU, JAMMU

**COURSE SCHEME**

**FOR B.E 8TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING**

**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Name of the Course</th>
<th>Hours Per Week</th>
<th>Marks</th>
<th>% Change</th>
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<tbody>
<tr>
<td>ECE-801</td>
<td>Microcontroller &amp; their Applications</td>
<td>3 2 -</td>
<td>100 50 ---</td>
<td>150</td>
</tr>
<tr>
<td>ECE-802</td>
<td>Antenna &amp; Radar Engineering</td>
<td>3 2 -</td>
<td>100 50 ---</td>
<td>150</td>
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<tr>
<td>Elective-II ECE-803</td>
<td>(A) Satellite Communication (B) Electronics Circuit Design with IC’s (C) Nanotechnology (D) Computer Networks &amp; Communication</td>
<td>3 2 -</td>
<td>100 50 ---</td>
<td>150</td>
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<tr>
<td>Elective-III ECE-804</td>
<td>(A) Digital Image Processing (B) Neural Networks &amp; Fuzzy Systems (C) Biomedical Electronics &amp; Instrumentation</td>
<td>3 2 -</td>
<td>100 50 ---</td>
<td>150</td>
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<tr>
<td>ECE-811</td>
<td>Microcontroller Lab</td>
<td>-- -- 2</td>
<td>-- -- 50</td>
<td>50 50</td>
</tr>
<tr>
<td>ECE-805</td>
<td>Major Project</td>
<td>-- -- 14</td>
<td>-- -- 350</td>
<td>350</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
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<td>400 200 400</td>
<td>1000</td>
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</table>

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

**COURSE SCHEME**

**FOR B.E 8TH SEMESTER ELECTRONICS & COMMUNICATION ENGINEERING**

**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

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<td>100 50 --- 150</td>
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<td>3 2 -</td>
<td>100 50 --- 150</td>
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**Elective-II**

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<th>Hours Per Week</th>
<th>Marks</th>
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<tr>
<td>ECE-803</td>
<td>(A) Satellite Communication</td>
<td>3 2 -</td>
<td>100 50 --- 150</td>
</tr>
<tr>
<td></td>
<td>(B) Electronics Circuit Design with IC’s</td>
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<td>(C) Nanotechnology</td>
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<td></td>
<td>(D) Computer Networks &amp; Communication</td>
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**Elective-III**

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<tr>
<td>ECE-804</td>
<td>(A) Digital Image Processing</td>
<td>3 2 -</td>
<td>100 50 --- 150</td>
</tr>
<tr>
<td></td>
<td>(B) Neural Networks &amp; Fuzzy Systems</td>
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<tr>
<td></td>
<td>(C) Biomedical Electronics &amp; Instrumentation</td>
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</table>

| ECE-811    | Microcontroller Lab | -- -- 2 | -- -- 50 | 300 |
| ECE-805    | Major Project | -- -- 14 | -- -- | 350 100 |

**Total** | 12 8 16 400 200 400 1000 |

**Note:** Students have to select one course each from Elective-II and Elective-III.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

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

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Section – A

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

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


Section- B

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

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

Books Recommended:-

01. The 8051 Microcontroller (architecture, Programming and Applications) By: Kenneth J. Ayala -----Penram International.
03. Design with Microcontroller By: J ohn B. Peatman ( Tata McGraw Hill Publications)
04. ARM system development guide By: Andrew-n-sloss & Dominic Symes Publisher –Morgan Aausamann.

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.
UNIVERSITY OF JAMMU, JAMMU  
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

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

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**Section-A**

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

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

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

**Section-B**

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

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

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

Text Book:-
4. Radar Principles, Technology & Applications  Byron Edde

Reference Book:-

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting atleast two questions from each section. Use of Calculator is allowed.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

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

L     T   P  MARKS
3      2    0  100  50

Section-A


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

Section-B

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

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

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

Textbook:-

02 Satellite Communications by T. Pratt
03 Satellite Communications by Dennis Roddy

NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.
UNIVERSITY OF JAMMU, JAMMU
FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS

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

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**Section-A**

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

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

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

**Section-B**

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

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

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

**BOOKS RECOMMENDED:**

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

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

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

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

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

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Section-A

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

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

Section-B

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

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

Application: Introduction to Nanoelectronics, Nanobiotec

Text Book:

References
2. Y. Imry “Introduction to Mesoscopic Physics, Oxford University press 1997
NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

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

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

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Section-A

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

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

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

Section-B

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

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

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

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

01. Computer Networks by Andrew S. Tanenbaum

Reference

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

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

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

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

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3 2 0 100 50

Section -A

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


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

Section -B

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

Detection of discontinuities & Edge Linking Thresholding

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

**Books:-**

01. Digital Image Processing : Rafaelc Ganzalez & Richard Woods
02. Digital Image Processing Using Matlab : Ganzalez & Woods

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

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**UNIVERSITY OF JAMMU, JAMMU**

**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

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

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**Section-A**

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

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

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

**Section-B**

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

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

**Recommended Books**

01. Artificial Neural Networks : Zurada
02. Artificial Neural Networks : Vegna Narayanan
03. Neural Networks : Simon Haykin
NOTE: There will be eight questions of 20 marks each, four from each section. Students are required to attempt five questions selecting at least two questions from each section. Use of Calculator is allowed.

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

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

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Section-A

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

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

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

Section-B

Medical Imaging Instrumentation: X-rays-Introduction, Generation of X-ray and X-ray machine Ultrasound-Introduction, Basic pulse echo system, A scan- Echo-encephalography, Echo-ophthalmoscope, M-scan-Echo-cardiograph, B-scan-linear, Sector, Compound scan, Biological effects of ultrasounds.
**Therapeutic Instrument:** Cardiac pacemakers, need for pacemakers, External pacemakers (continuous & on-demand), Voltage, Current, & current limited voltage pacemakers, Implantable pacemakers i.e fixed rate, Demand and its types. Cardiac defibrillators, their need, de defibrillators, Implantable defibrillators, pacer-cardiovertor defibrillators.

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

**BOOKS RECOMMENDED:**
2. Biomedical Instruments: Theory and Design by Walter Welko- Witz and Sid Doutsch

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

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

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

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**Programs to be introduced:**

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

02. Program to output incrementing date on D₀ to D₇ on output part in a Continuous loop with some delay.

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

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

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

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

08. Program to output logic ‘1’- logic ‘0’ alternatively on Eight LED’s with delay between by making the eight LED’s flash.

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

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

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**UNIVERSITY OF JAMMU, JAMMU**

**FOR EXAMINATION TO BE HELD IN JUNE, 2012 ONWARDS**

**CLASS: BE 8TH SEMESTER**

**BRANCH: ELECTRONICS & COMMUNICATION**

**COURSE NO: ECE-805**

**COURSE TITLE: MAJOR PROJECT**

**DURATION OF EXAM: 3 HOURS.**

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

**Guidelines for evaluation of Project work in 8th semester:**

**Sub-distribution of marks:**

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

**Sub distribution of internal Marks:**

- Mark distribution of internal Project work as per the University statues shall be based on:
  a. Viva-Voce = 75 30%
  b. Presentation = 75 30%
c. Report = 100  40%
    Total = 250