

UNIVERSITY OF JAMMU

(NAAC ACCREDITED A + GRADE UNIVERSITY)
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

NOTIFICATION

(22/Nov/Adp/72)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Competent Bodies, has been pleased to authorize the adoption of the revised Syllabi and Courses of Studies in **Bachelor of Engineering (E&C Engineering)** for Semester I & II under the **Credit Based System** as per the model curriculum of the AICTE (as given in the Annexure) for the candidates of (Govt./Pvt.) Engineering Colleges affiliated with the University of Jammu for the Examinations to be held in the years indicated against each Semester as under:-

| Branch | Semester | For the Examination to be held in the years |
|--------|-------------|---|
| E&C | Semester-I | December 2022, 2023, 2024 and 2025 |
| | Semester-II | May 2023, 2024, 2025 and 2026 |

The Syllabi of the course is available on the University Website: www.jammuuniversity.in.

Sd/-
DEAN ACADEMIC AFFAIRS

No. F.Acd/III/22/9967-9975

Dated: 22 /11/2022

Copy for information & necessary action to:-

1. Dean Faculty of Engineering
2. Principal. GCET/MBSCET/BCET/YCET
3. C.A to the Controller of Examinations
4. Deputy Assistant Registrar (Exams/Confidential)
5. Incharge University Website

Sumita Sharma
Deputy Registrar (Academic) 22/11/22

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22/11/22

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22/11/22

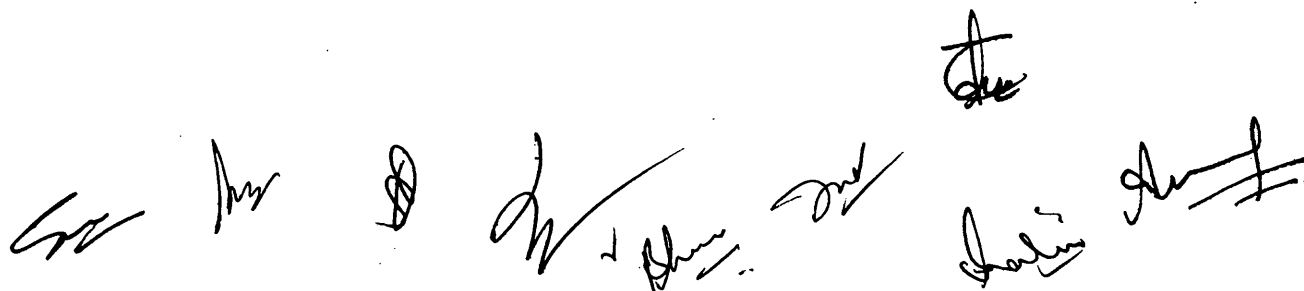
Annexure-I

B.E.1st Semester Electronics and Communication Engineering

Examination to be held in the years December 2022, 2023, 2024, 2025

Contact Hrs: 22

| COURSE CODE | COURSE TYPE | COURSE TITLE | LOAD ALLOCATION | | | MARKS DISTRIBUTION | | TOTAL MARKS | CREDITS | % Change |
|--------------|--|---------------------------------|-----------------|-----------|-----------|--------------------|------------|-------------|-----------|----------|
| | | | L | T | P | INTERNAL | EXTERNAL | | | |
| BST1101 | Basic Science Course | Engineering Mathematics I | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| BST1103 | Basic Science Course | Applied Engineering Physics | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| MET5102 | Engineering Science Course | Engineering Graphics | 3 | 0 | 0 | 50 | 100 | 150 | 3 | 100% |
| CET6101 | Engineering Science Course | Energy and Environment | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| CST3101 | Engineering Science Course | Computer Programming | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| HMT1102 | Humanities & Social science & Management Courses | Universal Human Values | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| BSP1113 | Basic Science Course | Applied Engineering Physics lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| CSP3111 | Engineering Science Course | Computer Programming Lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| TOTAL | | | 13 | 05 | 04 | 400 | 600 | 1000 | 20 | |



Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: COMMON TO ALL BRANCHES

CREDITS 3

CLASS: B.E. 1st SEMESTER

COURSE TITLE – ENGINEERING MATHEMATICS-I

COURSE NO.- BST1101

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

Course Outcomes: At the end of the course the students will be able to

CO 1 Learn general theorems of calculus, find the maximum and minimum value of functions of two variables.

CO 2 Understand the concept of definite integrals.

CO 3 Learn basic concepts of complex trigonometry.

CO 4 Find the rank, eigen values/ vectors of matrices.

SECTION - A

UNIT-I: DIFFERENTIAL CALCULUS

Partial differentiation, Euler's theorem on homogeneous functions, Rolle's theorem, Mean value theorem, Taylor's and Maclaurin's series with remainder, Taylor's series in two variables, Maxima and Minima of functions of two variables, Method of Lagrange's multipliers. (12 hrs)

UNIT-II: INTEGRAL CALCULUS

Definite integrals with important properties, differentiation under the integral sign, Gamma, Beta and error functions with simple problems, double and triple integrals with simple problems. (8 hrs)

SECTION - B

UNIT-III: COMPLEX TRIGONOMETRY

Hyperbolic functions of a complex variable, Inverse Hyperbolic functions, Logarithmic function of a complex variable; Summation of series by C+iS method. (8 hrs)

UNIT-IV: MATRICES

Introduction, Rank of a matrix, Elementary transformations, Elementary matrices, Inverse using elementary transformation, Normal form of a matrix, Eigen values and Eigen vector, Properties of Eigen value, Cayley Hamilton Theorem, Diagonalization of matrix. (14 hrs)

BOOKS RECOMMENDED:

1. Calculus and Analytic Geometry Thomas and Finney, 9th Edition, Pearson, 2002.
2. Differential Calculus S. Narayan and P.K. Mittal, S.Chand, New Delhi.
3. Higher Engineering Mathematics B.S Grewal, Khanna Publishers, New Delhi
4. Engineering Mathematics-I Dr. Bhopinder Singh
5. Engineering Mathematics-II Dr. Bhopinder Singh

NOTE: There shall be total 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 a calculator is allowed.

Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: COMPUTER/CSE/IT/ECE/ELECTRICAL ENGINEERING

CLASS: B.E. 1st SEMESTER

COURSE TITLE – APPLIED ENGINEERING PHYSICS

CREDITS: 3

COURSE NO.- BST1103

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

At the end of the course the Student Will be able to -

| | |
|-----|---|
| CO1 | Understand the significance of vector calculus and Maxwell's equations as the basis of Electromagnetic theory. |
| CO2 | Acquire the basic principles of laser physics, quantum mechanics and their applications. |
| CO3 | Acquire knowledge of semiconductor physics along with different aspects of applied optics & their applications. |
| CO4 | Understand the working principle of optical fibres with their applications in various fields |

Section-A

UNIT I: ELECTROMAGNETIC FIELDS AND WAVES

Concepts of Del Operator- gradient, divergence, curl and their physical significances, Displacement Current. Maxwell's equations in integral and differential form, Poynting vector and Poynting theorem, Electromagnetic wave propagation in free space (e m wave equations for electric & magnetic fields for free space) & their solutions (plane wave solution), velocity of E M waves, Relation between E_0 & B_0 .

(08 hrs)

UNIT-II: LASER PHYSICS

Concept and principal of Laser action, Spontaneous and Stimulated emission, Einstein's Co-efficient and relations, three and four level laser system, coherence and characteristics of laser light, Ruby, He –Ne and CO₂ Lasers, Applications of lasers

(05 hrs)

UNIT -III: QUANTUM MECHANICS

Need of quantum mechanics, Compton effect, concept of wave function, Eigen function and Eigen values, operators in quantum mechanics, Expectation values, Schrodinger's wave equation (Steady-state and Time dependent) for one- dimensional case, Applications of Schrodinger's equation (Time independent) to Particle in a one-dimensional box of infinite height and concept of zero-point energy

(08 hrs)

Section – B

UNIT-IV: SEMICONDUCTOR PHYSICS

Structure of Atoms, Energy band diagram, Metal, Insulator and Semiconductor, Intrinsic and Extrinsic semiconductors, Direct & Indirect semiconductors (E-k diagrams), Electron and hole concentration in intrinsic semiconductor, Charge densities in semiconductor, Generation & Recombination of charge carrier, Law of mobility & conductivity, Current densities in semiconductors, Fermi levels, Mass action law, Drift & Diffusion current and Einstein relation for p-n junction, Hall effect, Hall co-efficient & its applications

(09 hrs)

UNIT –V: APPLIED OPTICS

Thin films, Interference in thin films (by reflection and transmission of light), Theory of Newton's rings by reflected & transmitted light, Determination of wavelength and refractive index of monochromatic light by Newton's rings theory, Plane diffraction grating & its theory for secondary maxima & minima, polarized and unpolarized light, Nicol Prism as a Polarizer and Analyzer

(07 hrs)

UNIT VI: FIBRE OPTICS

Optical Fibre, Physical structure and basic theory, Propagation of Light in Optical fibres, critical angle, Acceptance angle & acceptance cone, Numerical Aperture, Single mode & Multimode Fibres, Characteristics and General applications of Optical fibres.

(05 hrs)

Books Recommended

1. Fundamentals of Electricity & Magnetism
2. Lasers Fundamentals and applications
3. Semiconductor Physics and Devices
4. Optics
5. Fibre Optics
6. Quantum Mechanics

Duggal & Chabbra
A. K. Ghatak
Donald A. Neamen
Brijlal & Subramaniam
Ghatak, Tyagrajan
N. Zettili

NOTE: There shall be total 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 a calculator is allowed.

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Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: COMPUTER/CSE/IT/ECE/ELECTRICAL ENGINEERING

CREDITS: 3

CLASS: B.E. 1st SEMESTER
COURSE TITLE: ENGINEERING GRAPHICS
COURSE NO.- MET 5102
DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 3 | 0 | 0 | 100 | 50 |

COURSE OUTCOMES (COS) Students will be able to:

| | |
|-----|--|
| CO1 | Understand and use engineering scales with accuracy and interpret missing views. |
| CO2 | Work with zeal of Industrial practices and standards. |
| CO3 | Convert sketches to engineering drawings. |
| CO4 | Fundamentally understand and perform Two and Three-dimensional drawings. |
| CO5 | Draw and understand orthographic projections of sections |

SECTION -A

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

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.

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. (20 hrs.)

SECTION -B

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.

Orthographic Projections: Orthographic projection of simple blocks (First & Third angles), to draw the third view from given two views. Missing lines in projection. Introduction to Auto CAD. Basic Commands and Basic Drawing Practices. (21 hrs.)

RECOMMENDED BOOKS:

- | | |
|---------------------------------------|-----------------------------|
| 1. Engineering Drawing | P.S Gill |
| 2. Practical Geometry | V. Laxminarayan & GEV |
| 3. Engineering Graphics | K.L. Narayanan & P. Kamaish |
| 4. Principles of Engineering Graphics | P.E Giesecks |
| 5. Engineering Graphics | Frederic & Michelle. |

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

BRANCH: COMPUTER/CSE/IT/E&C/ MECHANICAL ENGINEERING

CREDITS: 3

CLASS: B.E. 1st SEMESTER

COURSE TITLE – COMPUTER PROGRAMMING

COURSE NO.- CST3101

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

| COURSE OUTCOMES: At the end of this course, students will able to: | |
|--|--|
| CO 1 | Understand various software development tools like algorithm, pseudo codes and flow charts for solving problems. |
| CO 2 | Understand the use of loops and decision-making statements to solve the problems. |
| CO 3 | Apply different operations on arrays and user-defined functions to solve real-time problems. |
| CO 4 | Analyze the operation of pointers, structures and unions. |
| CO 5 | Implement file operations in C programming for a given application. |

SECTION A

1. **Introduction to Programming (Flow chart/pseudocode, compilation etc.)**

Evolution of programming languages, the compilation process, object code, source code, executable code, fundamentals of algorithms, flow charts.

(4 Hrs)

2. **Introduction to C, Data Types, Constants, Variables, Expressions, Statements, Operators, Data Input and Output - Character set, Identifiers, Keywords, Data Types, Constant and Variables, Statements, Expressions, Operators, Precedence of operators, Input-output Assignments.**

(6 Hrs)

3. **Control Statements, Storage Classes, Library Functions.**

Control structures, Decision making and Branching, Decision making & looping.

Storage Classes: Types of storage classes, Scoping rules.

Standard Library Functions, advantages and use of various library functions (I/O functions, String, Character, Mathematics, Time and Date, functions).

(10 Hrs)

SECTION B

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

User defined and standard functions, Formal and Actual arguments, Functions category, function prototypes, parameter passing, Call-by-value, Call-by-reference, Nested function, Recursion.

One dimensional Array, One dimensional Array, 2- dimensional arrays: declaration and their applications, Searching in an array: Linear search and Binary search.

Sorting in an array: Bubble sort, Selection sort, Insertion sort, String Manipulation functions, Passing array to a Function, Declaration of structures, declaration of unions, pointer to structure & unions.

(10 Hrs)

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

Pointer variable and its importance, Pointer Arithmetic, passing parameters by reference, pointer to pointer, pointers to functions, Dangling pointer, dynamic memory allocation. Console input-output functions, Disk input-output functions, opening closing and creating Data files.

(10 Hrs)

BOOKS RECOMMENDED:

- | | |
|--------------------------|-----------------------|
| C How to Program, 7/e | - Paul J. Deitel |
| Programming With C | - Byron Gottfried. |
| Programming With C | - E. Balaguruswamy. |
| C The Complete Reference | - Herbert Schildt. |
| Let us C | - Ya shwant Kanitkar. |

NOTE: There shall be total 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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Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: ECE / CIVIL ENGINEERING
CLASS: B.E. 1st SEMESTER
COURSE TITLE – ENERGY AND ENVIRONMENT
COURSE NO.- CET6101
DURATION OF EXAM: 3 HOURS

CREDITS: 3

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

| COURSE OUTCOMES: On completion of the course the students will be able to | |
|---|---|
| CO1 | Understand the ecosystems, biodiversity, and its conservation. |
| CO2 | Understand the basic concepts of environmental studies and natural resources. |
| CO3 | Gain knowledge about different types of environmental pollution and their control measures. |
| CO4 | Understand the fundamentals of social issues, population and the environment. |

SECTION-A

Environment: Introduction, Multidisciplinary nature of environmental studies- Definition, scope and importance, Need for public awareness. **Ecosystem:** Concept, Energy flow, Structure and function of an ecosystem. Food chains, food webs and ecological pyramids, Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystems.

(10 hrs)

Natural Resources: Renewable and Non-renewable resources. Different types of resources.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems.

(10 hrs)

SECTION-B

Pollution: Definition, Cause, effects and control measures.

Air pollution- Sources, effects, control, air quality standards, air pollution act, air pollution measurement.

Water Pollution-Sources and impacts, **Soil Pollution-**Sources and impacts, disposal of solid waste. Greenhouse gases – effect, acid rain. **Noise pollution-** Definition, Cause, effects and control measures.

(10 hrs)

Social Issues and the Environment: Sustainable development and Sustainable use of Resources, Urban problems related to energy, **Energy resources:** Growing energy needs, renewable and nonrenewable energy sources use of alternate energy sources, **Land resources:** Land as a resource, land degradation, soil erosion and desertification, Role of an individual in conservation of natural resources. **Environment Protection Acts:** Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act and Forest Conservation Act.

(10 hrs)

RECOMMENDED BOOKS:

- | | | |
|---|---|-------------------------------|
| 1 | Environmental Engineering | Peavy, Rowe And Tchobanoglous |
| 2 | Elements of Environmental Science And Engineering | P. Meenakshi |
| 3 | Environmental Studies | Kaushik And Kaushik |
| 4 | A Basic Course In Environmental Studies | Deswal And Deswal |

NOTE: There will be total 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.

Examination to be held in the Year December 2022, 2023, 2024, 2025

BRAÑCH: COMPUTER/CSE/IT/ECE/ELECTRICAL ENGINEERING

CREDITS: 3

CLASS: B.E. 1st SEMESTER

COURSE TITLE – UNIVERSAL HUMAN VALUES

COURSE NO.- HMT1102

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

COURSE OUTCOMES: At the end of the course students will be able to:

| | |
|-----|---|
| CO1 | Understand the meaning of happiness and prosperity for a human being. |
| CO2 | Comprehend the holistic approach about the family and society. |
| CO3 | Understand the harmony in the nature and self-regulation in nature |
| CO4 | Apply the understanding of harmony in existence in their profession. |

SECTION A

UNIT 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self-Exploration–what is it? -it’s content and process; ‘Natural Acceptance’ and Experiential Validation-as the mechanism for self-exploration
3. Continuous Happiness and Prosperity-A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities-the basic requirements for fulfillment of aspirations of every human being with their correct priority.

(11 hrs)

UNIT 2: Understanding Harmony in the Human Being-Harmony in Myself!

1. Understanding human being as a co-existence of the sentiment ‘I’ and the material ‘Body’
2. Understanding the needs of Self (‘I’) and ‘Body’– Happiness and physical facility.
3. Understanding the Body as an instrument of ‘I’ (I am being the doer, seer and enjoyer)
4. Understanding the characteristics and activities of ‘I’ and harmony in ‘I’

(9 hrs)

SECTION B

UNIT 3: Understanding Harmony in the Family and Society-Harmony in Human-Human Relationship

1. Understanding Harmony in the family–the basic unit of human interaction.
2. Understanding values in a human-human relationship; the meaning of justice (*Nyaya*) and program for its fulfillment to ensure mutual happiness (*Ubhay-tripti*); Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
3. Understanding the meaning of trust (*Vishwas*); Difference between intention and competence
4. Understanding the meaning of respect (*Samman*); Difference between respect and differentiation

(10 hrs)

UNIT 4: Understanding Harmony in the Nature and Existence-Whole existence as Co-existence

1. Understanding harmony in the Nature
2. Interconnectedness and mutual fulfillment among the four orders of nature-recyclability and self-regulation in nature.
3. Understanding existence as co-existence of mutually interacting units in all pervasive space
4. Holistic perception of harmony at all levels of existence.

(10 hrs)

Book Recommended:

1. R.R Gaur, R Sangal, GP Bagaria, A foundation course in Human Values and professional Ethics, Excel books, New Delhi,

Reference Books:

1. P L Dhar, RR Gaur, Science and Humanism, Common wealth Purblishers.
2. Subhas Palekar,2000,How to practice Natural Farming, Pracheen (Vaidik) Krishi Tantra Shodh,
3. A Nagraj, 1998,Jeevan Vidya ek Parichay, Divya Path Sansthan, Amar kañtak.
4. B. Mahadevan, Vinayak Rajat Bhat, Nagendra Pavana R.N, Indian Knowledge System, PHI Publisher.

NOTE : There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two from each section.

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Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: COMPUTER/CSE/IT/ECE/ELECTRICAL ENGINEERING

CLASS: B.E. 1st SEMESTER

CREDITS: 1

COURSE TITLE – APPLIED ENGINEERING PHYSICS LAB

COURSE NO: BSP1113

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | PRACTICAL |
| 0 | 0 | 2 | 0 | 50 |

Course Outcomes: At the end of the course the Student will be able to –

| | |
|------|--|
| CO-1 | Gain knowledge about the scientific methods of measuring different physical parameters based on the concepts of Physics. |
| CO-2 | Develop the experimentation skills by displaying minimized measurement errors. |
| CO-3 | Acquire the practical skills to obtain the solutions pertaining to different physics' experiments. |
| CO-4 | Acquire essence of scientific temper infused with innovation and creativity. |

| Experiment No. | Title of Experiment |
|----------------|---|
| EXP-I | To find co-efficient of self- induction of a coil by Anderson's Bridge using headphone. |
| EXP-II | To measure the number of lines on the diffraction grating using He-Ne laser. |
| EXP-III | To study the V-I characteristics of a PN- Junction diode. |
| EXP-IV | To find the wavelength of monochromatic light using Newton's rings apparatus. |
| EXP-V | To evaluate the value of Planck's constant using a photocell. |
| EXP-VI | To study the voice transmission through the optical fiber and measure the numerical aperture. |
| EXP-VII | To find the dispersive power of a given prism using a spectrometer. |
| EXP-VIII | To study the variation of Magnetic field by using Stewart and Gee's Tangent galvanometer. |
| EXP-IX | To find the resistivity of a semiconductor by four probe method at different temperatures. |
| EXP-X | To find the impedance of LCR circuit. |
| EXP-XI | To study the Common base/ common emitter characteristics of PNP/NPN junction transistor. |

NOTE: A minimum of eight experiments is to be performed covering the diverse aspects of engineering physics

Deebrikta

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Examination to be held in the Year December 2022, 2023, 2024, 2025

BRANCH: COMPUTER/CSE/IT/ECE/ELECTRICAL/MECHANICAL ENGINEERING

CREDITS: 1

CLASS: B.E. 1st SEMESTER

COURSE TITLE – COMPUTER PROGRAMMING LAB

COURSE NO.- CSP3111

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | PRACTICAL |
| 0 | 0 | 2 | 0 | 50 |

| | |
|------|--|
| CO 1 | Understand the working of different compilers and editors for writing programs in C. |
| CO 2 | Exercise basic syntax, operators and control statements to write C programs. |
| CO 3 | Execute programs bauser-defined functions and recursive functions. |
| CO 4 | Implement arrays, pointers to access variables and functions. |
| CO 5 | Write programs that perform operations using derived data types and files. |

Lab Experiments

Experiment 1: Problem solving using computers: Familiarization with programming Environment.

Experiment 2: Variable types and type conversions: Simple computational problems using arithmetic expressions.

Experiment 3: Branching and logical expressions: Problems involving if-then-else Structures.

Experiment 4: Loops, while and for loops: Iterative problems e.g., sum of series

Experiment 5: 1D Arrays: searching, sorting: 1D Array manipulation

Experiment 6: 2D arrays and Strings, memory structure: Matrix problems, String Operations

Experiment 7: Functions, call by value: Simple functions

Experiment 8: Recursion, structure of recursive calls: Recursive functions

Experiment 9: Pointers, structures and dynamic memory allocation: Pointers and Structures

Experiment 10: File handling: File creation, writing and reading a file, File manipulation Operations

NOTE: A minimum of eight experiments is to be performed .

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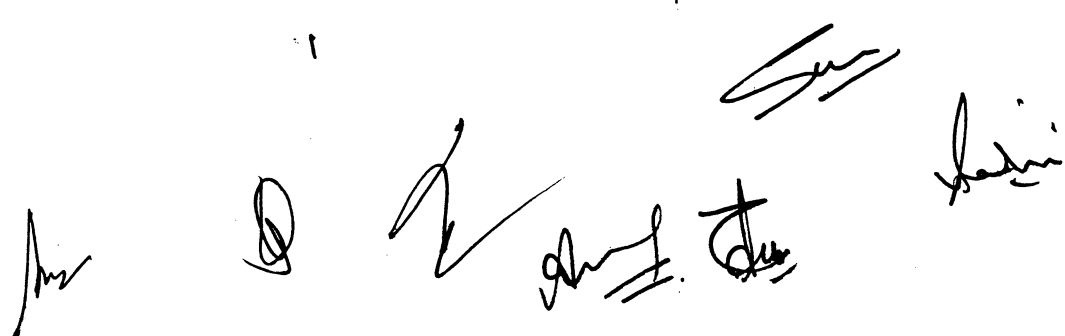
Annexure-II

B.E. 2nd Semester Electronics and Communication Engineering

Examination to be held in the Year May 2023, 2024, 2025, 2026

Contact Hrs: 25

| Course code | Course type | Course title | Load allocation | | | Marks Distribution | | Total Marks | Credits | % Change |
|-------------|--|--|-----------------|-----------|-----------|--------------------|------------|-------------|-------------|----------|
| | | | L | T | P | Internal | External | | | |
| BST 1201 | Basic Science Course | Engineering Mathematics-II | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| BST 1202 | Basic Science Course | Advanced Engineering Chemistry | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| EET 2201 | Engineering Science Course | Fundamentals of Electrical Engineering | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| ECT 1201 | Engineering Science Course | Fundamental of Electronics Engineering | 2 | 1 | 0 | 50 | 100 | 150 | 3 | 100% |
| HMT 1202 | Humanities & Social science & management courses | Professional Communication Skill | 2 | 0 | 0 | 25 | 75 | 100 | 2 | 100% |
| BSP 1212 | Basic Science Course | Advanced Engineering Chemistry-Lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| EEP 2211 | Engineering Science Course | Fundamentals of Electrical Engineering Lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| HMP 1212 | Humanities & Social science & management courses | Professional Communication Skill lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| MEP 5212 | Engineering Science Course | Workshop Manufacturing Practices | 0 | 0 | 3 | 50 | - | 50 | 1.5 | 100% |
| ECP 1211 | Engineering Science Course | Fundamental of Electronics Engineering lab | 0 | 0 | 2 | 50 | - | 50 | 1 | 100% |
| | | TOTAL | 10 | 04 | 11 | 475 | 475 | 950 | 19.5 | |



Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: COMPUTER/CSE/IT/ECE/CIVIL/ELECTRICAL/MECHANICAL ENGINEERING

CREDITS:3

CLASS: B.E. 2nd SEMESTER

COURSE TITLE – ENGINEERING MATHEMATICS-II

COURSE NO.- BST1201

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

Course Outcomes: At the end of the course the students will be able to:

| | |
|-----|--|
| CO1 | Learn different tests to check the convergence or divergence of a series. |
| CO2 | Find the Fourier series of a function. |
| CO3 | Solve the differential equations of the first order and higher order. |
| CO4 | Learn the concept of linear and non-linear partial differential equations. |

SECTION A

UNIT-I: INTRODUCTION TO INFINITE SERIES

Convergence and divergence of a Series: p-test, Comparison Test, Cauchy Root Test, D'Alembert Ratio Test, Raabe's Test, Gauss Test, Logarithmic Test, Leibnitz Test for alternating series (10 hrs)

UNIT-II: FOURIER SERIES

Euler's formula, 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. (10 hrs)

SECTION B

UNIT-III: ORDINARY DIFFERENTIAL EQUATIONS

Differential equations of first order and first degree: Linear and Bernoulli's differential equations, Exact and non-exact differential equations. Higher order linear differential equations: Complementary solution, particular integral and general solution of these equations, variation of parameters technique to find particular integral of second order differential equations (10 hrs)

UNIT-IV: PARTIAL DIFFERENTIAL EQUATIONS

First order linear p.d.e, Non-Linear p.d.e. of 1st order, solution by Charpit's method, Four Standard forms of non-linear p.d.e with reference to Charpit's technique: $f(p, q) = 0$, $f(z, p, q) = 0$, $f(x, p) = g(y, q)$ and Clairaut's form. Homogeneous and Non-homogeneous higher order linear partial differential equations with constant coefficients, Rules for finding P.I and C.F, Non-Linear equations of 2nd order (12 hrs)

BOOKS RECOMMENDED:

- 1 Advanced Engineering Mathematics R.K. Jain, S.R.K. Iyenger, 2nd edition Narosa New Delhi.
- 2 Differential Equations G. F. Simmons
- 3 Partial differential equations M. D. Raisinghania
- 4 Engineering Mathematics-I Dr. Bhopinder Singh
- 5 Engineering Mathematics-II Dr. Bhopinder Singh

NOTE: There will be total 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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4. Spectroscopy of Organic Compounds

Kalsi, P.S.

5. Principles of Colloids and Surface Chemistry

Paul C Hiemenz

Reference Books:

1. Engineering Chemistry

Sharma, B.K.

2. Spectroscopy of Organic Compounds

Silverstein

3. Electrochemistry

Samuel Glasstone

NOTE: There will be total 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.



Deepsikha

Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: COMPUTER / CSE / IT / E&C ENGINEERING

CREDITS:3

CLASS: B.E. 2nd SEMESTER

COURSE TITLE: FUNDAMENTALS OF ELECTRICAL
ENGINEERING

COURSE NO.- EET2201

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

| COURSE OUTCOMES: students will be able to understand and analyse | |
|--|--|
| CO.1 | The basic concepts of electric circuit terminology, Kirchhoff's and Ohm's laws. |
| CO.2 | The circuits using electrical theorems |
| CO.3 | The basic terminologies in AC and star delta circuits |
| CO.4 | The basic concepts of single-phase transformer and installation of low voltage electrical components |

SECTION-I

Unit-1: Electric Circuit Laws & Energy Sources: Basic electric circuit terminology, Ohm's law, Kirchhoff's laws, Circuit parameters (Resistance, inductance & capacitance), series & parallel combination of resistance, inductance & capacitance. ideal & practical voltage and current sources and their transformation, dependent voltage sources and dependent current source.
(8 hrs)

Unit-2: D.C. Circuit Analysis: Power and energy relations, analysis of series-parallel D.C. circuits, Mesh & Nodal methods, Star- Delta transformation, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem. Reciprocity Theorem.
(10 hrs)

SECTION-II

Unit-3: A.C. Circuit: Introduction, Average and effective values of periodic functions, instantaneous and average power, Phasor and complex number representation. Solution of sinusoidally excited R, L, C circuits, Resonance in series and parallel circuits, quality factor. Concept of 3-phase voltage and current in Wye (y), Delta circuits and their relationship.
(8 hrs)

Unit-4: Transformers and Electrical Installations: Principle operation of single phase transformer, ideal and practical transformer (no-load & on-load phasor diagrams), equivalent circuit, losses in transformers, transformer test (open circuit & short circuit), regulation and efficiency, auto transformer. Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of wires and cables.
(10 hrs)

RECOMMENDED BOOKS:

- | | |
|--|-----------------|
| 1. Electrical Engineering Fundamentals | V. Del toro |
| 2. Electrical Technology | H.Cotton |
| 3. Electrical Technology | E.Hughes |
| 4. Circuit Theory | A.K.Chakorbarti |
| 5. Basic Electrical Engineering | J.B Gupta |

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.

Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: ECE/MECHANICAL ENGINEERING

CREDITS: 3

CLASS: B.E. 2nd SEMESTER

COURSE TITLE: FUNDAMENTALS OF ELECTRONICS
ENGINEERING

COURSE NO.: ECT1201

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 1 | 0 | 100 | 50 |

COURSE OUTCOMES

After learning this course students will be able to:

| | |
|------|---|
| CO.1 | To understand the fundamentals of semiconductor Physics. |
| CO2 | To introduce the concepts of semiconductor devices with applications. |
| CO3 | To enable the students to understand the working and applications of a transistor |
| CO4 | To understand the basics Techniques of biasing of JFET & MOSFET |

SECTION-A

UNIT-I: Semi-Conductors and Diodes: Introduction, Insulators, Semiconductors and Metals, Mobility and Conductivity, Intrinsic and Extrinsic Semiconductors, Charge Density, Current Components in Semiconductors, Continuity Equation, PN Junction Diode- Volt ampere characteristics, Diode capacitances, Static & dynamic resistances; Types of Diodes- Zener Diode, its breakdown phenomenon and its applications, Photodiodes, LED, Varactor Diode, Tunnel Diodes, Schottky diode.

(9 hrs)

UNIT-II: Diode Applications: Rectifiers and Filter Circuit: Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, and their Analysis, L, C, and Pi Filters; Series and Shunt Diode Clippers, Clipping at Two Independent Levels, Clamping Operation, Clamping Circuit; Practical Clamping Circuits.

(9 hrs)

SECTION-B

UNIT-III: Transistor Biasing: Symbol, Construction, and Characteristics of BJT, reach through &avalanche phenomena, Base width modulation, Transistor Configuration: CB, CE, CC Configuration with necessary current equations. Transistor as an amplifier and switch, Derivation related to Transistor Biasing and Bias Compensation Techniques.

(10 hrs)

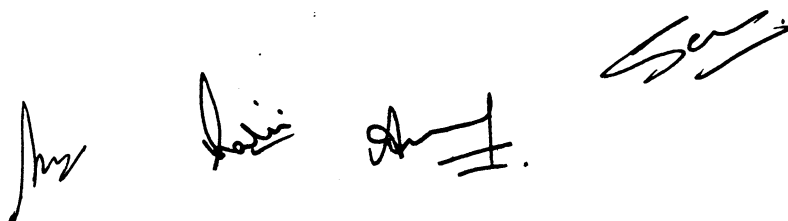
UNIT-IV: Symbol, construction, and Characteristics of JFET, parameters of JFET, Analysis and biasing of JFET, Low-frequency model of JFET, MOSFET, and its characteristics.

(10 hrs)

BOOKS RECOMMENDED:

1. Integrated Electronics by J. Millman and C.C. Halkias, McGraw Hill Education, India.
2. Electronics Devices and Circuit Theory by R. Boylestad and L. Nashelsky, Pearson India.
3. Electronics Devices and Circuits-II by U. A. Bakshi and A. P. Godse, Technical Publications.
4. Electronic principles by L. Malvino, Tata McGraw Hill Education.

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



Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: COMPUTER/CSE/IT/ECE/ ELECTRICAL ENGINEERING

CREDITS: 2

CLASS: B.E.: 2nd SEMESTER

COURSE TITLE: PROFESSIONAL COMMUNICATION SKILLS

COURSE NO.- HMT1202

DURATION OF EXAM: 3 HOURS

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 2 | 0 | 0 | 75 | 25 |

| Course Outcomes: At the end of the course the students will be able to | |
|--|---|
| CO 1 | Acquire proficiency in reading, writing, speaking & listening skills. |
| CO 2 | Equip themselves with professional development skills. |
| CO 3 | Learn interpersonal communication and self-confidence. |
| CO 4 | Learn the basics and essentials of Life skills education for successful life. |

SECTION -A

Communication skills & writing practice: Introduction, Elements of Business Communication, Media of verbal communication (oral & written), Barriers to Communication, Technology-Enabled Business Communication, types of letter- Inquiry letter, Reply to an inquiry, Claims letter, Adjustment and Sales letter, Job letter. (8hrs)

Listening & Skills: Process of listening, types of listening, techniques to improve listening ability, **Group Discussion-** Advantages, Purpose, Group Dynamics, and Guidelines for Effective Group discussion. **Speaking Skills-** Skills of Effective speaking, Tips for writing scripts and speeches. (7hrs)

SECTION-B

Professional development–Introduction, Objectives of professional development, tips for professional development, Activities that contribute to professional development. **Interviews**–Meaning, Types of interview, tips for giving an interview and handling questions. (8hrs)

Life Skills: Definition and Importance of Life Skills, Life Skills Activities for personality development, Essential Life Skills for personal and professional growth, Concept of Soft skills and Hard skills: Difference between soft skills & hard skills. (7hrs)

Recommended Books:

- Communication Skills (Second Edition) by Sanjay Kumar & Pushap Lata, Oxford University Press.
- Functional Aspects of Communication Skills by Dr. Prajapati Prasad, Published by S.K Kataria & Sons.

Reference Books:

- An Approach to Communication Skills by Indrajit Bhattacharya, Published by Dhanpat Rai & Co Ltd
- Communication Skills by Varinder Kumar and Bodh Raj, Published by Kalyani Publishers.
- Integrated Life Skills by Payel Basu, published by Notion Press.
- Manuals of Life Skills Key to Excel by Alka Seth, Prof. Novrattan Sharma, Published by Global Vision Publishing House.
- Professional Development by Sally J. Zepeda, published by Taylor & Francis Ltd.

NOTE: There shall be total eight questions, four from each section. Each question carries 20 marks. Five questions will have to be attempted, selecting at least two from each section.

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Second Semester Examination to be held in the Year May 2023, 2024, 2025, 2026

CLASS: B.E. 2ND SEMESTER

BRANCH: COMPUTER /E&C/ELECTRICAL ENGINEERING

COURSE TITLE: ADVANCED ENGINEERING CHEMISTRY-LAB

COURSE No.: BSP1212

CREDITS: 1

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | SESSIONAL |
| 0 | 0 | 2 | 0 | 50 |

| Course Outcomes: At the end of the course the students will be able to | |
|---|---|
| CO 1 | Visualize and understand chemical engineering unit, operations related to fluid and practical mechanics and mass transfer. |
| CO 2 | Analyse an overview of preparation and identification of organic compound and detection of various elements and functional groups present in it. Also, the Absorbance/concentration of various solutions. |
| CO 3 | This course relies on quantitative analysis and makes use of simple equation to illustrate the concept involved. |
| CO 4 | Estimation of total hardness of water by EDTA complexometric method. |

S. No.

TITLE OF EXPERIMENT

1. Determine Volumetrically the number of molecules of water of crystallization present in the given sample of Mohr's salt, x gms. of which have been dissolved per litre provided N/10 $K_2Cr_2O_7$ (using an external indicator).
2. Determine Volumetrically the percentage of Cu in a sample of $CuSO_4$ crystals, Z gms of which have been dissolved per litre, provided 0.1N $Na_2S_2O_3$.
3. Determine the percentage of $CaCO_3$ in precipitated chalk. You are provided with 1N HCl and 0.1N NaOH.
4. To analyse the given antacid tablets.
5. To determine the coefficient of viscosity of an unknown liquid using Ostwald Viscometer.
6. Determine the surface tension of a unknown liquid Stalagmometer.
7. To prepare a pure and dry sample of Glucosazone.
8. To analyse the absorbance of solutions at different concentrations by UV Spectrophotometer.
9. Determine the method of purification of organic compounds by paper chromatography.
10. Organic Analysis: Identify the following organic compounds (preparation of at least one derivative).
11. Determine the total hardness of a sample of water by complexometric method (using EDTA).
12. Determine the percentage of calcium oxide in cement.

Note:- A minimum of ten experiments to be performed.

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Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: COMPUTER / CSE / IT / E&C ENGINEERING

CLASS: B.E. 2nd SEMESTER

COURSE TITLE –FUNDAMENTALS OF ELECTRICAL
ENGINEERING LAB

COURSE NO: EEP2211

CREDITS: 1

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | PRACTICAL |
| 0 | 0 | 2 | 0 | 50 |

Course Outcomes: After completion of laboratory course the students would able to:

CO.1 Experimentally verify the basic circuit theorems

CO.2 Measure current in series-parallel RLC circuits.

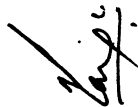
CO.3 Measure load of 3 phase ac circuits connected in star and delta..

CO.4 Understand the basic characteristics of single-phase transformer

LIST OF EXPERIMENTS:

1. Verification of Kirchoff's Laws.
2. Verification of Superposition Theorem.
3. Verification of Thevinin's Theorem.
4. Verification of Norton Theorem.
5. Verification of Reciprocity Theorem.
6. Verification of Maximum Power Transfer Theorem.
7. Measurement of current in various branches of RLC series-parallel circuit.
8. Study of three-phase A.C Circuits with Star and Delta connected Load.
9. Study of single-phase transformer. Determination of polarity test of given single phase transformer.
10. To perform open and short circuit test on single phase transformers.
11. Study of wires, cables, fuses and MCBs.

Note- Minimum of seven experiments to be performed by each student



Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: COMPUTER/CSE/IT/ECE/ ELECTRICAL ENGINEERING

CLASS: B.E. 2nd SEMESTER

CREDITS: 1

COURSE TITLE: PROFESSIONAL COMMUNICATION SKILLS LAB
COURSE NO.: HMP1212

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | PRACTICAL |
| 0 | 0 | 2 | 0 | 50 |

| |
|---|
| Course Outcomes: At the end of the course the students will be able to |
| CO 1 Acquire proficiency in reading, writing speaking and listening skills. |
| CO 2 Develop presentation, interview and interpersonal skills |

List of Practical's:

Listening Skills

1. Listen to text read aloud in normal speed with focus on intonation,
2. After listening the student can fill in blanks, choose a suitable title, make a summery, and be able to answer comprehension questions from the passage read aloud.

Speaking skills

3. Formal & Informal Conversations
4. Presentation Skills

Interpersonal Skills

5. Group Discussion
6. Interviews, Mock Interviews

Career Building & Resume writing

7. SWOT Analysis
8. Resume Writing

Life Skills Activities

9. Self-Management
10. Role play

Note: 1. Eligibility to appear in Practical Test: 8 Practicals
2. Simulation/ virtual labs are used to enhance the practical ability of students.

Deepshikha

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Examination to be held in the Year May 2023, 2024, 2025, 2026

CLASS: B.E. 2nd SEMESTER

BRANCH: COMPUTER/CSE/IT/E&C/CIVIL ENGINEERING

COURSE TITLE: WORKSHOP MANUFACTURING

PRACTICES

COURSE NO.: MEP5212

Credits 1.5

Marks

Practical

50

L T P
0 0 3

COURSE OUTCOMES

At the end of the course, the student will demonstrate the ability to: -

| | |
|------------|---|
| CO1 | Understanding different manufacturing techniques and their relative advantages/disadvantages with respect to different applications |
| CO2 | Selection of a suitable technique for meeting a specific fabrication need. |
| CO3 | Acquire a minimum practical skill with respect to the different manufacturing methods. |
| CO4 | Creation of simple components using different materials. |

SHOP PRACTICE: -

Unit -1: - Carpentry

1. Middle/Cross lap joint
2. Mortise and Tenon Joint T -Joint
3. Pattern making of open bearing

Unit II: -Foundry

1. Moulding of open bearing (simple pattern)
2. Moulding of Sliding Job of Bench Vice (Split piece pattern)

Unit -III: - Smithy

1. Upsetting, drawing and bending operation

Unit -IV: - Welding

1. Preparation of single V- Butt joint by arc/gas welding.
2. Preparation of Double V-Butt joint by gas /arc welding.
3. Corner Joint by arc/gas welding
4. Lap Joint by arc/gas welding

Unit – V: - Fitting

1. Assembly of snap fitting of MS-Flat pieces (Male and Female)
2. Assembly and fitting of two L-shaped rectangular MS-flat pieces.

Books Recommended: -

1. Workshop Technology by Hajra and Chowdhary
2. Manufacturing Technology Vol I and II by Rao. P.N
3. Manufacturing Technology by Gowri. P. Hariharan and A. Suresh Babu.

Note: Minimum of Eight experiments to be performed.

Examination to be held in the Year May 2023, 2024, 2025, 2026

BRANCH: ECE/MECHANICAL ENGINEERING

CLASS: B.E. 2nd SEMESTER

COURSE TITLE: FUNDAMENTALS OF ELECTRONICS
ENGINEERING LAB

COURSE NO: ECP1211

CREDITS-1

| L | T | P | MARKS | |
|---|---|---|--------|-----------|
| | | | THEORY | PRACTICAL |
| 0 | 0 | 2 | 0 | 50 |

After learning this course students will be able to:

| | |
|------|---|
| CO 1 | Plot and understand rectifiers and evaluate their performance parameters. |
| CO 2 | Plot the characteristics of FET using trainer kits. |
| CO 3 | Plot V-I characteristics of transistor for various configurations. |
| CO 4 | Design basic electronic circuits using soldering techniques. |

LIST OF PRACTICALS: -

1. To study the various active and passive electronic components along with soldering techniques on PCB.
2. To assemble various electronic circuits on a Breadboard.
3. To determine and plot the operating characteristics of PN junction diode.
4. To study the characteristics of Zener diode, photodiode, Tunnel diode and LED.
5. To study Half wave and Full wave / Bridge Rectifier.
6. To study the operation characteristics (Input/Output) of the PNP/NPN Transistor (Common Emitter/Common Base).
7. To study clipper and clamper circuits using diodes.
8. To study the characteristics of FET and MOSFET.
9. Design of self-Bias circuits using BJT.
10. Design of self-Bias circuits using FET.

Note: Each student has to perform at least eight experiments.

