Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of EEE Department

"Centre of Excellence in Education and Research in the field of Electrical and Electronics Engineering and to become the foremost academic department through its education and research programs"

Mission of EEE Department

- To develop innovative, efficient and proficient electrical engineers.
- To keep the curriculum industry friendly, with due regard to the University curriculum.
- To participate in large projects of National and International importance.
- To promote ethical and moral values among the students so as to make them emerge as responsible professionals.

Program Educational Objectives (PEOs)

PEO 1. To produce Electrical and Electronics Engineering graduates who have strong foundation in Mathematics, Sciences and Basic Engineering.

PEO 2. To provide intensive training in problem solving, laboratory skills and design skills to use modern engineering tools through higher education and research.

PEO 3. Ability to seek employment in a variety of engineering (or) engineering technology positions to specialize in specific areas of interest and work successfully in their chosen career aspirations.

PEO 4. To inculcate in students professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context through life-long learning.

Program Outcomes(POs) of EEE Department

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of EEE Department

PSO 1: The EEE program must demonstrate knowledge and hands-on competence in the application of electrical and electronics circuits in a rigorous mathematical

environment at or above the level of algebra and trigonometry.

PSO2: The EEE program must demonstrate that graduates can apply interdisciplinary project management techniques to electrical and electronics systems.

PSO 3: The EEE program must demonstrate that graduates can analyze, design and develop hardware and software for control systems, measurements, power electronics and power systems

II YEAR II SEMESTER

ELECTRICAL & ELECTRONICS ENGINEERING

R19 SYLLABUS

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	1	0	3
Subject	Power Systems-II				
Branch	EEE				

Learning Objectives:

- To compute inductance/capacitance of transmission lines and to understand the concepts of GMD/GMR.
- To study the short and medium length transmission lines, their models and performance.
- To study the performance of long transmission lines and travelling waves of transmission lines.
- To study the factors affecting the performance of transmission lines and power factor improvement methods.
- To discuss sag and tension computation of transmission lines as well as to study the performance of overhead insulators.

UNIT–I

Transmission Line Parameters-I

Types of over head transmission line conductors – Calculation of resistance for solid conductors – Calculation of inductance for single phase and three phase– Single and double circuit lines– Concept of GMR and GMD–Symmetrical and asymmetrical conductor configuration with and without transposition-Numerical problems

UNIT–II

Transmission Line Parameters-II

Bundled conductors-Calculation of capacitance for 2 wire and 3 wire systems – Effect of ground on capacitance – Capacitance calculations for symmetrical and asymmetrical single and three phase–Single and double circuit transmission lines-Numerical Problems.

UNIT–III

Performance of Short and Medium Length Transmission Lines

Classification of Transmission Lines-Short transmission line model representation–Medium transmission line model representation by End condenser, Nominal "T" and Nominal "π" methods -A, B, C, D Constants of short and medium transmission lines-Mathematical Solutions to estimate regulation and efficiency – Numerical Problems.

UNIT–IV

Performance of Long Transmission Lines and Travelling Waves

Representation of Long Transmission Line–Rigorous mathematical Solution – Evaluation of A, B, C, D Constants-Numerical Problems– Types of Power System Transients-Concept of travelling waves or propagation surges-Incident, Reflected and Refracted Waves-Wave Length and Velocity of Propagation of Waves –Surge Impedance and SIL of Long Lines

UNIT–V

Various Factors governing the Performance of Transmission line

Skin and Proximity effects – Description and effect on Resistance of Solid Conductors – Ferranti effect – Charging Current –Shunt Compensation –Corona – Description of the phenomenon– Factors affecting corona–Critical voltages and power loss – numerical problems – Basic concept of Radio Interference.

UNIT–VI

Sag and Tension Calculations and Overhead Line Insulators

Sag and Tension calculations with equal and unequal heights of towers–Effect of Wind and Ice on weight of Conductor–Numerical Problems – Stringing chart and sag template and its applications–Types of Insulators – String efficiency and Methods for improvement– Numerical Problems – Voltage distribution–Calculation of string efficiency–Capacitance grading and Static Shielding.

Learning Outcomes:

Students are able to:

- Evaluate the parameters of different types of transmission lines.
- Apply Nominal "T" and Nominal "π" concepts to evaluate the performance of short and medium transmission lines
- Understand the long transmission lines performance calculations and travelling waves of transmission lines.
- Analyze the various factors governing the performance of transmission lines.
- Understand the sag and tension calculations of transmission lines and performance of over head line insulators.

Text Books:

1. Electrical power systems – by C.L.Wadhwa, New Age International (P) Limited, Publishers, 7th edition 2017.
2. Modern Power System Analysis by I.J.Nagarath and D.P.Kothari, Tata McGraw Hill, 4th Edition,2011
3. A course in Power Systems by J.B Gupta, SK Publications, 11th edition 2013

Reference Books:

1. Power system Analysis–by John J Grainger William D Stevenson, TMC Companies, 4th edition
2. A Text Book on Power System Engineering by M.L.Soni, P.V.Gupta, U.S.Bhatnagar A.Chakrabarthy, DhanpatRai& Co Pvt. Ltd.
3. Electrical Power Systems by P.S.R. Murthy, B.S.Publications.

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	1	0	3
Subject	ELECTRICAL CIRCUIT ANALYSIS – II				
Branch	EEE				

Learning Objectives:

- To understand the applications of network theorems for analysis of AC electrical networks.
- To study the concepts of balancedand unbalanced three-phase circuits.
- To study the transient behavior of electrical networks with DC and AC excitations.
- To study the performance of a network based on input and output excitation/response.
- To understand the realization of electrical network function into electrical equivalent passive elements. .

UNIT-I Network theorems (AC Excitation): Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem, Reciprocity theorem, Millman's theorem.

UNIT-II Balanced Three phase circuits

Introduction to three phase, phase sequence, star and delta connection ,relation between line and phase voltages and currents ,analysis of balanced three phase circuits, measurement of active and reactive power.

UNIT-III Unbalanced Three phase circuits

Analysis of three phase unbalanced circuits: Loop method – Star-Delta transformation technique, Two wattmeter methods for measurement of three phase power, Single wattmeter method of measuring reactive power.

UNIT-IV Transient Analysis in DC and AC circuits

Transient response of R-L, R-C, R-L-C circuits for DC and AC excitations, Solution using differential equations and Laplace transforms.

UNIT-V Two Port Networks

Two port network parameters – Z, Y, ABCD and Hybrid parameters and their relations, Interconnections of two port networks, Poles and zeros of network functions.

UNIT-VI Network synthesis

Positive real function - basic synthesis procedure - LC immittance functions - RC impedance functions and RL admittance function - RL impedance function and RC admittance function - Foster and Cauer methods.

Learning Outcomes:

- Students are able to solve AC electrical networks by using principles of network theorems.
- Students are able to solve three- phase circuits under balanced and unbalanced condition
- Students are able find the transient response of electrical networks for different types of excitations.
- Students are able to find parameters for different types of network.
- Students are able to realize electrical equivalent network for a given network transfer function.

Text Books:

1. Engineering Circuit Analysis by William Hayt and Jack E.Kemmerley,McGraw Hill Company,6 th edition
2. Network synthesis: Van Valkenburg; Prentice-Hall of India Private Ltd

Reference Books:

1. Circuit Theory (Analysis and Synthesis) by A.Chakrabarthi,Dhanpat Rai &Co.
2. Fundamentals of Electrical Circuits by Charles K.Alexander and Mathew N.O.Sadiku, McGraw Hill Education (India)
3. Introduction to circuit analysis and design by TildonGlisson. Jr, Springer Publications.
4. Circuits by A.BruceCarlson ,Cengage Learning Publications
5. Networks and Systems by D. Roy Choudhury, New Age International publishers
6. Electric Circuits by David A. Bell, Oxford publications.

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	1	0	3
Subject	ELECTRICAL MACHINES– I				
Branch	EEE				

Learning objectives:

i. Understand the principles of electromagnetic energy conversion and learn the Principle and construction details of DC Generator.
ii. Learn the characteristics of DC generators.
iii. Understand the concept of armature reaction and commutation Process.
iv. Learn the characteristics and performance of DC motors.
v. Learn the speed control and testing methods of DC motors.
vi. Learn the basics Of PMDC motor & Stepper Motor.

UNIT–I:

Introduction to D.C. Machines

Energy balance- singly excited machine- magnetic force - co-energy – multi excited magnetic field system.

Principle of operation of D.C.Generators – construction - E.M.F equation- armature windings – lap and wave windings- Methods of excitation - types of generators.

UNIT–II:

Characteristics of DC Generators:

Build- up of emf - open circuit characteristics-critical field resistance-critical speed-causes for failure to self excitation- remedial measures – Internal and external characteristics of separately excited, shunt, series, compound generators.

UNIT-III

Armature Reaction & Commutation:

Armature reaction – cross magnetizing and de-magnetizing AT/pole – Commutation process – methods of improving commutation – compensating windings – Interpoles - applications, losses and efficiency.

UNIT–IV:

D.C. Motors

Principle of operation – back E.M.F - torque equation –characteristics of shunt, series and compound motors – armature reaction and commutation - losses and efficiency- applications of dc motors- Starting by 3 point and 4 point starters .

UNIT-V:

Speed Control and Testing of D.C. Machines

Speed control by armature voltage and field flux control – testing of DC machines - brake test, Swinburne's method – Hopkinson's method - separation of losses – methods of electrical braking: plugging, dynamic and regenerative.

UNIT–VI:

Permanent Magnet DC Motors

Construction – Principle of working – Torque equation and equivalent circuits – Performance characteristics.

Stepper Motors

Construction – Principle of operation – Theory of torque production – Hybrid stepping motor – Variable reluctance stepping motor.

Learning outcomes:

i. Able to explain the concepts of electromagnetic energy conversion and Principle and Construction of DC Generator.
ii. Able to analyze the characteristics of dc generator,
iii. Able to explain the armature reaction and commutation in DC generator.
iv. Able to explain the Operation, Characteristics and performance of dc motors.
v. Able to analyze the speed control and testing methods of dc motors.
vi. Able to understand the operation of PMDC motor and Stepper motor.

TEXT BOOKS:

1. Electrical Machines – P.S. Bimbra., Khanna Publishers.
2. Electric Machinery – A. E. Fritzgerald, C. Kingsley and S. Umans, TMC, 7th edition
3. Theory & Performance of Electrical Machines by J.B.Gupta. S.K.Kataria& Sons.
4. Special electrical Machines, K.Venkata Ratnam, University press, 2019, New Delhi.

REFERENCE BOOKS:

1. Performance and Design of D.C Machines – by Clayton & Hancock, BPB Publishers
2. Electrical Machines -S.K. Bhattacharya,
3. Electric Machines by I.J. Nagrath & D.P. Kothari, Tata McGraw – Hill Publishers, 5th edition 2004.
4. Brushless Permanent magnet and reluctance motor drives, Clarenden press, T.J.E. Miller, 2017, Oxford..

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	1	0	3
Subject	CONTROL SYSTEMS				
Branch	EEE				

Learning Objectives:

- To learn the mathematical modeling of physical systems and to use block diagram algebra and signal flow graph to determine overall transfer function.
- To analyze the time response of first and second order systems and study of controllers.
- To investigate the stability of closed loop systems using Routh's stability criterion and the analysis by root locus method.
- To present the Frequency Response approaches for the analysis of linear time invariant (LTI) systems using Bode plots, polar plots.
- To discuss basic aspects of design and compensation of linear control systems using Bode plots.
- Ability to formulate state models and analyze the systems. To present the concepts of Controllability and Observability.

UNIT – I Mathematical Modelling of Control Systems

Classification of control systems-Open Loop and closed loop control systems and their differences with examples. Feed-Back principle and characteristics. Definition of Transfer function, determination of transfer function of translational, rotational mechanical systems and electrical networks. Transfer Function of DC Servo motor - AC Servo motor- Synchro transmitter and receiver with block diagrams.

Block diagram algebra – Representation by Signal flow graph - Reduction using Mason's gain formula.

UNIT-II Transient and Steady-State Analysis of Linear Time Invariant Systems.

Standard test signals - Time response of first order systems – Time response of second order systems - Time domain specifications – Steady state response -dominant closed loop poles- Steady state errors and error constants.

Definition of Controller -Proportional (P) controller , Proportional Integral (PI) controller, proportional controller(PD) and Proportional Integral Derivative controller (PID).

UNIT – III Stability Analysis.

The concept of stability – Routh Hurwitz criterion – The root locus concept - construction of root loci(Simple Problems)-Effect of open loop & Closed loop Poles on Root Locus.

UNIT – IV Frequency Response Analysis.

Introduction, Frequency domain specifications-Bode diagrams- Transfer function from the Bode Diagram-.Polar Plots- Nyquist stability criterion-Relative Stability- Phase margin and Gain margin-Stability analysis from Bode Plots.

UNIT – V Classical Control Design Techniques.

Lag, Lead, Lead-Lag Compensators. Design of Lag, Lead, Lead-Lag Compensators-using Bode plots.

UNIT – VI State Space Analysis

Concepts of state, state variables and state model, State space representation of transfer function, Diagonalization- Solving the time invariant state equations- State TransitionMatrix and its Properties – Concepts of Controllability and Observability.

Learning Outcomes:

- Ability to determine the transfer function of physical systems and overall transfer function using block diagram algebra and signal flow graphs.
- Capability to determine time response specifications of second order systems and to determine error constants.
- Acquires the skill to analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method.
- Capable to analyze the stability of LTI systems using frequency response methods.
- Able to design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.
- Able to understand the State Space Analysis of Continuous systems.

Text Books:

1. Control Systems principles and design, M.Gopal, Tata McGraw-Hill Publications, 4th Edition.
2. Automatic control systems, Benjamin C.Kuo and Farid Golnaraghi, Wiley- India,8th Edition.

Reference Books:

1. Modern Control Engineering, Katsuhiko Ogata, Prentice Hall of India.
2. Control Systems, Dhanesh NManik, Thomson Press (India) Limited.
3. Control Systems Engineering, I.J.Nagarath and M.Gopal, Newage InternationalPublications.
4. Control Systems Engineering, S.Palani,TataMcGraw-Hill Publications, 2nd Edition.

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	1	0	3
Subject	DIGITAL LOGIC DESIGN				
Branch	EEE				

The main objectives of this course are given below:

- To learn basic tools for the design of digital circuits and fundamental concepts used in the design of digital systems
- To understand common forms of number representation in digital electronic circuits and to be able to convert between different representations.
- To implement simple logical operations using combinational logic circuits
- To design combinational logic circuits, sequential logic circuits
- To impart to student the concepts of sequential circuits, enabling them to analyze sequential systems in terms of state machines.
- To implement synchronous state machines using flip flops.

UNIT- I: Digital Systems and Binary Numbers: Digital Systems, Binary Numbers, Octal and Hexadecimal Numbers, Complements of Numbers, Signed Binary Numbers, Arithmetic addition and subtraction

UNIT -II: Concept of Boolean algebra: Basic Theorems and Properties of Boolean algebra, Boolean Functions, Canonical and Standard Forms, Minterms and Maxterms,

UNIT- III: Gate level Minimization: Map Method, Two-Variable K-Map, Three-Variable K-Map, Four Variable K-Maps. Products of Sum Simplification, Sum of Products Simplification, Don't – Care Conditions, NAND and NOR Implementation, Exclusive-OR Function

UNIT- IV: Combinational Logic: Introduction, Analysis Procedure, Design Procedure, Binary Adder–Subtractor, Decimal Adder, Binary Multiplier, Decoders, Encoders, Multiplexers.

UNIT- V: Synchronous Sequential Logic: Introduction to Sequential Circuits, Storage Elements: Latches, Storage Elements: Flip-Flops, Analysis of Clocked Sequential Circuits, Mealy and Moore Models of Finite State Machines

UNIT -VI: Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counter, Johnson Counter, Ripple Counter

TEXT BOOKS:

1. Digital Design, 5/e, M.Morris Mano, Michael D Ciletti, PEA.
2. Fundamentals of Logic Design, 5/e, Roth, Cengage.

REFERENCE BOOKS:

1. Digital Logic and Computer Design, M.Morris Mano, PEA.
2. Digital Logic Design, Leach, Malvino, Saha, TMH. 3. Modern Digital Electronics, R.P. Jain, TMH.

LEARNING OUTCOMES:

At the end of this course the student will able to:

- Able to manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, gray, and BCD.
- Able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
- Able to design and analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits.

Able to design and analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits.

II Year II sem EEE 2019-2020	ELEMENTS OF CIVIL AND MECHANICAL ENGINEERING	L	T	P	C
		2	1	0	3

Part - A

CIVIL ENGINEERING

Course Objectives:

- To know the different fields of Civil Engineering, Building Materials and structural Elements
- To impart knowledge on basic concepts in surveying and building construction
- To Provide basic fundamental knowledge on Transportation Engineering, Environmental engineering

UNIT – I

Civil Engineering Materials (Types, Properties and uses): Bricks – stones – sand – cement – concrete – steel sections.

Introduction to Buildings: Types of buildings, selection of site for buildings, components of a residential building and their functions

UNIT – II

Surveying: Objectives – Types – Classification – Principles - Determination of area (Mid ordinate rule, Average ordinate rule, Trapezoidal rule, & Simpson's rule)

Foundations: Definition of Bearing capacity of soil, functions of foundations, types – shallow and deep (brief discussion only). Concept of Load bearing & framed structure.

UNIT- III

Roads- Benefits- Classifications - Traffic signs, Bridges-components of Bridges – Dams and its Types , Purpose of reservoir.

Environmental Engineering: Protected water supply, water treatment methods-sewage treatment

COURSE OUTCOMES:

- To impart basic knowledge on civil engineering.
- To explore the knowledge on basic surveying and Foundations.
- The students will be able to analyze the material on the basis of their properties and thus assigning different weightage to their use for technical purposes. And to provide exposure on the fundamental elements of civil engineering structures.

Part - B

MECHANICAL ENGINEERING

OBJECTIVES:

- To provide the basic concepts of various mechanical systems
- To expose to a wide range of equipment and their utility in a practical situation.
- To provide the fundamentals of manufacturing methods, IC engines, heat transfer and transmission systems that usually exist in engineering.

UNIT-IV

Engineering Materials for manufacturing process: Classification, Properties of Materials. Introduction to Composites, Smart materials-classification and applications
Casting: Introduction to Casting, advantages and disadvantages
Joining processes: Brief description of arc welding, gas welding, soldering and brazing.

UNIT-V

Thermal Basics: Introduction to thermodynamics, working principle of internal combustion engines. heat transfer: Modes of heat transfer,
Electric Vehicles: Introduction to electric vehicles, working principle, transmission system, social and environmental importance of electric vehicles.
Power Generation: Layout and working principle of thermal and hydro electric power plants.

UNIT-VI

Additive Manufacturing: Introduction to additive manufacturing and its applications, advantages and disadvantages, comparison between additive manufacturing and conventional manufacturing.
Robotics &Automation: Introduction to Robotics, classification of robots and applications.
Concept of Automation, comparison between NC and CNC machines.

COURSE OUTCOMES:

At the end of the course, the student will be able to:

- Identify engineering materials, their properties, manufacturing methods encountered in engineering practice.
- Understand the basics of internal combustion engines, heat transfer and power generation.
- Understand the working of hybrid electric vehicles, basics of robotics and automation.

TEXT BOOKS:

1. Basic Civil Engineering/Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kr. Jain, /Laxmi Pulications.
2. Text Book of surveying Kinle edition by P.Venugopala rao , Vijayalakshmi Akella
3. Basic Mechanical Engineering, Pravin Kumar, published by Pearson
4. Production Technology, Volume - I by P. N. Rao, McGraw-Hill publications.

REFERENCE BOOKS:

1. Basics of civil Engineering, S. Chand publications Er. Srikrishna A Dhale
2. Basic civil Engineering – SS Bhavikatti. New Age International publishers
3. Electric and Hybrid Vehicles 1st Edition, Kindle Edition by Tom Denton, ISBN-13: 978-1138842373
4. Manufacturing Engineering and Technology, Serope Kalpakjian and Steven R. Schmid published by Pearson, Fourth edition

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	2	0	0	0
Subject	Logical Reasoning				
Branch	EEE				

Course Objectives:

Enable the students to

1. Be familiar with different relations in a family, concepts of clocks and calendars.
2. Find position and order of a person /object , routes between points.
3. Understand the techniques of coding and decoding .
4. Understand the validity of statements and inferences from them.
5. Draw valid conclusions from given statements.
6. Understand the concept of analogy and properties of dice.

UNIT –I:Blood Relations, Directions, Clocks & Calendars.
Blood relations -family tree, types of problems on blood relations- first person narrating type-coded relation-puzzle relation, direction-distance-direction and distance problems, angle between hands -correct or incorrect time, day of a date-repeated calendars.
UNIT- II: Ranks & Position, Puzzles.
Ranks-based on positions ,counting ,comparisons , puzzles-table based, selection based, seating based, graph and network Based .
UNIT –III: Coding & Decoding, Series.
Coding and decoding-letter coding, number coding, symbol coding, substitution and mixed type, Symbols and notations, series-number, letter and word type , missing term.
UNIT –IV: Critical Reasoning-I.
Syllogisms, logical consistency, inference & degree of truth, assertion & reason.
UNIT – V: Critical Reasoning-II
Statement & assumption, statement &conclusion, cause & effect, decision making.
UNIT –VI: Non Verbal Reasoning
Series, odd-man out, analogies, mirror & water images, paper cutting & folding, figure formation, cubes & dice .

Text Books:

1. Dr. R.S. Aggarwal , A Modern Approach to Verbal & Non-Verbal Reasoning Sultan Chand Publications, 2018.

References:

1. B.S.Sijwali and Indu Sijwali, A New Approach to Reasoning Verbal & Non-Verbal, Arihant Publishers, 2016.

2. M.K. Pandey, Analytical Reasoning , Bsc Publishing Co. Pvt. Ltd 2009.

Course Outcomes:

After completing this course, the students will be able to

1. Identify the relation between given persons, find the direction and distance from starting point, find angle between hands at given time and vice-versa, find day of given date and vice-versa.
2. Find the position and rank of a person/object in an arrangement, arranging in order using given data.
3. Decode the given code pattern and code given word in terms of alphabet, numbers, symbols and mixed, identify missing term in the pattern/series.
4. Draw a valid conclusion from the statements, consistency of inference drawn, valid reason from given assertions.
5. Identify the cause for the assumed effect, take decision logically from the given data.
6. Identify the odd one in the given series/group, number opposite any face of dice, figure completion from a folded figure.

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2019-2020	0	0	2	1
Subject	ELECTRICAL CIRCUIT ANALYSIS LAB				
Branch	EEE				

Learning objectives:
To verify and demonstrate various theorems, two port networks.
To determine self and mutual inductance of a magnetic circuit, parameters of a given coil and measurement of 3- phase power.

Any 10 of the following experiments are to be conducted:

1) Verification of Thevenin's and Norton's Theorems
2) Verification of Superposition theorem and Maximum Power Transfer Theorem
3) Verification of Compensation Theorem
4) Verification of Reciprocity , Millmann's Theorems
5) Series and Parallel Resonance
6) Determination of Self, Mutual Inductances and Coefficient of coupling
7) Z and Y Parameters
8) Transmission and hybrid parameters
9) Parameters of a choke coil.
10) Determination of cold and hot resistance of an electric lamp.
11) Measurement of 3-phase Power by two Wattmeter Method for balanced loads.

Learning outcomes:
Able to apply various theorems, determination of self and mutual inductances, two port parameters of a given electric circuit. Waveforms and phasor diagram for lagging and leading networks.

II year II sem EEE 2019- 2020	CIVIL AND MECHANICAL ENGINEERING LAB	L	T	P	C
		0	0	2	1

.

Note: At least 5 experiments to be done from each Part

PART - A

CIVIL ENGINEERING

COURSE OBJECTIVES:

- To test basic properties of construction materials like cement, fine aggregates, coarse aggregates, bricks and concrete
- To familiarize the students with advanced survey instruments (Total Station)
- To determine Dissolved Oxygen (DO) levels in given water sample

List of Experiments:

1. Determination of the fineness of cement
2. Determination of particle size distribution of coarse and fine aggregates
3. Determination of specific gravity of fine and coarse aggregates
4. Determination of water absorption of Bricks
5. Determination of efflorescence of Bricks
6. Determination of Compressive strength of concrete
7. Determination of elevation of various points by using Total Station
8. Determination of Dissolved Oxygen (DO) present in given water sample

COURSE OUTCOMES:

- By the end of the course Students will be able to do the Quality Analysis for Building Materials.
- By the end of the course students will be able do the land surveying by Using Total Station Equipment.
- By the end of the course students will be able check the Dissolved oxygen levels in raw water sample.

PART - B

MECHANICAL ENGINEERING

COURSE OBJECTIVES:

- To study and observe various stages of casting through demonstration of Sand Casting Process.
- To prepare a simple joint like lap joint, butt joint are prepared using arc welding.
- Interpret the basic concepts in the area of IC engines.

- Develop a program to operate automated systems.

List of Experiments:

1. Mold making & Casting.
2. Preparation of i) Butt joint and ii) Lap joint by Arc Welding.
3. Perform Turning and facing for a given work piece using CNC lathe machine.
4. Thermal conductivity of a metal rod.
5. Draw the valve and port timing diagrams for IC engine.
6. Robot programming and simulation for Pick and place operation.
7. Joining printed circuite board using soldering process.
8. Perform milling operation for a given work piece using CNC milling machine.

Course Outcomes:

At the end of course the students are able to:

- Students must be able to prepare mould cavity and fabrication of welded structures.
- Students are able to understand the actual working of an IC engine.
- Students are able to generate a program to operate an automated systems.