Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Electro Magnetic Field** Code: B025411(025)

Total Theory Periods: **40** Total Tutorial Periods: **10**

Class Tests: **Two (Minimum)** Assignments: **Two (Minimum)**

ESE Duration: **Three Hours** **Maximum Marks: 100** **Minimum Marks: 35**

Course Objectives:

The objective of this course is to introduce the concepts of electric field and magnetic fields and their applications which will be utilized in the development of the theory for power transmission lines and electrical machines

Unit I

Review of Vector Calculus and Electromagnetic field Vector Algebra, Components of vectors, Scalar and Vector multiplications, Three orthogonal Coordinate systems (cartesian, cylindrical and spherical), Transformation between coordinate systems, Vector calculus (differentiation, partial differentiation, integration), vector operator (del, gradient, divergence and curl, integral theorems of vectors; Coulomb's law, Electric field intensity, Electrical field due to charge distributions (Point, Line, Surface and Volume charge distributions.) **Total Period 10**

Unit II

Static Electric Fields Electric flux and Electric flux density, Gauss's law and its application (symmetrical charge distribution only), divergence and divergence theorem, Maxwell's first equation, Electric potential and potential difference, potential field of a point charge, Maxwell's curl equation, potential gradient, Electrostatic Energy and Energy density.

Total Period 10

UNIT- III

Electric current, Poisson & Laplace equations Current and current density, continuity of current, metallic conductors, conductor properties and boundary conditions, Electric dipole and dielectric materials, boundary conditions of perfect dielectric materials, Method of images, Poisson's and Laplace's equations, solution of Laplace equations (one dimension only). **Total Period 12**

Unit-IV

Static Magnetic Fields Steady state magnetic field, Biot-Savart Law, Ampere's circuital Law, Curl of **H**,Stoke's theorem, Steady magnetic fields produced by current carrying conductors. Magnetic flux and Magnetic flux density, Scalar and Vector Magnetic potentials, Force on a moving charge, Force on a differential current element, magnetic materials, Magnetization and permeability, Magnetic boundary conditions. **Total Period 10**

Unit-V

Time Varying Fields and Maxwell's Equations Faraday's law for Electromagnetic induction, Displacement current, Point form of Maxwell's equation, Integral form of Maxwell's equations, Skin effect, Poynting Theorem and poynting vector.

Total Period 07

Course outcomes:

1. Compute electric field intensity for various charge distribution
2. Compute Electric flux for various charge distribution
3. Compute potential for different charge distributions.
4. Compute solution of Laplace and Poisson's equations
5. Compute magnetic field intensity and magnetic flux density using Ampere's circuital LawandStoke's theorem.
6. Compute force and torque for various current carrying elements.
7. Enlist Maxwell's equations for time varying fields and solve them for specific regular geometries

Text Books:

1. Elements of Electromagnetic, Mathew N.O. Sadiku, 4th edition, Oxford university press.

2. Engineering Electromagnetic, W.H. Hyat& J.A. Buck, 7th Edition, TMH

3. Theory and problems of Electromagnetic, Edminister, 2nd Edition, TMH

Reference Books:

1. Electromagnetic with application, Krause, 5th Edition, TMH.

2. Elements of Engineering Electromagnetic, N.N. Rao, 6th Edition, Pearson Education.

3. Electromagnetic field theory fundamentals, Guru &Hizroglu, 2nd edition, Cambridge University Press.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Electrical Machines II** Code: B025412(025)

Total Theory Periods: **40** Total Tutorial Periods: **10**

Class Tests: **Two (Minimum)** Assignments: **Two (Minimum)**

ESE Duration: **Three Hours** **Maximum Marks: 100** **Minimum Marks: 35**

Course Objectives:

The objective of this course is to provide knowledge about the basic principles, construction and working of synchronous, single and three-phase induction machines. The aim of this course is to give the knowledge of the equivalent circuits, parameter determination, operational constraints, starting mechanisms, conventional speed control methods, various tests and applications of synchronous and induction machines.

UNIT I

Principles of Electrical Rotating Machines Mechanical speed and frequency relation, MMF of concentrated and distributed windings, rotating magnetic fields, EMF equation, pitch factor, distribution factor, winding factor, general torque equation.

Synchronous Machines I Theory of non-salient pole synchronous machines, basic synchronous machine models, equivalent circuit and phasor diagrams of synchronous machines, saturation effects, armature reaction, open circuit, short circuit and ZPF lag tests on synchronous generators (alternators) , synchronous reactance, voltage regulation of alternators by synchronous impedance, MMF and ZPF method. **Total Period 12**

UNIT II

Synchronous Machines II Excitation systems of alternators, Short circuit ratio, General input and output characteristics of synchronous generators, Active and reactive power flow, Steady state power angle characteristics of cylindrical rotor synchronous generator, Parallel operation of synchronous generators, load sharing, operation of synchronous generators with infinite bus bars, effect of excitation and prime mover input, synchronizing torque, V-curves and inverted V-curves of synchronous machines. **Total Period 10**

UNIT III

Synchronous Machines III Theory of salient pole synchronous machines, two-reaction theory, phasor diagram, power angle characteristics of salient pole synchronous motor, determination of Xd and Xq by slip test and maximum lagging power factor text, stiffness of coupling, synchronous condenser, Hunting in synchronous machines, damper winding, starting of synchronous motor. **Total Period 08**

UNIT IV

Three-phase Induction Machines-I Introduction, construction (Cage and slip-ring induction motors), principle of operation, equivalent circuit, phasor diagram, power across air-gap, torque and power output, torque-speed (slip) relationship, loss and efficiency estimation, No-load and block rotor test, circle diagram, Methods of starting of Induction motor – Direct – on - line, autotransformer, star-delta. **Total Period 10**

UNIT V

Three-phase Induction Machines-II Speed control of induction motor (stator voltage control, rotor resistance control, EMF injection method, frequency control or v/f control, pole changing method), cogging and crawling, deep bar rotor, double cage induction motors. **Total Period 05**

Single –Phase Induction Motor Double revolving field theory of single phase induction motor, starting and running performance of single phase induction motor (elementary analysis only), Different types of single phase induction motors (Resistance split phase, Capacitor split phase, Shaded Pole), Universal Motor, Stepper motor, Reluctance motor, hysteresis Motor, Linear Induction Motor, Repulsion Motor. **Total Period 05**

Course outcomes:

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

- Understand the construction, working principles of synchronous and three-phase induction machines
- Draw the equivalent circuit diagrams under various load conditions
- Analyze the load profile, voltage regulations and efficiency in various operating conditions
- Understand the needs and requirements of various types of machine operations like starting, speed control, tests etc

Text Books:

1. Electric Machines, Nagrath& Kothari, Mc Graw Hill Publications,
2. Electrical Machinery, P. S. Bimbhra, Khanna Publishers,

Reference Books:

1. Electrical Machines, Chakrabarti & Debnath, Mc Graw Hill Publications,
2. Electrical machines , B. R, Gupta,, New Age International,
2. Performance and design of AC machines ,M.G. Say, CBS Publication.
3. Electric Machines , P.K. Mukherjee & S. Chakravarti , DhanpatRai Publication

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Network Analysis & Synthesis** Code: B025413(025)

Total Theory Periods: **40** Total Tutorial Periods: **10**

Class Tests: **Two (Minimum)** Assignments: **Two (Minimum)**

ESE Duration: **Three Hours** **Maximum Marks: 100** **Minimum Marks: 35**

Course Objectives:

1. To understand the concept of circuit elements lumped circuits, waveforms, circuit laws and network reduction.
2. To analyze circuits using the node-voltage method and the mesh-current method.
3. To analyze RL, RC and RLC circuits - step and natural response.
4. To apply the Laplace transform in circuit analysis and transform circuits using Thevenin and Norton equivalents.
5. To determine the response to any excitation and to identify and use transfer functions in circuit analysis.

UNIT- I

Solution of First order Networks: Solution of first order differential equations for Series and parallel R-L, R-C, RL-C circuits, network solution with Laplace transformation, initial and final conditions in network elements, forced and free response, time constants, steady state and transient state response. **Total Period 12**

UNIT-II

Network Theorems and Functions: Transform impedance and transform circuits, Thevenin's and Norton's theorem, poles and zeros with restrictions for driving point functions and transform functions. **Total Period 10**

UNIT- III

Two Port Network: short circuit Admittance parameters, open circuit impedance parameters, Transmission parameters, hybrid parameters, relationship between parameter sets, Reciprocity & Symmetry, Inter-connection of two-port networks.

Total Period 10

UNIT-IV

Network Synthesis: Positive real function; definition and properties, Properties of LC, RC and RL driving point functions, Synthesis of LC, RC and RL driving point admittance functions using Foster and Cauer first and second forms.

Total Period 10

UNIT-V

Filters: Low pass filters, high pass filters, band pass filters, band reject filters, Gain equalizer and delay equalizers, m-derived filters, constant k-filters, design of filters. **Total Period 08**

Course outcomes:

1. Students will be able to analyze circuits using Kirchhoff's laws and design and conduct experiments using various elements, as well as to analyze and interpret data.
2. To develop the ability of understanding the application of network theorems in reducing complicated networks to simpler ones.
3. Students should have the ability to demonstrate the application of Fourier transform and Laplace transform in networks.
4. Explain and analyze the different types of network functions.
5. To understand the different parameters of one port and two port networks.
6. Derive interrelationship between various parameters.
7. Analyze the stability of network function and interpret time domain behavior of networks from pole zero plots of network function.
8. To develop the ability to identify and synthesize the impedance functions using various techniques of synthesis.
9. An ability to design the low pass and high pass filters.

Text Books:

1. "Network Analysis and Synthesis", M. E. Van Valkenburg, PHI Publications.
2. A. Sudhakar & Shyammohan S Palli, "Circuit & Networks", 5th edition, McGraw Hill.
3. A. Chakrabarti, "Circuit Theory", 7th edition, Dhanpat Rai & Co.Pvt.Ltd.

References Books:

1 Co Alexander, Sadiku, "Fundamentals of Electric Circuits", 6th edition, McGraw Hill.

2 Networks and Systems by D Roy Choudhury; New Age International.

Samarjit Ghosh, " Network Theory: Analysis & Synthesis" Prentice Hall India

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Electrical Measurement & Instrumentation** Code: B025414(025)

Total Theory Periods: 3**0** Total Tutorial Periods: **10**

Class Tests: **Two (Minimum)** Assignments: **Two (Minimum)**

ESE Duration: **Three Hours** **Maximum Marks: 100** **Minimum Marks: 35**

Course Objectives:

1. To provide students with a fundamental knowledge of low, medium & high resistance and there measuring technique with the help of D.C. bridges
2. To provide students with a fundamental knowledge of Inductor and capacitor and there measuring technique with the help of various A.C. bridges.
3. To provide students with a fundamental knowledge of galvanometer construction and working.
4. To provide students with a fundamental knowledge of wattmeter & Energy meter and there testing

UNIT- I

Measurement of Resistance, Inductance, Capacitance and frequency Classification of resistances (low, medium and high), measurement of resistance by volt drop method, loss of charge method, Wheatstone's bridge, Kelvin's double bridge, Megger, Measurement of inductance and capacitance by AC bridges: Hay's, Maxwell's, Anderson, Schering bridge, Owen's bridge, De-sauty bridge, Wein's bridge for measurement of frequency, Wagner earthing device.

Total Period 08

UNIT-II

Measuring Instruments: Classification, operation and working principle of PMMC, MI and dynamometer type instruments, controlling, damping and balancing devices, single-phase and three-phase, Electro-dynamometer power factor meter, frequency meters: electrical resonance type, electrodynamometer, Phase sequence meter. **Total Period 08**

UNIT- III

Power And Energy Measurement: Construction and principle of operation of dynamometer and induction type wattmeter, measurement of power in a three-phase circuit by using two wattmeter method, wattmeter errors, low power factor wattmeter, single and poly-phase energy meters, **Instrument transformers**: errors of CTs and PTs, methods of reduction of errors of instrument transformers. **Total Period 08**

UNIT-IV

Passive and Active Electrical Transducers: Resistive, capacitive, inductive, piezoelectric, photovoltaic, Hall effect transducers, selection of transducers, semiconductor photo-diode, photo transistor, frequency generating transducers, pressure inductive transducers, LVDT, differential output transducer, thermistor, strain gauge, measurement of angular and linear velocity using electrical transducers, AC tachogenerators. **Total Period 08**

UNIT-V

Data Acquisition System and Recorders: Introduction of DAS, Objective of DAS, single and multi-channel DAS, Computer based DAS, general description of Data loggers, Digital transducers: optical encoders, resistive digitial encoders, shaft encoders. Recorders: Introduction, Strip chart recorders, General description of XY recorders, galvanometer type recorders, potentiometric recorders. **Total Period 08**

Course outcomes:

1. The students should be able to Measure low, medium & high Resistances using suitable bridges.
2. The students should be able to determine the value of inductor and capacitor with the help of A.C. Bridge & they can draw phasor diagram of bridges.
3. The students should be able to test and calibrate ammeter, voltmeter, and Wattmeter and energy meter.
4. The students should be able to select proper instrument for measurement various Electrical elements.

Text Books:

1. Electrical and Electronics Measurements and Instrumentation: Purkait, B Biswas, S. Das and C. Koley, McGraw hill
2. "A Course In Electrical And Electronics Measurement And Instrumentation", Sawhney, DhanpatRaiPbs.
3. Electronic Instrumentation, H. S. Kalsi, TMH Publications

Reference Books:

1. "A Course In Electrical And Electronics Measurement And Instrumentation", J. B. Gupta, KatariaPbs.
2. . Electrical Measurement and Measuring Instruments", Golding, CBS Publication

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Digital Electronics** Code: B025415(025)

Total Theory Periods: 3**0** Total Tutorial Periods: **00**

Class Tests: **Two (Minimum)** Assignments: **Two (Minimum)**

ESE Duration: **Three Hours** **Maximum Marks: 100** **Minimum Marks: 35**

Course Objectives:

1. To know the different codes used in digital electronics and their application.
2. To minimization of Boolean algebra using k-map & tabulation methods.
3. To realize the combinational & sequential logic circuits.
4. To introduce with digital logic families.

UNIT- I

Binary Number Systems & Codes: *Number System:* Decimal, binary, octal, Hexadecimal number systems, conversion of number systems, r's & (r-1)'s complement. *Binary Codes*: Weighted & Non weighted codes, Self- complementing code, Excess-3 code, Gray code, error detecting & correcting code, Hamming code, ASCII & EBCDIC Codes. *Boolean algebra*: Reduction of Boolean expression using Identities, Laws & Theorems, Basic & universal logic gates, NAND-NOR implementation **Total Period 06**

UNIT-II

Minimization Techniques: Sum of product (SOP) & Product of sum (POS) form, Min-term, Max-term, Canonical & Standard form. Minimization of Boolean function using K-map method (for two, three & four variables) concept of Don't care terms, Quine-McCluskey or Tabulation method of minimization. **Total Period 06**

UNIT- III

Combination logic circuits: Half adder, Full adder, Half Subtractor, Full subtractor, Binary parallel adder, BCD adder, Look ahead carry generator, Code converters, Parity bit generator/ checker, magnitude comparators, Decoders: 2:4, 3:8 and 4:16, BCD to Seven segment decoder. Encoder: 4:2, 8:3, Priority encoder, Multiplexer: 2:1, 4:1, 8:1 & 16:1, Demultiplexer: 1:4, 1:8, Logic Array: Programmable Array Logic (PAL), Programmable Logic Array (PLA), Read only Memory (ROM) implementation **Total Period 06**

UNIT-IV

Sequential logic circuits: *Latches:* Active low & high S-R Latch, *Flip flops:* S-R, D, J-K and T flip-flops, Race around condition, Master-Slave flip-flop, Truth table & Excitation Table. Conversion of one flip-flop to other flip-flop. *Counters:* Asynchronous Ripple Counter, up, down & up/down counter, Decade counter, Synchronous counter, Module-N synchronous counters, Ring counters, Johnson counter. State diagram, state equation, state table, *Shift Registers:* SISO, SIPO, PISO, PIPO, Bi-directional shift registers. **Total Period 06**

UNIT-V

Logic families & Memories: *Logic Families:* Resistor Transistor Logic (RTL), Diode Transistor logic (DTL), Transistor Transistor Logic (TTL): open collector Totem pole and Tri state logic. Emitter Coupled Logic (ECL) MOS Logic: NMOS & CMOS (NOT, NAND & NOR gate), comparison among various logic families.

Memories: RAM: Static and dynamic RAM, ROM, PROM, EPROM, EEPROM **Total Period 06**

Course outcomes:

1. Be able to design, build, test, troubleshoot, and evaluate digital circuits.
2. Be able to utilize computer software such as Electronic Work Bench (Multisim).
3. Be able to evaluate and revise designs as actual performance is reviewed.
4. Be able to prepare a written report that effectively communicates the objective, the design procedure, the experimental results, and the conclusion for any project design.

Text Books:

1. "Digital Logic and Concept design" M. Morris Mano, Pearson Publications.
2. "Fundamentals of Digital Circuits" A. Anand Kumar, 4th Edition, PHI Learning Private Limited.

Reference Books:

1. "Mordern Digital Electronics" R. P. Jain, 4th Edition, McGraw Hill.
2. "Digital Principles And Application" Malvino& Leach, 4th Edition, McGraw Hill.

"Digital Electronics and Micro-Computers", R. K. Gaur, 3rd

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Electrical Measurement & Instrumentation Lab** Code: B025421(025)

Total Lab Periods: **36** Batch Size: **30**

Maximum Marks: **40** Minimum Marks: **20**

List of experiments: (minimum 10 experiments are to be performed)

1. To determine unknown resistance or value resistance by Kelvin Bridge Method.
2. To determine unknown resistance R by Wheatstone Bridge Method.
3. To determine unknown inductance of a given coil by Maxwell Bridge Method.
4. To determine the inductance of the given coil by Anderson Bridge Method.
5. To determine unknown capacitance of a given capacitor by Desauty Bridge Method.
6. To determine capacitance of a given capacitor by Schering Bridge Method.
7. To determine the inductance by Owen's Bridge Method.
8. To determine unknown inductance by Hay Bridge Method.
9. To calibrate a given single phase induction type Energy Meter.
10. To find the phase sequence of the supply by the rotating type phase sequence meter.
11. To find the phase sequence of the supply by the Static type phase sequence meter.
12. To determine the unknown resistance R by Voltmeter-Ammeter Method.
13. To observe the B-H curve and hysteresis loop of agiven transformer core on CRO.
14. Measurement of high resistance by using Meggar.

Equipment/Machines/Instruments/Tools/Software Required:

Bridges, Head Phone, Transformer, Variac, Voltmeter, Ammeter, Multimeters, Resistors, DC Supply, Meggar

Recommended Book:

1. Electrical measurement & measuring instrument by A.K.Sawhney.
2. Electrical measurement & measuring instrument by J.B.Gupta

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Electrical Machines-II Laboratory** Code: B025422(025)

Total Lab Periods: **36** Batch Size: **30**

Maximum Marks: **40** Minimum Marks: **20**

List of experiments: (minimum 10 experiments are to be performed)

1. To study squirrel cage & slip ring type Induction motor and Synchronous motor with the help of Cut-view model or Dismantled Motor.
2. To plot the magnetization characteristic of a three phase alternator
3. To determine the voltage regulation of 3 phase alternator by EMF method.
4. To determine the voltage regulation of 3 phase alternator by ZPF method.
5. To determine the voltage regulation of 3 phase alternator by Direct Loading.
6. To plot the V and inverted V- curve of synchronous Motor at No Load, and Full Load.
7. To perform synchronization of alternator with infinite bus by bright lamp method.
8. To determine Xd &Xq of a salient pole rotor type synchronous machine by slip test.
9. To determine the equivalent circuit parameters of 3-phase induction motor by No-Load &Block Rotor test
10. To Study DOL starter and provide connection to 3- phase Induction motor.
11. To study Contactor type starter for Forward/ Reverse operation of Induction motor
12. To study the speed control of a three phase slip ring I.M by adding external resistance to the rotor circuit.
13. To find Full load Efficiency of Induction Motor by drawing Circle Diagram.
14. Measurement of Speed of Induction Motor by Measuring Rotor Frequency.
15. To Study the starting methods of single phase Induction motor.

Note:-It is also expected to visit to the substation of Institute and observe the sequence of operation to make DG set ON and OFF.

Requirement: • 3-phase Alternators • Resistive Load. • 3-phase induction motor ,Single phase I.M • Single phase variac • Three phase Variac • Ammeter, Voltmeters, Watt-meters. • Induction Motor. • Starters

Reference Book:

Laboratory courses in electrical engineering by S.G. Tarnekar & P.K. Kharbanda

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Digital Electronics Laboratory** Code: B025423(025)

Total Lab Periods: **36** Batch Size: **30**

Maximum Marks: **40** Minimum Marks: **20**

List of experiments: (minimum 10 experiments are to be performed)

1. To Verify the Properties of NOR & NAND Gates As Universal Building Block.
2. Realization of Boolean Expression Using NAND Or NOR Gates.
3. To Construct X- OR Gate Using Only NAND Or NOR Gates Only.
4. To Construct a Half Adder Circuit. And Logic Gates And Verify its Truth table.
5. To Construct a Full Adder Circuit and Verify its truth table (Using Two X-OR AND 3 NAND gates).
6. To Construct a Half Subtractor Circuit. by Using Basic Gates and Verify its truth table.
7. To Construct a Full Subtractor Circuit by using Basic Gates And Verify its truth table.
8. To Construct a Circuit of 4 -Bit Parity Checker & Verify its truth table.
9. To Construct a Programmable Inverter Using X-OR Gates & Verify its truth table.
10. To Design a Comparator Circuit & Verify its truth table.
11. To Construct A RS Flip Flop Using Basic & Universal Gates (NOT, NOR & NAND)
12. To Construct a J.K. Master Slave Flip Flop & Verify its truth table
13. To Verify the Operation of a Clocked S-R Flip Flop and J. K. Flip Flop
14. To Construct a T & D Flip Flop Using J. K. Flip Flop and Verify Its Operations & truth table.
15. To Verify the Operation of Asynchronous Decade Counter
16. To verify the operation of various decoding and driving devices
17. To perform the operation of BCD Counter Using 7490

Equipment/Machines/Instruments/Tools/Software Required: Circuit components, Power supply, CRO, Function generator

Recommended Books:

1. "Digital logic and concept design", Morris Mano, PHI Publications
2. "Study, theory and logic design" Jain, TMH Publications

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Electrical & Electronics** Semester: **IV**

Subject: **Virtual Lab Industrial Electric Drives Lab and Application of PLC** Code: B025424(025)

Total Lab Periods: **3 6** Batch Size: **30**

Maximum Marks: **40** Minimum Marks: **20**

List of experiments: (minimum 10 experiments are to be performed)

- Experiment 1: PLC On-Delay Timer Instruction
- Experiment 2:PLC Off-Delay Timer Instruction
- Experiment 3: PLC Retentive Timer On Instruction
- Experiment 4 :PLC Count-Up Instruction
- Experiment 5 :PLC Count-Down Instruction
- Experiment 6 :Garage Shutter Opening and Closing Using PLC:
- Experiment 7 :Container Filling Process Using PLC
- Experiment 8 : Simultaneous output interlock using PLC
- Experiment 9 :Maximum Simultaneous Operations Limiter using PLC
- Experiment 10 : Motor forward and reverse direction control using PLC

Recommended on line:

Virtual Labs an MHRD Govt of India Initiative

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: **Bachelor of Technology**

Branch: **Common to All Branches** Semester: **IV**

Subject: **Indian Culture and Constitution of India** Code: B000406(046)

Total Theory Periods: **2/Week** Total Tutorial Periods: **NIL**

Assignments: **Two (Minimum)** Total Marks in ESE: **NIL** Marks in TA: **10**

Objective: The Constitution is the supreme law and it helps to maintain **integrity** in the society and to promote unity among the citizens to build a great nation. The main objective of the Indian Constitution is to promote harmony throughout the nation.

Course Objectives

Upon completion of this course, the student shall be able

- To understand Meaning and concepts of Traditional and Modern of Culture
- To understand Sources of the Study of Indian Culture
- To Enable the student to understand the history and importance of constitution
- To understand philosophy of fundamental rights and duties
- To understand the powers and functions of executive, legislature and judiciary
- To understand the powers and functions of state government
- To understand the recent trends in Indian constitutional and election commission of India.

To understand the central and state relation, financial and administrative.

UNIT-I

Meaning and concepts of Culture: Traditional and Modern concepts of Culture-Notions of Culture in textual tradition, anthropological, archaeological and sociological understanding of the term culture. Elements of Culture, concept of Indianness and value system. Relation between culture and civilization. Historiography and approaches to the study of Indian Culture– Stereotypes, Objectivity and Bias, Imperialist, Nationalist, Marxist and Subaltern. Heritage of India and world's debt to Indian Culture.

UNIT–II

Sources of the Study of Indian Culture: Archaeological: cultural remains, Monuments, Numismatics, Epigraphy; Literary sources and Oral traditions; Foreign Accounts; Archival sources.

UNIT–III

History of Indian Constitution Constitutional History, Preamble salient features, citizenship, Method of Amendment and Recent Amendments. **Rights and Duties** Fundamental Rights and Directive Principles of State Policy. Fundamental Duties. Difference between Fundamental Rights and Directive Principles of State Policy

Union Government a) President-powers and functions. Vice president powers and functions, Prime Minister and council of ministers powers and functions. b) Parliament- Loksabha, Rajyasabha- composition powers and functions.

c) Judiciary (Supreme Court) composition powers and functions Judicial Activism

UNIT–IV

State Government a) Governor: powers and functions b) Chief minister: powers and functions c) State Legislative Assembly and Legislative Council- composition powers and functions. d) High Court : composition powers and functions

UNIT–V

Recent Trends in Indian Constitutional a) Basic structure of Indian Constitution. b) Electoral Reforms c) Panchayati Raj system in India.

Books of Reference

1. **Dr. P. K. Agrawal** Indian Culture, Art and Heritage,

2. P. Raghunadha Rao Indian Heritage and Culture

3. M.V.Pylee, An Introduction to the Constitution of India,NewDelhi,Vikas,2005.

4. Subhash C.Kashyap, Our Constitution: An Introduction to India's Constitution and constitutional Law, New Delhi, National Book Trust, 2000.

5. Durga Das Basu, Introduction to the Constitution of India ,NewDelhi,Prentice Hall of India,2001.

6. D.C.Gupta, Indian Government and Politics,VIII Edition,New Delhi, Vikas, 1994.

7. V.D.Mahajan, Constitutional Development and National Movement inIndia, New Delhi, S. Chand and Co., latest edition.