Chhattisgarh Swami Vivekanand Technical University,Bhilai

Scheme of Teaching and Examination

B.E. III SEMESTER
ELECTRONICS AND INSTRUMENTATION

S.No.	Board of studies	SUBJECT CODE	Subject Name	Period Per Week			Scheme of Exam.			Total Marks	Credit L+(T+P)/2
							Theory / Practical				
				L	T	P	ESE	CT	TA		
1	Appl. Mathematics	328311 (14)	MATHEMATICS-III	4	1		80	20	20	120	5
2	Electronic & Telecom.	328313 (28)	BASIC ELECTRONICS	3	1		80	20	20	120	4
3	Electronics & Inst.	327311 (27)	MEASUREMENT & INSTRUMENTS	3	1		80	20	20	120	4
4	Electrical Engg.	327312 (24)	ELECTRICAL ENGINEERING MATERIALS	3			80	20	20	120	3
5	Electronic & Telecom.	328314 (28)	NETWORK ANALYSIS AND SYNTHESIS	3	1		80	20	20	120	4
6	Electronic & Telecom.	328316 (28)	PROGRAMMING WITH C	3	1		80	20	20	120	4
7	Electronic & Telecom.	328322 (28)	BASIC ELECTRONICS-I LAB			3	40	-	20	60	2
8	Electronics &Inst.	327321 (27)	MEASUREMENT & INSTRUMENTS LAB			3	40	-	20	60	2
9	Electronic & Telecom.	328323 (28)	PROGRAMMING WITH C LAB			4	40	-	20	60	2
10	Electronic & Telecom.	328321 (28)	NETWORK ANALYSIS AND SYNTHESIS LAB			3	40	-	20	60	2
11	Humanities etc.	300325 (46)	Value Education			2	-	-	40	40	1
12			Library			1	-	-	-	-	-
			TOTAL	19	5	16	640	120	240	1000	33

L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Examination, CT- Class Test,TA- Teacher's Assessment

Note (1) : Duration of all theory papers will be of **Three Hours.**

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C. G.)

Semester: **B.E. III Sem.**

Branch: **Electronics & Instrumentation, Appl. Electronics & Instru, Electronics and Telecom Engg.,**

Subject: **Mathematics-III**

Code: **328311 (14)**

Total Theory Periods: **40**

Total Tutorial Periods: **10**

Total Marks in End Semester Exam: **80**

Minimum number of class tests to be conducted: **02**

UNIT - 1 FOURIER SERIES (No. of periods 8+2)

Periodic functions, Definition of Fourier series, Euler's formulae, Dirichlet conditions, Change of interval, Even and odd functions, Half range Fourier Sine & Cosine series, Parseval's identity, Practical harmonic analysis.

UNIT - 2 FOURIER TRANSFORM (No. of periods 8+2)

Definition of Fourier integrals – Fourier Sine & Cosine integrals, Complex form of Fourier integral, Fourier Sine & Cosine transforms, Complex form of Fourier transform, Linearity, shifting & scaling properties, Modulation theorem, Inverse Fourier transform, Fourier transform of derivatives.

UNIT – 3 LAPLACE TRANSFORM (No. of periods 8+2)

Definition, Linearity, shifting & scaling properties, Transform of elementary functions, Transform of derivatives and integrals, Multiplication by t & division by t. Inverse Laplace transform, Convolution theorem, Transform of periodic functions, Unit step function & Dirac delta function, Initial value & final value theorems, Application to solution of ordinary differential equations.

UNIT - 4 COMPLEX VARIABLES (No. of periods 8+2)

Limit, Derivative, Analytic function, Cauchy-Riemann equations, Harmonic functions, Application to flow problems. Complex integration, Cauchy's integral theorem and integral formula, Taylor's & Laurent's series, Singular point, Poles & residues, Residue theorem & its application to contour integration.

UNIT – 5 CORRELATION AND REGRESSION (No. of periods 8+2)

Linear correlation, Measures of correlation, Karl Pearson's coefficient of correlation, Spearman's rank correlation coefficient, Bivariate frequency distribution, Regression, lines of regression & coefficients of regression, Standard error estimate.

TEXT BOOKS: -

1. Higher Engg. Mathematics by Dr. B.S. Grewal– Khanna Publishers.
2. Advanced Engg. Mathematics by Erwin Kreyszig – John Wiley & Sons.

REFERENCE BOOKS: -

1. Advanced Engg.Mathematics by R.K. Jain and S.R.K. Iyengar – Narosa Publishing House.
2. Applied Mathematics by P.N.Wartikar & J.N. Wartikar. Vol- II– Pune Vidyarthi Griha Prakashan, Pune.
1. Applied Mathematics for Engineers & Physicists by Louis A. Pipes- TMH.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **B.E. III Sem.**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Basic Electronics**

Code: **328313 (28)**

Total Theory Periods: **40**

Total Tutorial Periods: **10**

Total Marks in End Semester Examination: **80**

Minimum number of Class tests to be conducted: **Two**

Unit – I

Introduction, Transport Phenomena in semiconductor, Formation of P-N Junction, Properties of P-N Junction, P-N Junction Diodes; Semiconductor Diodes, V-I Characteristics, Effect of Temperature on V-I Characteristics, Ideal Diode, Diode equation, Diode Resistance, Diode Capacitance: Transition and Diffusion Capacitance.

Unit – II

Rectifying circuits and DC Power Supplies: Load line analysis of diode circuit, Half wave rectifier: Voltage regulation, Ripple factor, ratio of rectification, Transformer Utilization factor. Full wave rectifier, Bridge rectifier. Filter circuits for power supply: Inductor filter, Capacitor filter, LC filter, Multiple LC filter, CLC or π filter. Zener diode: Break down mechanism, Characteristics, Specifications, Voltage regulator circuit using zener diode.

Unit - III

Transistor: Introduction, Construction, Types: npn and pnp, Current components. Transistor as an amplifier, Transistor Characteristics, Transistor Circuit Configuration: Common Base (CB) Configuration, Common Emitter (CE) Configuration, Common Collector Configuration (CC), Early Effect. Ebers-Moll Model, Maximum Voltage Ratings.

Unit – IV

Transistor Biasing and Thermal stabilization: The operating point, Bias stability, Stability factor, Emitter bias, Collector – to – base bias, Voltage divider bias with emitter bias, Emitter bypass capacitor. Bias compensation.

Unit – V

Field Effect Transistor (FET): Introduction, Construction, Operation, V-I Characteristics, Transfer Characteristics, Drain Characteristics, Small-Signal Model.

Metal Oxide Semiconductor Field Effect Transistor (MOSFET): Introduction, Construction, Operation and characteristics, Depletion MOSFET, Enhancement MOSFET.

Name of Text Books:

1. Integrated Electronics: Analog & Digital Circuit Systems – Jacob Millman & Halkias, TMH.
2. Electronic Devices & Circuits – Allen Mottershead, PHI.

Name of Reference Books:

1. Electronic Devices and Circuit Theory – Boylestad & Nashelsky, 8th Ed. PHI.
2. Electronic Devices & Circuit Analysis – K. Lal Kishore, BS Publications

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: **B.E. III Sem.**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Measurement & Instruments**

Code: 327311 (27)

Total Theory Periods: 40

Total Tut Periods: 10

Total Marks in end Semester Exam.: 80

Minimum number of class tests to be conducted: 02

Unit 1 Measurement & Instrumentation

Measurement Methods, Classification of instruments, Basic Standards & units of measurement, Primary, Secondary & working standards, Instrument characteristic Static terms and characteristics, Dynamic terms & characteristic, Measurement of Error Classification of errors, Statistical analysis of test data, Mathematical theory of errors, Curve fitting by least squares. Selecting an Instrument.

Unit 2 Potentiometer

DC Potentiometer: - Basic potentiometer circuit, Laboratory type potentiometer, Multiple Range Potentiometer, Constructional Details of Potentiometer, Precision type potentiometer, Volt ratio Box, Application of D.C. Potentiometer, Self balancing potentiometer.

AC Potentiometer:- Standardizing AC potentiometer & use of Transfer instruments, Types of AC potentiometers, Drysdale polar potentiometer, Gall -Tinsley AC Potentiometer, Quadrature Adjustment of Currents, Application of AC Potentiometer.

Unit 3 Bridges

Sources & Detectors, General equation for Bridge Balance. Measurement of Resistance -wheat stone bridge & kelvin's double bridge. General form of an AC bridge, Measurement of self inductance:- Maxwell's Inductance Bridge, Maxwell's Inductance- Capacitance bridge, Hay's Bridge, Anderson's Bridge, Measurement of Capacitance – De Sauty's Bridge, Schering Bridge, High Voltage schering bridge. Measurement of relative permittivity with schering bridge, Measurement of mutual inductance- Heaviside bridge & its campbells modification. Measurement of frequency- wien's bridge, Sources of errors in Bridge Circuit, Wagner earthing device.

Unit 4 Analog Instruments

Analog Instruments, Classification, Principle of operation. Galvanometer- construction of D' Arosnval Galvanometer, Torque equation, Dynamic behaviour of Galvanometers- Equation of motion, Under damped, Undamped critically damped & overdamped motion of Galvanometer. Ballastic Galvanometer- construction, Theory & calibration of ballastic Galvanometer. Flux meter:- construction & operation. Vibration Galvanometer, PMMC Construction, Torque Equation, Ohmmeter Meggar.

Unit 5 Measurement of Power & Energy

Power in DC & AC Circuits, Electrodynamometer wattmeters, Ferrodynamic wattmeters, Low power factor wattmeters, Measurement of power in three phase circuits, Three phase wattmeter, Measurement of Reactive power.

Energy meters for AC circuits- theory of induction type meters, Single phase & poly phase energy meter. Testing of Energy meters:-

Name of the Text Books :

1. A. K. Sawhney, "Electical & Electronics Measurement & Instrumentation", Dhanpat Rai Publication
2. D.S. Kumar, "Mechanical Measurements & Control", Metropolition Publication

Name of Reference Books :

1. Albert Helfrik & Cooper, "Modern Electronic Instrumentation & Measurement Technique", Prentice Hall Of India
2. H. S. Kalsi, "Electronics Instrumentation", Tata McGroaw Hill

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: III

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Electrical Engg. Materials**

Code: 327312 (24)

Total Theory Periods: 40

Total Tut Periods: 10

Total Marks in end Semester Exam.: 80

Minimum number of class tests to be conducted: 02

Unit 1: Dielectric Properties of Insulators in Static Fields.

Static dielectric constant, Polarization and dielectric constant, Atomic interpretation of the dielectric constant of monatomic gases Qualitative remarks on the dielectric constant of polyatomic molecules, Internal field in solids and liquids, Static dielectric constant of solids, Some properties of ferroelectrics materials, Spontaneous polarization, Piezoelectricity.

Unit 2: Behavior of Dielectric in Alternating Fields

Frequency dependence of the electronic polarizability, Ionic polarization as a function of frequency, complex dielectric constant of non-dipolar solids, dipolar relaxation, dielectric losses.

Unit 3: Magnetic Properties of Materials

Summary of concepts pertaining to magnetic fields, Magnetic dipole moment of a current loop, Magnetization from a macroscopic viewpoint, orbital magnetic dipole moment and Angular momentum of two simple atomic models, Lenz's law and induced dipole moments.

Unit 4: Atomic Interpretation of Magnetic Properties of Materials

Classification of magnetic materials, diamagnetism, origin of permanent magnetic dipoles in matter, paramagnetic spin systems, some properties of ferromagnetic materials, spontaneous magnetization and the Curie weiss law, Ferromagnetic domains and coercive force, Antiferromagnetic materials, Ferromagnetic materials.

Unit 5: Conductivity of Metals & Super Conductivity

Ohm's law and the relaxation time of electrons, Relaxation time, collision time, and mean free path, Electron scattering and the resistivity of metals, Heat developed in a current carrying conductor, Thermal conductivity of metals, Superconductivity, Type I & II super conductor.

Name of the Text Books:

A.J. Dekker, "Electical engineering Materials", Prentice Hall of India Reprinty 2005

Name of Reference Books:

1. G.K. Mithal, "Electrical Engineering Materials", Khanna Publication 2nd Edition.
2. Robert M. Rose, "Structure and Properties of Materials", Willley Eastern Vol. IV
3. S.O. Pillai, "Solid State Physics", New Age International
4. Kakni, "Material Science", Tata McGraw Hill

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **B.E. III Sem.** Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Network Analysis & Synthesis** Code: **328314 (28)**

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

Total Marks in End Semester Examination: **80**

Minimum number of Class tests to be conducted: **Two**

Unit – I

Laplace Transformation & its Application in Circuit Analysis: Introduction, Laplace Transformation, Laplace Transform of a Derivative df(t) /dt, Laplace Transform of an Integral, Laplace Transform of Common Forcing Function, Initial And Final Value Theorem, Convolution, Application of Laplace Transformation technique in Electric Circuit Analysis, Partial Fraction Expansion Method, Step Response of RL, RC Circuits, Impulse Response of Series RC, RL Network, Response of RL Circuit with Pulse Input, Pulse Response of Series RC Circuit, Step Response of RLC Series Circuit.

Unit – II

Two Port Network Analysis: Introduction, z parameters, y- parameters, hybrid parameter, ABCD parameters, condition of reciprocity and symmetry in two port parameter presentation. Interrelationship between parameters of two port networks. Expression of input and output impedance in terms of two port parameter, ladder network, equivalent T and π section representation in parametric form.

Unit – III

Properties of Network function: Introduction, Driving Point Impedance and Admittance Transfer function, Voltage And Current Transfer Ratio. Thevenin's and Norton Theorem, Milliman Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem, Supeposition Theorem, Substitution Theorem.

Unit – IV

Network Graph Theory: Introduction, Concept of Network Graph, Terminology Used in Network Graph, Properties of Tree in a Graph, Formation of Incidence Matrix, Properties of Incidence Matrix, Number of Tree in a Graph, Cut Set Matrix, Tieset Matrix, Fundamental Tieset Matrix, Fundamental Cutset Matrix.

Unit –V

Synthesis of Passive Networks: Concept of Stability of a System from Pole Zero Concept, Necessary condition of Stability of a Network Function, Hurwitz Polynomial, Properties of Hurwitz Polynomials, Positive Real Function, Concept of Network Synthesis, Reactive Network, Driving Point Immitance of LC Network, LC Network Synthesis, Foster and Caurr form, RC and RL Network Synthesis By Foster and Caurr form.

Name of Text Books:

1. Network Analysis by M.E. Van Valkenbarg, PHI
2. Circuit Theory Analysis & Synthesis by A Chakraborty (Dhanpat Rai & Co. Pvt. Ltd, New Delhi)

Name of Reference Books:

1. Network Theory: Analysis & Synthesis – Smarjit Ghosh, PHI
2. Network Synthesis – T. Lapatra, TMH.
3. Circuits and Networks: Analysis and Synthesis – A. Sudhakar & Shyam Mohan S. Palli, TMH

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **III**

Branch: **Electronics & Instrumentation**, Applied Electronics & Instrumentation

Subject: **Programming with C**

Code: **328316 (28)**

Total Theory Periods: **40**

Total Tutorial Periods: **10**

Total Marks in End Semester Examination: **80**

Minimum number of Class tests to be conducted: **Two**

Unit – 1

Introduction to C Language : history and development .C compilers. Data types, types of instructions, input/output functions. Operators , precedence and associativity of operators. Type casting, Developing simple programs , compilation , debugging and testing of programs. Relevance of C language.

Unit – II

Conditional constructs : if statement , if-else statements , nested if-else ,forms of if. Conditional operator, Switch case construct .Loop control structures ,nested loops,break and continue statements. goto statement.
Arrays : Syntax and definition, one and multidimensional arrays, readind and writing an array. Pointers and arrays.

Unit – III

Functions : Declaring and defining functions ,storage classes ,call by value, introduction to pointer data type ,call by reference, using library functions in programs, macro definitions. Preprocessor directives - #if, #elif, #define etc. Passing arrays into functions. Recursion.

Unit – IV

Strings: reading and writing strings, passing a string into a function, using library functions to manipulate strings. Array of strings.
Structures: Declaring and using structures. Array of structures, passing structures into function. Unions and enums, Pointers to structures Bit fields.

Unit – V

File Handling : reading and writing text files though C programs . File manipulating functions : fputc, fgetc, fgets, fputs, fseek, ftell etc. Working with Binary files , fread and fwrite. Command line arguments. Bitwise operators in C.

Name of Text Books:

1. Let us C – Yashwant KanetkarBPB Publication
2. Programming in ANSI C – E. Balaguruswamy Tata Mc-Gcraw Hill

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **B.E. III Sem.**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Basic Electronics I Lab**

Code: **328322 (28)**

Total Practical Periods: **36**

Total Marks in End Semester Examination: 4**0**

Experiments to be performed: (Minimum 10 experiments)

1. To draw the characteristics of a semi conductor diode and to find cut-in voltage, reverse resistance, static resistance and dynamic resistance.
2. To draw the characteristics of a zener diode
3. To design a half wave rectifier and to determine its efficiency and ripple factor.
4. To design a- full wave rectifier and determine the ripple factor and efficiency with filter.
5. To design a- full wave rectifier and determine the ripple factor and efficiency without filter.
6. To draw the characteristics of FET using BFW – 10
7. To draw the characteristics of CE configuration of a transistor amplifier.
8. To draw the characteristics of CB configuration of a transistor amplifier.
9. To draw the characteristics of CC configuration of a transistor amplifier.
10. To design a Zener regulator circuit and to find the regulation characteristics.
11. To draw the load line of a transistor amplifier under CE configuration.
12. To design and verify the self bias circuit operation.
13. To design and verify the voltage divider biasing circuit.
14. To verify the effect of emitter bypass capacitor.
15. To design a regulator circuit using Zener diode.

List of Equipments/Machine Required:

Circuit components, Breadboard, Hook-up wire, Power supply, CRO, Function generator

Recommended Books:

1. Laboratory Manual for Electronic Devices and Circuits, 4th Ed., David A. Bell, PHI

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester : **B.E. III Sem.**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Measurement & Instruments Lab**

Practical Code: 327321 (27)

Total Practical Periods: 03
Total Marks in end Semester Exam.: 40

Experiments to be performed(Minimum 10 experiments)

1. Measurement of Resistance by kelvin's Double Bridge
2. Measurement of resistance by wheat stone bridge
3. Measurement of unknown induction coil by Maxwell's inductance capacitance Bridge
4. Measurement of unknown inductance of coil by Hay's bridge
5. Measurement of unknown capacitance by modifiable Desauty's bridge
6. Measurement of unknown inductance of coil by Anderson Bridge
7. Measurement of unknown capacitance by shearing bridge
8. Calibration of single phase energy meter using single phase wattmeter.
9. Study of Moving iron & Moving coil voltmeter
10. Study of single phase wattmeter
11. Study of single phase Energy meter
12. Potentiometer calibration
13. Study of 1 - ϕ power factor meter
14. Study of frequency meters
15. Study of moving iron & moving coil ammeter
16. Measurement of high Resistance using loss of charge method
17. Measurement of high Resistance using Megger Method

List of Equipments/Machine Required:

1. Kelvin's Double Bridge Kit
2. Wheat Stone Bridge Kit
3. Maxwll's inductance capacitance bridge kit
4. Hay's Bridge Kit
5. Desauty's Bridge Kit
6. Anderson Bridge Kit
7. Schering Bridge Kit
8. MIMC Voltmeter Kit
9. Single Phase Voltmeter Kit
10. Single Phase energy meter Kit
11. Single Phase Power meter Kit
12. Frequency Meter Kit
13. MIMC Ammeter Kit
14. Megger Trainer Kit

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **III**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Programming with C Lab**

Code: **328323 (28)**

Total Practical Periods: **48**

Total Marks in End Semester Examination: 4**0**

List of programmes to be executed (but should not be less than 10)

1. Write a program to take the radius of a sphere as input and print the volume and surface and surface area of that sphere.
2. Write a program to take a 5-digit number as input and calculate the sum of its digits.
3. Write a program to take three sides of a triangle as input and verify whether the triangle is an isosceles, scalene or an equilateral triangle.
4. Write a program that will take 3 positive integers as input and verify whether or not they form a Pythagorean triplet or not.
5. Write a program to print all the Prime numbers between a given range.
6. Write a program to define a function that will take an integer as argument and return the sum of digits of that integer
7. Write a program to define a macro that can calculate the greater of two of its arguments. Use this macro to calculate the greatest of 4 integers.
8. Write a program to define a recursive function that will print the reverse of its integer argument.
9. Write a program to print the sum of first N even numbers using recursive function.
10. Write a program to sort an array using Bubble sort technique.
11. Write a program that will take the elements of two integer arrays of 5 element each, and insert the common elements of both the array into a third array (Set intersection)
12. Write a program to take 5 names as input and print the longest name.
13. Write a program to define a structure Student that will contain the roll number, name and total marks of a student. The program will ask the user to input the details of 5 students and print the details of all the students whose total marks is greater than a given value.
14. Write a program to define a union Contact that will contain the members Mobile no and E-mail id. Now define a structure Employee that will contain name, roll number, mode of contact (mob/e-mail) and a variable of type Contact as members. The program will ask the user to give the details of two Employees including mode of contact and the contact num/ E-mail. Print the details of both the Employees.
15. Write a program that will ask the user to input a file name and copy the contents of that file into another file.
16. Write a program that will take any number of integers from the command line as argument and print the sum of all those integers.

List of Equipments/Machine Required:

PCs, C-Compiler

Recommended Books:

Programming in ANSI C – E. Balaguruswamy Tata Mc-Gcraw Hill

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI (C.G.)

Semester : **III**

Branch: **Electronics & Instrumentation**, **Applied Electronics & Instrumentation**

Subject: **Network Analysis and Synthesis Lab**

Code: **328321 (28)**

Total Practical Periods: **36**

Total Marks in End Semester Examination: 4**0**

Experiments to be performed: (Minimum 10 experiments)

1. To calculate & verify the Q factor of a given RL series circuit.
2. To calculate & verify the Q factor of a given RC series circuit.
3. To calculate & verify the *fo* factor of a given RLC series / parallel circuit.
4. To calculate & verify the *fo,* Q factor of a given RLC parallel circuit
5. For a given equivalent circuit by applying source transformation theory find Vo (Thevenin's equivalent circuit).
6. For a given equivalent circuit by applying source transformation theory find i o (Norton's equivalent circuit).
7. For a given equivalent circuit select a appropriate dual network (duality property).
8. To calculate & verify the value of **do* for a given equivalent circuit by superposition theorem.
9. To analyze the pulse response of a series RL circuit.
10. To analyze the pulse response of a series RC circuit.
11. To analyze the impulse response of a series RC circuit (Low pass filter).
12. To analyze the impulse response of a series CR circuit (High pass filter).
13. To analyze the impulse response of a band pass filter.
14. To calculate the value of impedance by applying Millman theorem and also satisfy the condition of duality for Millman theorem.
15. For a given Two-port network calculate Z & Y parameter
16. For a given Two-port network calculate ABCD (Transmission)
17. For given Two-port network calculate h (hybrid) parameter & g (inverse hybrid) parameter.
18. For a given Two-port network by applying source transformation design
    i. T to Π network
    ii. Π to T network.

List of Equipments/Machine Required:

Breadboard, Circuit components like resistor, capacitors, inductors etc., Power supply, Function Generator, Ammeter, Voltmeter, CRO.

Recommended Books:

16. Network Theory: Analysis & Synthesis – Smarjit Ghosh, PHI

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Semester : B.E. 3rd Sem.
Subject : **Value Education**
No. of Periods : 2 pds/week
Total Marks in End Semester Exam. : NIL
Minimum number of class test to be conducted : Two

Branch : Common to all Branches
Code : 300325(46)
Tutorial Periods : NIL
Teacher's Assessment : 40 Mks

Unit – I

- **STUDY OF BASIC HUMAN OBJECTIVES :** Everlasting solution ¼lek/kku½] prosperity ¼le`f)½] trust in self and others ¼vHk;½] and coexistence ¼lgvfLrRo½ for balance in nature. Need and importance of aforesaid basic human objectives and how to achieve these.

Unit – II

- **CONCEPT AND UNDERSTANDING OF HUMAN HAPPINESS**
  Meaning and concept of "happiness", incessant happiness, its relationship with gaurantee of physical needs, comforts, physical and sensory pleasures with its transient nature, misery; The only method to minimize incessant happiness : gaining right understanding about oneself, one's body, one's relationship with other human beings, Nature and total existence.

Unit – III

- **PROPER UNDERSTANDING** about the order in Nature ¼O;oLFkk½ and co-existence ¼lgvfLrRo½ at various levels, such as, I and my body, family, society, Nature and existence.
- **UNDERSTANDING THE SELF :** Understanding human reality – I and my body, present understanding of the self, physical needs, relation with others and with Nature, gaining proper understanding of the self, discrimination between 'I' and my 'body', characteristics and the needs of 'I', of my 'body' and 'body' & 'I'.

Unit – IV

- **SYNERGATIC ORDER ¼O;oLFkk½ and COEXISTENCE ¼lgvfLrRo½ among HUMANS, IN NATURE & IN EXISTENCE** :
  - Conceptual understanding of natural relations and consequent values, of family and relation therein, of society and role of engineers therein, overall excellence' : concept, its universal parameters and total human behaviour
  - Inanimate ¼tM+½ and consciousness ¼pSrU;½ aspects of Nature, Four distinct synergetic orders in Nature - Padaarth Awastha ¼inkFkZ voLFkk½] Pran Awastha ¼izk.k voLFkk½] Jiv Awastha ¼tho voLFkk½] and Gyan Awastha ¼Kku voLFkk½] complementary supplementary evolutionary connection amongst above orders, identifying and implementing "Appropriate Technology".
  - Synergetic order among interacting entities of Nature operating in all pervading changeless Shunya or Satta, Indivisible interconnectedness of Satta and Prakriti and its implications.

Unit – V

- **IMPLICATIONS OF PROPER UNDERSTANDING**

- Awakening ¼tkx`fr½] the common goal of all human beings,
- promotion and perseverance of synergetic order and co-existence at all levels leading to incessant happiness.
- Natural manifestation of universal human values and thereby incessant happiness
- Undivided Society ¼vfoHkkT; lekt½ and Universal Organised System ¼lkoZHkkSe O;oLFkk½
- Transition from synergetic disorder ¼vO;oLFkk½ to synergetic order ¼O;oLFkk½
- Evaluation of Understanding, work and behaviour.

REFERENCES

1. Jeevan Vidya Camp ¼f'kfoj½ notes
2. An Introduction to Jeevan Vidya by Shri A. Nagaraj

*****