Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination

B.E. III Semester Electronics & Telecommunication Engineering

Sl. No.	Board of Study	Code No.	Subjects	Period Per Week			Scheme of Exam Theory/Practical			Total Marks	Credit L+(T+P)/2
				L	T	P	ESE	CT	TA		
1	Appl. Mathematics	328311(14)	Mathematics-III	4	1	-	80	20	20	**120**	5
2	Appl. Mathematics	328312 (14)	Numerical Analysis	3	1	-	80	20	20	**120**	4
3	Electronics & Telecom.	328313 (28)	Basic Electronics	3	1	-	80	20	20	**120**	4
4	Electronics & Telecom.	328314 (28)	Network Analysis and Synthesis	3	1	-	80	20	20	**120**	4
5	Electronics & Telecom.	328315 (28)	Solid State Devices and Components	2	1	-	80	20	20	**120**	3
6	Electronics & Telecom.	328316 (28)	Programming with C	3	1	-	80	20	20	**120**	4
7	Electronics & Telecom.	328321 (28)	Network Analysis and Synthesis Lab	-	-	3	40	-	20	**60**	2
8	Electronics & Telecom.	328322 (28)	Basic Electronics Lab	-	-	3	40	-	20	**60**	2
9	Electronics & Telecom.	328323 (28)	Programming with C Lab	-	-	4	40	-	20	**60**	2
10	Electronics & Telecom.	328324 (28)	Electronics Workshop	-	-	3	40	-	20	**60**	1
11	Humanities etc.	300325 (46)	Value Education	-	-	2	-	-	40	**40**	1
12			Library	-	-	1	-	-	-	-	-
TOTAL				**18**	**6**	**16**	**640**	**120**	**240**	**1000**	**32**

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

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

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

Semester**:** **B.E. 3 Sem.** Branch**:** **Electronics & Telecom., Applied Electronics & Instrumentation**

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. 3 Sem.**

Branch**:** **Electronics & Telecom, CS, IT, Elec&Electronics, Electronics & Instru.**

Subject**:** **Numerical Analysis**

Code**: 328312 (14)**

Total Theory Periods**:** **30**

Total Tutorial Periods**: 10**

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

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

UNIT- 1 NUMERICAL SOLUTIONS OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

(No. of periods 6+2)

Bisection Method, Regula-Falsi Method, Newton-Raphson Method, Secant Method, Birge-Vieta Method, Bairstow's Method.

UNIT – 2 NUMERICAL SOLUTIONS OF SIMULTANEOUS LINEAR EQUATIONS

(No. of periods 6+2)

Direct Methods - Gauss Elimination, Gauss-Jordan & Crout's Triangularisation Method.
Iterative Methods - Jacobi's, Gauss- Siedal & Successive Over Relaxation Method.

UNIT – 3 NUMERICAL DIFFERENTIATION AND INTEGRATION (No. of periods 6+2)

Finite Differences, Derivatives using Forward, Backward and Central Difference Formulae. Newton-Cote's quadrature formula, Trapezoidal rule, Simpson's rules, Weddle's rule.

UNIT – 4 NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS

(No. of periods 6+2)

Picards Method, Taylor's Series Method, Euler's Method, Euler's Modified Method, Range-Kutta Methods, Predictor-corrector Methods- Milne's Method, Adams-Bashforth Method.

UNIT – 5 CURVE FITTING AND METHOD OF LEAST SQUARES (No. of periods 6+2)

Method of Least Squares, Fitting of a Straight Line, Parabola, Curves of the form $y = ab^x$ and $y = ax^b$.

TEXT BOOKS:

1. Numerical Methods in Engineering and Science by Dr. B.S. Grewal, Khanna Publishers.
2. Numerical Methods for Scientific and Engineering Computation by M .K. Jain, S. R. K. Iyengar & R. K. Jain, Wiley Eastern Limited.

REFERENCE BOOKS.

1. Numerical Methods, by Noble ben, New York, International Publications New York 1964.
2. Numerical Methods for Scientists and Engineers by K. Shankar Rao, Prentice Hall of India.
3. Numerical Methods with C++ Programming, by Somasundaram & Chandrasekaran, Prentice Hall of India.
4. Numerical Methods, by S. S. Shastry, Prentice Hall Inc. India 1998.

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

Semester : **B.E. 3 Sem.** Branch: **Electronics & Telecommunication**
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. 3 Sem.** Branch: **Electronics & Telecommunication**
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/Pearson Education
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 : **B.E. 3 Sem.**
Branch: **Electronics & Telecommunication**
Subject: **Solid State Devices & Components**
Code: **328315 (28)**
Total Theory Periods: **30**
Total Tutorial Periods: **10**
Total Marks in End Semester Examination: **80**
Minimum number of Class tests to be conducted: **Two**

Unit – I

Conduction in Semiconductor: Energy band Theory of Crystals Insulators. Semiconductors and metals Mobility and conductivity: Energy Distribution of in a Metal; Fermi – Dirac distribution; Density of states, Electron Emission from a metal. Electron and holes; carrier concentration in intrinsic semiconductors; Donor and Acceptor impurities; Fermi level in Extrinsic Semiconductors; Conductivity Modulation; Generation and Recombination of Charges; diffusion; continuity Equation; Injected Minority charges Potential Variation in a Graded semiconductors.

Unit – II

Dielectric Properties of Insulators: Static Field; static Dielectric Constant; Polarization; Dielectric Constant of Monatomic gases; Dielectric constant of solids. Properties of Ferro electric materials; Spontaneous polarization Piezo Electricity, Alternating fields; Electronic and lonic Polarizability-Frequency Dependence; Complex Dielectric Constant of Non-Dipolar Solids; Dipolar Relaxation and Dielectric Losses.

Unit - III

Magnetic Properties of Materials: Summary of Concepts pertaining to Magnetic Fields; Magnetic Dipole moment of a Current Loop; Magnetization from a Macroscopic Point of View; Orbital Magnetic Dipole Moment and Angular Moment of Two Simple Atomic Models; Lenz's: Induced Dipole Moment Classification of Magnetic Materials: Diamagnetism: Origin of Permanent Magnetic Dipole in matter: Paramagnetic Spain System: Properties of Ferromagnetic Materials: Spontaneous Magnetization and Curie-Weiss Law; Ferromagnetic Domains and Coercive Forces; Anti Ferromagnetic and Ferrimagnetic Materials.

Unit - IV

Conduction in Metals: Ohm's Law; Relaxation; Collision Time and Mean Free Path; Electron Scattering and Receptivity of Metals; Heat Developed in Current Carrying Conductors; Thermal Conductivity of Metals.

Unit – V

Components: Resistances: Resistive Elements: Terminals and Protective Means: Characteristics of Resistor: Characteristics of Different Capacitors and Their Selection Factors: Variable Capacitors: Precision Variable Capacitors: General Purpose Variable Capacitors: Trimmers: Characteristics of Electronics power Transformers and Audio Transformers: Design Consideration: Low and High Frequency Equivalent Circuits of Audio Transformers; High Frequency Equivalent Circuits of Components.

Name of Text Books:

1. Electronic Engineering Materials and Devices – John Allison, TMH
2. Electrical Engineering Materials – A.J. Dekker, PHI.
3. A Monograph on Electronics Design Principals: N.C. Goyal and R.K. Khetan: Khanna Publishers: (For Unit - V).

Name of Reference Books:

1. Integrated Electronics – Millmann & Halkias, TMH
2. Structure and Properties of Materials Vol IV : Robert M Rose. Lawrence A Shepard and John Wulf: Wiley Eastern.
3. Electrical Engineering Materials – S.P. Seth & P.V. Gupta, Dhanpat Rai Publications.

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

Semester : **B.E. 3 Sem.** Branch: **Electronics & Telecommunication**
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. 3 Sem.** Branch: **Electronics & Telecommunication**
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:

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

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

Semester : **B.E. 3 Sem.** Branch: **Electronics & Telecommunication**
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. 3 Sem.** Branch: **Electronics & Telecommunication**
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 : **B.E. 3 Sem.** Branch: **Electronics & Telecommunication**
Subject: **Electronics Workshop** Code: **328324 (28)**
Total Practical Periods: **36**
Total Marks in End Semester Examination: 4**0**

Experiments to be performed: (minimum 10 experiments)

1. To study the all types resistances and their color code chart.
2. To study the all types of capacitors (variable and fixed type) and their color-codes.
3. To identify and check the types of transistor (npn, pnp).
4. To identify the types of diode (rectifier, switching , zener, detector).
5. To learn the design technique of PCB using PCB designing software.
6. To fabricate a PCB.
7. To learn PCB drilling technique.
8. To learn PCB tinning technique.
9. To design a transformer.
10. To learn soldering- desoldering technique.
11. To design and fabricate a DC power supply using bridge rectifier on PCB.
12. To design and fabricate a DC power supply using full wave rectifier on PCB.
13. To learn the use of SMD rework station.
14. To design and fabricate any popular working project on electronics.
15. To learn the operation of CRO.
16. Measurement of voltage frequency using CRO.
17. Measurement of frequency and phase using Lissajus pattern.

List of Equipments/Machine Required:

1. Film Making unit
2. Deep coating machine
3. UV exposure unit
4. PCB curring machine
5. PCB etching machine
6. PCB drilling machine
7. PCB tining machine
8. Magnifying lamp
9. Soldering & desoldering iron
10. LCR qmeter
11. Digital & analog multimeter
12. PCB making software (ULTIBOARD, PROTEL, EXPRESS LAB etc.)
13. Resistance color code chart
14. Capacitor colour code chart
15. Transistor chart

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Semester : **B.E. 3 Sem.** Branch : **Common to all Branches**
Subject : **Value Education** Code : **300325(46)**
No. of Periods : 2 pds/week Tutorial Periods : NIL
Total Marks in End Semester Exam. : NIL Teacher's Assessment : 40 Mks
Minimum number of class test to be conducted : Two

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

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