### Chhattisgarh Swami Vivekanand Technical University, Bilhai

**Scheme of Teaching and Examination**

**B.E. VIII Semester Electronics & Telecommunication Engineering**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code No.</th>
<th>Theory Subjects</th>
<th>Period Per Week</th>
<th>Scheme of Exam</th>
<th>Total Marks</th>
<th>Credit</th>
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<tr>
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<td>L</td>
<td>T</td>
<td>P</td>
<td>Theory/ Practical</td>
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<td>1</td>
<td>Electronics &amp; Telecom.</td>
<td>328811 (28)</td>
<td>Optical Communication</td>
<td>3</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Electronics &amp; Telecom.</td>
<td>328812 (28)</td>
<td>VLSI Design</td>
<td>3</td>
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<td>3</td>
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<td>328813 (28)</td>
<td>Industrial &amp; Power Electronics</td>
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<td>Refer Table -3</td>
<td>Professional Elective - III</td>
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<td>1</td>
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<td>Refer Table -4</td>
<td>Open Elective - IV</td>
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<td>-</td>
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<td>Electronics &amp; Telecom.</td>
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<td>Optical Communication Lab</td>
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<td>Electronics &amp; Telecom.</td>
<td>328822 (28)</td>
<td>VLSI Design Lab</td>
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<td>Electronics &amp; Telecom.</td>
<td>328823 (28)</td>
<td>Digital Circuit Simulation Laboratory</td>
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<td>Electronics &amp; Telecom.</td>
<td>328824 (28)</td>
<td>Major Project</td>
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<td>10</td>
<td>Electronics &amp; Telecom.</td>
<td>300825 (28)</td>
<td>Report Writing &amp; Seminar</td>
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<td>Library</td>
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**TOTAL**

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

### Table - 3

**Professional Elective - III**

**Telecommunication Group:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Electronics &amp; Telecom.</td>
<td>328871 (28)</td>
<td>Video Transmission &amp; Reception</td>
</tr>
<tr>
<td>2</td>
<td>Electronics &amp; Telecom.</td>
<td>328872 (28)</td>
<td>Radar Engineering &amp; Navigational Aids</td>
</tr>
<tr>
<td>3</td>
<td>Electronics &amp; Telecom.</td>
<td>328873 (28)</td>
<td>Information Theory &amp; Coding</td>
</tr>
</tbody>
</table>

**Allied Group:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Board of Study</th>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Electronics &amp; Telecom.</td>
<td>328874 (28)</td>
<td>DSP Processors &amp; Applications</td>
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<tr>
<td>2</td>
<td>Electronics &amp; Telecom.</td>
<td>328875 (28)</td>
<td>Micro-electronic Devices &amp; VLSI Technology</td>
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<tr>
<td>3</td>
<td>Electronics &amp; Telecom.</td>
<td>328876 (28)</td>
<td>Industrial Automation</td>
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<td>4</td>
<td>Electronics &amp; Telecom.</td>
<td>328877 (28)</td>
<td>Digital Image Processing</td>
</tr>
</tbody>
</table>

**Note (1)**: 1/4th of total strength of students subject to minimum of twenty students is required to offer an elective in the college in a particular academic session.

**Note (2)**: Choice of elective course once made for an examination cannot be changed in future examinations.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Board of Studies</th>
<th>Code</th>
<th>Name of Subject</th>
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<tbody>
<tr>
<td>1</td>
<td>Management</td>
<td>300881 (36)</td>
<td>Enterprise Resource Planning</td>
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<tr>
<td>2</td>
<td>Information Technology</td>
<td>300882 (33)</td>
<td>E-Commerce &amp; strategic IT</td>
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<tr>
<td>3</td>
<td>Management</td>
<td>300883 (36)</td>
<td>Technology Management</td>
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<td>4</td>
<td>Information Technology</td>
<td>300884 (33)</td>
<td>Decision Support &amp; Executive Information system</td>
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<tr>
<td>5</td>
<td>Computer Science &amp; Engg.</td>
<td>300885 (22)</td>
<td>Software Technology</td>
</tr>
<tr>
<td>6</td>
<td>Management</td>
<td>300886 (36)</td>
<td>Knowledge Entrepreneurship</td>
</tr>
<tr>
<td>7</td>
<td>Management</td>
<td>300887 (36)</td>
<td>Finance Management</td>
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<tr>
<td>8</td>
<td>Management</td>
<td>300888 (36)</td>
<td>Project Planning, Management &amp; Evaluation</td>
</tr>
<tr>
<td>9</td>
<td>Mechanical Engg.</td>
<td>300889 (37)</td>
<td>Safety Engineering</td>
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<tr>
<td>10</td>
<td>Computer Science &amp; Engg.</td>
<td>300890 (22)</td>
<td>Bio Informatics</td>
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<tr>
<td>11</td>
<td>Mechanical Engg.</td>
<td>300891 (37)</td>
<td>Energy Conservation &amp; Management</td>
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<tr>
<td>12</td>
<td>Nanotechnology</td>
<td>300892 (47)</td>
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<tr>
<td>13</td>
<td>Management</td>
<td>300893 (36)</td>
<td>Intellectual Property Rights</td>
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<tr>
<td>14</td>
<td>Mechanical Engg.</td>
<td>300894 (37)</td>
<td>Value Engineering</td>
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<td>15</td>
<td>Civil Engg.</td>
<td>300895 (20)</td>
<td>Disaster Management</td>
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<tr>
<td>16</td>
<td>Civil Engg.</td>
<td>300896 (20)</td>
<td>Construction Management</td>
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<tr>
<td>17</td>
<td>Civil Engg.</td>
<td>300897 (20)</td>
<td>Ecology and Sustainable Development</td>
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<tr>
<td>18</td>
<td>Chem. Engg.</td>
<td>300898 (19)</td>
<td>Non Conventional Energy Sources</td>
</tr>
<tr>
<td>19</td>
<td>Electrical Engg.</td>
<td>300899 (24)</td>
<td>Energy Auditing and Management</td>
</tr>
</tbody>
</table>

**Note (1)** - 1/4th of total strength of students subject to minimum of twenty students is required to offer an elective in the college in a particular academic session.

**Note (2)** - Choice of elective course once made for an examination cannot be changed in future examinations.
UNIT – I

UNIT – II
Silicon Controlled Rectifiers: General idea of thyristor family members. SCR- Construction, Principle of operation, Dynamic & Gate characteristics & SCR Terminologies, Different methods of turning on & turning off of SCRs (Load commutation; Forced commutation; External pulse commutation). Different methods of triggering SCR Circuits, Series & Parallel operation of SCRs.

UNIT – III
Power Conditioning Circuits:
Inverters: Line Commutated Inverters (3 phase bridge inverter), Forced Commutated Inverters (McMurray Bridge inverter)
(Only Qualitative analysis are needed in this unit)

UNIT – IV
Heating and Welding Control:
Induction heating: Theory, Principle, Effects of supply frequency, and Choice of frequency, Applications.
Dielectric heating: Electronic theory, Principle, heating in materials of irregular shape, Limitations, Effect of variation of supply voltage & frequency, Applications.
Welding: Theory of Resistance welding, Classification of Resistance welding and Scheme for AC Resistance welding.

UNIT – V
AC Power Conditioner:
Power supply Noise: Origin, Effect on computer & Communication systems, Reduction of noise, Different forms of their noise (thermal, shot, flicker & transit time noise) & Requirements and characteristics of the computer power supply system, Types of power line disturbances, Effects of power line disturbances on sensitive electronic equipment.

Name of Text Books:
1. Industrial Electronics & Control: B. Paul, PHI
2. Power Electronics: M. D. Singh, Khanchandani, TMH

Name of Reference Books:
1. Industrial & Power Electronics: H.C. Rai, Umesh Publications.
2. Power Electronics: P.C. Sen, TMH

The underlined portions have been elaborated.
This syllabus will be effective from the session Jan 2012.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII
Subject: Optical Communication
Total Theory Periods: 40
Total Marks in End Semester Examination: 80
Minimum number of Class tests to be conducted: Two

UNIT – I
Basic Optical Laws and definition: Numerical Aperture; Optical Fiber Modes and propagation; Single Mode and Multi-Mode Fibers; Step Index and Graded Index Fibers Structures; Different types of attenuations in optical fiber communication; Fiber Optic Cable; Fabrication;

UNIT - II
Light sources: Light Emitting diodes and types of LEDS; LASER principles; Laser diode and types of LDs; Operating characteristics and Modulation circuits of LED and LASER diodes.

UNIT – III
Optical Couplers and connectors: Connector principles; fibre end preparation; splices; connectors; source coupling; Distribution system; Distribution networks; Directional couplers; Star couplers; Switches;

UNIT - IV
Light Detectors: Principle of photo-detection; semiconductor photodiode; PIN photodiode; Avalanche photodiode; Noise and Detection; Thermal noise and Shot noise; signal to noise ratio;

UNIT - V
Optical Measurement & Networks: Numerical Aperture; Attenuation and Dispersion measurement; Optical networks: Introduction to SONET/SDH; SONET/SDH Networks; formats and interface.

Names of Text Books:
1. Optical Fiber Communication, Keiser, TMH
2. Fiber Optic Communications, Palais, 4th Ed., Pearson Education

Names of Reference Books:
2. Text Book on Optical Fiber Communication and its Applications, Gupta, PHI
3. Fundamentals of Optical Fiber Communication, Satish Kumar, PHI
4. Semiconductors Optoelectronic Devices, Bhattacharya, Pearson Education
5. Optical Fiber Communication-Principles and Practice, John Senior, PHI
UNIT – I
Introduction to Integrated Circuits: Brief introduction of SSI, MSI and LSI; VLSI Design flow; Design hierarchy; concept of regularity, Modularity and Locality; VLSI design styles with FPGA and CPLD: FPGA and CPLD architecture, logic function implementation using LUT.

UNIT – II
Design Aspects: Basic steps of fabrication process of PMOS, CMOS; Basic Bi-CMOS circuits (Inverter, NOR2, NAND2). Layout design rules: Basics of stick diagram for CMOS; CMOS lambda based layout design rules; Layout of CMOS inverter, NAND Gate, NOR Gate, Full Adder, calculation of resistance and capacitance.

UNIT – III
Lay Out Design: Lay out design of Memories: 6-T SRAM cell, 1-T DRAM cell; 4x4 NAND and NOR based ROM array; Combinational Logic: 2:4 Decoder, 4:1 MUX, 1 bit Full Adder, Comparator; Sequential Logic: CMOS SR, JK and D latch.

UNIT – IV
Combinational Logic Design: Static and Dynamic Power dissipation in CMOS Inverter; Introduction to CAD Tools; Introduction to VHDL and Verilog; VHDL: Operators, Data Types, Libraries; Entity, Architecture; Data flow, Structural and Behavioral programming, Generic, Signal, Generate, Process, Loops, Case, Variable, Procedure, Component and Configuration.

UNIT – V
Sequential Logic Design: Sequential design by VHDL: Flip-Flop and Shift Registers; FSM: Moore and Mealy machine, Counter, Sequence Detector; Bus structure in VHDL; Test bench Modeling in VHDL, Basic concepts of operator overloading, Blocks, Delays, Concepts of Verifications for BIST using Half Adder.

Note: Unit 4 and Unit 5 is based on VHDL programming.

Recommended books:
4. VHDL Primer by J. Bhaskar, PHI

Reference Books:
3. VHDL Programming by Perry, TMH Pub
6. Verilog-HDL Primer by J. Bhaskar, PHI

The underlined portions have been elaborated.

This syllabus will be effective from the session Jan 2012.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII  
Subject: Video Transmission and Reception  
Total Theory Periods: 40  
Minimum number of Class tests to be conducted: Two

UNIT – I  
Television picture, Introduction geometric form and aspect ratio; image continuity; number scanning lines; interlaced scanning; Composite video signal, introduction; video signal dimension; horizontal sync composition; vertical sync detail; functions of vertical pulsed train; scanning sequence detail.

UNIT – II  
Color signal generation: Introduction; perception of brightness and colors; additive color mixing; video signal for color; luminance signal; compatibility; color difference signal; Television signal transmission: positive and negative modulation; VSB transmission; monochrome transmitter; Merits and demerits of the PAL system; SECAM system and NTSC system.

UNIT – III  
Television cameras:  
Basic principles, Image orthicon, Vidicon, Plumbicon, Solid-state image scanners; Silicon diode array vidicon, camera optics, color camera. Picture tubes: Colour television display tubes Delta-gun colour picture tube; Purity and convergence; Precision (PIL) colour picture tube; The deflection unit; Purity and static convergence adjustments; Dynamic convergence adjustments; Trintron colour picture tube; Pincushion correction techniques. Automatic-degaussing (ADG) circuit. Grey scale tracking.

UNIT – IV  
Advances in Television technology: Video recorders, video disc, optical disc, capacitance disc; Cable Television: coaxial cable for CATV, characteristic impedance, cable losses, Two-way cable systems cable TV converter; Recent Technologies: HDTV, Flat panel display TV receivers; Colour receivers for the new generations.

UNIT-V  
Multimedia Fundamentals: Basic concepts of Computer-based Multimedia Different types of media Audio, Video, Text, Image, Graphics, and animation; Multimedia applications, Authoring Tools, Multimedia building blocks, video capturing and editing

Text Books:

Reference Books:
1. Modern Television Practice: R.R. Gulati, New Age International
2. Basic Television and Video System: Bernard Grob
UNIT – I

UNIT – II
MTI And Pulse Doppler Radar: Introduction to Doppler and MTI Radar, delay line cancellers, staggered PRF. Range gated Doppler filter, limitations to MTI performance. Tracking with Radar, Monopulse Tracking, Conical Scan and Sequential Lobing, Limitations to Tracking Accuracy, Low Angle Tracking, Tracking in range, Comparison of Trackers.

UNIT – III

UNIT – IV
Antennas for Detection of Radar Signals: Parabolic antennas, introduction to phased array, cosecant squared antenna, radome.

UNIT – V
Radar Transmitter and Receiver: Radar Receiver, Receiver Noise Figure, Superheterodyne Receiver, Duplexers and Receiver Protectors, Radar Displays, introduction to ECM and ECCM, Linear Beam Power Tubes, Solid State Power Sources, Magnetron.

Text Books:

Reference Books:
UNIT-I
Uncertainty, Information and Entropy: Entropy; information source and entropy, mutual information, information measures for continuous random variables Characteristics on information measure; Shannon’s concept of information; Shannon’s measure of information; Model for source coding theorem; Communication system; Source coding and line/channel coding; channel mutual information capacity (Bandwidth)

UNIT-II
Channel coding: Theorem for discrete memory less channel, Information capacity theorem: Error detecting and error correcting codes; Types of codes; Block codes; Tree codes; Hamming and Lee Matrices; Description of linear block codes by matrices; Description of linear tree code by matrices; Parity check codes; Parity check polynomials;

UNIT-III
Compression: Lossless and lossy ; Hoffmann codes; Binary Image compression schemes; Run –length Encoding; CCITT group-3 1D compression; CCITT group-3 2D compression; CCITT group-4 2D compression;

UNIT-IV
Video Image Compression: Requirement of full motion video compression; CCITT H 261 video coding algorithm; MPEG compression methodology; MPEG-2 compression; Audio (Speech) compression;

UNIT-V
Cryptography: Encryption; Decryption; Cryptogram (cipher text); Concept of cipher; Cryptoanalysis; Keys: Single key (Secret key); Cryptography: two-key (Public key) cryptography; Single key cryptography; Ciphers; Block Cipher code; Stream ciphers; Requirements for secrecy; The data Encryption Standard; Public Key Cryptography; Diffie-Hellmann public key distribution; The Rivest- Shamim Adelman(R-S-A) system for public key cryptography; Digital Signature;

Name of Text books:
1. Digital Communication by Proakis, TMH (For Unit I & II)
3. Local Area Network by G. Keiser, TMH (for Unit – V)

Name of Reference books:
2. The Mathematics of Coding Theory, Garrett, Pearson Education
3. Norman Abramson, Information Theory, John Wiley
UNIT - I

**Instruction Set and Architecture of DSP Processor:** Computational characteristics of DSP algorithms and applications: their influence on defining a generic instruction-set architecture for DSPs.

UNIT - II

**Architectural Requirement of DSPs:** High throughput, low cost, low power, small code size, embedded application techniques for enhancing computational throughput; parallelism and pipelining.

UNIT - III

**Data-path of DSPs:** multiple on-chip memories and buses, dedicated address generator units, specialized processing units. Hardware multiplier, ALU, Shifter and on-chip peripherals for communication and control.

UNIT - IV

**Control Unit of DSPs:** Pipelined instruction execution, specialized hardware for zero-overhead looping, Interrupts. Architecture of Texas instruments fixed-point and floating-point DSPs, Brief description of ADSP 218X/2106X DSPs, Programmer's model.

UNIT - V

**Advanced DSPs:** TI's 320C6X, ADI's Tiger-SHARC, Lucent technologies' DSP 16000 VLIW processors. Applications: a few case studies of application of DSPs in Communication and Multimedia.

**Text Books:**

**Reference Books:**
1. Digital Signal Processing in VLSI, R.J. Higgins
2. Texas Instruments TMSC5X, C54X and C6X Users manuals.
UNIT – I
Crystal Growth: The Czochralski Technique, Bridgeman Technique, Float Zone Process.

UNIT – II
Oxidation: Thermal Oxidation, Kinetics of Thermal Oxidation, Film Deposition, Dielectric Deposition, Polysilicon Deposition.

UNIT – III

UNIT – IV

UNIT – V

Text Book:
1. VLSI Design by Sujata Pandey & Manoj Pandey, Dhanpat Rai & co.
2. VLSI Technology, S.M. Sze, TMH Book Company

Reference Book:
Unit – I

Unit – II

Unit – III

Unit – IV
Programmable Logic Controller: Evaluation of PLC, PLC Architecture, Basic Structure. PLC Programming: Ladder Diagram – Ladder diagram symbols, Ladder diagram circuits. PLC Communications and Networking, PLC Selection: I/O quantity and Type, I/O Remoting requirements, Memory size and type, Programmer Units. PLC Installation, Advantages of using PLCs.

Unit – V
Distributed Control System: Introduction, Overview of Distributed Control System, DCS Software configuration, DCS Communication, DCS Supervisory Computer Tasks, DCS Integration with PLCs and Computers, Features of DCS, Advantages of DCS.

Text Books:
1. Process Control Instrumentation Technology, C.D. Johnson, PHI

Reference Books:
1. Introduction to Instrumentation & Control, A.K. Ghosh, Eastern Economy Edition
2. Intelligent Instrumentation, George C. Barney, Prentice Hall India
UNIT – I

UNIT – II
Statistical properties: Histogram mean, standard deviation, profile different distributions. Image Transform: One and two dimensional DFT the discrete cosine transform, Hadamand transform, haar transform, slant transform.

UNIT – III
Image Enhancement: Spatial and frequency Domain methods point operations, contrast stretching, bit extraction, range compression, Histogram equalization, modification local enhancement, image smoothing spatial operations, filtering multispectral, color image processing, Pseudo- color image enhancement.

UNIT – IV
Image restoration: degradation model, Restoration in spatial domain geometric transformation spatial transformation, approach to restoration, Inverse & Wiener filtering, image compression: basics of image compression, models, elements of information theory, error free compression, lossy compression, image segmentation, line detection, edge detection, edge linking and boundary detection, thresholding & region oriented segmentation.

UNIT – V
Image Analysis: boundary extraction, boundary representation, region representation structure shape features, texture, scene matching and detection. Application of image processing: Character recognition, diagram understanding, medical imaging, scientific analysis, military guidance and reconnaissance remote sensing, telecommunication.

Name of Text Books:
2. Digital Image Processing, Madhuri A. Joshi, PHI

Name of Reference Books:
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : VIII  Branch: Electronics & Telecommunication
Subject: Optical Communication Lab  Code: 328821 (28)
Total Practical Periods: 50  Total Marks in End Semester Examination: 40

Experiments to be performed:
1. To measure bending loss of a fiber.
2. To propagation or attenuation loss in a fiber.
3. To obtain amplitude modulation and to transmit the same over fiber optic cable and to demodulate the same at the receiver end.
4. To determine the numerical aperture of a fiber.
5. To measure various types of losses occur in an optical fiber.
6. To study the AC characteristics of intensity modulation of laser and fiber optic system.
7. To measure optical power of a laser diode Vs. forward current.
8. To monitor photo diode current Vs. laser optical output.
9. Demonstration of voice transmission through optical fiber using FM.
10. Communication between two computers using RS232 interface via optical fiber.
11. To measure plastic fiber patch cord loss for various lengths of fiber.
12. To study voice transmission through fiber optic cable using PWM.
13. To transmit and receive text files over fiber optic cable.
14. To transmit, receive and observe digital signals over fiber optic cable.
15. To measure rise time, fall time, pulse width distortion of a laser and to determine transmission delay.

List of Equipments/Machine Required:
Fiber optic trainer kit, optical fiber, Splicing unit, Data Acquisition card for optical signal, O/E & E/O Converter, CRO.

Recommended Books:
1. Fundamentals of Optical Fiber Communication - Sathish Kumar, PHI
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII
Subject: VLSI Design Lab
Branch: Electronics & Telecommunication
Total Practical Periods: 50
Total Marks in End Semester Examination: 40

Experiments to be performed:

1. LAYOUT DESIGN OF CMOS INVERTER
2. LAYOUT DESIGN OF CMOS NAND GATE
3. LAYOUT DESIGN OF CMOS NOR GATE
4. LAYOUT DESIGN OF CMOS 2:1 MUX
5. LAYOUT DESIGN OF CMOS 1:2 DECODER
6. LAYOUT DESIGN OF ANY COMBINATIONAL LOGIC
7. LAYOUT DESIGN OF ANY SEQUENTIAL LOGIC
8. LAYOUT DESIGN OF CMOS MIXED DESIGN LOGIC
9. LAYOUT DESIGN OF CMOS COMPARATOR
10. DESIGN AND IMPLEMENTATION OF 4-BIT ADDER USING VHDL
11. DESIGN AND IMPLEMENTATION OF 8-BIT ADDER USING VHDL
12. DESIGN AND SIMULATION OF SEQUENTIAL CIRCUIT USING VHDL
13. DESIGN AND SIMULATION OF SEQUENTIAL CIRCUIT USING VERILOG
14. DESIGN AND SIMULATION OF FSM CIRCUIT USING VERILOG
15. DESIGN AND SIMULATION OF COUNTER USING VERILOG
16. DESIGN AND SIMULATION OF ARITHMETIC FUNCTION USING VERILOG
17. DESIGN AND SIMULATION OF BUSSES USING VHDL

List of Equipments/Machine Required:

PCs with PIV/128 MB RAM/40 GB HD, VHDL, VERILOG, Any Device Simulator

Recommended Books:
Experiments to be performed:

1. To Design, implement and Simulate the combinational logic circuit for the function \( f(A,B,C) = \Sigma(0,4,5,8,11,15) + d(1) \)
2. To Design, implement and Simulate the Full adder using two half adder.
3. To Design, implement and Simulate the 8 bit adder using Full adder.
4. To Design, implement and Simulate the 3 : 8 Decoder.
5. To Design, implement and Simulate the 16 : 1 Multiplexer using 4 : 1 Multiplexer
6. To Design, implement and Simulate the Binary to BCD code Converter by Showing BCD No. on 7segment Display.
7. To Design, implement and Simulate the Look ahead carry.
8. To Design, implement and Simulate the Flip-Flop.
9. To Design, implement and Simulate the Ring Counter.
10. To Design, implement and Simulate the Decade counter using D-Flip-Flop.
11. To Design, implement and Simulate the Divide by 32 (+32) digital logic by counter and flip-flop.
12. To Design, implement and Simulate the Hamming code converter.
13. To Design, implement and Simulate the 4 bit comparator.
14. To Design, implement and Simulate the Finite State Machine by Moore method
15. To Design, implement and Simulate the Finite State Machine by Mealy circuit

List of Equipments/Machine Required:
1. PCs with simulation software like MULTISIM, COMSIM, MATLAB, TINA PRO installed

Recommended Books:
The students are expected to take up a Project under the guidance of a faculty from the Institute. This may be an extension of the Minor project undertaken in VII semester or a new one.

The topic of the project should be justified for the degree of BE (Electronics & Telecommunication).

The project selected should ensure the satisfaction of the urgent need to establish a direct link between education, Industrial application, national development and productivities.

The students may be asked to work individually or in a group having not more than FOUR students.

The student/group of student should collect all necessary information from literature on selected topic/project.

It should include the scope of project, identification of necessary data, source of data, development of design method and identification, methodology, software analysis (if any).

Students should deliver a seminar on the selected Project/topic.

The students are expected to submit the report in standard format approved by the University in partial fulfillment of the requirement for the degree of B.E. (Electronics & Telecommunication).

There will be an external viva-voce at the end of the semester and the students are to demonstrate the project at the time of viva-voce.

The project report should contain the following:

- A cover page mentioning the project title, names of the students, Affiliated Institute/College, Session, Batch and the name of the University.
- A bonafide certificate to be issued by the Head of the Institute.
- A forwarding certificate from the Head of the Department.
- A completion certificate from the Project guide.
- A certificate of Approval from both Internal and External Examiner.
- Acknowledgement from the students
- Abstract
- Contents
- Description of the Project (to be divided in chapters)
- Conclusion
- Bibliography
- A CD containing the Software/Program used in the project.
Semester : BE 8th  Branch: Electronics & Telecommunication
Subject: Report Writing & Seminar  Code: 300825 (28)
Total No. of periods : 2 per week  Total Tutorial Periods : Nil
Total marks in End Semester Exam: Nil  Teacher's Assessment: 40 marks
Minimum Number of class test to be conducted: Two

Unit - I
Introduction to Technical Writing: how differs from other types of written communication Purpose of technical writing, Correspondence: prewriting, writing and rewriting Objectives of Technical Writing. Audience Recognition: High-tech audience, Low tech audience, Lay audience, Multiple Audience.

Unit - II
Correspondence: Memos, Letters, E-mails, Its differentiation, types of letters, Document Design, its importance, Electronic Communication: Internet, Intranet, extranet, Writing effective e-mail.

Unit - III
Summary: Report Strategies, Effective style of technical report writing: Structures: content, introduction, conclusions, references, etc., Presentation, Writing first draft, revising first draft, diagrams, graphs, tables, etc. report lay-out.

Unit - IV

Unit - V
Proposals & Presentation: Title page, Cover letter, Table of Content, list of illustrations, summary, discussion, conclusion, references, glossary, appendix, Case Studies. Oral Presentation/ Seminar:

Text Books:

Reference Books:
1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman
UNIT-I
Conceptual foundation of Business Process reengineering: Role of information Technology and BPR; Process improvement and Process redesign, Process identification and mapping; Role/Activity diagrams, Process Visioning, and benchmarking. [No of Periods: 8 + 2]

UNIT -2
Enterprise Resource Planning: Evolution of ERP- MRP and MRP II, structure of ERP- two tier architecture, three tier architecture, Electronic data processing, management information system, Executive information system, ERP as an integrator of information needs at various Levels. [No of Periods: 8 + 2]

UNIT -3
Typical Business Processes: Core processes, Product control, Sales order processing, Purchases, Administrative processes, Human resource, Finance support processes, Marketing, Strategic planning, Research and development, Problems in traditional view. [No of Periods: 8 + 2]

UNIT -4
ERP models/functionality: Sales order processing, Production scheduling, forecasting, distribution, finance, features of each of the models, description of data flow across each module, overview of supporting databases & packages. [No of Periods: 8 + 2]

UNIT -5
ERP implementation issues: Opportunities and problems in ERP selection, and implementation; ERP implementation: identifying ERP benefits, team formation, Consultant intervention, Selection of ERP, Process of ERP. [No of Periods: 8 + 2]

Books:
2. Rahul V. Altekar, Enterprise wide Resource Planning-theory and practice, PHI

References:
1. ALEXIS LEON: Enterprise Resource Planning, TMH
2. S. SADAGOPAN: MIS, PM
3. V. RAJARAMAN: Analysis and Design of Information Systems, PHI
4. MONK’ & BRADY: Concepts in ERP, Vikas pub, Thomson

UNIT – II
Network Infrastructure: LAN, Ethernet (IEEE standard 802.3) LAN, WAN, Internet, TCP/IP Reference Model, Domain Name Server, Internet Industry Structure,

UNIT – III
Electronic payment systems, types of electronic payment systems, digital token-based electronic payment systems, smart cards & electronic payment systems, credit card based electronic payment systems, risk and electronic payment systems, designing electronic payment systems.

UNIT – IV
Information Distribution and Messaging: FTP, E-Mail, WWW server, HTTP, Web service implementation, Information publishing, Web Browsers, HTML, Common Gateway Interface

UNIT – V
Mobile & wireless computing fundamentals, mobile computing framework, wireless delivery technology and switching methods, mobile information access devices, mobile data internetworking standards, cellular data communication protocols, mobile computing applications, personal communication service.

BOOKS:
1. Frontiers of E-commerce by Kalakota & Whinston (Addison-wesley) E-business roadmap for success by Dr. Ravi Kalakota & Marcia Robinson (addision wesicy)
2. Electronic Commerce By Bharat Bhasker (TMH)
Unit I
Technology: - Definitions, Types and Characteristics, Management of Technology (MOT), Technological Environment, Parameters of Technological Environment; Science & Technology in India. 

Unit II

Unit III
Technology life cycle, Technology evolution and S-curves of Technology Evolution, Technology Diffusion, Dynamics of Diffusion, Mechanism of Diffusion.

Unit IV
Technology strategies & Intelligence: Technology Strategy & types, Models for technology strategy formulation Definition of Technology Intelligence, Technology Audit, Process of Technology Intelligence: Technology Scanning, Monitoring, Forecasting and Assessment.

Unit V
Acquisition and technology transfer. Over view of - GATT, Intellectual property rights (IPR)

Texts Books:

Reference Books:
3. Plsek, Crativity, Innovation and Quality, PHI
UNIT-I Decision Support System:
What is a DSS, Decision Making Rational Decisions, Definitions of Rationality, Bounded Rationality and Muddling Through, The Nature of Managers, Appropriate Data Support, Information Processing Models, Group Decision Making?

UNIT-II Component OF DSS:
Data Component : Information and its Usefulness, Characteristics of Information, Databases to Support Decision Making, Database Management Systems, Data Warehouses, Data Mining and Intelligent Agents
Mail Component: Integration of Mail Management Examples of Use implications for DSS.

Unit-III Intelligence and Decision Support Systems:

Unit-IV Designing A DSS: Planning for DSS, Designing a Specific DSS, Interviewing Techniques, Other Techniques, Situational Analysis Design Approaches, Systems Built from Scratch, Using Technology to Form the Basis of the DSS, Evaluating a DSS Generator, Using a DSS Generator, The Design Team, DSS Design and Re-engineering Discussion.


Name Of Text Books:-
Decision Support System By Vicki I Sauter
Management Information system-Gerald V. Post & David L. Anderson
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI (C.G.)

Semester: VIII  Branch: Common to All Branches.
Subject: Software Technology  Code: 300885 (22)
Total Theory Periods: 4 per week.  Total Tut Periods: Nil.
Total Marks in End Semester Exam: 80.
Minimum number of class tests to be conducted: 02.

UNIT-1
ASSEMBLY LANGUAGE PROGRAMMING
Pentium Assembly languages-Registers, Memory Model, Addressing mode, 1source Link, Installation, Assembler Directives.
ASSEMBLER DESIGN

UNIT-2
LINKERS
Linking -Combining Object Modules, Pass I, Pass II; Library Linking; Position Independent Code (PIC); Shared Library Linking.
LOADERS- Binary Image; Types of Loaders.

UNIT-3
MACROPROCESSORS
Macro in NASM- Local Labels in Macro Body, Nested Macros.; Design of Macroprocessors – Major Data Structures, Macroprocessing Technique, Simple macroprocessors without nesting, Nested calls & definitions

UNIT – 4
COMPILERS
Lexical Analysis; Syntax Analysis; Intermediate Code Generation; Target Code Generation; Optimizing Transformation

UNIT – 5
TEXT EDITORS
Design of a Text Editor ; Data Structures for Text Sequences; Text Document Design; Text view Design
DEBUGGER
Features; Breakpoint mechanism; Hardware support; context of Debugger; Check pointing & reverse Execution

Textbooks
1. SYSTEM SOFTWARE by Santanu Chattopadhyay ; Prentice Hall of India
2. Software Engineering By Roger S Pressman ; Mc-Graw Hill

References
1. Foundations of Software Technology and Theoretical Computer Science, By V. (Venkatesh) Raman: Springer
2. Software Visualization by John Stasko; MIT press
3. Software Engineering By Rajib Mall : PHI
Unit – I
Introduction: Entrepreneurship in Knowledge economy, abundant & accessible information, implication, impact & consequence, knowledge based opportunities, aims, scope, and objectives.

Unit-II
Managing knowledge & intellectual capital:
Knowledge management, loss of knowledge, knowledge implementation, knowledge creation, property intellectual capital.

Unit-III
Contemporary information problems:
Information overload, winning & losing barrier to entry, emerging issues, customers, investors, myth of inevitable program.

Unit-IV
Creating enterprise cultures:
Working with employer, organizing for entrepreneurship, unity & diversity, ten essential freedoms, freedom of operation, effective issue monitoring, establish search criteria.

Unit-V
Becoming a knowledge entrepreneur:
Entrepreneur qualities, knowledge entrepreneur, challenge of launching new product, creating launch support tool, examples of best practice.

Text & Reference Books
Amrit Tiwana, The Knowledge Management tool kit, Pearson Education.
Lunlin Conlson, Knowledge Entrepreneur, Thomas Press.
Catherie L Mann, Knowledge entrepreneurship, Oxford
Heinke Robkern, Knowledge entrepreneurship,
Bonnie Montano, Knowledge Management, , IRM Press, London
UNIT I
Financial Management - an overview: Introduction, finance and other disciplines, objectives and scope of financial management, role and responsibility of finance manager.

[No of Periods: 8 + 2]

UNIT II
Working capital management - nature, need, importance and concept of working capital, trade off between profitability and risk, Determining finance mix.

[No of Periods: 8 + 2]

UNIT III
Inventory management - Introduction, objectives, ordering cost, carrying cost, lead time, economic order quantity and safety stock, deterministic model.

[No of Periods: 8 + 2]

UNIT IV
Management of cash - introduction motives for holding cash, objectives of cash management and technique/process of cash management.

[No of Periods: 8 + 2]

UNIT V
Receivables management - introduction, objectives, credit terms, credit policies and collection policies.

[No of Periods: 8 + 2]

Text books:
Basic financial management, M Y Khan and P K Jain, TMH
Financial Management, I M Pandey.

References books:
Financial management and policy, V K Bhalla, Anmol publications pvt. Ltd.
Financial management, Van Horne.
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI
(C.G.)

Semester : VIII
Subject : Project planning management and Evaluation
Total Theory Periods : 40
Total Marks in End Semester Exam : 80
Minimum No. Of Class test to be conducted : 2

Branch : Common to All Branches
Code : 300888 (36)
Total tutorial Period : 12

UNIT I
Identification of projects-generation and screening of idea, monitoring corporate appraisal, preparing project profiles and project rating index.

UNIT II
Feasibility studies: Market and demand analysis, technical analysis, financial analysis and economic viability.

UNIT III
Project appraisal: Criteria, net present value, internal rate of return, payback period and accounting rate of return method.

UNIT IV
Project management and implementation-
Project planning, project control, prerequisites of implementation. Network techniques of project management-Project evaluation and review technique (PERT) and critical path method (CPM).

UNIT V
Project review and control-
Initial review, performance evaluation, abandonment analysis and its behavioral issues.

Text books:
Project planning, analysis, selection, implementation and review by Prasanna Chandra, TMH.
Reference Books:
Project management-Dr. Harold Kerzner.
Total Project management-Dr. P K Macmillan.
UNIT – I
Safety Philosophy and principles of Accident prevention
Introduction, accident, injury, unsafe act, unsafe condition, reportable accidents, need for safety, break
down of accidents, hazardous industries.
Theories & Principle of accidents
Casualty, cost of accident, computation of cost, utility of cost data.
Accident reporting & Investigation
Identification of the key facts, corrective actions, classification of facts.
Regulation
American (OSHA) and Indian Regulation.

UNIT – II
Safety Management
Division of responsibility, Location of Safety function, size of safety department, qualification for safety
specialist, safety committee – structure and functions.

UNIT – III
Safe Working Condition and Their Development
SOP for various Mechanical equipments, Incidental safety devices and methods, statutory of provisions
related to safeguarding of Machinery and working condition.

UNIT – IV
Safety in Operation and Maintenance
Operational activities and hazards, starting and shut down procedures, safe operation of pumps,
compressor, heaters, reactors, work permit system, entry into continu ed spaces.

UNIT – V
Safety in Storage and Emergency Planning
Safety in storage, handling of chemicals and gases, storage layout, ventilation, safety in chemical
laboratories, emergency preparedness on site plan, off site plan, toxic hazard control.

TEXT BOOKS
Safety and Accident Prevention in Chemical Operation – H.H. Faweett and Wood
Personal Protective Equipment – NSC Bombay

REFERENCE BOOKS
Ergonomics - P. Krishna Murthy
Fire Prevention Hand Book – Derek James
CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,
BHILAI (C.G.)

Semester: VIII
Subject: Bioinformatics
Total Theory Periods: 4 per week.
Total Marks in End Semester Exam: 80.
Minimum number of class tests to be conducted: 02.

UNIT-1
Bioinformatics-introduction, Application, Data Bases and Data Management, Central Dogma; information search and Data retrieval, Genome Analysis and Gene mapping- Analysis, Mapping, Human Genome Project (HGP).

UNIT-2
Alignment of Pairs and Sequences; Alignment of Multiple Sequences and Phylogenetic Analysis; Tools for similarity Search and Sequence Alignment- FASTA BLAST.

UNIT-3
Profiles and Hidden Marcov Models (HMMs); Gene Identification and Prediction-Basics, Pattern Recognition, Methods and Tools; Gene Expression and Micro arrays.

UNIT-4
Protein Classification and Structure Visualization; Protein Structure Prediction; Proteomics; Computational methods-Analysis of Pathways, Metabolic Network Properties, Metabolic Control Analysis, Stimulation of Cellular Activities, Biological Mark Up Languages.

UNIT-5

TEXT BOOKS
II. BIOINFORMATICS by V. R Srinivas, Prentice Hall of India

REFERENCES
1. BIOINFORMATIC COMPUTING by Bergeron, MIT Press.
2. Evolutionary Computation in Bioinformatics, Gary B. Fogel, David W. Corne (Editors), 2002
4. Current Topics in Computational Molecular Biology (Computational Molecular Biology), Tao Jiang, Ying Xu, Michael Zhang (Editors), 2002, MIT Press
UNIT - I
Energy Scenario
Commercial and Non-commercial energy, primary energy resources, commercial energy production, final energy consumption, energy needs of growing economy, long term energy scenario, energy pricing, energy sector reforms, energy and environment, energy security, energy conservation and its importance, re-structuring of the energy supply sector, energy strategy for the future, air pollution, climate change, Energy Conservation Act – 2001 and its features.

UNIT - II
Energy Conservation in Electric Utility and Industry

UNIT - III
Energy in Manufacturing

UNIT - IV
Heat Recovery System

UNIT - V
Energy Conservation Economics
Basic discounting, life cycle costing and other methods, factors affecting economics, energy pricing and incentives for conservation, energy conservation of available work identification of irreversible processes, primary energy sources, Optimum use of prime movers, energy efficient house keeping, energy recovery in thermal systems, waste systems and waste heat recovery in thermal systems, waste heat recovery techniques, conservation in energy intensive industries, thermal insulation.

TEXT BOOKS
2. Energy Management – Paul O'Callaghan –

REFERENCE BOOKS
2. Energy Management in illuminating System – Kao Chen – CRC Publishers
Unit I: Introduction to nanotechnology: background, definition, basic ideas about atoms and molecules, physics of solid state, review of properties of matter and quantum mechanics

Unit II: Preparation of Nanostructured Materials: Lithography: nanoscale lithography, E-beam lithography, dip pen lithography, nanosphere lithography. Sol gel technique Molecular synthesis, Self-assembly, Polymerization


References:

1. Guozhong Cao, “Nanostructures and Nanomaterials”, Imperial College Press, London
Unit-I

Unit-II
Patents: Introduction to patent law and condition for patentability, Procedure for obtaining patents, Rights of a patentee, Patent infringements, Biotechnology patents and patents on computer programs, Patents from an international perspective.

Unit-III
Trademark and ‘geographical Indications: Statutory authorities and registration procedure, Rights conferred by registration, Licensing, assignment and transfer of trademark rights, Trademark infringement, Geographical Indication of Goods & Appellations of Origin.

Unit-IV
Copyright: Registration procedure and copyright authorities, Assignment and transfer of copyright, copyright infringement and exceptions to infringement, Software copyright

Unit-V
Introduction to the law on Industrial Designs, Registration and piracy, International perspective, Introduction to the law on semiconductor layout design, Registration, commercial exploitation and infringement.

Text Books:
2. Kumar K ,Cyber law, intellectual property and e-commerce security, Dominent Publication and distribution, New Delhi.

Reference Books:
1. Inventors Guide to Trademarks and Patents- Craig Fellenstein, Rachel Ralson- Pearson Education.
2. Intellectual Property –David Bainbridge, Longman
UNIT - I
Basic Concepts
Meaning of the term value, basic kind, reasons for poor value, value addition, origin and history. Benefits, relevance in Indian scenario.

UNIT - II
Techniques
Different techniques, organizing value engineering study, value engineering and quality.

UNIT - III
Job Plan
Different phases, General phase, Information phase, Functional Phase, Creation Phase, Evaluation Phase, Investigation Phase, Implementation Phase, Audit.

UNIT - IV
Selection of evaluation of VE Projects
Project selection, method selection, value standard, application of methodology.

UNIT - V
Value Engineering Program
VE operations in maintenance and repair activities, VE Cost, life cycle, cost model, training for VE, general value engineering, case studies.

TEXT BOOKS
Value Engineering - S.S. Iyer - New Age International Publishers, New Delhi
Industrial Engineering & Management - O.P. Khanna - Dhanpat Rai & Sons

REFERENCES
Compendium on Value Engineering - H.G. Tufty - Indo American Society
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII
Subject: Disaster Management
Total Theory Periods: 40
Total Marks in End Semester Exam: 80
Minimum number of class tests to be conducted: 2

Branch: Common to All Branches
Code: 300895 (20)
Total Tutorial Periods: 12

Unit 1
Nature of disasters – natural and other disasters, Earthquakes, floods, draught, cyclones, fire and other environmental disasters.

Unit 2
Behaviour of structures in disaster prone areas, Disaster zoning, Hazard assessment, Environmental Impact Assessment

Unit 3
Methods of mitigating damage during disasters, disaster preparedness.

Unit 4
Management systems during disasters, Construction Technology for mitigation of damage of structures.

Unit 5
Short-term and long-term relief measures.

Name of Text Books:
Design of Earthquake Resistant Buildings – Minoru Wakabayashi (McGraw Hill Publication)
Dynamics of Structures: Theory and Application to Earthquake Engineering (2nd edition) – Anil K Chopra (Pearson Education Publication)

Name of Reference Books:
Fundamentals of Vibrations – Anderson, R.A. (Mc Millan)
Earth quake engineering damage assessment and structural design – S.F. Borg
Disasters and development – Cuny F (Oxford University Press Publication)
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: VIII
Subject: Construction Management
Total Theory Periods: 40
Total Tutorial Periods: 12
Total Marks in End Semester Exam: 80
Minimum number of class tests to be conducted: 2

Unit 1
The Owner's Perspective
Introduction-The project life cycle-Major Types of Construction-Selection of Professional Services-Construction contractors-Financing of constructed facilities-Legal and regulatory Requirements-The changing Environment of the construction Industry-The Role Project Managers

Unit 2
Organizing for Project Management
What is project management? – Trends in Modern Management-Strategic planning and project programming- Effects of project risks on organization-Organization of Project Participants-Traditional designer-Constructor sequence-Professional construction management-Owner-BUILDER-Operation-Turnkey operation-Leadership and Motivation for the Project team-Interpersonal behaviour in project organization-perceptions of Owners and Contractors

Unit 3
The Design and Construction Process

Unit 4
Labour, Material and Equipment Utilization

Unit 5
Cost Estimation

Name of Text Books:
Project Management: A systems Approach to Planning, Scheduling and Controlling – Harold Kerzner (CBS Publishers & Distributors, Delhi, 1988)

Name of Reference Books:
Construction Project Management – Frederick E.Gould (Wentworth Institute of Technology, Vary E.Joyce, Massachusetts Institute of Technology, 2000)
Unit 1
Nature of ecology and sustainable development
Definition, scope of ecology an sustainable development, geomorphology, oceanography, climatology and biogeography.

Unit 2
Energy and environment
Introduction of energy environment, use of solar cells for heating and operated drills, methane gas digesters, environmentally friendly method of energy conservation, difference between conventional and non-conventional energy sources, future trends of energy systems.

Unit 3
Theory of isostasy
Concept of isostasy for sustainable development, discovery of the concept, concept of Hayford and Bowie, Joly, and Holmes, Global isostatic adjustment.

Unit 4
Physical geography and man human impact on the natural environment
Modification of land forms, direct alteration of land forms, wind deflation, coastal erosion and deposition, modification of the atmosphere, ultration process in eco and energy systems.

Unit 5
Obstacles in sustainable development
Pollution growth, species extinction, restriction of bat lands, desertification, soil erosion, soil pollution, characterisation of contaminated soil, global warming and ozone depletion etc.

Name of Text Books:
Energy and environment - Fowler (McGraw Hill, New Delhi)
Restoration Ecology and sustainable development - Krystyna M. Urbanska et.al. (Cambridge University Press, U.K.)

Name of Reference Books:
Reuniting Economy and Ecology in Sustainable Development - Russ Beaton et.al. (-----)
Theory and implementation of economic models for sustainable development - Jeroen C.J.M. Van Den Bergh (----------)
Economy and Ecology: Towards sustainable development - F. Archibugi et.al. (--------)
Evaluating Sustainable Development: Giving People a voice in their destiny - Okechukwu Ukaga et.al. (-------)
Unit I
Focusing Type Collectors: Orientation and sun tracking systems, Types of concentrating collectors – Cylindrical parabolic collector, Compound parabolic collector, Thermal performance of focusing collectors, Testing of solar collectors.

Unit II

Unit III

Unit IV

Unit V

Name of Text Books:
1. John A Duffie & William A Beckman: Solar Energy Thermal processes Wiley Inter science publication

Name of Reference Books:
 UNIT I:

 UNIT II:

 UNIT III:

 UNIT IV:

 UNIT V:

Text Books:

Reference Books: