TEACHING AND EVALUTION SCHEME

DISPLENE: ELECTRONICS & TELECOMMUNICATION ENIGINEERING   **SEMESTER : VI**

Sl. No.	Subject	Evolution Scheme							
	Theory & Practical			**Theory**			**Practical**		
	Theory	Lecturer	Practical	End Exam	Class Test	Assignment	End Exam	Sessional	Total Marks
1.	Entrepreneurship & Industrial Management	5	-	80	15	5	-	-	100
2.	Advance Communication Engineering	5	-	80	15	5	-	-	100
3.	Microcontroller , Embedded System & PLCs	5	-	80	15	5	-	-	100
4.	ELECTIVES.	4	-	80	15	5	-	-	100
	(i) Digital Signal Processing (ii)Robotics & Control System Engineering (iii)Nanotechnology (iv)Digital Image Processing						-	-	
	Practical								
1.	Advance Communication Lab	-	5				50	25	75
2.	Microcontroller, Embedded System & PLCS Lab	-	5				50	25	75
3.	Maintenance & Computer Diagnosis Lab	-	3				25	25	50
4.	Simulation Using MATLAB Lab.	-	3				25	25	50
5.	Electronic Project Work &Design Lab.	-	4				50	50	100
		19	20	320	60	20	200	150	750

Organisational Behaviors and Environmental Engineering

Theory & Tutorial – 5P/W   Examination: 3Hr
 Total Theory & Tutorial: 75P   Total Marks: 100
                                                           Theory: 80
                                                           I.A: 15+5

A: RATIONALE:

The student can able to get idea in Organisation Behaviour and environmental Engineering. This course has been design to improve the personality, ability and individual behaviour and motivation. There Communication Skill, Quality will improve. They will get idea of Entrepreneurship Development and they can able handle project. The different pollution preventations have included the syllabus. E-waste has been included for environmental management Essential for electronics sectors.

B: OBJECTIVS:

 At the end of the course the students should be able to :
 1. Know the organisational Behaviour, Organisation culture
 2. Know Intellectual abilities, Physical abilities & ability Job-fit
 3. Know the Meaning of personality
 4.Know the Individual Behaviour:-Learning ,Perception, Values, Attitudes & Job satisfaction
 5.Know the Group: Communication, Leadership, Contingency theories
 6. Idea of Environment Management& Managerial activity
 7.. Idea of Pollution etc

C: TOPIC WISE DISTRIBUTION OF PERIODS:

Sl.No.	Topics	Periods
1	Introduction	02
2	Individual Behaviour:-Ability	01
3	Individual Behaviour:-Personality	02
4	Individual Behaviour:-Learning	02
5	Individual Behaviour:-Perception	01
6	Individual Behaviour:- Values, Attitudes & Job satisfaction	03
7	Individual Behaviour:-Motivation	03
8	Group: Communication	05
9	Group: Leadership	03
10	Group: Conflict and conflict resolution	03
11	Group: Team and team work	02
12	Entrepreneurship Development	04
13	Project Management	10
14	MANAGEMENT OF FINANCE	07
16	Appreciate the principles of internal waste treatment	06
17	NUCLEAR	15
18	Know environmental management	06
	TOTAL	75

D: COURSE CONTENTS IN TERM OF SPECIFIC OBJECTIVES:

1 Introduction
 1.1 What is organisational Behaviour
 1.2 Model stage II of organisational Behaviour
 1.3 Organisation culture
 2.Individual Behaviour:-Ability
 2.1 Intellectual abilities
 2.2 Physical abilities
 2.3 The ability Job-fit
 3.Individual Behaviour:-Personality
 3.1 Meaning of personality
 3.2 Determinants of personality
 3.3 Personality traits
 3.4 Major personality attributes influencing organizational behaviour
 4.Individual Behaviour:-Learning
 4.1 Definition of learning
 4.2 Theories of learning
 4.3 Reinforcement
 5.Individual Behaviour:-Perception
 5.1 Perception and its importance
 5.2 Factors influencing perception
 5.3 How one individual perceives other individual
 6.Individual Behaviour:- Values, Attitudes & Job satisfaction
 6.1 Importance of values
 6.2 Sources of our value systems
 6.3 Types of values
 6.4 Sources attitudes
 6.5 Types of attitudes
 6.6 Attitudes and consistency
 6.7 Cognitive Dissonance theory
 6.8 Job Satisfaction
 7.Individual Behaviour:-Motivation
 7.1 What is Motivation
 7.2 Theories of Motivation
 7.3 Maslow hierarchy of needs
 7.4 Motivation-Hygiene theory
 7.5 ERG Theory
 7.6 Motivating the new generation
 8.Group:Communication
 8.1 What is communication and its importance
 8.2 Communication process model
 8.3 Sources of distortion
 8.4 Barrier to Effective communication
 8.5 Overcoming the barriers
 8.6 Written communication

8.7 Oral communication

9. Group: Leadership

9.1 What is Leadership

9.2 Leadership theories

9.3 Trait theories

9.4 Behavioural theories

    Ohio state studies

    University of Michigan studies

    The Managerial grid

9.5 Contingency theories

    Fielder Model

    Harsay Blanchard's Situational theory

    Leader Participation model

10. Group: Conflict and conflict resolution

10.1 Definition of conflict

10.2 Transitions in conflict thought

    Traditional view

    Human relation view

    Interactionist view

10.3 Distinguish Functional versus Dysfunctional conflict

10.4 Define the following term ;

    Conflict Processes

    Potential opposition

    Cognition and Personalisation

    Intentions

    Behaviour

    Outcome

10.5 What are Conflict resolution techniques

11. Group: Team and team work

11.1 What is team

    Why team

    Types of teams

    Characteristics of a teams

1.2 Define Team building

    Leader and leadership

    Characteristics of a leader

    Key to leadership

1.3 Define Team member

    Selecting the team member

    Contributor, collobrator, challenger, communication

1.4 Define Team Maintenance

    Maintaining core purpose

    Maintaining standards

12. Enterpreneurship Development

12.1 Entrepreneurship- Meaning Scope- need for development of entrepreneurial skill in Technical personnel

12.2 Opportunities and success stories in entrepreneurship characteristic feature of an entrepreneur

12.3 Opportunities and facilities for development and entrepreneurial skills

12.4 A brief outline of steps in setting up a small business industry- Facilities

And incentives available for entrepreneurs in setting up small enterprise-training, finance , marketing and sales, risks and precautions

13.Project Management

13.1 Introduction

13.1.1 What is project management ?

13.1.2 Definition and Basic Characteristics

13.2 Project planning and scheduling

13.2.1 Project management Activities

13.2.2 Various sections in project Plans

13.2.3 Work breakdown structures

13.2.4 Define GANTT Charts

13.2.5 Define PERT/CPM

13.2.6 Explain Time sheet reviews

13.2.7 Cost Milestone Schedule graphs

13.3 Explain Quality Management

13.3.1 Define TQM

13.3.2 What is ISO?

13.3.3 What are the need for ISO and third party certification

13.3.4 Define SEI Model(CMM) level 1 to level 5

13.3.5 Define ISO Audit

13.3.6 Purpose of Internal and External Audit

13.3.7 Identification of Non-conformance

13.3.8 Corrective and preventive action for effective quality system

14.MANAGEMENT OF FINANCE

GEOS

1.1 To acquaint the student about the need for measurement of financial operation

1.2 To enable the student to concentrate on the particular segment or group of the market and its needs

SIOS

1.3 To acquire the skills of initiating preparing and maintaining the various books of accounts

1.4 To prepare the invoice, cash bills and credit bills

1.5 To compare and recompile the cash book and bank pass book balances

1.6 To prepare the final accounts of a business

1.7 To place the product or services before the marker and induce them to buy

1.8 To manage the profits

1.9 To fix the prices of the product/Services

15.Understand Environmental Pollution

15.1 Define pollution
15.2 List types of pollution
15.3 List the pollutions of water, air and land
15.4 Classify the pollutants
15.5 Mention the sources of various pollutants
15.6 Discuss Global warming
15.7 Describe Ozone warming
15.8 Discuss Acid rain phenomenon

16.Appriciate the principles of internal waste treatment
16.1 State the objectives of industries waste treatment
16.2 List the principal such as process/equipment modification, house keeping and maintenance practices,
16.3 Explain the principles of industrial waste statement

17. INDUSTRIAL ACTIVITIES
NUCLEAR
17.1 list the sources Nuclear radiation
17.2 Discuss disposal of radioactive waste
17.3 Explain effects of radiation

WASTE FROM ELECTRONICS & COMPUTER INDUSTRY
17.4 List sources of waste in Microelectronics industry
17.5 Explain the process of waste water treatment in microelectronics industry
17.6 Discuss air emissions during Etching, cleaning , Photolithography
17.7 Electroplating, Stripping. Rinsing, Drying, Degreasing , Wafer fabrication, Trimming
17.8 Rejects from testing & soldering
17.9 List effects of the pollutants in microelectronics
17.10 Explain halogeneteted solvent and hazardous solvent
17.11 Explain the contribution of microelectronics to global environment issues like
17.12 ozone layer depletion, Global warming, Smog formation
17.13Define the terms bioaccumulation and bio magnification hazardous waste
17.14 Explain transmission of toxics trough food chain
17.15 Changes and improved operating processes
17.16 Explain the benefit of reuse and recycling of resources /pollutants
17.17 Particular emissions, etc, of various activities of microelectronics industry**.**

E-WASTE
17.18 Define E-waste
17.19 List the hazardous waste in e-waste
17.20 Discuss the risks related to e-toxics

18 Know environmental management
18.1 Write the objectives of environmental impact assessment
18.2 Know terminology in EIA
18.3 State environmental law 1986
18.4 Explain the duties of Citizens and Governments for environmental protection.

Recommended Books:

1. Organisation Behaviour By Dr S.S. Khana
2. Kneese, Allen V., and Blair, T.Bower., 'Environmental quality and residual management ' John Hopkins University press, Baltimore
3. Environmental impact assessment by canter, Larry Z., Tata McGraw Hill
4. Cunninghan P. Williams and saigo. Barbara Woodworth Environmental science- A globle concer' WM.C.Browm Publisher, USA
5. Masters Gibart.M. 'Introduction to environmental engineering and science' Prentic e-Hall India pvt. Ltd., New Delhi, 1998
6. "Pollution prevention in the electronics industry- developed by USEPA/ SEMARNAP Pollution prevention workgroup " 1996
7. "Environmental compliance and pollution prevention guide for the electronics and computer industry "1999
8. Just Say No To E-Waste: Background document of Hazards and Waste from computers
9. Freeman .M.Harry 'Industrial pollution prevention handbook ' McGraw Hill, 1995
10. Profitable Cleaner production, published by Tanstia-Fnf Service centre, Chennai.
11. Karpagam, M.(1991) "Environment Economics – A Test books" Sterling publishers Pvt Ltd., New Delhi
12. Ruff, E.Larry, (1970), "The economics commonsense of pollution" , The public interest N.19 (Spring 1970)
13. Barbier, Edward, B.., (1989)"Economics Natural resource Scarcity and development ", Earthscan publications, London.

ADVANCED COMMUNICATION ENGINEERING

Theory & Tutorial – 5P/W   Examination: 3Hr
Total Theory & Tutorial: 75P   Total Marks: 100
       Theory: 80
       I.A: 15+5

A: RATIONALE:

The Communication has a wide long history, of application in different technology. This subject deals with different advanced techniques of Communication Engineering. The Microwave Engineering, Radar and Navigation aids an example of Communication system. The Satellite, Mobile and Optical Fiber Communication has today permeated almost every field of modern society. This has been incorporated in this subject.

B: OBJECTIVS:

At the end of the course the students should be able to :
1. Discuss the principles of RADAR system and range equation and performance   Factor.
2. Draw and explain the block diagram of Pulse RADAR CW.
3. State the various uses of radar in field of navigation system and aircraft Landing system.
4. Define & Describe Satellite Orbital patterns and evation (LEO,MEO & GEO) categories
5. Describe Geostationary satellite, satellite earth station & Link Station.
6. Explain the operation of direct broadcast system (DBS) & VSAT system.
7. Discuss the Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA)
8. Compare the advantage and disadvantage of optical fiber metallic cables
9. Describe how light wave propagate to optical fiber
10. Define the modes of propagation and index profile of optical fiber
11. Describe the working principle of LED , Injection Diodes & PIN Diodes & laser.
12. Discuss the operation of Basic Telephone System & Electronic Telephone System.
13. Describe the operation of a PBX.

C: TOPIC WISE DISTRIBUTION OF PERIODS:

Sl.No.	Topics	Periods
1	Radar & Navigation aids	18
2	Satellite Communication	17
3	Optical Fiber Communication	20
4	Telecommunication System	20
	TOTAL	75

D: COURSE CONTENTS IN TERM OF SPECIFIC OBJECTIVES:

1.   RADAR & NAVIGATION AIDS.

1.1 State and explain the simple Radar system.
1.2 Derive Radar range equation, types of radar and their application.
1.3 Explain the Performance factor of radar.
1.4 Describe the block diagram of pulsed radar system.
1.5 State the function of radar indication and moving target indicator.
1.6 Describe the block diagram of C.W radar.

1.7 Explain the radar aids to navigator.
1.8 Explain aircraft landing system.
1.9 Explain the concept of Navigation Satellite System.(NAVSAT) & GPS System.

2. SATELLITE COMMUNICATION.

2.1 Define & Describe Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
2.2 Describe the Concept of Geostationary Satellite , calculate its height, velocity & round trip time delay & their advantage & disadvantage over other system
2.3 State Satellite frequency allocation and frequency bands.
2.4 Describe General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
2.5 Explain the operation of direct broadcast system (DBS)
2.6 Explain the operation of VSAT system.
2.7 Define multiple accessing & name various types.
2.8 Discuss the Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) & its advantages & dis-advantages.
1.9 Describe Satellite Application- Communication .Satellite, Digital Satellite Radio.
1.10 Explain GPS Receiver & Transmitter.

2. OPTICAL FIBER COMMUNICATION.

3.1 Define optical communication.
3.2 Compare the advantage and disadvantage of optical fiber metallic cables
3.3 Define Electromagnetic Frequency and wave line spectrum
3.4 Discuss the block diagram of an optical fiber communication system
3.5 Describe the optical fiber construction
3.6 Describe how light wave propagate to optical fiber
3.7 Explain the following terms: Velocity of propagation, Critical angle, Acceptance angle & numerical aperture
3.8 Define the modes of propagation and index profile of optical fiber
3.9 Describe the three types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
3.10 Describe the working principle of LED, Injection Diodes & PIN Diodes.
3.11 Describe the working principle of Laser.
3.12 Explain concept of Wave Length Division Multiplexing (WLDM) principles.

4. TELECOMMUNICATION SYSTEM

4.1 Discuss the operation of Electronic Telephone System. (Telephone Set)
4.3 Discuss the function of switching system.& Call procedures
4.3 Discuss the principle of space and time switching.
4.4 Discuss the principle of PDH and SDH modes of transmission.
4.5 Discuss the operation of ATM , ISDN network.
4.6 Discuss the numbering plan of telephone networks (National Schemes & International Numbering)
4.7 Describe the operation of a PBX & Digital EPABX.
4.8 Define units of Power Measurement.
4.9 Describe the operation of Internet Protocol Telephone.
4.10 Describe the principal of Internet Telephone

RECOMMENDED BOOKS:

A. TEXT BOOKS:
1. Optical Fiber comm. Principles and practice John M.Senior.
2. Microwave Engineering-Rich & Krauch
3. Telecommunication and the computer – James Martine
4. Wireless Digital Communication – Rapaport.
5. Advance Electronics Communication System-Wayne Tomasi

A. REFERENCE BOOKS:
1. Electronic communication system – G.Kennedy.
2. Principle of Electronics Telecommunication system – Couls E.frenzel.
3. Satellite Comm.- Rebort M.Gagriardi
4. Optical Fiber Communication Essentials by Greb Keiser.
5. Rader & Microwave engineering- M.Kulkani

MICRO CONTROLLOR, EMBEDDED SYSTEM & PLC
SIXTH SEMESTER

Theory & Tutorial – 5P/W

Total Theory & Tutorial: 75 P

Examination: 3Hr

Total Marks: 100

Theory: 80

I.A: 15+5

A: RATIONALE:

Computational tools & computing machines are always for technology implementation in field of automation for industries and domestic products. Hence micro controls, Embedded System & PLCs are integral port of automation and semi-automation machine.

B: OBJECTIVS:

At the end of the course the students should be able to :

  i.   Gate Idea of Embedded System & Different Technology.
  ii. Know the application of Embedded System.
  iii. Know the various peripherals.
  iv. Concept in PLC & its Programming.

C: TOPIC WISE DISTRIBUTION OF PERIODS:

SI.No.	Topics	Periods
1.	Introduction to Embedded Systems	10
2.	8051 Architecture	10
3.	8051 Addressing Modes & Instruction Set	10
4.	8051AssemblyLanguage Programming Tools	15
5.	Peripherals	06
6.	Application of Embedded Systems	10
7.	Programmable Logic Controllers(PLCs)	14
	TOTAL	**75**

D: COURSE CONTENTS IN TERMS OF SPECIFIC OBJECTIVES:
1. Introduction to Embedded Systems

1.1 Embedded Systems Overview
  -What are they?
  -A shortlist of embedded systems
  -Some common characteristics of embedded systems
  -An embedded system example – A Digital Camera

 1.2 Embedded Systems Technologies
  -Technology – Definition
  -Technology for Embedded Systems
  -Processor Technology
  -IC Technology
  -Design Technology

 1.3 Processor Technology
  -General Purpose Processors – Software
  -Single Purpose Processors – Hardware

1.4 Application – Specific Processors
- Microcontrollers
- Digital Signal Processors(DSP)

1.5 IC Technology
- Full Custom / VLSI
- Semi Custom ASIC (Gate Array & Standard Cell)
- PLD (Programmable Logic Device)

2. MICROCONTROLLER 8051 Architecture

2.1 Difference between microcontroller & Microprocessor.

2.2 Explain the Block diagram of the Architectural of 8051.

2.3.Explain the PIN Diagram features of the 8051 core.

2.4 Explain the 8051 Programming Model.

2.5 Explain the Port Structure & Operation, Timer/Counters, serial Interface & External Memory.

3. 8051 Addressing Modes & Instruction Set

3.1 Explain different addressing modes of 8051.

3.2 Explain the different types of Instruction sets of 8051.

- Data Transfer
- Arithmetic Operations
- Logical Operations
- Boolean Variable Manipulation
- Program Branching etc.

4. 8051 Assembly Language Programming Tools.

4.1 Programs using Jump, Loop and Call Instructions

- Loop and Jump Instructions,
- Call Instructions
- Time Delay Generation and Calculation

4.2 I/O Port Programming

I/O Programming, Bit manipulation

4.3 Arithmetic Programs

- Unsigned Addition and Subtraction
- Unsigned Multiplication and Division
- Signed number concept and Arithmetic operations

4.4 Logic Programs

- Programs using Logic and Compare Instructions
- Programs using Rotate and Swap Instructions
- BCD and ASCII Application Programs

4.5 Programming using single-bit Instruction

- Single-bit Instruction Programming
- Programs using Single-bit Operations with CY
- Use Instructions which reads the status of input pin and reads internal latch of the output port

4.6 Simple Programs

- The addition of 8bit numbers located in two memory addresses

- The addition of inputs from 10 different sensors
- Write a subroutine that can be used to produced a time delay and which can be set to any value

    4.7 Counter / Timer Programming

- Programming 8051 Timers
- Counter Programming

5. Peripherals

    5.1 Define Timers, Counters and Watchdog Timers, LCD Controllers, Keypad controllers

    5.2 Explain Analog-to-Digital converters

    5.3 Explain Real- Time Clocks

6. Application of Embedded Systems

    6.1 Temperature Measuring System

    6.2 Domestic Washing Machine

    6.3 Timed Switch

    6.4 Windscreen-Wiper Motion

7. Programmable Logic Controllers(PLCs)

    7.1 Draw the block diagram showing the major components of PLC and state each function of each   component

    7.2 Explain the basic operation of PLC

    7.3 Describe briefly PLC programming

    7.4 Explain address of inputs, outputs and internal of a PLC

    7.5 State the difference between a programmable controller and a computer

    7.6 Explain how a PLC memory is organized

    7.7 Explain program scan of a PLC

    7.8 Explain internal instruction of PLC

    7.9 Program EXAMINE instruction Program a ladder Rung diagram

    7.10 Program PLC timer

    7.11Program PLC as a counter

    7.12Understand control instructions of PLC

    7.13Understand Data management instruction of PLC

    7.14Understand Compute Instruction of PLC

    7.15Explain sequences in a program of a PLC

    7.16Explain how I/O interface handles numerical data in PLC

    7.17Draw the solid state logic control circuit for the following problems and explain

    a) Motor control circuit to provide sequence control to Motor 1 and Motor 2

REFERENCE BOOKS:
A: TEXT BOOK:
1. Embedded System Frank Vahid & Tony Givaagis.
2. Microcontrollers by Ajaya Deshmukh, TMH.
3. Embedded System by Raj Kamal, TMH.
4. Programme logic controls –Frank D.Peturzela
B: REFERENCE BOOKS:
1. Modern Industrial Electronics by Schuler and Mc Namee

2. ContrFundamentals by Mc Intyre Losee
3. Programme logic controller –Dr.M.Mitra & Dr.S.Sengupta
4. 8051 Microcontroler & Embeded System by Sampath K. Venkash

VI/SEM/ETC/TH-4

DIGITAL SIGNAL PROCESSING
(Elective)
SIXTH SEMESTER

Theory & Tutorial – 4P/W
Total Theory & Tutorial:60P

Examination: 3Hr
Total Marks: 100
Theory: 80
I.A: 15+5

A: RATIONALE:

Digital signal processing is a technology driven field which dates its growth where Computers and Digital Circuitry became fast enough to process large amount of data efficiently. This subject is concerned with processing discrete-time signals or data sequences. The main objectives of this subject are to provide background and fundamental materials in discrete time system, digital signal processing technique, design procedures of digital filters and discrete Fourier transform.

B: OBJECTIVS:

On completion of the study the students will be able to:

1. Understand signal system & signal processing.
2. Differentiate continuous time & discrete time signals.
3. Explain the concepts of frequency in continuous time, discrete time signals and harmonically related complex exponential.
4. Classify the signals like multi channel, multidimensional, continuous time vs. discrete time signals and continuous valued vs. discrete valued signals.
5. Convert analog signal to digital & vice-versa.
6. State and explain sampling theorem.
7. State and explain quantization of continuous-amplitude signals, sinusoidal signals.
8. Analyze digital signal & system verses discrete time signals & systems.
9. Explain discrete time signals & classify discrete-time signals.
10. Describe discrete time systems will block diagrams, classification & interconnections.
11. Analyze liner invariant systems using different techniques.
12. Describe discrete time system using different equations.
13. Apply Z-transform on LTI systems.
14. Explain discrete Fourier transform, its properties & state its application.

C: TOPIC WISE DISTRIBUTION OF PERIODS:

SI.No.	Topics	Periods
1.	Introduction	11
2.	Discrete time signals & systems	15
3.	The Z-transform & its application to the analysis of LTI system	12
4.	The Discrete Fourier trans form	12
5.	Fast Fourier Transform & Digital Filters	10
	TOTAL	**60**

D: COURSE CONTENTS IN TERMS OF SPECIFIC OBJECTIVES:
1. INTRODUCTION.

1.1 Discuss Signals, Systems & Signal processing.

    1.1.1   Explain basic element of a digital signal processing system.

    1.1.2   Compare the advantages of digital signal processing over analog signal processing.

1.2 Classify signals

    1.2.1   Multi channel & Multi dimensional signals.

    1.2.2   Continuous time verses discrete time.

    1.2.3   Continuous valued verses discrete valued signals.

1.3 Discuss the concept of frequency in continuous time & discrete time signals.

    1.3.1   Continuous-time sinusoidal signals.

    1.3.2   Discrete-time sinusoidal signals.

    1.3.3   Harmonically related complex exponential.

1.4 Discuss Analog to Digital & Digital to Analog conversion & explain the following.

    1.4.1   Sampling of Analog signal.

    1.4.2   The sampling theorem.

    1.4.3   Quantization of continuous amplitude signals.

    1.4.4   Coding of quantized sample.

    1.4.5   Digital to analog conversion.

    1.4.6   Quantization of sinusoidal signals.

    1.4.7   Analysis of digital systems signals vs. discrete time signals systems.

2. DISCRETE TIME SIGNALS & SYSTEMS.

2.1 State and explain discrete time signals.

    2.1.1   Discuss some elementary discrete time signals.

    2.1.2   Classify discrete time signal.

    2.1.3   Discuss simple manipulation of discrete time signal.

2.2 Discuss discrete time system.

    2.2.1   Describe input-output of system.

    2.2.2   Draw block diagram of discrete time system.

    2.2.3   Classify discrete time system.

    2.2.4   Discuss inter connection of discrete time system.

2.3 Discuss discrete time time-invariant system.

    2.3.1   Discuss different technique for the analysis of linear system.

    2.3.2   Discuss the resolution of a discrete time signal in to impulse.

    2.3.3   Discuss the response of LTI system to arbitrary I/Ps using convolution theorem.

    2.3.4   Explain the properties of convolution & interconnection of LTI system.

    2.3.5   Study systems with finite duration and infinite duration impulse response.

2.4 Discuss discrete time system described by difference equation.

    2.4.1   Explain recursive & non-recursive discrete time system.

    2.4.2   Determine the impulse response of linear time invariant recursive system.

3   THE Z-TRANSFORM & ITS APPLICATION TO THE ANALYSIS OF LTI SYSTEM.

3.1 Discuss Z-transform & its application to LTI system.

    3.1.1   State & explain direct Z-transform.

    3.1.2   State & explain inverse Z-transform.

3.2 Discuss various properties of Z-transform.

3.3 Discuss rational Z-transform.

    3.3.1 Explain poles & zeros.

    3.3.2 Determine pole location time domain behavior for casual signals.

    3.3.3 Describe the system function of a linear time invariant system.

3.4 Discuss inverse Z-transform.

    3.4.1 Determine inverse Z-transform by partial fraction expansion.

4 DISCUSS FOURIER TRANSFORM: ITS APPLICATIONS PROPERTIES.

    4.1 Discuss discrete Fourier transform.

    4.2 Determine frequency domain sampling and reconstruction of discrete time signals.

    4.3 State & explain discrete Fourier transformation (DFT).

    4.4 Compute DFT as a linear transformation.

    4.5 Relate DFT to other transforms.

    4.6 Discuss the property of the DFT.

    4.7 Discuss periodicity, linearity & symmetry property.

    4.8 Explain multiplication of two DFT & circular convolution.

5 FAST FOURIER TRANSFORM ALGORITHM & DIGITAL FILTERS.

    5.1 Compute DFT & FFT algorithm.

    5.2 Explain direct computation of DFT.

    5.3 Discuss the radix-2 algorithm. (Small Problems)

    5.4 Introduction to digital filters.

    5.5 Introduction to DSP architecture, familarsation of different types of processor.

RECOMONDDED BOOKS:

A . TEXT BOOKS:

1. Digital signal processing principles algorithms & applications by J.G.Proakis & Dimities G. Manolakis, Peason.
2. Digital Signal Processing by Ramesh Babu.

B . REFERENCE BOOKS:

1. Digital signal processing By A.V.Oppenleim & W.Schafer.
2. Digital Signal Processing by S Salivahanan, A Vallavaraj, C Gnanapriya Tata Mc Graw Hill.
3. Digitaisation by B.Somanath Nair, PHI.

ROBOTICS AND CONTROL SYSTEM ENGINEERING
(Elective)
SIXTH SEMESTER

Theory & Tutorial – 4P/W   Examination: 3Hr
Total Theory & Tutorial:60 P   Total Marks: 100
                                                  Theory: 80
                                                  I.A: 15+5

A: RATIONALE:
      This course Robotics & Auto Electric is necessary to understand the basic theory of Robotics will play a important role in industrial sector now a days.

B: OBJECTIVS:
On completion of the study the students will be able to:
- Know Basic configuration of Robotics & its working.
- Know Robot Control & Motion Analysis
- Know about programming.
- Know application & Auto Electric.

C: TOPIC WISE DISTRIBUTION OF PERIODS:

SI.No	Topics	Periods
1.	Introduction to Control system	15
2.	Introduction to Robotics	05
3.	Coordinate Frames, Mapping, and Transforms	05
4.	Symbolic Modelling of Robots-Direct Kinematic Model	05
5.	The Inverse Kinematics	05
6.	Trajectory Planning	05
7.	Control of Manipulators	08
8.	Robotic Sensor and Vision	08
9.	Robot Application	04
	TOTAL	**60**

D: **TOPIC WISE DISTRIBUTION OF PERIODS:**

1. Introduction to Control system:
1.1   Show some applications of control system:
      Ex: Thermal Power Plant model.
          Radar tracking system.etc.
           Brain eye coordination system.
     Explain what happens when no feedback i.e. Open Loop condition.
1.2   Mathematical modelling of Physical Systems :
      A---Show some mechanical (Translational & Rotational Systems)
      B---Show some electrical Systems (series & parallel circuits.)
      C--- Show by the derived equations from each, How they ate ANALOGOUS SYSTEMS.
1.3   Define and Explain the significance of Transfer Function.

1.3.1 State the Rules of Block diagram reduction Technique and solve one problem from Exercise.
1.4 Explain the procedure of drawing a signal flow graph.
State and explain Mason's Gain Formula .
Solve the problem By mason's gain formula.
1.5 Define the various Standard signals and show their L.T.(Laplace Transform)
Show any first order system and derive the Gain $G(s)$,response $C(t)$ and error $E(t)$ by Laplace Transform. and Inverse Laplace Transform technique (with standard inputs applied).
Show a second order system like Armature controlled D.C.motor System by deriving overall transfer function.
1.6 Show the step response of 2nd order system and discuss various performance indices like maximum over soot, rise time, set Time, under soot error etc.
1.7 Explain stability analysis by Routs stability analysis.
1.8 Explain the Root- locus Technique and solve one general problem.
1.9 Explain the procedure of drawing Polar Plots.
1.10 Explain the procedure of drawing the Bode Plots.
1.11 State and explain the Niquist Stability Criterion

2.Introduction to Robotics
2.1 What is and What is not a Robot
2.2 Progressive Advancement in Robots
2.2.1 First Generation
2.2.2 Second Generation
2.2.3 Third Generation
2.2.4 Fourth Generation
2.3 Robot Anatomy
2.3.1 Links
2.3.2 Joints and joints Notation Scheme
2.3.3 Degrees Of Freedom (DOF)
2.3.4 Required DOF in a Manipulator
2.3.5 Arm Configuration
2.3.6 Wrist Configuration
2.3.7 The End- Effector
2.4 Sensors and Vision

3. Coordinate Frames, Mapping, and Transforms
3.1 Coordinate Frames
3.1.1 Mapping
3.1.2 Mapping between Rotated Frames
3.1.3 Mapping Between Translated Frames
3.1.4 Mapping Between Rotated and Translated Frames.
3.2 Fundamental Rotation
3.2.1 Principal Axe Rotation
3.2.2 Fixed Angel Representation
3.2.3 Euler Angle Representations

BOOKS:

    A . TEXT BOOKS:

1.Control System Engineering by P Ramesh Babu & A. Anadanatarajan

2..Robotics & Control By R. K. Mithal & I.J. Nagrath

3.Mechatronics by R.K.Rajput, Schand..

    B . REFERENCE BOOKS:

1. Control System By A. Anand Kumar

2. Control System by S.K. Bhattachaya

3. Introduction Robotics byS.K.Saha.

NANO TECHNOLOGY
(Elective)
SIXTH SEMESTER

Theory & Tutorial – 4P/W   Examination: 3Hr
Total Theory: 60P   Total Marks: 100
                                              Theory: 80
                                              I.A: 15+5

A: RATIONALE:

Nanoscience and nanotechnology refer to the control and manipulation of matter at nanometer dimensions. The best eco-friendly and efficient processes must learn fromnature. When we explore life around us, it is found that organization of nonmaterial Is central to biology. Architectures made by organisms are all based on nanoassemblies. Today we know that it is possible to use biological processes to make artificial nanostructures. Chemically synthesized nanostructures have been used at various stages of civilization.

B: OBJECTIVES :

On completion of the study the students will be able to:
- Know the concept of Nanotechnology.
- Know the idea of Nanoscale & Fullerences.
- Know the idea of Nanotubes, Nanoshell, Nanosensor,Nanomedicien.

C: TOPIC WISE TISTRUBUTION OF PERIODS :

SI.No.	Topics	Periods
1.	Introduction of Nano	06
2.	Investing and manipulating Materials in the Nanoscale	08
3.	Fullerenes	08
4.	Carbon Nanotubes	08
5.	Self-assembled Monolayer	06
6.	Semiconductor Quantum Dots	06
7.	Nanoshells	06
8.	Nanosensors	06
9.	Nanomedicines	06
	TOTAL	60

D: COURSE CONTENT IN TERM OF SPECIFICATION

1. Introduction of Nano
  1.1 Why nanotechnology?
  1.2 What are the connections between nanotechnology and biology?
  1.3 What are wet and dry nanotechnologies?
  1.4 What are the historical landmarks in this area & importance of Nano scale.

2. Investing and manipulating Materials in the Nanoscale
  2.1 Explain the working of electrocution Micros copies & what does SEM contain.

2.2 Explain the concept of Optical Micros copies for Nanoscience and Technology

2.3 Explain about X-Ray Diffraction

3. Fullerenes

3.1 What is fullerenes and what are their properties?

3.2 Explain Synthesis and Purification of Fullerenes

3.3 Explain Pressure Effects

3.4 Explain Conductivity and Superconductivity in Doped Fullerenes

3.5 Explain Optical Properties.

4. Carbon Nanotubes

4.1 Define carbon Nanotubes.

4.2 Explain Synthesis and Purification

4.3 Explain Filling of Nanotubes

4.4 Explain Electronic Structure of Carbon Nanotubes & its properties.

4.5 What are its Applications

5. Self-assembled Monolayer

5.1 What are the various kind of Monolayers.

5.2 Explain the structure of Monolayer on Gold

5.3 Describe Growth Process

5.4 What are Phase Transitions & explain its types.

5.5 What is SAMS and its Applications

5.6 Define difference type of sensor.

6. Semiconductor Quantum Dots

6.1 What are Quantum Dots.

6.2 Explain the Synthesis of Quantum Dots & its properties.

6.3 Explain Electronic Structure of Nanocrystals

6.4 How Do We Study Quantum Dots?

6.5 Explain Correlation of Properties with Size

6.6 What are its Uses

7. Nanoshells & Nano Electronics

7.1 What are various nanocavity system & give its properties, characteristics & applications.

7.2 Name different Types of Nanoshells

7.3 Why Nanoshells are made over Dielectric material & non-metallic Particles.

7.4 Define fabrication of I.C

7.5 Define Micro electro mechanical systems (MEMS)

8. Nanosensors

8.1 What is a Sensor?

8.2 What are Nanosensors-What Makes Them Possible?

8.3 Explain the Order from Chaos-Nanoscale Organization for Sensors

8.4 Explain Electrochemical Sensors

8.5 Define Sensors Based on Physical Properties

8.6 Explain Nanobiosensors-A Step towards Real-time Imaging and Understanding of Biological Events

9. Nanomedicines

9.1 Describe the Approach to Developing Nanomedicines

9.2 What are the Various Kinds of Nanosystems in Use

9.3 Explain Protocols for Nanodrug Administration

9.4 Explain Nanotechnology in Diagnostic Applications

9.5 Explain Materials for Use in Diagnostic and Therapeutic Applications

BOOKS:

A: TEXT BOOKS:

1. NANO: The Essentials by T.Pradeep, TMH.
2. Nanotechnology by Mark Ratner & D. Ratner, Pearson.
3. Principle of nanotechnology – Phani Kumar

B: RECOMMENDED BOOKS:

1. Nanotechnology by Rakesh Rathi, Schand.

DIGITAL IMAGE PROCESSING
(Elective)
SIXTH SEMESTER

Theory & Tutorial – 4P/W   Examination: 3Hr
Total Theory & Tutorial: 60P   Total Marks: 100
                                                           Theory: 80
                                                           I.A: 15+5

A: RATIONALE:

Digital Image Processing is used for image processing system in day to life. The transforms, enhancement, restoration, segmentation & reorganization of images are used for analysis of different images .The data compression technique is also essential for Digital image processing system. This subject helps for remote sensing and digital satellite communications and other fields of electronic and information technology.

B: OBJECTIVS:

On completion of the study the students will be able to:
1. Understand data compression and various techniques.
2. Define Gray level transformation of images.
3. Know techniques of image enchantment, image compression, image segmentation etc.
4. Know elements of image processing system.
5. Know applications of digital image processing.
6. Define object recognition.
7. Understand binary image processing.

C: TOPIC WISE DISTRIBUTION OF PERIODS:

Sl.No.	Topics	Periods
1	INTRODUCTION TO IMAGE PROCESSING SYSTEM	06
2	DTAT COMPRESSION	09
3	FUNDAMENTALS OF IMAGE PROCESSING	12
4	IMAGE ENHANCEMENT	12
5	IMAGE COMPRESSION	11
6	IMAGE SEGMENTATION	10
	TOTAL	60

D: COURSE CONTENT IN TERM OF SPECIFICATION:
1. INTRODUCTION TO IMAGE PROCESSING SYSTEM.
    1.1   Define image sampling and quantision.
    1.2   Define classification of digital images.
    1.3   Define application of digital image processing.
    1.4   Define wave let based image processing.
2. DATA COMPRESSION:
    2.1 Define Data Compression
    2.2 Explain Minimum Redundancy Coding, Shannon Fano Algorithm, Huffman Algorithm,

2.3 Explain Adaptive Huffman Coding – Updating, Swapping, Enhancement, Escape Code, Overflow, Rescaling,

2.4   Explain Arithmetic Coding. Dictionary Based Compression – Static Vs Adaptive,

2.5   Define Speech Compression & Sampling Variables.

2.6   Explain Lossless Compression, Lossy Compression, Silence Compression

3. FUNDAMENTALS OF IMAGE PROCESSING:

3.1 What Is Image Processing

3.2 What are the Fundamental Steps in Digital Image Processing

3.4 Explain Image Acquisition Using Array Simple Image Fundamentals

3.5 Explain Image Sampling And Quantization.

3.6 Define Relationships between Pixels

4. IMAGE ENHANCEMENT:

4.1   What is image enhancement?

4.2   Define Gray Level Transformation. (Image Negatives, Log Transformations, Power Law Transformations, Piecewise Linear Transformation Functions)

4.3   Define Histograms Processing.

4.4   Explain Enhancement Using Arithmetic/Logic Operations.

4.5   Explain Image arithmetic (Subtraction, Averaging) Special Filtering

5. IMAGE COMPRESSION:

5.1   Need of Image compression.

5.2   Define Basic of color Image Processing.

5.3   Define Color Transformation & Smoothing and Sharpening.

5.4   Define Coding Redundancy, Interpixel Redundancy, Psycho visual Redundancy.

5.5   What are the images Compression Models?

5.6   Define The Source Encoder And Decoder

6. IMAGE SEGMENTATION:

6.1   Define Morphological Image Processing – Dilation And Erosion.

6.2   Define Basic Morphological Algorithms.

6.3   What is detections.

6.4   What are Detection Of Discontinuities.

6.5   What are the methods Point Detection, Edge Detection.

TEXT BOOKS:

1. Rafael C.Gonzalez And Richard E Woods – Digital Image Processing – Second Edition, Pearson Education Pvt. Ltd, New Delhi.

2. Jayaraman; Digital Image Processing TMH (2009)

REF. BOOKS:

1.   Marks Nelson And Jean Loup Gailly – The Data Compression Book – Bpb Publications Second Edition,

2. Fundamental of Digital Image Processing by A.K. Jain, PHI

ADVANCE COMMUNICATION LAB.

Period / Week: 5 P/W   End Exam.: 50
Total Contact hrs:75 P   Sessional: 25
                                                         Exam. Time: 4 Hours

A: RATIONALE:

In this Lab. The student will know the operation & application of RADER trainer, Satellite Trainer, Optical Fiber kit Trainer & EPABX Trainer for various communication Technology including mobile communications.

B: OBJECTIVS:

On completion of this Lab the students will be able to:
- Setup & Know the Optical Fiber Link including analog & digital.
- Measure the losses of Optical Fiber.

C: COURSE CONTENT:

1. Setting up a fiber optic analog & digital link including source & detector.
2. Study of losses in Optical Fiber:
   a. Measurement of propagation loss.
   b. Measurement of bending loss.
   c. Measurement of connector loss.
   d. How connector loss is affected by fiber and quality.
3. Measurement of Numerical aperture.
4. Setting of AM, FM, PWM, Modulator & Demodulator using optical fiber kit.
5. Study the following experiments using EPABX Trainer Kit.
   a) To study extension to extension call pickup, direct onward dialing, autocall back, auto attendant, dynamic looking, last extension redial, conference call , call forward, simultaneous ringing, pulsing on trunk, follow me tone and DTMF dialing, Messages on hold, extension baring, trunk baring, caller id for extension to extension & trunk lines, individual memory, clobal memory, call waiting call conference
   b) Study of speech circuit using IC and its interface to line, pulse/tone dialing
   c) Study to subscriber ringing generation circuit and interface to the line.
   d) Study of telephone instrument trainer with caller id facility
6. Study of satellite communication Trainer Kit:
   a. To setup active & passive satellite communication link.
   b. To study uplinking and downlinking of satellite signals.
   c. To analyze the analog baseband (Voice & Video) Signals in satellite link.
   d. To study the digital baseband signals in a satellite link.
   e. To setup an analog FM/FDM satellite link.
7. Study of Rader Trainer Kit.
   a. Study of Doppler shift in Radar.
   b. Speed detection & multiple reflections from object.

       c. To find out the Time period and frequency of a moving pendulum for different heights.

       d. To measure the size of moving objects using Radar.

       e. To measure the distance traveled by moving a object.

8. Study of mobile communication Trainer Kit.
9. Study of ISDN Trainer Kit.
       a. Basic Rate ISDN exchange with Protocol with Protocol Analyzer.
       b. ISDN Telephone sets.
       c. ISDN Terminal Adaptors.   D) Analog Telephone sets.
10. Visit to Telephone Exchange / Mobile Network / earth station / Rader Station.

MICROCONTROLLER &EMBEDDED SYSTEM PLC LAB
SIXTH SEMESTER

Period / Week: 5 P/W   End Exam.: 50
Total Contact hrs:75 P   Sessional: 25
                                                        Exam. Time: 4 Hours

COURSE CONTENT:
A: MICROCONTROLLER:
1. Write a Simple Assembly Programs for
   a. Addition b. Subtraction b. Multiplication d. Division e. Ascending order
      f. descending g. Loop up
2. Write a Program for
   a. Bit Digital Output-LED Interface
   b. 8 Bit Digital Inputs (Switch Interface)
3. Write a Programs for(Any one)
   a. 4 x 4 Matrix Keypad Interface
   b. Buzzer Interface
   c. Relay Interface
4. Write a Program for character based LCD Interface.
5. Write a Program for Analog to Digital Conversion (On chip ADC& DAC)
6. Write a Program forI^2C Device Interface(any one)
   a. Serial EEPROM
   b. Seven Segment LED Display Interface
   c. Real Time Clock.
7. Interfacing With Temperature Sensor.
8. Stepper Motor Interface
B: EMBEDDED SYSTEM: HANDS ON EXERCISE BASED ON RTOS.
9. To Study and Implement Multitasking. Write a Simple Program with Two Separate LED Blinking Tasks.
10. Study and Implement Priority Scheduling and OS Time Delay Functions by writing 3 different UART Transmitting Tasks.
11. Implement OS Real Time Multitasking by writing a multitasking program with the tasks.
    a. Interface RTC and Display on LCD First Line Continuously.
    b. Interface ADC and Display on LCD second line continuously.
12. Implement OS Real Time Multitasking by implementing three tasks.
    a. Read the Key input and display on seven segment LED
    b. Read the ADC analog input and Plot the Corresponding signal on a graphical LCD.
    c. Generate a PWM single with Xon Time and Yoff Time.
13. Interface a Stepper motor and control the speed of rotation by implementing RTOS delay functions.

C: Programming PLC

Introduction to ladder diagram

Communication between PLC and pc

a Single motor on / off control

b Interlock control of two motors

c water level control with three sensors

d Three sped control of a motor

e Timer on –delay / off-delay of a motor

Equipment Required

1.Microcontrol 8085 trainer kit & interfacing

2. Embed kit (arm processor and its operating system)

3. PLC (manual Fanuc / Alan Bradly /Siment)

MAINTENANCE & COMPUTER DIAGNOSIS LAB
SIXTH SEMESTER

Period / Week: 3 P/W   End Exam.: 25
Total Contact hrs:45 P   Sessional: 25
                                                   Exam. Time: 4 Hours

COURSE CONTENT:
1. Switches, Indicators and connectors of PC: Identification of front panel indicators and switches in a computer system of table top/tower case model and also identification of rear side connectors.
2. PC system layout: Draw a Computer system layout and Mark the positions of SMPS, Mother Board, FDD, HDD, and CD-Drive / DVD-Drive add on cards in table top/tower models systems.
3. Mother Board Layout: Draw the layout of Pentium IV or Pentium Dual core or Pentium Core2 DUO mother board and mark Processor, chip set ICs. RAM, Chache, Xtal, cooling fan, I/O slots and I/O ports and various jumper settings.
4. CMOS Setup Program: 1. Changing the Standard settings.
                          2. Changing advanced settings (BIOS and Chipset features)
5. Installation of FDD: 1. Install and configure an FDD in a computer system.
                           2. Floppy drive diagnostics/servicing.
6. USB pen drives and I-pods.
                          1. Connect and enable a pen drive or I-pod to HDD.
                          2. Format the pen drive or I-pod.
                          3. Copy files and folders from pen drive I-pod to HDD.
                          4. Copy files and folders from HDD to pen drive or I-pod.
7. HDD Installation: 1. Install the given HDD.
                      2. Configuration in CMOS-Setup program
                      3. Partition the HDD using fdisk./CAT/other
                      4. Format the Partitions.
8. Printer Installation & Troubleshooting:
                          1. Installing and checking a Dot-Matrix Printer.
                          2. Installing and checking an Ink jet / Laser Printer.
                          3. Possible problems and troubleshooting.
9. Modem Installation: 1. Install and configure a Modem in a windows PC.
                          2. Check the working condition of modem with pc.
10. DVD Multi-recorder drive installation:
                          1. Install a DVD Multi-recorder drive in a PC.
                          2. Configure using device driver.
                          3. Check the read / write operation using a CD / DVD.
11. Installation of Scanner:
    1. Connect the given scanner with a PC.
    2. Configure the scanner with driver.
    3. Check the scanner by scanning a page / a portion in a page.

12. Familiarize: Scandisk, recent Anti-virus software and recent PC Diagnostic software.
13. Assembling a PC: Assemble a Pentium Dual Core/ Pentium Core2
   Duo System with necessary peripherals and check the working condition of the PC.
14. Install and Configure Windows NT2003 operating system in a PC.
15. Construct Network by connecting one or two computer with a Windows NT2003 Server.
16. Install and Configure operating system (LINUX /Window XP/Window 2007 etc)in a PC.
17. Construct Network by connecting one or two computer with a LINUX Server.
18. Configure the network by connecting one or two computer with a LINUX Server.
19. Add / Remove devices using Hardware Wizard Add and Manage User Profile, Set permission to the users both in Windows NT
2003 / LINUX.

N.B. DIAGONIS SOFTEARE WILL BE USE FOR MAINTAINANCE OF COMPUTER

EQUIPMENT REQUIRED

Sl.No.	Name of the Equipments	Range	Required Nos.
1	Pentium IV/higher configuration		5
2	Pentium Dual Core/higher configuration		2
3	IPod		4
4	USB Pen Drive		4
5	Printer Inkject / Laser		2
6	DVD RW		5
7	Scanner		1
8	Windows server 2003		1
9	Linux		1
10	DIAGONIS SOFTWARE		1

SIMULATING USING MATLAB
SIXTH SEMESTER

Period / Week: 3 P/W   End Exam.: 25
Total Contact hrs:45 P   Sessional: 25
                                                      Exam. Time: 4 Hours

COURSE CONTENT:
1.1 Introduction to MATLABS & its various instructions.
1.2 Program for Representation of Basic Signals (Unit impulse, Unit step, Ramp, Expontational, Sine, Cosine Matrics, Graphics, Tool Boxes & Simulation & Animation)
1.3 Program for Discrete Convolution (Linear Convolution, Circular Convolution)
1.4 Program for Sampling Theorem
1.5 Program for Fast Fourier Transform
1.6 Program for Filters(Low pass, High Pass, Band Pass, Band stop& Butter worth)
1.7 Program for Amplitude Modulation
1.8 Program for frequency modulation
1.9 Program in the Demo(at lest any TWO using Simulation)
1.10 Project –a)Using op. Amplifier
             b)Series Inverter
             c)Regulated Power Supply
             d)Create block sets for optical fiber communication using s-fuction
1.11   Programming on two link planer Robot.

BOOK:
1. Met lab & Simulation-By Parth S.Mallik-Scientech
2. Electrical & ETC Lab. Practical – S.S.Panda.
3. Simulation of M/C using MAT LAB & SIMULINK

ELECTRONIC PROJECT WORK & DESIGN LAB
SIXTH SEMESTER

Period / Week: 4 P/W

End Exam.: 50

Total Contact hrs:60 P

Sessional: 50

Exam. Time: 4 Hours

A: RATIONALE:

The Project work is intended to integrate the knowledge, skills and attitudes developed after completion of subjects for developing competency in a particular specialized job. In this activity the role of teachers is a facilitator or co-ordinator. The student will select a topic, perform design work, place the indents and get the raw materials either from the department or from the local market and implement the design. The leadership quality, coordination of job and maintaining a good communal harmony is important factor of activity. It is the process, which is to be evaluated along with students knowledge and their dedication. The success of the project is no doubt the goal but the group activity will also be critically evaluated.

B: OBJECTIVS:

On completion of the Project Work the students will able to:

1. Select a suitable project work.
2. Design the job.
3. Prepare job schedule.
4. Select and Indent the materials.
5. Procure material.
6. Exhibit co-opertative attitude towards the peer group.
7. Develop leadership.
8. Develop cost awareness.
9. Develop attitude for proper utilization of time.
10. Develop marketing strategies.
11. Develop quality consciousness.

C: COURSE CONTENT:

1. The students should be divided into group of 4 or 5 students. Each faculty should guide one group & he should that act as project guide. The students should select the projects of advanced topic of their own choice (Hardware /Software) in consultation with project guide.
2. The sessional records should be maintained and evaluated by a team of faculty members and the final marks awarded by the team.
3. In the end examination, a team of External Examiners and Internal examiner will evaluate students.
4. Suggested Project activity.

The Project Work:

1. A practical project needs to be taken . The steps involved in the project work are:
    a. Identification of the project.
    b. Problem definition.

c. Gathering information / Data needed for the project.

d. Selection of best solution.

e. Selection and collection of suitable material.

f. Planning and fabrication.

g. Detailed Design.

h. Testing.

i. Preparing a detailed project report.

2. The Project report should have the following features.

a. Introduction.

b. Name and feature of the project

c. Block diagram of the project.

d. Circuit diagram and its brief description

e. Flow chart

f. Components layout.

g. Printed circuit pattern or layout diagram of the circuit.

h. Front panel and cabinet drawing.

i. Components list

j. Cost estimation of the project

k. Power Supply.

l. Testing points and waveforms if any

m. Operation and maintenance & design procedure

n. Suggestion for improvement if any

o. Operation and maintenance procedure.

p. Electrical safety information

q. Electrical safety information

3. The internal and final evaluation marks have to be awarded on the basis of the above features along with viva-voce at the end.

4. Evaluation based on:

a. Work done during Semester for Project.

b. Testing & Working of Project.

c. PPP Seminar Presentation.

5. Students may be advised to do the project in the following related areas.

A: Minor project (at least any two projects)

Develop a power supply related project.

(a) Develop a simple IC based project.

(b) Develop a simple Audio power project.

(c) Develop an RF related project.

(d) Develop a simple Electronics Chime / Sound generation Circuit.

Develop any protective Circuit.

(e) Develop any Telephone System /Communication system related project

(f) Preparation of PCB.

N.B.: The Minor project must be course related.

B: Major project (at least any one projects)

a. The project based on following topics

- Microcontroller Based
- Power Electronics & Industrial Control based.
- Communication / Mobile / Satellite based.
- Robotics Based.
- Mechatronics Based
- Embedded System Based
- Industrial Application Based

N.B : Any other Project may also be carried out in consultation with the Project guide as per suitability. Each project report must contain the technical data of live components i.e. Transistor., ICs etc and pin diagrams of the such devices, PCB layout diagram & component layout diagram etc.

* Use pisspice /Electronics work branch for initial work and simulation purpose.
* Use METLAB for project work and simulation purpose.

SYLLABUS

3rd Semester to 6th Semester

Displine : Electronics & Telecommunication

Diploma Examination.

Prepared by:-

Er. R.K.Prusty, Sr. Lecturer, BOSE, Cuttack

&

Mrs. J,Sathapathy, Lecturer, W.P.,Bhubaneswar