PURAN MURTI
CAMPUS

A Unit of Puran Murti Educational Society
Approved by AICTE ,Recognized Under Section 2 (f) by UGC
Affiliated to Deenbandhu Chhotu Ram University of Science
And Technology, Murthal, Sonipat

Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Sonepat) B.Tech. 3rd YEAR ELECTRICAL ENGINEERING (SEMESTER – VI)
Choice Based Credit System Scheme Of Studies & Examinations w.e.f. 2020-21

Sl. No.	Course Code	Course Title	Teaching Schedule			Marks of Class work	Examination Marks		Total	Credits	Duration of Exam
			L	T	P		Theory	Practical			
1	EE302C	Power Systems – II	3	1	0	25	75	0	100	4	3
2	EE380C	Power Systems Laboratory - II	0	0	2	25	0	75	100	1	3
3	EE304C	Microprocessor& Micro-controller	3	0	0	25	75	0	100	3	3
4	EE382C	Microprocessor Micro controller Laboratory	0	0	2	25	0	75	100	1	3
5	EE384C	Electronics Design Laboratory	0	0	4	25	0	75	100	2	3
6	PE3	Program Elective - 3	3	0	0	25	75	0	100	3	3
7	PE4	Program Elective - 4	3	0	0	25	75	0	100	3	3
8	PE5	Program Elective - 5	3	0	0	25	75	0	100	3	3
9	HSMC350C	Applications of Psychology in Engineers Life	3	0	0	25	75	0	100	3	3
		Total	**18**	**01**	**08**	**225**	**450**	**225**	**900**	**23**	**27**

L= Lecture, T = Tutorial, P = Practical, & MC = Mandatory Course (Audit)

1. The students will be allowed to use non-programmable scientific calculator in the examination. However, Sharing/exchange of calculator is prohibited in the examination.
2. Electronics gadgets including Cellular phones are not allowed in the examination**.**
3. At the end of 6th semester, each student has to undergo Summer Internship of at least 4 weeks from the industry / institute /research lab / training centre, etc. during summer vacation & its evaluation shall be carried out in 7th Semester.

PROGRAM ELECTIVE-3 (PE3)

EE322C	Electromagnetic Waves
EE324C	Wind & Solar Energy Systems
EE326C	Electrical Energy Conservation and Auditing
EE328C	Digital Control Systems

PROGRAM ELECTIVE-4 (PE4

EE332C	Line Commutated and Active Rectifiers
EE334C	HVDC Transmission
EE336C	Utilization of Electric Power and Traction
EE338C	Digital Signal Processing

PROGRAM ELECTIVE -5 (PE5)

EE342C	Sensors and Transducers
EE344C	Fuzzy Systems
EE346C	Analog and Digital Communication
EE348C	Optimization Techniques

Campus:
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Department	Electrical Engineering						
Program Name	Bachelor of Technology in Electrical Engineering						
Program Level	UG						
Course Code	EE 302C						
Category	Programme Core						
Course Title	POWER SYSTEM -II						
Scheme and Credits	L	T	P	Credits	Duration of Examination		
	3	0	0	3	3 hours		
Evaluation System	Sessional					End Term Examination	Grand Total
	As per Ordinance				Total		
					25	75	100
Prerequisites (if any)							
Detailed Contents							

S. No.	Contents	
Unit – I	**POWER FLOW ANALYSIS** TOPIC NO 1 Analysis of Power Flows: TOPIC NO 2 Formation of Bus Admittance Matrix. TOPIC NO 3 Real and reactive power balance equations at a node. TOPIC NO 4 Load and Generator Specifications. TOPIC NO 5 Application of numerical methods for solution of nonlinear algebraic equations – Gauss Seidel and Newton-Raphson methods for the solution of the power flow equations. TOPIC NO 6 Computational Issues in Large-scale Power Systems.	
Unit – II	**LOAD FREQUENCY CONTROL** TOPIC NO 7 Control of Frequency and Voltage: TOPIC NO 8 Turbines and Speed-Governors, TOPIC NO 9 Frequency dependence of loads, TOPIC NO 10 Droop Control and Power Sharing. TOPIC NO 11 Automatic Generation Control.	
Unit – III	**MONITORING POWER SYSTEM AND EXCITATION CONTROL** TOPIC NO 12 Overview of Energy Control Centre Functions: SCADA systems and its components, protocol. TOPIC NO 13 Phasor Measurement Units. and Wide-Area Measurement Systems. TOPIC NO 14 Normal, Alert, Emergency, Extremis states of a Power System. TOPIC NO 15 Excitation System Control in synchronous generators, TOPIC NO 16 Automatic Voltage Regulators. TOPIC NO 17 Shunt Compensators, TOPIC NO 18 Static VAR compensators and STATCOMs. TOPIC NO 19 Tap Changing Transformers. TOPIC NO 20 Three phase Induction regulators, TOPIC NO 21 Voltage Stability, TOPIC NO 22 Voltage Collapse.	
Unit – IV	**BASIC PRICING PRINCIPLES** TOPIC NO 23 Generator Cost Curves, TOPIC NO 24 Vertically Integrated Utility and restructured Power System, TOPIC NO 25 Role of Different entities in restructured market. TOPIC NO 26 Market clearing price, TOPIC NO 27 Single sided and double sided linear bid market. TOPIC NO 28 Transmission and Distributions charges	

TEXT BOOKS

1. J. Grainger and W. D. Stevenson, "Power System Analysis", McGraw Hill Edition, 1994.
2. O. I. Elgerd, "Electric Energy Systems Theory", McGraw Hill Edition, 1995.
3. S K Gupta, "Power System

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Operation Control and Restructuring Analysis", IK International Publication 2015.

4. B. M. Weedy, B. J. Cory, N. Jenkins, J. Ekanayake and G. Strbac, "Electric Power Systems", Wiley, 2012.
5. Hadi Saadat, "Power System Analysis", McGraw Hill Edition 2002.

REFERENCE BOOKS:

6. A.R. Bergen and V. Vittal, "Power System Analysis", Pearson Education Inc., 1999.
7. Advanced Power System Analysis & Dynamics by L P Singh: Wiley Eastern LTD New Delhi
8. Elements of Power System Analysis by W D Stevenson: MGH Publication New Delhi
9. Power Generation, operation and control by Alen J. Wood by Wiley.

NOTE:

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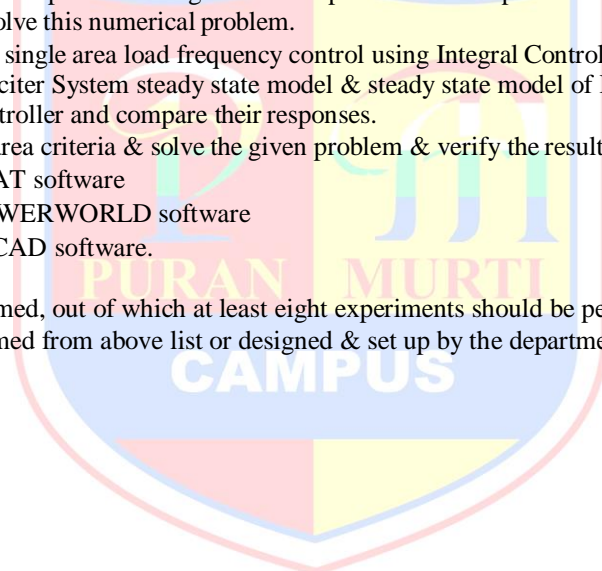

Department	Electrical Engineering
Program Name	Bachelor of Technology in Electrical Engineering
Program Level	UG
Course Code	EE 380C
Category	Programme Core

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Course Title	**POWER SYSTEM LABORATORY II**						
Scheme and Credits	**L**	**T**	**P**	**Credits**	**Duration of Examination**		
	3	**0**	**0**	**3**	**3 hours**		
Evaluation System	**Sessional**					**End Term Examination**	**Grand Total**
	As per Ordinance				**Total**		
					25	**75**	**100**
Prerequisites (if any)							

LIST OF EXPERIMENTS:

1. (a) To study some of the commands used in MATLAB.
   (b) Compute the voltages of the given network using MATLAB.
2. Draw the flow chart for forming Y-BUS. Write the computer program in MATLAB. Take any solved numerical question from book and from the Y-BUS. Solve it for the voltage and currents injected in the buses. Match the result.
3. Draw the flow chart for power system analysis of Gauss Siedel Method. Write program in MATLAB for performing load flow analysis using Gauss-Siedel method and solve the given problem, solve the problem by hand for one iteration.
4. Write a MATLAB program for the Newton Raphson Method to find the intersection of the curves.
5. Calculating market clearing price for single sided bidding & obtain share of participating Gencos (Generating Companies).
6. Obtain power solution of the given problem using Fast Decoupled Newton Raphson method then write program for FDNR method using MATLAB and solve this numerical problem.
7. To obtain dynamic response of single area load frequency control using Integral Controller.
8. To develop the Boost Buck Exciter System steady state model & steady state model of IEEE Type-1 Excitation system with compensator Block & PID controller and compare their responses.
9. Stability analysis using equal area criteria & solve the given problem & verify the results of practical & theory.
10. Study basic instructions of PSAT software
11. Study basic instructions of POWERWORLD software
12. Study basic instructions of PSCAD software.

Note: Ten experiments are to be performed, out of which at least eight experiments should be performed from above list. Remaining three experiments may either be performed from above list or designed & set up by the department as per the scope of the syllabus

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Department	Electrical Engineering						
Program Name	Bachelor of Technology in Electrical Engineering						
Program Level	UG						
Course Code	EE 304C						
Category	Programme Core						
Course Title	MICROPROCESSOR & MICROCONTROLLER						
Scheme and Credits	L	T	P	Credits	Duration of Examination		
	3	0	0	3	3 hours		
Evaluation System	Sessional				End Term Examination		Grand Total
	As per Ordinance			Total			
				25	75		100
Prerequisites (if any)							
Detailed Contents							

S. No.	Contents	
Unit – I	TOPIC NO 1 Introduction to 8086 microprocessor, TOPIC NO 2 RISC and SISC processors, TOPIC NO 3 architecture and pin diagram of 8086 and description of various signals. TOPIC NO 4 Register organization of 8086; TOPIC NO 5 Description of address computations & memory segmentation; TOPIC NO 6 Segment override, TOPIC NO 7 Instruction pipelining, TOPIC NO 8 Timing diagrams, TOPIC NO 9 Addressing modes	
Unit – II	TOPIC NO 10 Instruction set of 8086, TOPIC NO 11 Instruction execution timing, TOPIC NO 12 Instruction format, Data transfer instructions, Arithmetic instructions, TOPIC NO 13 Branch instructions, Loop instructions, TOPIC NO 15 NOP & HLT instructions, Flag manipulation instructions, TOPIC NO 16 Logical instructions, Shift & Rotate instructions, TOPIC NO 17 Directives & operators, Interrupts of 8086, TOPIC NO 18 Assembly language Programs using 8086.	
Unit – III	TOPIC NO 19 The concept of microcontroller, TOPIC NO 20 comparison between Microcontrollers & Microprocessors. TOPIC NO 21 Architecture and Pin diagram of 8051 microcontroller, TOPIC NO 22 Memory organization. Special function registers. TOPIC NO 23 External memory, TOPIC NO 24 Reset operation. Instruction Set, Addressing modes, TOPIC NO 25 arithmetic, Logical. Data transfer. TOPIC NO 26 Boolean variable manipulation, TOPIC NO27 program branching instructions etc. TOPIC NO 28 Programs based on various instructions. Timer operation, Timer Mode register, TOPIC NO 37 Timer Control register. TOPIC NO 40 Timer modes & overflow flag, TOPIC NO 41 Starting, Stopping & controlling the timers. TOPIC NO 42 Programs for generating square waves of various frequencies	
Unit – IV	TOPIC NO 43 Serial port operation, UART, Serial port control register, TOPIC NO 44 Modes of serial port operation. Serial port baud rate, TOPIC NO 45 Initialization & programming of serial port. Interrupts of 8051, TOPIC NO 46 SFRs related to interrupts, processing interrupts, program design using interrupts. TOPIC NO 47 Interfacing with LED,DC motors, TOPIC NO 48 stepper motors	

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Text Books:

1. M. A.Mazidi, J. G. Mazidi and R. D. McKinlay, "The8051Microcontroller and Embedded Systems: Using Assembly and C",Pearson Education,2007.
2. Badri Ram, " Advanced Microprocessors and Interfacing," Tata McGrawHill.

Reference Books:

1. K. J. Ayala, "8051 Microcontroller", Delmar Cengage Learning 2. ,2004.
2. D. V. Hall, "Microprocessors & Interfacing", McGraw Hill Higher Education, 1991.
3. Advanced Microprocessors and Peripherals : A.K.Ray, K.M.Bhurchandi, Mc Graw Hill

NOTE:

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Subject: MICROPROCESSOR & MICROCONTROLLER LABORATORY
Subject Code: EE382C

L	T	P	Credits	Class-work Marks	: 25
0	0	2	1	Exam Marks	: 75
				Total Marks	:100
				Duration of Examination	:3 Hrs

Course outcomes: On completion of this lab course the students will be able to: a. Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller. b. Work with standard microprocessor real time interfaces including GPIO, serial ports, digital-to-analog converters and analog-to-digital converters; c. Troubleshoot interactions between software and hardware; d. Analyze abstract problems and apply a combination of hardware and software to address the problem; e. Use standard test and measurement equipment to evaluate digital interfaces

LIST OF EXPERIMENTS:

(A) 8086 Microprocessor:

1. Write a well-documented program for copying 12 bytes from source to destination, on 8086 microprocessor kit.
2. Write a program for 8086 for division of a defined double word (stored in a data segment) by another double word and verify.
3. Write a well-documented program for finding the square root of a given number, on 8086, microprocessor kit.
4. Write a program using 8086 for finding the square of a given number and verify.
5. Write a program using 8086 and verify for:
   (i) Finding the largest number from an array.
   (ii) Finding the smallest number from an array.
6. (i)Write a program using 8086 for arranging an array of numbers in descending order and verify.
   (ii)Write a program using 8086 for arranging an array of numbers in ascending order and verify.
7. Write a program for 8086 for finding square of a number using look-up table and verify.
8. Write a program to control the operation of stepper motor using 8086 microprocessor and 8255 chip.
9. Write a program using 8086 to add a series of 16-bit numbers.

(B) 8051 Microcontroller:

10. To study the architecture of 8051 microcontroller.
11. Write a program in 8051 to add and subtract two 8 bit numbers.
12. Write an ALP to generate square wave of 10 kHz frequency using timer of 8051 microcontroller.
13. To find average of Ten 8-bit numbers.
14. Write an ALP to interface LED and switches with 8051 microcontroller.
15. Write a program to find (i) largest number and (ii) smallest number from an array using 8051 microcontroller.
16. Write a program to generate square wave of 50 Hz frequency using timer of 8051 microcontroller.
17. To control the operation of DC motor using 8051 microcontroller.
18. To interface LCD with 8051 microcontroller.
19. To control the operation of stepper motor using 8051 microcontroller

Note:-

1 Total ten experiments are to be performed in the semester.
2 At least eight experiments should be performed from the above list. Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.

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Subject : ELECTRONICS DESIGN LABORATORY
Subject Code: EE384C

L	T	P	Credits	Class-work Marks	: 25
0	0	4	2	Exam Marks	: 75
				Total Marks	:100
				Duration of Examination	:3 Hrs

Course Outcomes: At the end of the course, students will demonstrate the ability to

1. Understand the practical issues related to practical implementation of applications using electronic circuits.
2. Choose appropriate components, software and hardware platforms.
3. Design a Printed Circuit Board, get it made and populate/solder it with components.
4. Work as a team with other students to implement an application.

Basic concepts on measurements; Noise in electronic systems; Sensors and signal conditioning circuits; Introduction to electronic instrumentation and PC based data acquisition; Electronic system design, Analog system design, Interfacing of analog and digital systems, Embedded systems, Electronic system design employing microcontrollers, CPLDs, and FPGAs, PCB design and layout; System assembly considerations. Group projects involving electronic hardware (Analog, Digital, mixed signal) leading to implementation of an application.

Text/Reference Books

1. A. S. Sedra and K. C. Smith, "Microelectronic circuits", Oxford University Press, 2007.
2. P. Horowitz and W. Hill, "The Art of Electronics", Cambridge University Press, 1997.
3. H.W.Ott, "Noise Reduction Techniques inElectronic Systems", Wiley, 1989.
4. W.C. Bosshart, "Printed Circuit Boards: Design and Technology", Tata McGraw Hill, 1983.
5. G.L. Ginsberg, "Printed Circuit Design", McGrawHill, 1991.

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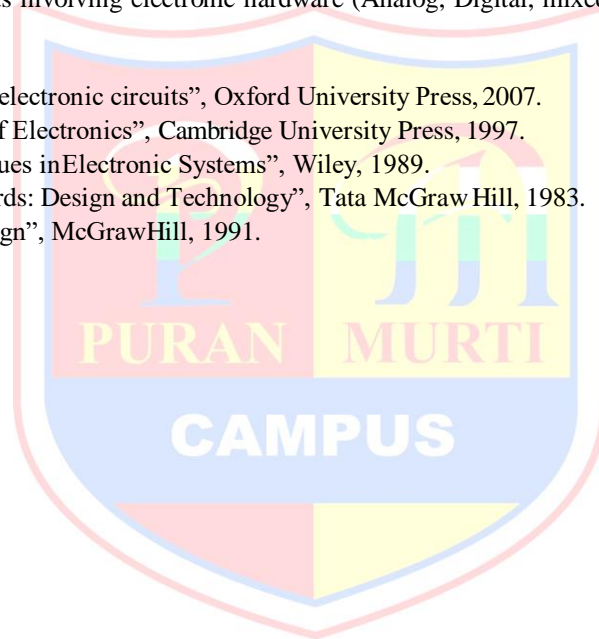
Subject: WIND AND SOLAR ENERGY SYSTEMS
Subject Code: EE 324C

L	T	P	Credits		Class-work Marks	: 25
3	0	0	3		Exam Marks	: 75
					Total Marks	:100
					Duration of Examination	:3 Hrs

Course Outcomes:
At the end of this course, students will demonstrate the ability to
Understand the energy scenario and the consequent growth of the power generation from renewable energy sources.
Understand the basic physics of wind and solar power generation.
Understand the power electronic interfaces for wind and solar generation.
Understand the issues related to the grid-integration of solar and wind energy systems

UNIT-I

Physics of Wind Power:
TOPIC NO 1 History of wind power, Indian and Global statistics,
TOPIC NO 2 Wind physics, Betz limit, Tip speed ratio,
TOPIC NO 3 Stall and pitch control, Wind speed statistics-probability distributions,
TOPIC NO 4 Wind speed and power-cumulative distribution functions.

Solar thermal power generation:
TOPIC NO 5 Technologies, Parabolic trough, c
TOPIC NO 6 Entral receivers, parabolic dish,
TOPIC NO 7 Fresnel, solar pond, elementary analysis

UNIT-II

Wind generator topologies:
TOPIC NO 8 Review of modern wind turbine technologies,
TOPIC NO 9 Fixed and Variable speed wind turbines,
TOPIC NO 10 Induction Generators,
TOPIC NO 11 Doubly-Fed Induction Generators and their characteristics,
TOPIC NO 12 PermanentMagnet Synchronous Generators,
TOPIC NO 13 Power electronics converters.
TOPIC NO 14 Generator-Converter configurations, Converter Control.

UNIT-III

The Solar Resource:
TOPIC NO 15 Introduction, solar radiation spectra,
TOPIC NO 16 Solar geometry, Earth Sun angles, observer Sun angles,
TOPIC NO 17 solar day length, Estimation of solar energy availability.

Solar photovoltaic:
TOPIC NO18 Technologies-Amorphous, mono crystalline, polycrystalline; V-I characteristics of a PV cell, PV TOPIC NO 19 Module, array, Power Electronic Converters for Solar Systems,
TOPIC NO 20 Maximum Power Point Tracking (MPPT) algorithms. Converter Control.

UNIT-IV

Network Integration Issues:
TOPIC NO 21 Overview of grid code technical requirements.
TOPIC NO 22 Fault ride-through for wind farms - real and reactive power regulation,
TOPIC NO 23 Voltage and frequency operating limits,
TOPIC NO 24 solar PV and wind farm behavior during grid disturbances.
TOPIC NO 25 Power quality issues. Power system interconnection experiences in the world.
TOPIC NO 26 Hybrid and isolated operations of solar PV and wind systems.

Text / References:
1. T. Ackermann, "Wind Power in Power Systems", John Wiley and Sons Ltd., 2005.

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2. G. M. Masters, "Renewable and Efficient Electric Power Systems**",** John Wiley and Sons, 2004.

3. S. P. Sukhatme, "Solar Energy: Principles of Thermal Collection and Storage", McGraw Hill, 1984.

4. H. Siegfried and R. Waddington, "Grid integration of wind energy conversion systems" John Wiley and Sons Ltd., 2006.

6. G. N. Tiwari and M. K. Ghosal, "Renewable Energy Applications", Narosa Publications, 2004.

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Subject: UTILIZATION OF ELECTRIC POWER AND TRACTION
Subject Code: EE 336C

L	T	P	Credits	Class-work Marks	: 25
3	0	0	3	Exam Marks	: 75
				Total Marks	:100
				Duration of Examination	:3 Hrs

COURSE OUTCOMES:
   At the end of this course, the students will be able to:
1. Understand the construction and applications of electrical components.
2. Understand the various electrical heating and welding machines
3. Understand the principles and performances of different batteries.
4. Understand the principles and performances of traction motors and design calculations.

UNIT-I

Selection of Electrical Components:
TOPIC NO 1 Sizing of a transformer, main dimensions,
TOPIC NO 2 kVA output for single- and three-phase,
TOPIC NO 3 sizing and selection of motors (ac as well dc) cables sizing.
TOPIC NO 4 SENSORS AND TRANSDUCERS:
TOPIC NO 5 pressure, displacement, velocity, acceleration, strain and torque type.
TOPIC NO 6 Medical equipments: X-ray machine - Radio graphic and fluoroscopic techniques –
TOPIC NO 7 Computer tomography – MRI – Ultrasonography – Endoscopy –
TOPIC NO 8 Thermography – Different types of biotelemetry systems and patient monitoring –
TOPIC NO 9 Electrical safety. Biological effects of X-rays and precautions.

UNIT-II

ELECTRIC HEATING & WELDING:
TOPIC NO 10 Principle and application of resistance,
TOPIC NO 11 induction and dielectric heating., Resistance welding,
TOPIC NO 12 arc welding, welding generator and welding transformer,
TOPIC NO 13 properties of arcing electrode.

UNIT-III

ELECTROLYTIC PROCESS:
TOPIC NO 14 Principles and applications of electrolysis.
TOPIC NO 15 Faraday's law of electrolysis, electroplating, charging and discharging.
TOPIC NO 16 Different types of battery , Capacity and efficiency of battery,
TOPIC NO 17 defects in battery, maintenance of battery.

UNIT-IV

ELECTRIC TRACTION:
TOPIC NO 18 Systems of electric traction, traction motors,
TOPIC NO 19 traction motor control, multi unit control,
TOPIC NO 20 Braking of electric motors, thyristor control of electric traction.
TOPIC NO 21 Types of services, speed time and speed distance curves, average and schedule speed,
TOPIC NO 22 Estimation of power and energy requirements: specific energy consumption.
TOPIC NO 23 Mechanics of train movement coefficient of adhesion,
TOPIC NO 24 Adhesive weight, effective weight.

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TEXT BOOKS:

1. Utilization of Electrical Energy : Open Shaw Taylor ; ELBS
2. Art and Science of Utilization of Electrical Energy : H. Pratab ; Dhanpat Rai & Sons, Delhi.

REFERENCE BOOKS:
1. Generation, Distribution and Utilization of Electrical Power : C.L. Wadhwa ; Khanna Pub.
2. H.Pratab,"Electric Traction", Dhanpat Rai & Sons.
3. Utlization of Electrical Energy, H.Partab, Dhanpat Rai

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Subject: ANALOG AND DIGITAL COMMUNICATION
Subject Code: EE 346C

L	T	P	Credits		Class-work Marks	: 25
3	0	0	3		Exam Marks	: 75
					Total Marks	:100
					Duration of Examination	:3 Hrs

COURSE OUTCOMES:
1. Analyze and compare different analog modulation schemes for their efficiency and bandwidth
2. Analyze the behavior of a communication system in presence of noise
3. Investigate pulsed modulation system and analyze their system performance
4. Analyze different digital modulation schemes and can compute the bit error performance

UNIT-1

TOPIC NO 1 Review of signals and systems,
TOPIC NO 2 Frequency domain representation of signals,
TOPIC NO 3 Principles of AmplitudeModulation Systems-
TOPIC NO 4 DSB, SSB and VSB modulations.
TOPIC NO 5 Angle Modulation, Representation of FM and PM signals,
TOPIC NO 6 Spectral characteristics of angle modulated signals.

UNIT-2

TOPIC NO 7 Review of probability and random process.
TOPIC NO 8 Gaussian and white noise characteristics,
TOPIC NO 9 Noise in amplitude modulation systems,
TOPIC NO 10 Noise in Frequency modulation systems.
TOPIC NO 11 Pre-emphasis and Deemphasis,
TOPIC NO 12 Threshold effect in angle modulation.

UNIT-3

TOPIC NO 13 Pulse modulation. Sampling process.
TOPIC NO 14 Pulse Amplitude and Pulse code modulation (PCM),
TOPIC NO 15Differential pulse code modulation. Delta modulation,
TOPIC NO 16 Noise considerations in PCM,
TOPIC NO 17 Time Division multiplexing, Digital Multiplexers.

UNIT-4

TOPIC NO 18 Elements of Detection Theory, Optimum detection of signals in noise,
TOPIC NO 19 Coherent communication with waveforms- Probability of Error evaluations.
TOPIC NO 20 BasebandPulse Transmission- Inter symbol Interference and Nyquist criterion.
TOPIC NO 21 Pass band Digital Modulation schemes-
TOPIC NO 22 Phase Shift Keying, Frequency Shift Keying,
TOPIC NO 23 Quadrature Amplitude Modulation,
TOPIC NO 24 Continuous Phase Modulation and Minimum Shift Keying.

TEXT BOOK:
1. Haykin S., "Communications Systems", John Wiley and Sons, 2001.
2. Proakis J. G. and Salehi M., "Communication Systems Engineering", Pearson Education, 2002.

Campus:
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REFERENCE BOOKS:

1. Taub H. and Schilling D.L., "Principles of Communication Systems", Tata McGraw Hill, 2001. 4.
2. Wozencraft J. M. and Jacobs I. M., ``Principles of Communication Engineering'', John Wiley, 1965.
3. Barry J. R., Lee E. A. and Messerschmitt D. G., ``Digital Communication'', Kluwer Academic Publishers, 2004.
4. Proakis J.G., ``Digital Communications'', 4th Edition, McGraw Hill, 2000.

NOTE:

1. In Semester Examinations, the paper setter will set two questions from each unit (total 8 questions in all), covering the entire syllabus. Students will be required to attempt only five questions, selecting atleast one question from each unit.

2. The use of scientific calculator will be allowed in the examination. However, programmable calculator, mobile phones or other electrical/ electronic items will not be allowed in the examination.

3. For students admitted in B.Tech. 1st Year (C-Scheme) in 2019 & onwards and all trailing students:
   Examinations and evaluations of students shall be conducted, covering the entire syllabus, as per guidelines "AICTE Examination Reforms". Students shall be informed about these reforms.

Subject: APPLICATIONS OF PSYCHOLOGY IN ENGINEERS LIFE

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Subject Code: HSMC 350C

L	T	P	Credits	Class-work Marks	: 25
3	0	0	3	Exam Marks	: 75
				Total Marks	:100
				Duration of Examination	:3 Hrs

COURSE OUTCOMES: After going through this course, the students shall be able to:

1. Understand the different applications of psychology to everyday issues of life.
2. Understand the different social issues, workplace issues, and behavioural issues.
3. Understand how the knowledge gained from this course can be used in their personal and professional work life.
4. Understand the need of Psychology and Counselling.

Unit 1:

TOPIC NO 1 Introduction:
TOPIC NO 2 Nature and fields.
TOPIC NO 3 Psychology in industries and organizations:
TOPIC NO 4 Job analysis; fatigue and accidents in industries.

Unit 2

TOPIC NO 5 Consumer behavior,
TOPIC NO 6 Psychology and mental health:
TOPIC NO 7 Abnormality, symptoms and causes psychological disorders.

Unit 3

TOPIC NO 8 Psychology and Counseling:
TOPIC NO 9 Need of Counseling, Counselor and the Counselee,
TOPIC NO 10 Counseling Process, Areas of Counseling.

Unit 4

TOPIC NO 11 Psychology and social behavior:
TOPIC NO 12 Group, group dynamics, teambuilding,
TOPIC NO 13 Prejudice and stereotypes;
TOPIC NO 14 Effective Communication, conflict and negotiation.

Text Books:

1. Schultz, D. & Schultz, S.E. (2009). Psychology and Work Today (10th ed.). New Jersey:Pearson/Prentice Hall.
2. Butcher, J. N., Mineka, S., & Hooley, J. M. (2010). Abnormal psychology (14th ed.). New York: Pearson
3. Gladding, S. T. (2014). Counselling: A comprehensive profession. New Delhi: Pearson Education
4. Aronson, E., Wilson, T. D., & Akert, R. M. (2010). Social Psychology (7th Ed.). Upper Saddle River, NJ: Prentice Hall.

NOTE:

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