

BHAVNAGAR UNIVERSITY
B.E. SEM V (EC) w.e.f. July 2007
EC –501 INDUSTRIAL ORGANISATION & BUSINESS MANAGEMENT

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
3	0	0	100	3	00	00	100

National income, economic planning and public finance.

1. **Organization** : Concept, principles, line & staff functions, organization structure and its importances, systems concepts of organisation.
2. **Management concepts and functions** : concept functions (Planning), organizing, directing ,co-ordinating, controlling motivating, principles of management, traditional v/s modern management approaches, decision making, delegation.
3. **Productivity & its techniques** : Concepts, gains of productivity, productivity of economic development, role of management in promotion of productivity, selected productivity techniques, work –study (time study & work management), Quality control, waste reduction, job evaluation, incentives, inventory control, CPM & PERT.
4. **Personal Management** : Personal functions, man-power assessment, recruitment, training, & development , wage, salary administration, participative management, performance appraisal & counseling discipline improvement, grievance handling , Union management relation (Industrial Relation) trade unionism in India.
5. **Human side of management** : Understanding of human behavior, group dynamics, interpersonal behavior, motivation, communication, leadership.
6. **Financial Management** : Financial management & quantitative techniques, management accounting , break even analysis, preparation & analysis of balance sheets, capital budgeting cost accounting & cost & budgetary control.
7. **Marketing Management** : Introduction marketing management, concepts and approach , product development & diversification, industrial marketing.

BOOKS :

1. Management Analysis, concepts & cases by Haynes & Massie(Prentice Hall of India)
2. Personal Management by R.S. Davar (Vikas Publicating House Ltd. Delhi)

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 502 MICROPROCESSOR - I

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
4	0	2	100	3	25	25	150

1. **INTRODUCTION TO DIGITAL COMPUTERS:-**
Block diagram of digital computer, Classification of computer languages, High level and low level languages.
2. **MICROPROCESSOR ARCHITECTURE AND MICROCOMPUTER SYSTEM:-**
Microprocessor architecture and its operation, Memory, input, output, Interfacing devices.
3. **ARCHITECTURE:-**
Instruction set and timing diagrams of 8085 microprocessor, 8085 architecture, Instruction classification of 8085, Instruction timing and operation status.
4. **ASSEMBLY LANGUAGE PROGRAMMING OF 8085:-**
Programming techniques, Concepts and timing delays, Stack and subroutines, Code conversions.
5. **PARALLEL INPUT/OUTPUT AND INTERFACING:-**
Basic interface concepts, Interfacing input and output devices like keyboards and display, Memory mapped I/O, Interfacing memory.
6. **INTERRUPTS:-**
8085 interrupts, Restart as software instructions, Study of programmable interrupt controllers 8259A.
7. **PROGRAMMABLE PERIPHERAL INTERFACE:-**
8255 programmable peripheral interface, Interface of A/D converter with microprocessors, 8253 programmable interrupt timer, 8257 DMA Controller, serial interfacing 8279 keyboard and display controllers.
8. **HARDWARE:-**
Hardware system design using memory and peripheral controllers, Software requirements, Monitor design concepts, typical applications, Single chip microcomputer, System design and typical applications.

BOOKS:-

- Microprocessor architecture programming and application R.S. Gaonkar, Wiley Eastern.
- Microprocessor principles and applications Ajit Pal, TMH Publications
- Fundamentals of Microprocessors & microcomputers Dr. Badri Ram, Dhanpatrai & Sons.
- Introduction to Microprocessors A.P. Mathur, TMH Publications.

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 503 INDUSTRIAL ELECTRONICS & AUDIO ENGG.

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
4	0	2	100	03	25	25	150

1. **High freq. Heating** : Principle and theory of induction heating, effect of freq., applications, and merits of induction heating, principle and theory of dielectric heating, electrodes used and methods of coupling of electrodes to the R.F.generator, thermal losses in dielectric heating and applications.
2. **Resistance welding** : Resistance welding process, basic circuits for AC resistance welding, types of welding, electronic welding controls, calculation on percentage duty, energy storage welding.
3. **Ultrasonics** : generation of ultrasonic waves, ultrasonic as means of communications, testing of materials, cutting machinery, soldering and welding by ultrasonic waves.
4. **Magnetic amplifier** : saturable reactors, self saturation by reactifiers, need for bias and feedback windings, feedback magnetic amplifier, pushpull magnetic amplifier.
5. **Automation & Robotics** : parts of a robotic systems, classification of robotic systems, robot configuration, degree of freedom, sensors, programmable controllers, programming sequence in a typical non servo control robot sensory system, control systems for industrial robotics.
6. **Transducers** : Basic principle and construction of different types of electrical, optical and mechanical transducers.
7. **Audio Engineering** : Characteristics of sound, Microphones, Loudspeaker, Disc Recording and Re-production, Magnetic Recording and Re-production, Optical Recording, Noise and distortion, stereophony, High fidelity, Public Address system, Accoustic Reveberation.

Books :

1. Industrial and power Electronics by Harish C. Rai.
2. Industrial Electronics by G.K. Mithal, Khanna publications.
3. Engg. Electronics by Ryder, Mcgraw Hill publication.
4. Audio & video systems by R.G. Gupta (TMH)
5. Electronics Instrumentation by Kalsi (TMH)
6. Consumer Electronics by J.S. Chitode (Technical Publications.)

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
EC-504 POWER ELECTRONICS

TEACHING SCHEME			EXAMINATION SCHEME			TOTAL MARKS	
THEORY HOUR	TUT. HOUR	PRAC. HOUR	THEORY		PRA/ORAL MARKS		T/W MARKS
			MARKS	HOUR			
3	-	2	100	3	25	25	150

1. **INTRODUCTION TO THYRISTER FAMILY:** Construction, operation and characteristics of SCR, Diac, Triac, SUS, SBS, RCT, LASCR, SITS, SITH, GTOs, IGBT, MCT etc. Two transistor analogy of SCR. Turn On and Turn Off methods of SCR. Triggering circuits of SCR. UJT relaxation oscillator and PUT. Series and parallel operation of Thyristor.
2. **PHASE CONTROLLED RECTIFIERS:** Single phase Half wave, Full wave, Half controlled bridge and Full controlled bridge rectifiers with resistive and inductive loads. Effect of Free wheeling diodes, Three phase Half wave, Half controlled bridge and Full controlled bridge rectifiers with resistive and inductive loads.
3. **INVERTERS:** Thyristor Inverter classification, Series and Parallel Inverters. The McMurray and McMurray-Bedford inverters. Three phase bridge inverter with 180° and 120° conduction mode. Voltage control of single phase and three phase inverters. Current source inverters.
4. **CHOPPER:** Principle of chopper operation, control strategies, Step-Up, Step-down and Step-Up/Down chopper. Type-A, Type-B, Type-C, Type-D and Type-E chopper. Voltage and current commutated chopper. Jones, Morgan and AC choppers.
5. **CYCLOCONVERTERS AND DUAL CONVERTERS:** Basic principle of operation. Single phase to single phase, Three phase to single phase and three phase to three phase cycloconverters. Comparison of cycloconverter and DC link inverter. Principle of dual converter. Dual converter with and without circulating current operation.
6. **CONTROL OF DC DRIVES:** Introduction, Basic machine equations. Braking modes. Single phase separately excited drives. Single phase series DC motor drives. DC chopper drives. Closed loop control of DC drives. PLL control of DC drives. Microcomputer control of DC drives.
7. **CONTROL OF AC DRIVES:** Basic principle of operation. Torque-speed characteristic of induction motor. Speed control of induction motor. Stator voltage control. Variable frequency control. Rotor resistance control. Slip power recovery scheme.
8. **APPLICATION OF THYRISTOR:** Over voltage protection, Zero voltage switch. SMPS and UPS

TEXT BOOK:

POWER ELECTRONICS BY M D SINGH AND K B KHANCHANDANI (TMH)

REFERENCE BOOK:

- (1) POWER ELECTRONICS CKT DEVICES AND APPLICATION BY MUHAMMAD RASHID (PHI)
- (2) POWER ELECTRONICS AND CONTROLS SAMIR K DATTA PHI
- (3) INDUSTRIAL AND POWER ELECTRONICS HARISH C RAI
- (4) POWER ELECTRONICS ELBS R. RAMSHAW
- (5) THYRISTOR AND THEIR APPLICATIONS RAMAMOURTHY
- (6) DESIGN OF MAGNETIC COMPONENTS FOR SWITCHING MODE POWER CONVERTERS UMANAND & BHATT WILEY EASTERN

PRACTICAL AND TERM WORK WILL BE BASED ON ABOVE SYLLABUS.

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 505 COMMUNICATION SYSTEMS

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
4	0	2	100	03	25	25	150

- Introduction to Signal** : Size of signal, classification of signal, useful signal operation, unit impulse function, signals and vector.
- Spectral Analysis** : Introduction, Fourier series, The sampling function, Response of a linear system, normalized power, power spectral density, Effect of transfer function on power spectral density, The fourier tranform, convolution, parseval's therorem, power and energy transfer through network, Bandlimiting of waveforms, correlation between waveforms, power and cross correlation, Autocorelation of periodic and non-periodic waveforms.
- Random variables and process** : probability, mutually exclusive events, joint probability statistical independence, random variables, cumulative distribution function. Probability density function, average value and variance of a random variable, Tche by cheff's inequality, the gaussian probability density, the error function, the Rayleigh probability density, mean & variance & PD of the sum random variables, correlation between random variables, the central limit theorem, error probability, signal determination random processes, autocorelation, PSD of sequence of random pulses, PSD of digital data, effect of filters on digital data The comppelmentry error function.
- Analog to Digital conversion** : Pulse modulation systems, The sampline theorem PAM, Natural & Flat- top sampling Signal recovery, Quantization, Quantization, errors, PCM companding Multiplexing, Differential PCM Delta modulation, Adaptive delta modulation.
- Digital Modulation Techniques** : Introduction, Binary phase shift keying DEPSK, QPSK, BFSK, MSK, Duobinary Encoding, comprision of narrowband FM systems.
- Noise in AM Systems** : AM receiver, Noise calculations in SSB- SC, DSB with carrier and the envelope demodulator.
- Noise in FM Systems** : An FM demodulator calculation of output signal & noise powers, comprision of FM & AM, Noise calculations in systems with Preemphasis & Deemphasis.

BOOKS :

Text : PRINCIPLES OF COMMUNICATIONS SYSTEMS by Taub and Schilling(TMh)

- Reference :**
- (1) DIGITAL AND ANALOG COMMUNICATION SYSTEM by B.P. Lathi
 - (2) DIGITAL COMMUNICATION by Proakis
 - (3) COMMUNICATION SYSTEM BY R.P.SINGH & SAPRE.

Practical and Termwork will be based upon the above syllabus.

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 506 COMPUTER WORKSHOP

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
1	0	2	-	-	50	50	100

1. **PERSONAL COMPUTER** : Evolution PC to Pentium IV, Note book, specification, PC system, I/O ports
2. **INSIDE PC** : Mother board, Basic input/output system, Bus standard , Switch mode power supply
3. **ON BOARD MEMORY** : PC memory organization, Memory packages, Type of memory, cache ram.
4. **FLOPPY DISK DRIVE AND CONTROLLERS** : Type and capacity , Floppy drive subassembly, Floppy disk controllers, Interfacing of FDC.
5. **HARD DISK DRIVE AND CONTROLLERS** : Hard disk drive and subassembly, Hard disk controller, Types of interface, Low level and high level formatting. Partitioning.
6. **MULTIMEDIA EXTANTION** : Type of CD- ROM disk, CD-ROM drive, Sound blaster, AGP,TV tuner card, Video camera , Head phone, Video capturing.
7. **INPUT DEVICES** : Keyboard, Mouse, Scanner, Digitizer, Joystick.
8. **OUTPUT DEVICES** : Dot matrix printer, printer subassembly, Ink jet printer, laser printer, Plotter, Printer controller, printer cartridge , toner.
9. **MONITOR AND DISPLAY CONTROLLER** : Video basic, Type of monitors, Display controllers EGA,CGA and VGA.
10. **OTHER COMPUTER PERIPHERALS** : External and internal FAX/modem, DVD drive, CD Writer, Zip drive, Dat drive , Local area network devices.
11. **COMPUTER INSTALLATION AND TROUBLE SHOOTING** : Room preparation, Power supply requirement, POST, Troubleshooting of mother board, key board, floppy disk /hard disk drive, printer and other daughter board.

BOOKS:-

1. COMPUTER INSTALLATION AND SERVICEING
 - B BALASUBRAMANIAN (TMH PUBLICATION)
 2. IBM PC AND CLONES HARDWARE TROUBLRSHOOTING AND MAINTENANCE
 - B GOVINRAJALU (TMH PUBLICATION)
- * Term work/Practical shall be based on above syllabus.