Annexure No.	34 B
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046

REGULATIONS FOR M. Sc. ELECTRONICS AND COMMUNICATION SYSTEMS DEGREE COURSE WITH COMPULSORY DIPLOMA IN INFORMATION TECHNOLOGY
Semester System
(with effect from 2007-2008)

1.   Eligibility for Admission to the Course

The eligibility conditions for admission to M. Sc. Electronics and Communication Systems shall be as follows:

A pass in B.Sc. Electronics / Industrial Electronics/ Electronic Science / Electronics and Communication Systems/ Physics / Applied science / Computer Science / BCA/ B. Sc. Hons / B.Sc. Electrical Equipment Maintenance, Instrumentation / B.E.S.

A pass in triple major (Maths, Physics & Electronics) or (Maths, Electronics & Computer Science).

A pass in B. Sc. Electronics with Computer Hardware, Technology of Applied Science, B.Sc. Computer Technology, Information Technology, B.E. with ECE, EEE, EIE,CSE, IT and A.M.I.E. in respective branches is also eligible for joining the above said courses.

All the above changes shall take effect for the students admitted during the academic year 2007-2008 and onwards.

2.   Duration of the Course

This Course of Study shall be based on Semester System. This Course shall consist of four Semesters covering a total of two Academic Years. For this purpose, each Academic Year shall be divided into two Semesters; the first and third Semesters; July to November and the second and the fourth Semesters; December to April. The Practical Examinations shall be conducted at the end of even Semester.

3.   Course of Study

The Course of the Degree of Master of Science/Arts/Commerce shall be under the Semester System according to the Syllabus to be prescribed from time to time. This Course consists of Core Subjects and Elective Subjects. There shall be one Paper on applied Skill Oriented, subject preferably in each semester as part of the adjunct Diploma Programme.

4. Requirement to appear for the Examinations

a) A candidate will be permitted to take the University Examination for any Semester, if

i)   he/she secures not less than 75% of attendance out of the 90 instructional days during the Semester.

b) A candidate who has secured attendance less than 75% but 65% and above shall be permitted to take the Examination on the recommendation of the Head of the Institution to condone the lack of attendance as well as on the payment of the prescribed fees to the University.

c) A candidate who has secured attendance less than 65% but 55% and above in any Semester, has to compensate the shortage of attendance in the subsequent Semester besides, earning the required percentage of attendance in that Semester and take the Examination of both the Semester papers together at the end of the latter Semester.

d) A candidate who has secured less than 55% of attendance in any Semester will not be permitted to take the regular Examinations and to continue the study in the subsequent Semester. He/she has to re-do the Course by rejoining the Semester in which the attendance is less than 55%.

e) A candidate who has secured less than 65% of attendance in the final Semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the Course.

5.   Restriction to take the Examinations

a) Any candidate having arrear paper(s) shall have the option to take the Examinations in any arrear paper(s) along with the subsequent regular Semester papers.
b) Candidates who fail in any of the papers shall pass the paper(s) concerned within 5 years from the date of admission to the said Course. If they fail to do so, they shall take the Examination in the revised Text / Syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the Text / Syllabus they shall take the Examination in that paper with the Syllabus in vogue, until there is a change in the Text or Syllabus.

In the event of removal of that paper consequent to the change of Regulations and / or Curriculum after a 5 year period, the candidates shall have to take up on equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per Regulations/Curriculum for the award of the Degree.

6. The Medium of Instruction and Examinations

The medium of instruction and Examinations shall be in English.

7. Submission of Record Notebooks for Practical Examinations

Candidates taking the Practical Examinations should submit bonafide Record Note Books prescribed for the Practical Examinations. Otherwise the candidates will not be permitted to take the Practical Examinations.

8. The Minimum (Pass) Marks

A candidate shall be declared to have passed in a paper if a student obtains not less than 50% of marks in that paper. A candidate shall be declared to have passed the whole Examination if the student passes in all the papers.

9. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks secured in their first attempt shall reappear once within the subsequent Semester. The improved marks shall be considered for classification but not for ranking. If there is no improvement there shall not be any change in the original marks already awarded.

10. Classification of successful candidates

A candidate who passes all the Examinations in the first attempt within a period of two years securing 75% and above marks in the aggregated shall be declared to have passed with First Class with Distinction.

Successful candidates passing the P.G. Degree Examinations, securing 60% marks and above shall be declared to have passed the examination in First Class. All other successful candidates shall be declared to have passed the Examination in Second Class.

11. Ranking

A candidate who qualifies for the PG Degree Course passing all the Examinations in the first attempt, within the minimum period prescribed for the Course of Study from the date of admission to the Course and secures 1st or 2nd Class shall be eligible for ranking and such ranking will be confined to 10% of the total number of candidates qualified in that particular subject to a maximum of 10 ranks.

The improved marks will not be taken into consideration for ranking.

12. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she has undergone the prescribed Course of Study for a period of not less than four Semesters in an Institution approved of by and affiliated to the University or has been exempted there from in the manner prescribed and has passed the Examinations as have been prescribed.

13. Evening College

The above Regulations shall be applicable for candidates undergoing the respective Courses in the Evening Colleges also.

14. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

15.Transitory Provision

Candidates who have undergone the Course of Study prior to the Academic Year 2007-2008 will be permitted to take the Examinations under those Regulations for a period of four years i.e. up to and inclusive of the Examination of April 2012 thereafter they will be permitted to take the Examination only under the Regulations in force at that time.

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BHARATHIAR UNIVERSITY
M. Sc. Electronics and Communication Systems degree course with compulsory
Diploma in Information Technology
Scheme of Examination

SEM	Subject and Paper	Instr-uction Hrs./ Week	University Examination	
			Dura-tion (Hrs.)	Max * Marks
I	Paper I : Instrumentation and Control Systems	5	3	100
	Paper II : MEMS and Power Electronics	5	3	100
	Paper III : 8051 Microcontroller with C Programming	5	3	100
	Paper IV : Telecommunication and Fiber optics	4	3	100
	Practical – I : Electronics and Communication Systems Laboratory	4	-	-
	Practical –II : Embedded Systems and Real Time Operating Systems Laboratory	4	-	-
	Diploma in Information Technology			
	Paper I : Web Technologies	3	3	100
II	Paper – V : Signals and Systems	5	3	100
	Paper – VI : Wireless Communications and Networks	5	3	100
	Paper – VII : Embedded Systems and Real Time Operating Systems	5	3	100
	Paper – VIII : Computer Communication and Networks	4	3	100
	Practical – I : Electronics and Communication Systems Laboratory	4	4	100
	Practical –II : Embedded Systems and Real Time Operating Systems Laboratory	4	4	100
	Diploma in Information Technology			
	Paper II : Relational Data Base Management Systems	3	3	100
III	Paper – IX : Digital Signal Processing	5	3	100
	Paper – X : Digital Image Processing	5	3	100
	Paper – XI : VLSI Design and VHDL Programming	5	3	100
	Paper – XII : Mobile Computing	4	3	100
	Practical – III : DSP Laboratory	4	4	100
	Practical –IV : VLSI Laboratory	4	4	100
	Diploma in Information Technology			
	Paper III : Programming with .NET	3	3	100
IV	PROJECT WORK & VIVA VOCE	10	-	200
	Diploma in Information Technology			
	Practical – I : RDBMS Laboratory	3	3	50
	Practical –II : .NET Laboratory		3	50

*   -   Includes 25% continuous internal assessment marks

SEM – I   **Core Paper – I**

INSTRUMENTATION AND CONTROL SYSTEMS

Subject Description: This course presents the concept of Instrumentation and basic principles involved in the control systems. It contains the different types of transducers and digital instruments.

Goals : To enable the students to learn the fundamentals of Instrumentation and control systems and its application scenarios.

Objectives : After successful completion of the course, the students should have
Understood Instrumentation, digital meters and measurements.
Understood the concept of Control systems and its usage in Instrumentation.
Learnt the compensation techniques in the Control systems

Contents :

UNIT I   DIGITAL INSTRUMENTS

Digital Multimeter – Digital frequency meter – Digital measurement of time - Digital measurement of mains frequency – Digital taco meter – Digital phase meter – Digital capacitance meter.

UNIT II TRANSDUCER AND MEASUREMENT

TRANSDUCER: Resistive transducer- Inductive transducer –Capacitive transducer – Load cell- Piezoelectric – Photo electric transducers – Temperature transducer.
MEASUREMENT: Measurement of Linear Displacement using LVDT –Measurement of rotary displacement using RVDT – Hall Effect Principle, operation and application – Optical encoders.

UNIT III CONCEPTS OF CONTROL SYSTEM
Introduction – Open and Closed Loop Systems – Examples – Elements of closed loop systems –Linear and Nonlinear system - Effect of feedback on Overall gain, Stability, Sensitivity and Noise – Analysis of Physical system: Electrical and Thermal system – Transfer function of closed loop system – Block diagram algebra and reduction – Signal flow graphs – Mason's gain formula – fuzzy logic- case study: washing machine control.

UNIT IV TIME RESPONSE ANALYSIS & STABILITY IN TIME AND   FREQUENCY DOMAIN
First order system: Impulse and Step input analysis – Second order system analysis – Study state error – Stability Analysis: Routh Hurwitz Criterion – Root locus method – Construction and Application - Nyquist Stability Criterion – Bode diagrams – Polar plot.

UNIT V   COMPENSATION TECHNIQUES
Principles of PI, PD and PID compensation – Cascade and feedback compensation, lag, lead, lag-lead Compensation. Design of cascade compensators – Using Bodes's plot.

TEXT BOOKS
1. "Modern Control Engineering" Katsuhiko. Ogata. Pearson Education Asia, Fourth edition, 2002
2. "Automatic Control Systems" BENJAMIN C.KUO, PHI, 1995
3. "Automatic Control Systems" S.N.VERMA, Khanna Publisher, 1999
4. "Electronic Instrumentation " H.S.KALSI, TMH - 2nd Edition, 2002.
5. " A Course in Electrical and Electronic Measurements & Instrumentation " A.K.SAWHNEY, Dhanpat
   Rai Publication

SEM – I   Core Paper – II
MEMS AND POWER ELECTRONICS

Subject Description: This course presents the overview and working principles of MEMS, fabrication and Microsystems design, AC voltage controller, D.C choppers, Inverters and Power supplies.

Goals : To enable the students to learn the techniques and working principles of microsystems and to study the different types of Power electronic circuits and their applications.

Objectives : After successful completion of the course, the students should have
Understood the concept of Microsystem fabrication & design
Understood Power electronic devices, circuits and its applications.

Contents :
UNIT I: OVERVIEW AND WORKING PRINCIPLES OF MEMS
MEMS and Microsystems – Typical MEMS and Microsystems products – Microsystems and Microelectronics –Miniaturization – Applications of Microsystems –Micro sensors, Microactuation, Micro grippers, Micro motors, Micro accelerometer.

UNIT II: FABRICATION & MICROSYSTEM DESIGN
Ions and Ionization – Doping – Diffusion process – Scaling Laws for Electrical design – Substrate and wafers – Silicon as a substrate – Silicon compounds – Piezoresistors – Piezocrystals - Photolithography – Ion implantation – Diffusion – Oxidation – PVD – Etching – Surface micromaching – LIGA process - Microsystem Design Considerations – Use of CAD tool in Microsystems design.

UNIT III: POWER ELECTRONIC DEVICES & CIRCUITS
Review of operations: SCR, TRIAC, DIAC, IGBT, Power Diodes, MOSFET and UJT.
Thyristor communication techniques: Introduction – Natural commutation –Forced commutation – Self commutation – Impulse commutation – Response pulse commutation – External pulse commutation – complementary commutation.
Controlled Rectifiers: Principle of Phase controlled converter – Single-Phase full converter – Single-phase semi converter – Principle of Three phase half wave converter.

UNIT IV: AC VOLTAGE CONTROLLER AND DC CHOPPERS
AC Voltage Controller: Introduction – Principle of On / Off Control – Principle of Phase Control – Single Phase Bi-Directional Controllers with Resistive Loads - Cyclo Converters – Single Phase Cyclo converters.
DC Choppers: Introductions – Principles of Step down Operation – Step down With RL load – Principle of Step up Operation-Switch Mode Regulators: Buck Regulator – Boost Regulator – Buck Boost Regulator – Cuk Regulator.

UNIT V: INVERTERS AND POWER SUPPLIES
Inverters: Introduction – Principle of Operation – Single Phase Bridge Inverter – Three-Phase Inverter –PWM voltage control.
Power Supplies: Introduction – DC Power Supplies – Switched Mode DC Power Supplies (SMPS) – AC Power Supplies – UPS- AC & DC static switches –static circuit breaker - A.C & D.C Solid state relays.

TEXT BOOKS
"MEMS & Micro Systems Design and Manufacture" – Tai-Ran-Hsu, TMH, 2002 Edition.
"Power Electronics, Circuits, devices and Applications", MUHAMMED RASHID, Prentice Hall Edition, 2nd Edition, 1999.
"Power Electronics" by Bimbra, Anna University –Reference book.

SEM – I   Core Paper – III

8051 MICROCONTROLLER WITH C PROGRAMMING

Subject Description : This subject presents the architecture, Programming in ALP & C and real world applications of the 8051 microcontroller.

Goals : To enable the students to learn the instruction set, programming, and interfacing concepts of microcontroller.

Objectives : On successful completion of the course the students should have :
Developed the programming skills in 8051ALP & C
Understood the concept of 8051microcontroller based system design

Contents :

UNIT I : OVERVIEW AND INSTRUCTION SET

Microcontrollers and embedded processors – microcontrollers for embedded systems – over view of 8051 family – 8051 instruction set and registers

UNIT II : ASSEMBLY PROGRAMMING ADDRESSING MODES

8051 assembly programming – program counter – ROM – data types – directives – flag bits – PSW registers – register bank – stack – loop and jump instructions – I/O port programming – addressing modes

UNIT III : ARITHMETIC AND LOGICAL OPERATIONS IN ALP & C

Arithmetic instructions and programs – unsigned addition and subtraction – unsigned multiplication and division – logic instructions and programs – single bit instructions and programming

Programming with C : Data types – time delay programming – I/O programming – logic operations – arithmetic operations

UNIT IV : 8051 INTERRUPTS & PERIPHERALS

Basic registers of timer – programming of 8051 timer – counter programming – 8051 serial communication – 8051 connection to RS232 – 8051 serial communication programming – programming timer interrupts – 8051 interrupts – programming external hardware interrupts – programming with serial communication interrupts – peripheral and interrupt programming in C

UNIT V : REAL WORLD APPLICATIONS

LCD Interfacing – keyboard interfacing – parallel and serial ADC interfacing – DAC interfacing – sensor interfacing and signal conditioning – RTC interfacing – relays and optoisolator interfacing – stepper motor interfacing - DC motor interfacing and PWM

TEXT BOOK

"THE 8051 MICROCONTROLLER AND EMBEDDED SYSTEMS USING ASSEMBLY AND C " by   Muhammad Ali Mazidi, Janice Gillispie Mazidi and Rolin D. McKinlay, PHI, 2nd   edition 2006

SEM – I   Core Paper – IV

TELECOMMUNICATION AND FIBER OPTICS

Subject Description: This course presents the telecommunication transmission system, digital switching system, transmission networks, and fiber optic communications.

Goals : To enable the students to learn telecommunication switching systems and fiber optic communication systems.

Objectives : After successful completion of the course ,the students should have
Understood the concept of telecommunication switching system
Understood the concept of optical fiber communication systems.

Contents :

UNIT I: TELECOMMUNICATION AND TRANSMISSION SYSTEMS
Signal characteristics – elements of communication – switching system – criteria for design of telecommunication system – types and advantage of telecommunication standards – telephone system – Transmission Systems: simplex – half duplex – full duplex – four wire circuit – echo canceller/suppressor – characteristics and limiting factors of subscriber loop design – space division multiplexing – frequency division multiplexing – time division multiplexing – evaluation of PSTN – Basics Of Switching System: requirements and basic elements of switching system – simple manual exchange – strowger switching system – crossbar exchange – stored program control exchange – message switching – circuit switching – reed relays.

UNIT II : DIGITAL SWITCHING SYSTEM
Evaluation of digital switching system – digital transmission and its advantages – digital signal encoding formats – asynchronous and synchronous transmission - space division switching – time division switching – analog TDS and Digital TDS – space & time switching – time & space switching – STS &TST switching.
UNIT III: CALL PROCESSING & SIGNALING TECHNIQUES

Basic steps of call processing – hardware configuration of digital switching system – software organization – early electronic switching system (ESS) – Signaling Techniques: classification – in channel signaling: DC signaling – multi frequency AC signaling – voice frequency AC signaling – PCM signaling – common channel signaling – SS7 network architecture.

UNIT IV: TELEPHONE AND TRANSMISSION NETWORK ORGANIZATION
Network planning – types of networks – numbering plan – asynchronous and synchronous time division multiplexing – wave length division multiplexing – dense WLDM – digital subscriber line technology – SONET/SDH: SONET network layers – frame format – SONET multiplexing – SONET topologies – SDH

UNIT V: OPTICAL FIBER COMMUNICATION
     A basic fiber optic system – Frequencies – Fiber optic Cables – Refraction – Numerical Aperture – Graded
     index cables – Single mode – Multi mode – Cable Constructions – Cable losses – Connectors – Light
     Sources – Light Detector – Systems Components – Advantages and Disadvantages.

TEXT BOOKS

1. "Telecommunication Switching and Networks" by   P. Gnanasivam,PHI, 2004
2. Robert J Schoenbeck "ELECTRONIC COMMUNICATIONS MODULATION AND TRANSMISSION",
   PHI, 1999

SEM – I   DIT Paper – I

WEB TECHNOLOGIES

Subject Description: This course presents the concept of internet, web technology and security issues.

Goals : To enable the students to learn web technology for information management.

Objectives : After successful completion of the course ,the students should have
Understood the concept of internet
Understood the concept of web technologies.
Developed the skills for information management.

Contents :
UNIT I
        Internetworking concepts – Devices: Repeaters – Bridges – Routers – Gateways – Internet topology Internal Architecture of an ISP – IP Address – Basics of TCP – Features of TCP – UDP.
UNIT II
        DNS – Email – FTP – HTTP – TELNET- Electronic commerce and Web technology – Aspects – Types – E-procurement models – Solutions – Supply chain management – Customer Relationship Management – Features Required for enabling e-commerce –Tiers – Concepts of a Tier
UNIT III
        Web page – Static Web pages – Dynamic Web pages – DHTML – CGI – Basics of ASP technology – Active Web pages - User Sessions: Sessions and session Management – Maintaining state information - Transaction Management: Transaction Processing monitors –

object Request Brokers – Component transaction – monitor – Enterprise Java Beans.

UNIT IV
        Security issues: Basic concepts – cryptography – Digital signature – Digital certificates – Security Socket Layer (SSL) – Credit card Processing Models – Secure Electronic Transaction – 3D Secure Protocol – Electronic money. Electronic Data Interchange: Overview of EDI – Data Exchange Standards – EDI Architecture – EDI and the Internet

UNIT V
Extensible Markup Language (XML) – Basics of XML – XML Parsers – Need for a standard – Limitations of Mobile Devices – WAP Architecture – WAP stack – Object Technology.

TEXT BOOK
Achyat.S.Godbole and Atul Kahate, "Web Technologies", Tata McGraw Hill Pub. Co, Delhi, 2006.

REFERENCES
Ellote Rusty Harold, "Java Network Programming", O'Reilly Publications, 1997.
Jason Hunter, William Crawford, "Java Servlet Programming", O'Reilly Publications, 1998.

SEM – II   Core Paper –V

SIGNALS AND SYSTEMS

Subject Description: This course presents the basic principles of signals & systems, transforms and its properties, sampling of CT and DT signals.

Goals : To enable the students to learn the basic principles, operations and concepts of signals and systems.

Objectives : After successful completion of the course ,the students should have
Understood the concept of signals and systems.
Learnt the applications of transforms and its properties.
Learnt the Sampling of CT and DT signals.

Contents :

UNIT I: INTRODUCTION
Continuous Time (CT) and Discrete Time (DT) signals – classification of CT and DT signals – Basic CT and DT signals – Signal Operations – Representation of signals by impulses

UNI II : CONTINUES TIME & DISCRETE TIME SYSTEMS
Properties – Linear Time Invariant (LTI) system – Linear Shift Invariant(LSI) systems - Properties – Continuous and discrete convolution – CT systems representation by differential equations – DT systems representation by differential equations.

UNIT III: FOURIER SERIES REPRESENTATION OF PERIODIC SIGNALS

Fourier series analysis of periodic signals – properties of Continuous Time Fourier series (CTFS)– Convergence of CTFS - Representation of periodic signals by Continuous time Fourier transform (CTFT) – properties of CTFT– Convergence of CTFT – Frequency response of systems characterized by differential equations.

UNIT IV: FOURIER ANALYSIS OF DT SIGNALS AND SYSTEMS

Fourier series representation of DT periodic signals (DTFS) – Properties of DTFS - representation of aperiodic signals by DTFT – properties of the DTFT – Frequency response of systems characterized by differential equations.

UNIT V : SAMPLING, LAPLACE TRANSFORM & Z TRANSFORMS

Sampling: Introduction – sampling theorem – reconstruction of a signal from its samples using interpolation – Aliasing – DT processing of a CT signal – sampling of DT signals
Laplace Transform: Introduction – Laplace transform – region of convergence for LT – Inverse Laplace Transform – properties of Laplace transform
Z Transform: Introduction – z-transform – region of convergence for z-transform – Inverse z-Transform – properties of z-Transform

TEXT BOOK

1. Alen V Oppenheim Alen S. Wilsky and Hamid Nawab S "Signals and Systems", second Edition, PHI, New Delhi, 1997

REFERENCES:

1.Michael J Roberts, " Signals and Systems Analysis using transform methods and MATLAB", Tata McGraw-
   Hill, 2003
2.Haykin.S and Barry Van Veen, "Signals and Systems", John willy and Sons Inc., 2002
3.Samir S Soliman and Srinath MD, " Continuous and discrete signals and systems" Second Edition, PHI, 2003
4. Lathi B.P., "Linear Systems and Signals". Oxford University Press Inc., 2003

SEM – II   Core Paper – VI

WIRELESS COMMUNICATIONS AND NETWORKS

Subject Description: This course presents the encoding techniques, coding methods, satellite communication, cellular communication and wireless LANs.

Goals : To enable the students to learn the technology of wireless communication and networks.
Objectives : After successful completion of the course ,the students should have
Understood the concept of encoding techniques.
Understood the concept of satellite and cellular networks.
Learnt wireless LAN technology.

Contents :

UNIT I: TECHNOLOGY AND SIGNAL ENCODING TECHNIQUES
Antennas: types – propagation modes – line of sight transmission – fading in the mobile environment – signal encoding techniques: criteria – ASK- FSK – BFSK – MFSK – PSK – BPSK – QPSK – multilevel PSK – AM modulation – Angle modulation – PCM - delta and adaptive delta modulation

UNIT II: CODING AND ERROR CONTROL
Error detection – parity check – cyclic redundancy check – block error correction codes – hamming code – cyclic codes – BCH code – reed-Solomon codes – block interleaving – convolution codes – decoding – turbo coding – automatic repeat request – flow control – error control.

UNIT III: SATELLITE COMMUNICATION
Satellite parameters and configurations – satellite orbits – GEO – MEO – LEO – frequency bands – transmission impairments – satellite footprint – atmospheric attenuation – satellite network – configuration – capacity allocation- Multiplexing : FDM – TDM.

UNIT IV: CELLULAR WIRELESS NETWORKS
Principles of cellular networks: organization – frequency reuse – operation – mobile radio propagation effects – handoff – power control – traffic engineering – first generation analog – AMPS – second generation – TDMA – mobile wireless TDMA design consideration - CDMA – mobile wireless CDMA design considerations – soft hand off – IS-95 – third generation systems – wireless local loop.

UNIT V: WIRELESS LANS
Over view: Wireless LAN applications – Wireless LAN requirements – Wireless LAN technology – Infrared LANs – Spread Spectrum LANs – Narrow band microwave LANs – IEEE 802 Architecture – IEEE 802.11 Architecture.

TEXT BOOKS

1.　"WIRELESS COMMUNICATIONS AND NETWORKS" by WILLIAM STALLINGS – 2002 – PEARSON EDUCATION ASIA

SEM – II   Core Paper – VII

EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS

Subject Description : This subject presents the architecture & Programming of PIC16F877 microcontroller, and Micro C/OS-II RTOS functions.

Goals : To enable the students to learn the instruction set, programming, and interfacing concepts of PIC16F877 microcontroller and RTOS based system design.

Objectives :
On successful completion of the course the students should have :
Developed the programming skills in PIC16F877 microcontroller.
Understood the concept the RTOS.
Understood the concept embedded system design

Contents :

UNIT I: INTRODUCTION TO EMBEDDED SYSTEMS
Definition and classification – Overview of microprocessor, Microcontroller, and DSP – exemplary high performance processors – CISC and RISC architecture – hardware unit in an embedded system- software embedded into a system – exemplary applications – embedded systems on a chip and in VLSI circuit

UNIT II: PIC 16F87X MICROCONTROLLERS
Device overview – architecture – memory organization – status register – option register – INTCON register – PCON register – I/O ports – data EEPROM – instruction set: Byte oriented operations – Bit oriented operations – Literal and Control operations

UNIT III: PERIPHERAL FEATURES OF 16F87X MICROCONTROLLERS
TIMER0 Module – TIMER1 Module – TIMER2 Module – Capture/Compare/PWM Modules – I2 C transmission and reception – USART – ADC Module - Special features of the CPU : oscillator selection – power on reset – power up timer – oscillator start up timer – brown out reset – interrupts – watchdog timer – SLEEP

UNIT IV: REAL TIME OPERATING SYSTEMS
Definitions of process, tasks, and threads – Operating system services – goals – structures- kernel – process management – memory management – device management – file system organization and implementation – I/O sub systems – interrupt routine handling in RTOS – RTOS task scheduling models – handling of task scheduling – latency – deadlines – round robin scheduling – cyclic scheduling – preemptive – critical session – static real time scheduling – IPC and synchronization – use of semaphore – priority inversion – deadlock –

IPC using signals – mutex- flag- message queues – mailboxes – pipes- virtual sockets – remote procedure calls

UNIT V: RTOS Programming Tools: Micro C/OS-II and Vxworks
Study of Micro C/OS-II – VxWorks – other popular RTOS – RTOS system level functions – task service functions – time delay functions – memory allocation related functions – semaphore related functions – mailbox related functions – queue related functions case studies of programming with RTOS – understanding case definition - multiple tasks and their functions – creating a list of tasks- functions and IPCs – exemplary coding steps

TEXT BOOKS
1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint, 2003.

2. PIC 16F87X data book, Microchip Technology Inc., 2001

SEM – II   **Core Paper – VIII**

COMPUTER COMMUNICATION AND NETWORKS

Subject Description: This subject presents data communication, various standards in networks with architectures and protocols.

Goals : To enable the students to learn the computer networks for today's needs.

Objectives : After successful completion of the course ,the students should have
Understood the concept of data communication
Developed their skills in networking

Contents :

UNIT I: DATA COMMUNICATION
Introduction – Basic terms and concepts – Line configurations – Topology – Transmission media – MODEM: Standard and types – Analog and Digital transmission: Encoding and modulating – Channel capacity - Base band and Broad band - Transmission impairments – Multiplexing – Error Detection and control :CRC.

UNIT II: STANDARD ARCHITECTURE AND PROTOCOLS
Layered Architecture – OSI model –functions of layers – Data link control protocols – ARQ-Stop and wait, Sliding window, Go back N and Selective repeat– Asynchronous protocol: X

Modem, Y Modem, Kermit – Synchronous protocol: BSC, SDLC, HDLC- TCP/IP model, SMTP, HTTP and FTP.

UNIT III: NETWORK STANDARDS
LAN: Standard, Protocol, IEEE 802 Standards – ETHERNET, LLC, MAC, CSMA/CD, Token Ring – Token bus – FDDI – ALOHA, Wireless LAN Technology, Hub, Bridge, Router, gateway, X.25.Protocols: SLIP, PPP, LCP – Optical network – SONET, WAN - MAN- Basic Concept and standards.

UNIT IV: ISDN
Introduction: Services – IDN – Channels – User interfaces – ISDN layers –Broad band ISDN –Frame relay – ATM: concept and architecture – ISDN Protocol: Physical layer protocol, D-channel Data link layer and layer 3 protocols, Network signaling systems, SS7 protocol.

UNIT V: UPPER OSI LAYERS
Session layer protocols, Presentation layer – Encryption / Decryption, Data security, Encryption/ Decryption, Authentication, Data compression, Application Layer Protocols – MHS, File Transfer, Virtual Terminal, CMIP.

TEXT BOOK

1. "DATA COMMUNICATION AND NETWORKING" BEHROUS. A.FOROUZAN, 2ND EDITION, TATA MCGRAW HILL, 2000.

REFERENCE BOOKS

1. "ISDN – Concepts, Facilities and Services" GARY C. KESSLAR and PETER SOUTHWICK, MCGRAW
    HILL, 3RD EDITION, 1997.
2. "Data and computer communication" by William Stallings, 6th edition, Pearson education, 2000
3. "Computer Networks" ANDREW S.TANENBAUM, 3rd edition, PRENTICE HALL OF INDIA, 1996.

SEM –II   DIT Paper –II

RELATIONAL DATA BASE MANAGEMENT SYSTEMS

Subject Description: This course presents the background of SQL, object relational Databases, and application of RDBMS.

Goals : To enable the students to learn the concept of Database management, Information systems, and its and applications.

Objectives : After successful completion of the course ,the students should have
Understood the concept of RDBMS
Developed the skills in Database management

Contents :

UNIT I : INTRODUCTION
Purpose of Database systems- View of Data-Data Models-Database Languages-Transaction Management-Storage Management Database Administrator- Database Users-System Structure.
ENTITY Relationship Model: Basic concepts-keys-Entity Relationship Diagram, Weak Entity sets,E-R Features. Specialization, Generalization.
RELATIONAL MODEL: Structure of Relational Databases-Relational Algebra-Views.

UNIT II : SQL:BACKGROUND
 Basic Structure- Set Operations- Aggregate Functions-Null values- Nested Sub Queries-Derived Relations- Views- Modification of the database- Joined Relations- Data Definition Language- Embedded SQL Features.

UNIT III : INTEGRITY CONSTRAINITS
:Domain Constraints: Domain Constraints-Referential Integrity-Assertions-Triggers-Functional Dependencies. RELATIONAL DATABASE DESIGN: Pitfalls-Normalization.
OBJECT ORIENTED DATABASES: New Database Applications-Object Oriented Data Model-Object Oriented Languages-Persistent Programming Languages.

UNIT IV : OBJECT RELATIONAL DATABASES
:Nested Relations-Complex Types and Object Orientation-Querying with Complex Data types- Creation of Complex values and Objects-Comparision of Objects Oriented Relational Databases.

UNIT V : APPLICATIONS
Decision Support Systems-Data Analysis-Data Mining-Data Warehousing- Spatial and Geographic Databases-Multimedia Databases-Mobility and Personal Databases-Information-Retrieval Systems-Distributed Information Systems-The World Wide Web.

TEXT BOOK
Abraham Silberschatz, Henry F.Korth,S.Sudharson, "Database Concepts", Tata McGraw Hill International Editions-1997.

Reference Books:
1.Alexis Leon and Mathews Leon,"Database Management Systems"Vikas pub
2.Elmasri Navathw,"Fundamentals of Database Systems", Pearson Education pub, 3rd Edition 2001

Core Practical – I   PRACTICAL – I

ELECTRONICS & COMMUNICATION SYSYEMS LABORATORY

ELECTRONICS LAB (ANY 10 EXPERIMENTS)
INSTRUMENTATION LAB
1. V to I & I to V Converters
2. Load cell & Instrumentation amplifier
3. Displacement & Angular displacement measurement
4. Inductive & capacitive pick up measurement
5. Voltage/Current measurement using Hall effect sensors
6. Flow measurement

CONTROL SYSTEMS LAB
7. Frequency response of first order low pass filter
8. Frequency response of second order systems
9. Frequency response of Peaking amplifier
10. Thermistor control of quench oil temperature
11. Strip tension controller
12. Position control systems – open loop – closed loop

POWER ELECTRONICS LAB
13. SCR, DIAC & TRIAC Characteristics
14. UJT characteristics & UJT as a saw tooth wave generator
15. Firing angle control using Thyristors
16. Commutation Techniques (any two)
17. Single phase inverter & converter (20W)
18. Switching Regulators

COMMUNICATION SYSTEMS LAB (ANY 10 EXPERIMENTS)

RF & OPTICAL FIBER COMMUNICATION SYSTEMS
1. LED Characteristics at 850 nm & 1300 nm
2. PIN diode & Laser Diode characteristics
3. Analog fiber optic transmitter & receiver
4. Digital fiber optic transmitter & receiver
5. Radiation pattern of Dipole & Yagi-Uda antennas
6. Radiation pattern of Loop & Array antennas

DIGITAL COMMUNICATION SYSTEMS
7. Generation and Detection of PAM & PWM
8. Generation and Detection of PCM
9. IR Transmitter & Receiver
10. ASK & FSK Transmitter and Receiver
11. PSK, QPSK & DPSK
12. Delta and Adaptive delta modulation

MICRO WAVE & SATELLITE COMMUNICATION SYSTEMS
13. Standing wave ratio measurement
14. Impedance and power measurement by Smith chart
15. Radiation Pattern by Horn antenna
16. Alignment of Satellite receiver
17. Gunn Diode oscillator
18. Reflex Klystron characteristics using microwave bench

Core Practical – II   PRACTICAL – II

EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS LABORATORY

8051 BASED EMBEDDED SYSTEMS (ANY 10 EXPERIMENTS)
1. Arithmetic and Logic programs
2. Square wave generation using ports
3. Key interfacing
4. LED Interfacing
5. Seven segment display interfacing
6. Solid state relay interfacing using interrupts
7. Traffic light control system
8. ADC interface
9. DAC interface
10. Stepper miter interface
11. Timer/Counter operation
12. Serial port interfacing using RS232C
13. Digital clock
14. LCD interface
15. Object counter
16. Water level controller
17. Flow measurement
18. Temperature measurement

PIC 16F87X BASED EMBEDDED SYSTEMS & RTOS (ANY 10 EXPERIMENTS)
 1. Arithmetic and Logical programs
2. Square wave generation using ports
3. Key & LED interfacing
4. Single digit timer using seven segment display
5. DC motor driving via H bridge
6. DAC interface
7. ADC INTERFACE
8. LCD interface
9. Stepper motor control
10. PWM generation
11. Compare and capture operation program
12. Serial communication using RS232C
13. PIC to PIC communication using I2 C bus

PROGRAMMING WITH RTOS
14. Semaphore & flag related functions
15. Queue & Mailbox related functions
16. Memory related functions
17. Embedded system for an adaptive cruise control system in a car
18. Embedded system for a smart card

SEM – III   Core Paper – IX

DIGITAL SIGNAL PROCESSING

Subject Description: This course presents the basic principles of processing of digital signals and its applications, design of discrete filters and its concepts.

Goals : To develop the students to learn the new techniques, solutions and a demand for knowledgeable communication professionals who have a firm grasp of the background theory and technologies.

Objectives : After successful completion of the course ,the students should have
Understood essential grounding in signal processing
Learnt the uses of DSP in satellite and communication technologies.
Recognized the future trends in DSP

Contents :
UNIT I: STRUCTURES FOR DISCRETE TIME SYSTEMS
Introduction – block diagram and signal flow graph representation of Linear co-efficient difference equation – basic structure for IIR system – basic network structures for FIR systems – Lattice structures – zero input cycles in fixed point realization of IIR digital filters

UNIT II: COMPUTATION OF DISCRETE FOURIER TRANSFORM
Introduction – efficient computation of DFT – Decimation in Time FFT algorithms – Decimation in Frequency algorithms – implementation of FFT algorithms – FFT algorithms for composite N

UNIT III: FILTER DESIGN TECHNIQUES
Introduction – design of discrete time IIR filters from continuous time filters – frequency transformation of low pass IIR filters – design of FIR filters by windowing – comments on IIR and FIR digital filters

UNIT IV: ANALYSIS OF FINITE WORD LENGTH EFFECTS
Introduction – quantization process and errors – analysis of co-efficient quantization effects – analysis of co-efficient quantization effects in FIR filters – A/D conversion noise analysis – low sensitivity digital filters – limit cycle in IIR filters – round of errors in FFT algorithms

UNIT V: DIGITAL SIGNAL PROCESSOR
TMS320C50 family overview – key features – architectural overview – functional block diagram – internal memory organization – CALU – system control – PLU – interrupts – addressing modes – Instruction set

TEXT BOOKS
1. Oppenheim A. V and Schaffer RW, Buck C "Discrete Time Signal Processing", PHI, 1999
2. Sanjith K Mitra, "Digital Signal Processing – A Computer based approach", Tata McGraw Hill, 1997
3. TMS 320C5X users guide, Texas instruments, 1993

4. www.ti.com/in - TMS320C5X user manual

SEM – III   Core Paper – X

DIGITAL IMAGE PROCESSING

Subject Description: This course presents the fundamentals of Digital Image Processing and image transforms, image enhancement and image encoding, analysis and computer version.

Goals : To enable the students to learn the basic principles of Image processing and analysis and computer vision of image.

Objectives : After successful completion of the course ,the students should have
Understood essential grounding in "Image processing"
Learnt the uses and wide range of application scenarios.

Contents :
UNIT I: DIGITAL IMAGE FUNDAMENTALS
Elements of a digital image processing system – structure of the human eye – image formation and contrast sensitivity – sampling and quantization – neighbors of pixel – distance measure – photographic film structure and exposure – film characteristics – linear scanner – video camera – image processing applications.

UNIT II: IMAGE TRANSFORMS
Introduction to Fourier transform – DFT – properties of two-dimensional FT – separability, translation, periodicity, rotation, average value – FFT algorithm – Walsh transform – Hadamard transform – discrete cosine transform.

UNIT III: IMAGE ENHANCEMENT
Definition – spatial domain methods – frequency domain methods – histogram – modification techniques – neighborhood averaging – median filtering – low pass filtering – averaging of multiple images – image sharpening by differentiation and high pass filtering.

UNIT IV: IMAGE ENCODING
Objective and subjective fidelity criteria – basic encoding process – the mapping – the quantizer – the coder – differential – encoding – contour encoding – run length encoding - image encoding – relative to fidelity criterion – differential pulse code modulation.

UNIT V: IMAGE ANALYSIS AND COMPUTER VISION
Typical computer vision system – image analysis techniques – spatial feature extraction – amplitude and histogram features - transforms features – edge detection – gradient operators – boundary extraction – edge linking – boundary representation – boundary matching – shape representation.

TEXT BOOK
1. Rafael C. Gonzalez, Paul Wintz, "Digital Image Processing", Addison-Westley Publishing Company, 1987

2. Rafael C. Gonzalez, Richard E Woods "Digital Image Processing", Pearson, 2001

SEM – III   Core Paper – XI

VLSI DESIGN AND VHDL PROGRAMMING

Subject Description: This course presents the fundamentals of IC fabrication and VHDL Programming.

Goals : To develop the students to learn the basic steps involved in the IC fabrication and modeling techniques using VHDL.

Objectives : After successful completion of the course ,the students should have
.Understood the concept of IC fabrication technology.
 Developed the programming skills in VHDL
 Learnt the Design of FPGA's and CPLD.

Contents :

UNIT I: CMOS CIRCUITS & PROCESSING TECHNOLOGY
MOS TRANSISTOR – Switches – CMOS Logics – Inverter – Combinational logic – NAND gate – NOR gate Compound gates – Multiplexer – Physical design of NAND, NOR gates – SI semiconductor technology overview – wafer processing – oxidation – epitaxy deposition – Ion Implantation – Diffusion – SI gate insulator process – CMOS technology - n-well process – p-well process – Twin-Tub process – silicon on insulator – CMOS process enhancements

UNIT II: INTRODUCTION AND BAISC CONCEPT OF VHDL
 History of VHDL – capabilities of VHDL – hardware abstraction – basic terminology – entity declaration - architecture body declaration – Basic language elements – identifiers – Data objects – Data type operators.

UNIT III: MODELING TECHNIQUES OF VHDL
Behavioral modeling: Entity declaration – architecture declaration – process statements- variable assignment statements – signal assignments statements – Wait statement – IF statement – Case statement – Null statement – Loop statement – Exit statement – Next statement – Assertion statement – Report statements – More on signal assignment statement – multiple process – postponed process – Data flow style of modeling – Concurrent signal assignment statement versus signal assignment – Delta delay revisited – Multiple drivers – Conditional signal assignment statement – Selected signal assignment statement – The unaffected value – Block statement- Concurrent assertion statement – Value of the signal.
Structural modeling: Component declaration – Component instantiation – Resolving signal value – examples – Half adder – Full adder – Four to one multiplexers – Decoders and encoders.

UNIT IV: ADVANCED FEATURES IN VHDL
 Generics – configuration – configuration specification – Configuration declaration – Default rules – Conversion functions – Direct instantiation – Incremental binding - Sub programs – Sub program overloading - operator overloading - signatures – default value of parameters –

package declaration - package body – design file – design libraries – order of analysis – implicit visibility – explicit visibility – attributes in VHDL.

UNIT V: DESIGN OF FPGA'S AND CPLD
State machine start – programmable logic arrays – programmable array logic devices – altera max 7000 CPLD'S – Xilinx-xc 4000structures – Xilinx interconnection – Xilinx logic – Xilinx 3000 series FPGA's – Altera complex programmable logic devices – Altera flex 10k series CPLD'S

TEXT BOOKS
1. Neil H.E. Westw kamaran eshraghin, '' PRINCIPLES OF CMOS VLSI DESIGN''
2. J.Bhasker,''VHDL PRIMER'', Low price Edition, 2001 PHI 3.Charles H.Roth, Jr.''DIGITAL SYSTEM DESIGN USING VHDL", Brooks/Cole Thomson Learning PWS Publishing,ISBN-981-240-052-4

SEM – III   Core Paper – XII

MOBILE COMPUTING

Subject Description: This subject presents the emerging technology and trends in mobile computing.

Goals : To enable the students to learn the mobile technology of current scenario.

Objectives : After successful completion of the course, the students should have
Gained the knowledge of mobile technology
Understood the design concept of mobile communication systems.

Contents :

UNIT –I: Mobile Computing Architecture
Mobile Computing – Dialogue control – Networks – Middleware and Gateways – Application and Services – Developing Mobile Computing Applications – Security in Mobile Computing – Standards – Standard Bodies – Architecture for Mobile Computing – Three Tier Architecture

UNIT-II: Design Consideration and Emerging Technologies
Design Consideration for mobile computing – Context aware systems – Mobile Computing through internet – Making exiting applications Mobile Enabled – Bluetooth - Radio frequency identification (Rfid) – Wireless Broadband (WiMAX) – Mobile IP – Internet Protocol version 6 (IPv6)- Java card

UNIT –III: GSM

Introduction – Cell Clusters in GSM – GSM Architecture- GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Address and Identifiers – Network aspects in GSM – GSM Frequency allocation – Authentication and security

UNIT –IV: GPRS
Introduction –GPRS and Packet – Data Network – GPRS Network Architecture- GPRS Network operations – Data Service in GPRS – Applications for GPRS – Limitations of GPRS – Billing and Charging in GPRS

UNIT – V: Data Services
SMS: Strength of SMS –SMS Architecture: SMMT- SMMO- SMS as an information bearer – Operator – Centric full – Operator Independent push – Challenge for SMS as a Mobile Computing bearer – Operator Independent pull – Value added service through SMS.

MMS: MMS Architecture – MMS Transaction flows – SMIL – MMS Inter connection, Interoperability and Roaming – MMS device management and configuration –GPRS applications

Text Book:
Mobile Computing – Asoke K Talukder and Roopa R Yavagal, Tata McGra-Hill Publishing Company Ltd, New Delhi-2005

SEM – III   DIT Paper – III

PROGRAMMING WITH .NET

Subject Description: This course presents the advanced tools and programming steps in VB.NET and ASP.NET

Goals : To enable the students to learn information system handling using .NET environment.

Objectives : After successful completion of the course, the students should have
Understood the programming concept of VB.NET and ASP.NET
Developed designing skills to manage various information systems.

Contents :

UNIT I
VB.NET: Introduction – Programming steps – Running VB.Net applications – Working with tool box controls: DataTimePicker control – Input control – LinkLabel control - Menus and

Dialog boxes: MainMenu Control – Menu commands – Dialog box controls – VB.Net Variables and operators.

UNIT II

Decision structures: Conditional Expressions – if…then and Select Case Decision structures - Loops and Timers: for…next and do Loops – Timer control - Debugging VB.Net programs – Using modules and Procedures: Standard Modules, Public variables – Function Procedures and Sub Procedures - Adding graphics and Animation Effects.

UNIT III

ASP.NET: Introduction - .NET Framework – ASP – operating systems – servers – ASP objects – ADO and ADO. Net objects – ASP Components – RDBMS and other Data sources – Developing distributed Online applications – Client / Server or Tiered Applications – Built in ASP.Net objects and Interconnectivity- The ASP server object.

UNIT IV

Web forms and ASP.Net: Programming web forms – web forms capabilities – web forms processing – web forms and events – Creating web forms – Event Handlers – Building Interactive applications with VS.Net – Solutions and project in VS.Net – Solution Explorer – Creating a Web form.

UNIT V

ASP.Net configuration, Scope and State – ASP application – ASP.Net applications - ASP.Net and State – The application object – ASP sessions – The session object. ASP.Net objects and components: The Scripting object Model – Active Server Components and controls – More active server components.

TEXT BOOK:
Michael Halvorson, "Microsoft Visual Basic.NET step by step", PHI Ltd, 2003.
Dave Mercer, "ASP.Net: A Beginner's Guide", Tata McGraw Hill Publishing Company Ltd, Edition 2002.

REFERENCE BOOK:
A J Williams, Kim Barber, "ASP Solutions", Cream Tech Press, 2000.

SEM – III   Core Practical – III

PRACTICAL – III

DIGITAL SIGNAL PROCESSING LABORATORY
(ANY 10 EXPERIMENTS)

USING TMS320C5X/TMS320C54XX/TMS320C67XX

1. Study of addressing Modes of DSP using simple examples
2. Arithmetic operations
3. DFT computations
4. FFT Computations
5. Convolution of two discrete signals
6. Correlation of two discrete signals
7. Waveform generation
8. Solving differential equations
9. Solving z-transform
10. Voice storing & Retrieval
11. FIR Filter design
12. IIR filter design

SIMULATION USING MATLAB
13. Generation of signals
14. Amplitude Modulation & FFT response
15. Impulse, Step, Exponential & Ramp functions
16. Frequency sampling method
17. Design of FIR filter
18. Design of IIR filter

SEM – III   Core Practical – IV

PRACTICAL – IV

VLSI LABORATORY
(ANY 10 EXPERIMENTS)

1. Study of simulation using tools
2. Study of synthesis tools
3. Place and root and back annotation for FPGAs
4. Study of development tool for schematic entry
5. Design and simulation of logic gates
6. Design and simulation of half adder & full adder
7. Design and simulation of half subtractor & full subtractor
8. Design and simulation of Encoder & decoder
9. Design and simulation of 4 bit & 8 bit multiplexer
10. Design and simulation of flip flops
11. Design and simulation of up/down counters
12. Design and simulation of shift register
13. Design and simulation of ALU
14. Design and simulation of Programmable Logic Array
15. Design and simulation of Traffic light Controller

16. Design and simulation of Real time clock
17. USART Implementation
18. State machine – Eg. Moore model

SEM – IV   DIT Practical – I

PRACTICAL – I

RDBMS LABORATORY
(ANY 10 EXPERIMENTS)

1. Creating Tables and writing simple Queries using
a) Comparision Operators
b) Logical Operators
c) Set Operators
d) Sorting and Grouping
2. Creation of Reports using Column format
3. Writing Queries using built in functions
4. Updating and Altering tables usinf SQL.
5. Creation of Students Information table and write PL/SQL Block find the Total, Average marks and Results.
6. Write a PL/SQL block to prepare the Electricity Bill.
7. Spliting the table: Write a PL/SQL block to split the students information table into two, one with the Passed
   and other failed.
8. Joining the Tables-Write a PL/SQl Block to join two tables,First table contain Roll Number, Name, Total and
   Second Table contains the RollNo and Address.
9.Create a Database Trigger to check the data validity of Record.
10. Recursive Functions write a Recursive Function to find
a) Factorial of N.
b).Fibonacci Series with N terms.
11.Write a Recursive function to create as sequence of Roll nos using sequence.
12.Write a Database Trigger to implement the Master Detail Relationship.
13. Front and tools.
14. High level programming language extension
15. Menu Design.
16. data definition, Manipulation of base tables and views.

SEM – IV   DIT Practical – II

PRACTICAL – II
.NET LABORATORY
(ANY 10 EXPERIMENTS)

Write a program to check whether the given number is Armstrong number or not.

Write a program to find the greatest number in text box. If the number is same, show an error message and clear the corresponding text boxes.

Write a program to check whether the given number is mirror no. or not.

Write a program to check whether the given number is prime no. or not.

Write a program to find the sum of digits of a given number.

Write a program to create a frame with two buttons called father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother appear.

Write a program to check whether the given number is Adam no. or not.

Develop an application to verify the username and password and to change the password of the existing user.

Write a program to calculate the age of the person by using date of birth.

Design a form for color modification (back color & fore color).

Design a form for Automated Banking system.

Develop an Application for Inventory system.

Develop an Application for Payroll system.

Design a form to create a database for dictionary.

Design a form for maintaining a telephone directory.

Develop an application for Library management system.

Design a form for online railway reservation system.

Model Question Papers

M.Sc – Electronics and Communication Systems   Time : 3 Hrs
MAX : 75 MARKS

PAPER I   : INSTRUMENTATION AND CONTROL SYSTEMS

Section -A :   Answer all the questions   10×1=10

1.   Schmitt trigger circuit in Digital frequency meter is used to shape the signal   into
     (a).Square pulses. (b).Digital signals. (c).Sine signal. (d).Trigger signal.
2.   Direct or ordinary frequency counters are not suitable for digital
     measurement of low frequency of 50Hz,the reason is
     (a). Resolution.   (b). No low frequency indication.
     (c). Counter capability.   (d). low power.
3.   The Transducer is used for -----------
     a) Divert the signal b) convert the signal c) modify the signal d) none
4.   The most useful temperature transducer used for industrial application are
     (a) Photoelectric transducer   (b) Photovoltaic transducer
     (c) Piezoelectric transducer   (d) Infrared transducer

5.   The correct sequence of steps needed to improve system stability is
     (a).Insert derivative action, use negative feedback reduce gain
     (b). Reduce gain, use negative feedback, insert derivative action
     (c). Reduce gain, insert derivative action, use negative feedback
     (d).Use negative feedback, reduce gain, insert derivative action

6.   In a control system, the controller consist of
                          (a) the error detector (b) the error detector & control element
                          c. the error detector & controlled element (d) none of these
7.   The power of 's' in the transfer function determines the _____
                          a. Order of the system   b. response of the system
                          c. Noise of the system   d. all the above

8.   The difference between the actual output .and the desired output is   called………
                          a. Stability   b. steady state error
                          c. Frequency response   d. none of the above
9.   The lag network is used to stabilize the system, in this process the
          (a). BW of the phase lag network is decreased.
                          (b). BW of the phase lag network is increased
                          (c). BW of the phase lag network remains constant.
                          (d). None fo the above.

10   The system is said to be unstable when
               a.   Bounded input produces unbounded output
               b.   Bounded input produces bounded output
               c.   Both a & b
               d.   none of the above

Section-B : Answer all the Questions   (5*5=25)

11   a. Explain how mains frequency can be measured?(OR)
        b. Explain the importance & working of digital multimeter.
12   a. Explain in detail about inductive transducer?(OR)
        b. Write short notes on piezoelectric crystal.
13.   a. Explain Thermal system with an example.(OR)
        c.Determine the transfer function for the following signal flow graph.
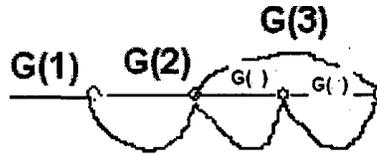
14.   a. Write the procedure for constructing Root locus.(OR)
        b. Using Routh criterion, determine the stability of the system
        represented by the   characteristic equation S4 +S3 + l8S2 + 16S+5=0
15.   a. Briefly explain PI controller with their effects on the system(OR)
        b. Briefly explain the effects and limitations of lag compensator.

Section C : Answer the All Questions   (5 x 8 = 40)
16   a. Explain the principle & operation of digital tachometer?. (OR)
        b. Explain the principle & operation of digital phase meter?
17   a. Explain the following. . 1) Load cell 2) Resistive transducer (OR)
        b. Discuss in detail Hall Effect principle, its operation and application.
18.   a. Briefly explain the effect of feedback on
        1. Overall gain 2. Stability 3. Sensitivity 4. Noise (OR)
        b. Explain open loop and closed loop system with example.
19.   a. Explain the Impulse and step input analysis of first order system (OR)
        b. Briefly explain the Nyquist stability criterion with examples?
20.   a. Explain PD compensation with diagram and give its effects on system?(OR)
        b. Explain Lead –Lag compensation with pole-zero plot

PAPER II   : MEMS AND POWER ELECTRONICS

Answer all the Questions   SECTION-A   (10*1=10)

1. Thermopiles have _____junction.
 a) One   b) two   c) three   d) four
2. What are the activities MEMS devices can perform?
        a) Sensing and measuring   b} Actuating
c) Pumping   d) All of the above.
3. Diffusion is good way to_____ foreign materials In Silicon material.
a) Coat   b) remove   c) implant   d) clean.

4. In ionization process we are _____ the ions?
a) Producing b) removing c) holding d) None of these
5. TRIAC is a _____   .
         a) AC Switch   b) DC Switch c) Control the I/P d) None of these
6. Natural commutation is used for
         a) Rectifiers   b) Inverter   c) regulator   d) all of the above.
7. The dc switch uses------------commutation
         a) Forced   b) Natural   c) line d) impulse
8. The converter with the load current In negative and load voltage in positive
    quadrant is known as
         a) Single   b) double   c) four d) none of the above.
9. The buck-boost regulator is also known as   _____regulator
         a) Fly back   b) feed back   c) Inverter   d) Switch mode
10. The ac power supplies are commonly used as   source.
         a) Standby   b) alternate   c) reversing   d} all or the above

      Answer all the Questions   SECTION-B   (5*5=25)
11.   a) Explain about MEMS and Microsystems with neat diagram?   (OR)
          b) Explain about the Micro systems applications in automobile Industries?
12.   a) Explain the following process   i) PVD ii) Etching.   (OR)
          b) Write about the process in detail i) Surface micro machining ii) LIGA
13.   a) Short notes on: i) Forced commutation ii) External pulse commutation.   (OR)
 b} Explain about single phase full converter with neat O/P wave form?
14.   a) Write about the principle of Step down operation with neat diagram?
(OR)
         b) Explain the principle of On/Off control & Phase control of AC Voltage
Controller?

15.   a) explain briefly about the operation of Single-phase Bridge Inverter.
(OR)
         b) Write notes on: I} Switched mode DC power supply   ii} UPS

Answer all the Questions   SECTION-C   (5*8=40)
16.   a) Explain briefly about the micro Sensors and micro actuator with neat diagram?
(OR).
          b) Write briefly the concept of micro accelerometer & micro fluidics in MEMS.

17.   a} Explain the materials used for MEMS and Silicon compounds in detail.
(OR).
          b) Explain the following i) Ion Implantation ii) diffusion iii) Oxidation

 18.   a) Describe the operation of Complementary and Impulse Commutation detail.
                                         (OR)
          b) Explain briefly the construction & operation of Single Phase Cyclo Converter?

19.   a} Explain about Switching regulator & operation of Boost regulator in detail?

(OR)

b) Principles of Step-up operation & UPS detail.

20.   a) Explain about the DC power supplies and the various types of it in detail?

(OR)

b) Write briefly about the AC & DC Solid state relays with neat Circuit diagram?

Model Question Paper   Time : 3 Hrs

M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER III : 8051 MICROCONTROLLER WITH C PROGRAMMING

Section – A : Answer all   10 x 1 =10

1. The I/O ports used for external memory interfacing are
    a) 0&1   b) 0&2   c) 1&3   d)2&3

2. Which is the bit addressable RAM location in 8051
        a) 0x2A   b) 0x0x10   c) 0x0x07   d)0x00

 3. The default value of SP is
    a) 0x0000   b) 0x00   c) 0x0004   d)0x07

4. The address space of SFR in RAM is
    a) 00-1F   b) 20-2F   c) 30-7F   d)80-FF

Which is the suitable data type to declare an eight bit variable in 8051 C Compiler
    a) signed int   b) unsigned char   c) char   d) int

6. The OV flag is set when there is a carry from the digit
    a) D3 to D4   b) D0 to D7   c) D7 to D8   d) D6 to D7

7. Which mode configures TIMER1 register as an 8-bit counter with auto reload?
    a) Mode0   b) Mode1   c) Mode2   d) Mode3

 8. In Mode1 operation of UART how many bits are transmitted through TxD?
    a) 8   b) 10   c) 11   d) 12

 9. Which one of the below is the fastest ADC?
    a) Successive approximation   b) Counter type c) flash type   d) Dual-slope

 10. The resolution of 12 bit DAC is
    a) 1/256   b) 1/2024   c) 1/1024   d) 1/4096

Section – B : Answer all   5 x 5 = 25

11 a) List out any four difference between 8051 and 8052. (OR)
        b) List out the selection criteria of a microcontroller
12 a) Explain the addressing modes of 8051 with an example (OR)
        b) Describe the function of the PSW Register.
13 a) Explain any four C operators. (OR)
        b) Explain loop and jump instructions.

14 a) Write a short note on 8051 interrupts.(OR)
        b) Explain the operation of all the four modes in 8051 UART
15 a) Explain the concept of Stepper Motor interfacing with 8051. (OR)
        b) Write an 8051 ALP & C programme to generate a ramp wave form using
        DAC.

Section – C : Answer all   5 x 8 = 40
16 a) Classify 8051 instruction set and explain each with two examples. (OR)
        b) Explain the architecture of 8051.
17 a) Write an 8051 ALP and C program to add an array of data. (OR)
        b) Explain the 8051 RAM allocation.
 18. a) Write an 8051 ALP and C program for binary counter operation. (OR)
        b) Explain the concept of a Key interfacing using I/O ports.
 19. a) Write an 8051 ALP and C program to generate a square wave form of 2Khz
        using TIMER0 Module (OR)
        b) Explain the operation of TIMER1 Module
 20. a) With necessary hardware and software explain the concept of interfacing a
        temperature sensor. (OR)
    b) With necessary hardware and software explain the concept of interfacing
        RTC.

PAPER IV   : TELECOMMUNICATION AND FIBER OPTICS

Answer all the questions   Section -A   10×1=10

1. ___is used to perform call processing function
    (a) Alloter   (b) Arbiters   (c) selectors   (d) marker
2. _____is used to connect all the trunk link frames in the office
    (a)connectors (b) junctors   c)switching   d)SPC
3. The minimum sampling rate is known as _____
    (a) Encoding   (b) Quantization   (c) Nyquist rate   (d) Manchester rate
4 The switching capacity of channel supported by cyclic controlled system is _____
    a)125μsec   b)125μsec/ts   c)ts/125 μsec   d)125 μsec/t, +t   +tM +td +tt

5. _____conditions arises when the called subscriber replaces the handset but the caller does not

    (a) stand by mode   (b) cyclic mode

(c) called subscriber held   (d) permanent loop Condition

6. _____is used for link initialization and flow control

   (a) HDLC   (b) LSSU   (c) FSU (d) TCAP

7. In Sony network IC _____is used to extract or insert lower rate signals from higher rate multiplexed signals

(a) DCS   (b) LOH   c) SOH   (d) add/drop multiplexer

8. _____ is a method of transmitting data from different source over same fiber Optic link

   (a)SDM   (b) WDM   (c) STS   (d) CCS

9 The conversion efficiency of photo detector is called

   a)Quantum   b)spectral   c) spatial   d)none

10. Acceptance angle of optical fiber is given by

    a) $\sin \sqrt{\mu_1^2 - \mu_2^2}$ b) $\sqrt{\mu_1 - \mu_2}$ c) $\sin^{-1} \sqrt{\mu_1^2 - \mu_2^2}$ d) $\sin \sqrt{\mu_1 - \mu_2}$

Answer all the questions   Section-B   (5×5=25)

11.a)   Write short note on four wire circuit (OR)

   b)   Write short note on frequency division multiplexing

12. a)   Write note on asynchronous transmission (OR)

   b)   Write short on analog time division switching

13. a)   Write about the basic steps to process a call (OR)

   b)   Write short note on voice frequency ac signaling

14. a)   Write short on Dense wavelength division multiplexing (OR)

   b)   Write short note SONY network layers

15. a)   Drive the expression for numerical aperture of optical fiber (OR)

   b)   Write short on connectors

Answer all the questions   Section-C   (5 ×8=40)

16.   a) Explain th e detail about the operation of telephone base unit with neat block diagram   (OR)

b) Explain the about strowger step by step switching system with neat block diagram ?

17. a) Explain about digization process and advantage of digital transmission (OR)

       b) Explain about space & Time Switching.

18.   a) Explain about PCM and Common Channel signaling   (OR)

      b) Explain detail about protocol architecture of SS7

19. a) Explain about international numbering plan and numbering plan in India(OR)

      b) Explain detail about SONET frame format

20.   a) Explain about process involved in LED light source of optical fiber(OR)

    b) Write about different type of cable losses that occur in optical fiber

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS
   & M. Sc – Applied Electronics

Diploma in Information Technology
PAPER I   : WEB TECHNOLOGIES
SECTION – A   (10 X 1 = 10)
Answer all the questions

1 A computer that has its own processor, memory& two NIC cards to connect two portions of a network is called _____.
a) Router   b) Bridges   c) Gate ways   d) Repeaters
2. _____ is a connection less protocol.
a) TCP   b) UDP   c) HTTP   d) IP
3. Domain name system was developed as _____.
a) Unique system   b) Text file   c) Distributed system d) Distributed data base
4. _____ enables an organization to manufacture develop &deliver products as a simple virtual organization.
a) CRM   b) SCM   c) VEM   d) None
5. Program which are used in web server are called_____.
a) Server-side script   b) Server-area script   c) Script   d) None
6. _____ is a series of interaction between a web browser & web server for a particular user.
a) Segment   b) Block   c) Session   d) Page
7. The Plain text is encrypted one bit at a time is called _____.
a) Stream ciphers   b) Byte Ciphers   c) Bit Ciphers d) None
8. EDI transactions are traditionally performed in _____.
a) WAN   b) MAN   c) LAN   d) VAN
9. Every WML document has an extension of .wml is called _____.
a) Deck   b) Cards   c) Dir   d) Pack
10.Fundamental concept of object technology is _____.
a) Abstraction b) Polymorphism   c) Reusable   d) Inheritance

SECTION – B   (5 X 5 = 25)
Answer all the questions
11. a) What are the basic functionality of bridge&explain the types of bridge?   (OR)
b) What are the main features of TCP portions of TCP/IP protocol?
12. a) Write short notes on email transfer protocols.   (OR)
b) What are the aspects used to make electronic transaction?
13. a) Write short note on i)DHTML ii)CGI   (OR)
b) What are the important drawbacks in static web page?
14. a) Write short note on digital signature.   (OR)
b) Explain secure socket Layer.
15. a) Write Short Note On Basics Of XML.   (OR)
b) What are the limitations of mobile device?

SECTION – C   (5 X 8 = 40)

Answer all the questions
16. a) How the IP addresses are represented and explain the concepts of IP addresses in detail.   (OR)
b) Explain Internal Architecture of an ISP in detail.
17. a) Which is the Application Layer Protocol? Explain in brief? (OR)
b) Explain E-procurement solution in detail.
18. a) Explain the techniques for maintaining state information.   (OR)
b) Explain EJB in brief
19. a) Explain Cryptography in detail.   (OR)
b) Explain about Credit Card Processing models.
20. a) Explain XML Parses in detail.   (OR)
b) Explain WAP Architecture in brief.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – V   : SIGNALS AND SYSTEMS

ANSWER ALL QUESTIONS   SECTION - A   (10 x 1 = 10)

1. For an energy signal the magnitude of energy is
(a) Infinite   (b) zero   (c) finite   (d)   none
2. For an power signal the magnitude of power is
(a) infinite   (b) zero   (c) finite   (d)   none
3. The sin c(t) is defined as
(a) cos t/t   (b) sin t/ t   (c) u(t) - u(t -10)   (d)   none
4.The unit delay system is
(a) non – casual   (b) casual   (c) static   (d) none
5. The forced response of a system is
(a) natural response (b) zero i/p response   (c) zero state response (d) none
6. The Fourier series expansion of a periodic signal x)t) having even symmetry
Contains _____ terms   only.
(a) sine   (b)   DC and Cosine   (c) DC and Tan   (d) DC.
7.The FT of   e-at   u(t)
(a) $1/ j\omega + a$ (b) $1 / j\omega - a$ (c) $a / j\omega - a$ (d) $a / j\omega + a$
8. The DTFT of x[n].e jω0n is
(a)   X (ejω)   (b) X (e j($\omega - \omega$0))   (c) X (e j($\omega + \omega$0)) (d) none
9. The name of the defect under sampling signal below nyquist rate is
(a) Decimation   (b) alising   (c) interpolation (d) none
10. Z – transform of x(n) = u(n)
(a) 1 / 1 + Z-1   (b)   1 / 1 - Z-1   (c) 1   (d) none

SECTION -- B   (5 X 5 = 25)

11. a)   (i) Find wheather the following signal is power or energy signal x(t) = e-4t u(t)
         (ii) Define Analog signal.
                         (OR)

b) Find out wheather the signals
         (i) x2(t)   =   e – 2t   u (-t) is casual
         (ii) x1(n) =   e 5t   u(t) is power   (or) energy   signal.

12 a) Check wheather the following system is linear and time invariant y (n) =
          x2 (n- 1).
                         (OR)
   b) Explain the different types of CT and DT   signals.

13 a) State and prove Parseval's theorem of CT Fourier series.   (OR)
     b) Find out LT of (i) Sin at   (ii) Cosh at   (iii) unit ramp.

14 a) Explain the properties of DTFS.   (OR)
    Explain the aperiodic signal representation of DTFT.

15   a) Explain how a signals are reconstructed from samples using Interpolation. (OR)
         b) Explain the properties of Laplace transform.

SECTION - C   (5 X 8 = 40)

16. a) Explain with suitable examples about the classification of signals and systems.
                         (OR)
What you mean by impulse function? Mention its properties.

17.a) Explain the properties of LTI system.
                         (OR)
b) Explain the DT system representation by differential equations.

18. a) Explain the properties of CTFT.
                         (OR)
Explain the frequency response of systems characterized by differential
Equations.

19.a) State and prove convolution property of DTFT.

                         (OR)
   b) Sketch the signals :
       (i) u (n +3)   (ii) Π (t + 5)

20. a) Prove that L [-tn x(t)]   =   dn /dsn X (s).

                         (OR)

b)   Explain the properties of Z transform.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – VI   : WIRELESS COMMUNICATIONS AND NETWORKS

PART A : Answer ALL questions   (10 x 1 = 10 marks)

    1.   Directionality of an Antenna is measured by
(a) bandwidth (b) antenna gain
(c) frequency   (d) wavelength.
    2.   If TT is greater than or equal to Te, then the
       spreading modulation is referred as
(a) Spread spectrum
(b) direct spectrum
(c) slow frequency - hop spread spectrum (d) angle modulation.
3.   In Reed Solomon Code Rs(n,k) the parameter
        block length is given by_____   symbols.

(a)   2' -1   (b)   5 k

(c)   7'   (d) None of the above.

4.   Cyclic codes are

(a) block codes
(b) error correcting block codes
(c) error detecting block codes
(d) convolutional codes.

5.   In the frequency reuse concept, the reuse factor N
     is given by
(a)   i2 + j2 +i2j2   (b)i2 + j2 +ij
(c)   ij   (d)i2 +ij.

6.   The unit of traffic intensity is
(a) Napier   (b) Hertz
(c) Erlangs   (d) Ohms.
7.   In TDMA   used to avoid

Overlapping   with   other   bursts   due   to   different   path delays

(a)   God bits   (b)   Guard bits
(c)   Tail bits   (d)   Head bits.

8.   In Digital Terrestrial broadcast and Wireless local
      loop, modulation technique used is
(a)OFDM
(b) AFM
(c)   Phase modulation
(d)   Amplitude modulation.

9.   The _____ layers NLAN(IEEE802.11)includes infrared and covers a range of data rates
(a)   Physical   (b) data link
(c)   Network   (d) none of these

10.   The print co-ordination function (PCF)is a centralized_____   algorithm provide connection
          free   series
(a)MAC   (b) AOM
(c) Distributed (d) none of these.

PART B - (5 x 5 = 25 marks)
11.   (a) Explain the concept of delta modulation
          transmission with neat diagram.   Or
(b)   With   necessary   diagram   explain   QPSK modulation.
12.   (a) Explain forward error correction process in
          detail.   Or
(b) Write short note on cyclic code.
13.   (a)Write a note on Geostationary satellites.   Or
(b) Explain Demand Assignment Multiple Access
          - FDMA.
14.   (a) What are the merits and demerits of CDMA
          used in cellular system?
Or
(b)   Describe   paging   function   of   a   cellular   system.
15.   (a)List and briefly define four application areas of wireless LANS   Or
(b) Give the some key advantages and disadvantages of infrared LANS?

PART C   (5 x 8 = 40 marks)

16.   (a) Explain PSK and multilevel PSK modulation.   Or
(b)   (i) Write a note on Antennas used in cellular   System.
(ii) Write a note on PCM.
17.   (a) With an example, explain hamming code.   Or

(b)   Explain   the   three   different   ways   in   which
           CRC algorithm can be described.
18.   (a) Describe various types of satellite network
            configuration in detail.
Or
(b) Compare LEO, MEO and GEO.

19.   (a) Describe the evolution of cellular systems,
           (Clue : I Generation to III Generation).
Or
(b)   (i) Explain the frequency reuse concept.
(ii) Write a note on traffic engineering.

20.(a) Describe the MAC layer three functional areas with protocols architecture
        Or
   (b)Describe the IEEE802.11 architecture and series with necessary diagrams.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – VII   :   EMBEDDED SYSTEMS AND REAL TIME   OPERATING SYSTEMS
Part A : Answer ALL questions   10X1=10 marks
1._____is one of that has computer hardware with software embedded in it as one of its most important component
a) Embedded system b) RTOS   c) Computer   d) Microcontroller
2._____is a program hat links the complied codes with the other codes and provide the input for a loader or locator
a) Linker   b) Loader   c) Assembler   d) Compiler
3. The PIC 16F877 device has 256 byte of data_____
a) RAM   b) EEPROM   c) ROM   d) NVRAM
 4. IRP bit in status register is used for_____addressing
 a) Direct   b) Indirect   c) Register   d) Indirect
 5. Timer 0 is_____bit timer/counter
  a) 8   b)12   c)   16   d)   20
6._____regiser controls the operation of A/D module
 a) ADCONO b) ANSEL   c) ADCON1   d) PCON
 7._____help in mutual exclusion of one task with respect to another by a scheduler in
   multi tasking operations
 a) Mutux   b)Semaphore c) flag   d) Mailbox
 8. A scheduling algorithm in which a higher priority task in forced to block by the
     scheduler to let higher priority task run in called_____
   a)Round Robin Scheduling
   b)Cyclic scheduling
   c)Preemptive Scheduling
   d) Polling

9. A task unable to run its code further is_____
   a) Task suspension   b) task resumption   c) soft deadlock   d) Hard deadlock
10. CRC is
    a) Cyclic Redundancy Check
    b) Connect right circuit
    c) Circuit for right carry
    d) Carry Redundancy Check
              PART B : Answer All   (5X5=25 marks)
11.(a)White a note on microprocessor   Or
    (b) Write short notes on DSP
12.(a)Draw the program memory map of 16F87 and explain   Or
     b) Explain about PCON register and INTCON egiter
13.(a)Write short note on Timer 1 module   Or
    (b) Write short notes on USART
14.(a)What is mail box? How does a mailbox pass a message during an IPC?   Or
    (b) Write short notes on process management
15.(a) Write short notes on RTOS system level function   Or
    (b)Write a note on creating a list tasks function

PART C : Answer All   (5X8=40 Marks)

16(a) Explain about processor in the system   Or
   (b) How software is embedded into a system? Explain   Or
 17(a) Draw the architecture of PIC 16877and explain   Or
    (b) Explain about Byte oriented and Bit oriented operation
18.(a)Explain about capture and compare mode with block diagram   Or
   (b) List the special features of the CPU and explain them
19(a) Explain about file system organization and implementation   Or
    (b) Explain about virtual sockets and remote procedure calls
20. (a)Explain about Semaphore related function   Or
    (b) Explain about case definition, multiple tasks and their function

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – VIII : COMPUTER COMMUNICATION AND NETWORKS

Section – A   10 x 1 = 10
1.   ____ transmission does not used modulators and demodulators
         (a) Broadband (b) Analog   (c) Digital   (d) Baseband
2.   CRC based on _____
         (a) Subtraction(b) Binary division   (c) Multiplication   (d) Addition
3.   Flow control is needed to prevent _____.
         (a) Bit errors   (b) Overflow of the sender buffer

(c) Overflow of the receiver buffer (d) collision between sender and receiver
4.   A client machine usually needs _____ to send email.
         (a) Only SMTP   (b) Only POP
(c) Both SMTP and POP   (d) None of the above
5.   ___ frames are used for the initial communication between stations and access points
         (a) Management frames   (b) Control frames
         (c) Data frames   (d) none of the above

6.   _____ specifies the use of a pointer to define the beginning of a payload
         (a) CRC   (b) CSMA   (c) SONET   (d) none of the above
7.   _____ provides a end to end connection for delay sensitive applications.
         (a) Packet mode   (b) Frame mode   (c) Circuit mode (d) none
8.   Frame relay operates in the _____.
         (a) Physical layer   (b) Data link layer
(c) Physical and data link layer   (d) Physical, data link layer and network layer
9.   Data link layer is to provide an _____ link between adjacent devices
         (a) Data flow (b) Error free Communication (c) physical (d) circuit
10.   _____ is a relatively high-speed protocol that can provides some services not available in other WAN.
          (a) Frame Relay   (b) DSL   (c) Cable TV (d) T lines

Section – B   5 x 5 = 25
11.   a. Briefly describe the modem standards and types   (or)
         b. Differentiate Base band and Broad band
12.   a. Briefly describe TCP/IP model   (or)
         b. Describe the functions of the two FTP connections.
13.   a. Write short notes on Hub and Gateway   (or)
         b. Briefly explain Link Control Protocol (LCP)
14.   a. List out the task done by D-channel data link protocol   (or)
         b. Briefly describe the Broad band ISDN
15.   a. Briefly explain data security in detail   (or)
         b. Explain data compression in detail
Section – C   5 x 8 = 40
16.   a. Describe in detail about transmission impairments.   (or)
         b. Explain Error Detection and Control using CRC.
17.   a. Draw the OSI reference model and explain the functions
    of each layers in detail   (or)
         b. Explain ARQ stop and wait and Sliding window protocol
18.   a. Explain IEEE 802 standard for ETHERNET   (or)
         b. Describe in detail about SONET with necessary diagram
19.   a. Describe in detail the ATM concept and architecture   (or)
         b. Explain the SS7 protocol in detail
20.   a. Describe the session layer protocols in detail   (or)
         b. Explain the following
                 1. File Transfer   2. Virtual terminal

Model Question Paper   Time : 3 Hrs

M.Sc – Electronics and Communication Systems   MAX : 75 MARKS
& M. Sc – Applied Electronics

Diploma in Information Technology
PAPER-II : RELATIONAL DATABASE MANAGEMENT SYSTEMS
SECTION – A   (10 X 1 = 10)
Answer all the Questions
1 A database schema is specified by a set of definitions expressed by a special language called _____.
a) Data Definition Language b) Non procedural DML
b) Procedural DML   d) Database Administrator
2 _____ is a language in which a user requests information from the database.
a) Procedural Language   b) Query Language
c) Procedural Query Language   d) None of the above
3 _____ clause corresponds to the projection operation of the relational algebra.
a) where b) from c) select d) between
4 The general form of create view command in SQL is _____.
a) create view as <Query Expression>   b) View name create view
c) create view view name as <Query Expression> d) create view view name
5 _____ is a condition used to ensure the value that occurs in different relations with 5 difference set of attributes.
a) Assertions b) Referential Integrity c) Trigger d) Integrity
6 The database which provides the assistance to the software developers is called _____.
a) CAD b) CASE c) OIS   d) Hypertext
7 The _____ domain is considered as indivisible units.
a) Relational b) Unit   c) Block d) Atomic
8 The transformation of a nested relation into 1NF is called _____.
a) Unnesting b) Nesting c) Both a) and b) d) None of the above
9 _____ is a repository of information gathered from multiple sources, stored under a unified schema at a single site.
a) Data Mining b) Data Warehousing c) Wire frame d) None of the above
10 _____ is a tree structure to allow multiple child nodes for each internal node in indexing of spatial data.
k-d tree b) Quad tree c) k-d-B tree d) R-tree

SECTION – B (5 X 5 = 25)
Answer all the Questions
11 a) What are the drawbacks in file processing system? Why we need Database Management system.   (OR)
     b) Write short notes on extended E-R features.
12 a) What are the modifications can be performed on database?   (OR)
b) Write short notes on Embedded SQL.
13 a) Write short notes on i) Assertions ii) Triggers   (OR)
b) Explain about Persistent Programming Languages.
14 a) Explain Nested relational model using document retrieval system. (OR)
b) Write short notes on comparison of Object-Oriented Database and Object-
Related Database

15 a) Explain Geographic data and its categories.   (OR)
      b) What are the issues in decision support systems while storing & retrieving of data?

SECTION – C   (5 X 8 = 40)
Answer all the Questions
16 a) Explain the following: i) Mapping Constraints ii) E-R Diagram (OR)
b) What are the fundamental operations in Relational Algebra? Explain in detail.
17 a) Explain basic structure of SQL in detail.   (OR)
b) Explain SQL Data Definition Language in brief.
18 a) Explain Normalization using functional dependencies.   (OR)
b) What are the aspects in Object-Oriented data model? Explain in detail.
19 a) Explain Complex types and Object orientation in detail.   (OR)
b) Write in brief about an extension of SQL query language with complex types.
20 a) Which is the technique used to finding relevant information from a large volume of data? Explain in brief.   (OR)
b) Explain mobility and Personal databases in detail.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – IX :   DIGITAL SIGNAL PROCESSING

SECTION-A   (10*1=10 marks)

1. A system whose output y(n) at time N depends on any number of past output values is called _____ system.
a) Recursive   b) Non-recursive   c) FIR   d) IIR
2. The direct form-II realization requires _____ memory than direct form-I realization.
a) Less   b) More   c) Equal   d) Greater than   to
 3. In DIT-radix-2 FFT, the number of complex addition is reduced to _____
a) Nlog2N   b) N2   c) N(N-1)   d) log2N
4. The number of basic operations required to implement a linear constant co-efficient difference equation
        a) 3   b)4   c)5   d)2
5. The tolerance in the stop band and pass band are called _____
a) Gain   b) Attenuation   c) Phase Factor   d) Ripples
6. In FIR filters, _____ function is a linear function of w
a) Amplitude   b) Gain   c) Phase   d) Ripples
7. In two's complement representation, the truncation error is always _____
a) Negative   b) Positive   c) One   d) Zero
8. The _____bit register used for temporary storage of accumulator is_____
        a)32,PREG   b)32, ACCB   c)16 ,ACCB
9. The register in which the multiplicand is stored before multiplication is performed is

_____ and is _____bit wide
  a)PREG, 32   b)PREG,16   c)TREGO, 16   d)TREGO,32
10. The mnemonic for the instruction which loads zero into PREG is_____
  a)SQRA   b)MVZ   c)LDZ   d)ZPR

SECTION-B   5*5=25marks
11) a)Explain the block diagram representation of linear constant co-efficient difference
      Equations (OR)
   b) Explain the signal flow graph representation of linear constant co-efficient
      difference equations
12.a)Explain the design of discrete-time IIR filters from CT-filters (OR)
   b) Explain the difference between FIR &IIR filters
13.a)Explain the efficient computation of the DFT (OR)
   b) Explain the Goertzel algorithm
14.a)What are effects of finite word length in digital filter (OR)
   b) What is sampling? Explain with an example
15.a)Explain the addressing modes of TMS320C50 processor with suitable
      Examples (OR)
   b) Explain arithmetic instructions of C50 processor

SECTION-C   5*8=40marks
16.a) With the suitable examples explain the basic structures of IIR systems   (OR)
 b) With the suitable diagram explain the structures of FIR systems
17.a) Briefly explain the decimation in time FFT algorithms with neat diagrams   (OR)
   b) With neat diagrams explain the decimation in frequency FFT algorithms
18 a) Describe the co-efficient quantization in IIR&FIR filters   (OR)
   b) What is the need for quantization? Explain the co-efficient quantization and
      Product Quantization
19.a) Explain the designs of FIR filters by windowing method   (OR)
   b) Explain zero-input limit cycles in fixed point –realization of IIR digital filters
20.a)With neat lock diagram explain the architecture of TMS 320C50 processor.   (OR)
b) Explain the different instructions in accumulator memory reference and branch
      Control operations in TMS320C50 processor

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – X   :   DIGITAL IMAGE PROCESSING

SECTION – A ANSWER ALL QUESTIONS   (10X1=10 MARKS)

1 The retina of the human eye contains rods and cones called_____.
(a). photo receptors .
(b). ciliary body.
(c). visual axis.
(d). Iris.

2 The step subsequent to Sampling in image digitization is_____.
(a).Quantization.
(b). Preprocessing
(c). Image analysis.
(d).all the above.

3 The number of zero crossing of a Walsh function or the number of transitions in a basis vector of the Hadamard transform is called its _____.
(a). Transform.
(b).Sequency.
(c).Function
(a).threshold.

4 The DFT of the sum of two functions is equivalent to the _____ of the DFT of each function separately.
(a).same .
(b). sum.
(c).difference.
(d). product

5 The perceived overall lightness or darkness of an image is defined as_____.
(a). contrast.
(b).gray level.
(c).colour.
(d).histogram.

6 The width of the _____ in graph, describes the gray level variations with in an image.
(a).Histogram .
(b).Matrix.
(c). Pixel.
(d).X axis.

7   Image _____criteria are useful for measuring image quality and for rating the performance of a processing technique or vision system.
(a). Fidelity .
 (b). Quality.
(c). Accuracy.
(d).point rating.

8 The process of dividing an image into a sequence of constant gray levels is known as _____coding.
(a). colour .
(b). image.
(c). sequence .
(d). transform.

9 In Infra red images amplitude represents _____.

(a). temperature.
(b). height .
(c). size.
(d). quality.

10 Boundaries of the images are also known as _____.
(a). outer connected pixels .
(b). inner connected pixels.
(c). back ground pixels.
(d). edge connected pixels.

SECTION – B (5X5=25 MARKS)
11 (a). Explain about the elements of a digital image processing system. (OR)

(b). Explain the functional schematic of linear scanner.
12(a). Explain the translational and rotational property of DFT.(OR)
        (b). List out the properties of FFT.
13   (a). What is median filtering? Explain how it is useful in image enhancement.(OR)
(b). Explain about Image sharpening by high pass filtering.
14 (a).Define mapping. Explain the basic encoding process.(OR)
(b).Define Run length coding .How it is useful in image processing.
15 (a).List out applications of Computer vision.(OR)
(b).Draw the block diagram of typical computer vision system.

SECTION – C (5X8=40 MARKS)
16   (a). Explain the process of Image formation and contrast sensitivity.(OR)
(b). Explain about photo graphical film structure.
17 (a). Define DCT and Explain with suitable theory.(OR)
(b).What is Image transform? Write a note on Walsh- Hadamard transform.
18 (a).With suitable example ,explain Histogram modification techniques.(OR)
(b). Explain the process of multiple image enhancement.
19 (a). Explain image fidelity criteria with suitable example.(OR)
(b). What are the steps involved in transform coding of an image.
20   (a). In the process of Image Analysis, explain the transform features.(OR)
(b). What is Edge of an object, explain the Edge detection technique.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – XI   : VLSI DESIGN AND VHDL PROGRAMMING

SECTION – A ANSWER ALL QUESTIONS   (10X1=10 MARKS)

1 Un doped polysilicon resistors used in _____
a) Dynamic memory cells   b) Static memory cells
c) Arithmetic unit   d) Logic unit
2 The substrate of MOS transistor should be always _____

a) Forward bias   b) Reverse bias   c) No bias   d) Any bias

3 VHDL is used to describe_____

a) Only circuit level   b) Only system level c) Only gate level

d) From the bidirectional switch level to the system level

4 _____ (Inertial/Transport) delay is the default in VHDL)

5 _____ represents local storage of temporary data, visible only inside a process

a) Single   b) Variable   c) Constant   d) Identifier

6 _____ is used whenever a single expression value can be used to select between a number of actions

a) Loop Statements   b) Wait Statements

c) Case Statements   d) Exit Statements

7 _____ configuration is used for models that do not contain any blocks or components to configure

a) Default   b) Component c) Lower-level d) Entity-Architecture Pair

8 The '&' (concatenation) operator only works with _____ types

a) Integer   b) Real   c) Physical   d) Array

9 Alter a 7000 series used _____ based configuration memory cells

a) EPROM   b) EEPROM   c) ROM   d) RAM

10 All PLDS have output macrocell, and each macrocell has one ___ flip flop

a) JK   b) RS   c) D   d) T

SECTION – B   (5 x 5 = 25)

11 a.   Design CMOS logic gate and for the following function.

Z= ((A.B) + (C.D) + E)

            (or)

Write short notes on Twin-Tub process.

12 a.   What are the data types. Explain briefly

(or)

Write short notes on capabilities of VHDL

13   a. Explain the following statements with example

Variable assignment statement

Signal assignment statement

(or)

        b.   Explain with an example, the structural modeling

14   a. Write short notes on operator overloading

(or)

b.   Write short notes on subprogram overloading

15 a.   Draw the logic cell of xilinx 3000 series and explain briefly

(or)

b.   Explain briefly the PLA logic devices with example.

Section C – (5 x 8 = 40 marks)

16 a.   Describe the fabrication process of CMOS technology

(or)

        b.   Using CMOS technology design the following

(i)   Multiplexer   (ii) Inverter   (iii) NAND   (iv) NOR

17 a.   Explain the following

(i)   Identifiers   (ii) Data objects   (iii) Operators

         (or)

     b.   Explain with examples:

            (i)   Entity declaration

            (ii)   Architecture declaration

18 a.   Write data flow and structural modeling VHDL program for a Half adder

(or)

     b.   Explain the following statements

            (i)   Assertion statement

            (ii)   Report statement

19 a.   Explain in detail about the Generics in configurations.

(or)

     b.   Explain in detail about Attributes in VHDL

20 a.   Realize a PLA circuit for the following function.

F1 = $\sum$m(2,3,5,7,8,9,10,11,13,15)

F2= $\sum$m(2,3,5,6,7,10,11,14,15)

F3= $\sum$m(6,7,8,9,13,14,15)

(or)

     b.   With an example describe the state machine chart and write its rules.

Model Question Paper   Time : 3 Hrs

M.Sc – Electronics and Communication Systems   MAX : 75 MARKS

PAPER – XII   :   MOBILE COMPUTING

Section – A   (10 x 1 = 10)

Answer all questions

1 WLAN is also known as _____ in short

(a) WiFi   (b) IrDA   (c) MAN   (d) none of these

2 The _____ converts one specific transport bearer to another transport bearer

(a) Gateway   (b) HUB   (c) Router   (d) none of these

3 Bluetooth uses the _____ ISM frequency band

(a) 2.4 GHz   (b) 3.2 GHz   (c) 4.6 GHz   (d) 2.4 MHz

4 A change of access point while connectivity is maintained is called as ___

(a) Handoff   (b) Routing   (c) Mapping   (d) overloading

5 Cells are formed by the radio areas covered by a ____

(a) BTS   (b) HLR   (c) OMC   (d) GMSC

6 ____ is the connection between the BTS and the MSC

(a) BSC   (b) ISC   (c) EIR   (d) AUC

7 ___ specifies the maximum / peak bit rate and the mean bit rate

(a) Throughput   (b) Delay

(c) Reliability   (d) Service precedence

8 The ____ controls the access attempts of an MS on the radio channel shared by several MSs.
(a) MAC   (b) RLC   (c) LLC   (d) none of these

9 ____ type of information does not change frequently
(a) Static   (b) Dynamic   (c) Real-time   (d) none of these

10 An ____ message can contain graphics, data, voice transmission and video sequence
(a) MMS   (b) EMS   (c) SMS   (d) none of these

Section – B   (5 x 5 = 25)

11 a.   Give an example of five mobile computing applications?(or)
Briefly explain the different types of middleware components in mobile computing

12 a. Briefly explain the ways for existing applications mobile-enabled.(or)
Explain how does Mobile IP work?

13 a. What is hand off? How is hand off different from roaming?(or)
What are HLR and VLR? Describe the functions of HLR and VLR in call routing and roaming.

14 a. Describe five applications suitable for GPRS (or)
Describe what are the limitations of GPRS

15 a. Explain the difference between SM MT and SM MOor)
What is MMS? How is it different from SMS and EMS?

Section – C   (5 x 8 = 40)

16 a. What are the different tiers in three tier architecture? Describe the
functions of these tiers.
             (or)
         b.   Describe in detail the characteristics of a mobile computing environment.

17 a. What do you understand by context? Why is context important? To
develop a navigational system for a car, what types of context information will be necessary
          (or)
Describe the protocol stack of Bluetooth with diagram

18 a. Describe the GSM architecture. Describe different elements in this
architecture
(or)
How is authentication done in a GSM network? What are the different
algorithms used for security in GSM?

19 a. Describe the GPRS network operation in detail
(or)
Draw the architecture of GPRS system and explain it in detail

20 a. What are the various strengths of SMS? Explain all of them. Also, state
what are the applications area where these strengths can be used?
          (or)
Describe the MMS architecture and transaction flows with necessary
diagrams.

Model Question Paper   Time : 3 Hrs
M.Sc – Electronics and Communication Systems   MAX : 75 MARKS
    & M. Sc – Applied Electronics

Diploma in Information Technology

PAPER III   : PROGRAMMING WITH .NET

Section – A (Choose the best answer)   (10 x 1=10)

1 _____ function key is pressed to open the properties windows
a) F3   b) F4   c) F2   d) F9
2 Dim stands for
a) Dim b) Dimensions   c) Dimension   d) none

3 If.......then else statement is
a) Decision structures b) control structures   c) loop structures   d)   condition structures
4 Functions declared in modules are _____ by default
a) Private   b) Public   c) both   d) Dim
5 Asp stands for
a) Active Server Pages   b) Active Serve Page   c) Archive server page
      d) None
6 Microsoft includes a group of objects called_____ than can create a connection to a database
a) ADO.net   b) DAO.net   c) RDBMS   d) RDO.net
7 Event Handlers can be defined in the _____
a) master page   b) content page   c) both   d) none
8 To test the web page we press _____ key
a) F3   b) F4   c) F2   d) F5
9 _____ returns the collection of user defined application settings in the form of name or value pairs
a) file path   b) locations   c) path   d) app settings
10. _____ is used to maintain information about users across a series of
    pages in a site
       a) session object   b) application object   c) cookies   d)none

Section-B Answer All   (5*5=25)
11) Explain Properties windows in .Net   (or)
      Write a VB.net program to perform the arithmetic operations
12) Explain in detail about the loop structures   (or)
      How will you add a module to any program in vb.Net
   13) What is RDBMS and Explain   (or)
      Explain in brief about ADO
14) Explain Event handler with example   (or)
      What is solution explorer?

15) What are cookies? Give a brief account on it   (or)
       What are the configuration file rules?

Section-C Answer All   (5*8=40)

16) Explain in detail about IDE environment of VB.net   (or)
       Explain in detail about variables, scope of variable and operators in vb.net
17) What is Debugging? What are the debugging tools and how will you debug and test the
program   (or)
       Explain functions and procedures with examples
18) Give a brief account about ASP and Dot Net framework   (or)
       Explain the concept of client/server or Tired application in ASP
19) How will you design or create a web form   (or)
       Explain in detail about web form and events
20) What is session object and how do sessions work   (or)
        What is application object and how do application work