Annexure No.	35 A
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046

REGULATIONS FOR B.Sc. ELECTRONICS DEGREE COURSE
Semester System
(with effect from 2007-2008)

1.   **Eligibility for Admission to the Course**

Candidate for admission to the first year of the **B.Sc. Electronics** degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu with,

a. Mathematics, Physics, Chemistry

b. Physics, Chemistry, Biology

c. Vocational Group with Mathematics/ Physics/Electronics as a subject of study.

d. Physics, Botany, Zoology

e. Mechanist or Electrical Motor Winding

f. Mathematics/ Business Mathematics /Computer Science as a subject of study

OR other examinations accepted as equivalent there to by the Syndicate, subject to such other conditions as may be prescribed therefor.

2.   **Duration of the Course**

The course shall extend over a period of three years comprising of six semesters with two semesters in one academic year. There shall not be less than 90 working days for each semester. Examination shall be conducted at the end of every semester for the respective subjects.

3.   **Course of Study**

The course of study for the **B.Sc. Electronics** degree course shall consist of the following

a)   Part - I

Tamil or any one of the following modern/classical languages i.e. Telugu, Kannada, Malayalam, Hindi, Sanskrit, French, German, Arabic & Urdu. It shall be offered for the first two semesters with one examination at the end of each semester.

b)   Part – II : English

The subject shall be offered during the first two semesters with one examination at the end of each semester. During third semester the subject communication skills will be offered as one of the core subject.

c)   Foundation Course

    The Foundation course shall comprise of two stages as follows:

   Foundation Course A : General Awareness (I & II semesters)

   Foundation Course B : Environmental Studies (III & IV semesters)

   The syllabus and scheme of examination for the foundation course A, General awareness shall be apportioned as follows.

   From the printed material supplied by the University   -   75%

   Current affairs & who is who?   -   25%

The current affairs cover current developments in all aspects of general knowledge which are not covered in the printed material on this subject issued by the University.

The Foundation course B shall comprise of only one paper which shall have Environmental Studies.

d)   **Part – III**

      Group A : Core subject – As prescribed in the scheme of examination.
      Examination will be conducted in the core subjects at the end of every semester

      Group B: allied subjects -2 subjects-4 papers
Examination shall be conducted in the allied subjects at the end of first four semesters.

      Group C: application oriented subjects: 2 subjects – 4 papers
The application –oriented subjects shall be offered during the last two semesters of study viz., V and VI semesters. Examination shall be conducted in the subjects at the end of V & VI semesters.

      Group D: field work/institutional training
Every student shall be required to undergo field work/institutional training, related to the application-oriented subject for a period of not less than 2 weeks, conveniently arranged during the course of 3rd year. The principal of the college and the head of the department shall issue a certificate to the effect that the student had satisfactorily undergone the field work/institutional training for the prescribed period.

      Diploma Programme:
All the UG programmes shall offer compulsory diploma subjects and it shall be offered in four papers spread over each paper at the end of III, IV, V, & VI semesters.

e)   **Co-Curricular activities: NSS/NCC/Physical education**
Every student shall participate compulsorily for period of not less than two years   (4 semesters) in any one of the above programmes.

The above activities shall be conducted outside the regular working hours of the college. The principal shall furnish a certificate regarding the student's performance in the respective field and shall grade the student in the five point scale as follows
      A-Exemplary
      B-very good
      C-good
      D-fair
      E-Satisfactory
This grading shall be incorporated in the mark sheet to be issued at the end of the appropriate semester (4th or 5th or 6th semester).
(Handicapped students who are unable to participate in any of the above activities shall be required to take a test in the theoretical aspects of any one of the above 3 field and be graded and certified accordingly).

4. **Requirement to appear for the examinations**

a) a candidate will be permitted to appear for the university examinations for any semester if
i) He/she secures not less than 75% of attendance in the number of working days during the semester.
ii) He/she earns a progress certificate from the head of the institution, of having satisfactory completed the course of study prescribed in the subjects as required by these regulations, and
iii) His/her conduct has been satisfactory.

Provided that it shall be open to the syndicate, or any authority delegated with such powers by the syndicate, to grant exemption to a candidate who has failed to earn 75% of the attendance prescribed, for valid reasons, subject to usual conditions.

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

c) A candidate who has secured less than 55% of attendance in any semester will not be permitted to appear for the regular examinations and to continue the study in the subsequent semester. He/she has to rejoin the semester in which the attendance is less than 55%

d) A candidate who has secured less than 65%of attendance in the final semester has to compensate his/her attendance shortage in a manner as decided by the concerned head of the department after rejoining the same course.

5. **Restrictions to appear for the examinations**

a) Any candidate having arrear paper(s) shall have the option to appear in any arrear paper along with the regular semester papers.

b) "Candidates who fail in any of the papers in Part I, II & III of UG degree examinations shall complete the paper concerned within 5 years form the date of admission to the said course, and should they fail to do so, they shall take the examination in the texts/ revised syllabus prescribed for the immediate next batch of candidates. If there is no change in the texts/syllabus they shall appear for the examination in that paper with the syllabus in vogue until there is a change in the texts or syllabus. In the event of removal of that paper consequent to change of regulation and / or curriculum after 5 year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulation/ curriculum for the award of the degree.

6. **Medium of Instruction and examinations**
The medium of instruction and examinations for the papers of Part I and II shall be the language concerned. For part III subjects other than modern languages, the medium of instruction shall be either Tamil or English and the medium of examinations is in English/Tamil irrespective of the medium of instructions. For modern languages, the medium of instruction and examination will be in the languages concerned.

7. **Submission of Record Note Books for practical examinations**
Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates will not be permitted to appear for the practical examinations. However, in genuine cases where the students, who could not submit the record note books, they may be permitted to appear for the practical examinations, provided the concerned Head of the department from the institution of the candidate certified that the candidate has performed the experiments prescribed for the course. For such candidates who do not submit Record Books, zero (0) marks will be awarded for record note books.

8. **Passing Minimum**
a) A candidate who secures not less than 40% of the total marks in any subject including the Diploma and Foundation courses (theory or Practical) in the University examination shall be declared to have passed the examination in the subject (theory or Practical).
b) A candidate who passes the examination in all the subjects of Part I, II and III (including the Diploma and Foundation courses) shall be declared to have passed, the whole examination.

9. **Improvement of Marks in the subjects already passed**
Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

10. **Classification of Successful candidates**
a)   A candidate who passes all the Part III examinations in the First attempt within a period of three years securing 75% and above in the aggregate of Part III marks shall be declared to have passed B.A/ B.Sc./B.Com./B.B.M. degree examination in **First Class with Distinctions**
b)   (i) A candidate who passes all the examinations in Part I or Part II or Part III or Diploma securing not less than 60 per cent of total marks for concerned part shall be declared to have passed that part in **First Class**
(ii) A candidate who passed all the examinations in Part I or Part II or Part III or Diploma securing not less than 50 per cent but below 60 per cent of total marks for concerned part shall be declared to have passed that part in **Second Class**
(iii) All other successful candidates shall be declared to have passed the Part I or Part II or Part III or Diploma examination in **Third Class**

11. **Conferment of the Degree**
o candidate shall be eligible for conferment of the Degree unless he / she,
i. has undergone the prescribed course of study for a period of not less than six semesters in an institution approved by/affiliated to the University or has been exempted from in the manner prescribed and has passed the examinations as have been prescribed therefor.
ii. Has satisfactory participates in either NSS or NCC or Physical Education as evidenced by a certificate issued by the Principal of the institution.
iii.   Has successfully completed the prescribed Field Work/ Institutional Training as evidenced by certificate issued by the Principal of the College.

12.   **Ranking**

A candidate who qualifies for the UG 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 I or II class shall be eligible for ranking and such ranking will be confined to 10 % of the total number of candidates qualified in that particular branch of study, subject to a maximum of 10 ranks.

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

13.   **Additional Degree**

Any candidate who wishes to obtain an additional UG degree not involving any practical shall be permitted to do so and such candidate shall join a college in the III year of the course and he/she will be permitted to appear for par III alone by granting exemption form appearing Part I, Part II and common allied subjects (if any), already passed by the candidate. And a candidate desirous to obtain an additional UG degree involving practical shall be [permitted to do so and such candidate shall join a college in the II year of the course and he/she be permitted to appear for Part III alone by granting exemption form appearing for Part I, Part II and the common allied subjects. If any, already passed. Such candidates should obtain exemption from the university by paying a fee of Rs.500/-.

14.   **Evening College**

The above regulations shall be applicable for candidates undergoing the respective courses in Evening Colleges also.

15.   **Syllabus**

The syllabus for various subjects shall be clearly demarcated into five viable units in each paper/subject.

16.   **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.

17.   **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

BHARATHIAR UNIVERSITY
B.Sc. Electronics with Compulsory Diploma in Computer Technology

Scheme of Examination
For candidates admitted during the Academic Year 2007-2008 and onwards

SEM	Part	Subject and Paper	Instr-uction Hrs./ Week	Dura-tion Hrs.	Max Marks
				University Examination	
I	I	Language Paper I Tamil/Hindi/French/Malayalam	6	3	100
	II	English Paper I English – I	6	3	100
	FC	Foundation Course –A General Awareness	2	-	-
	III	**Gr.A Core**			
		Paper I Basic Electronics	5	3	100
		Pract. I Basic Electronics Lab	3	-	-
		Pract.II Semiconductor Devices Lab	3	-	-
		Gr.B Allied A			
		Paper I Mathematics – I	5	3	100
II	I	Language Paper II Tamil/Hindi/French/Malayalam	6	3	100
		English Paper II English – II	6	3	100
	II	Foundation Course –A General Awareness	2	3	100
	FC	**Gr.A Core**			
	III	Paper II Semiconductor Devices	5	3	100
		Pract. I Basic Electronic Lab	3	3	100
		Pract.II Semiconductor Devices Lab	3	3	100
		Gr.B Allied A			
		Paper II Mathematics – II	5	3	100
III	FC	Foundation Course–B Environmental Sciences	2	-	-
		Gr.A Core Paper III Electronic Circuits	4	3	100
	III	Paper IV Digital Principles and Applications	4	3	100
		Paper V Communication Skills	4	3	100
		Pract. III Electronic Circuits & Communication Lab.	3	-	-
		Pract. IV Digital & Medical Electronics Lab	3	-	-
		Gr.B Allied B			
		Paper I Programming in C	4	3	075
		Allied Pract. I Computer Programming Lab	3	-	-
		Diploma in Computer Technology			
		Paper – I Computer Architecture and Organization	3	3	100

SEM	Part	Subject and Paper	Instruction Hrs. / Week	University Examination	
				Duration Hrs.	Max Marks
IV	FC	Foundation Course–B Environmental Sciences	2	3	100
	III	**Gr.A Core** Paper VI Principles of Communication Systems	4	3	100
		Paper VII Bio-Medical Instrumentation	4	3	100
		Paper VIII IC's and Instrumentations	4	3	100
		Pract. III Electronic Circuits & Electronic Communication Lab.	3	3	075
		Pract. IV Digital & Medical Electronics Lab	3	3	075
		Gr.B Allied B			
		Paper II Object Oriented Programming using C++	4	3	075
		Allied Pract. I Computer Programming Lab	3	3	075
		Diploma in Computer Technology			
		Paper – II Visual Programming	3	3	100
V	III	**Gr.A Core** Paper IX 8085 Microprocessor and Applications	5	3	100
		Paper X Computer Hardware and Maintenance	5	3	100
		Paper XI Advanced Communication Systems	4	3	100
		Pract. V Microprocessors and Interfacing Lab	3	-	-
		Pract. VI Microcontroller Lab	3	-	-
		Gr.C Application Oriented Subject - A			
		Paper I Industrial Electronics	4	3	075
		AOS Pract. I IC, TV and Industrial Electronics Lab	3	-	-
		Diploma in Computer Technology			
		Paper – III Internet and Java Programming	3	3	100
VI	II	**Gr.A Core** Paper XII 8051 Microcontroller and It's Application	5	3	100
		Pract. V Microprocessors and Interfacing Lab	3	3	100
		Pract. VI Microcontroller Lab	3	3	100
		Project work and Viva voce	8	-	200
		Gr.C Application Oriented Subject - A			
		Paper II Television Engineering	5	3	075
		AOS Pract.I IC, TV and Industrial Electronics Lab	3	3	075
		Diploma in Computer Technology			
		Practical I Visual Programming	3	3	50
		Practical II Java Programming		3	50

SEM –I   Core Paper- I

BASIC ELECTRONICS

UNIT I   RESISTORS & INDUCTORS

Types of resistors: Fixed, Variable_ Brief mention of their construction and characteristics - Color coding of resistors-Connecting resistors in series and parallel.

Types of inductors: Fixed, Variable- Self and mutual inductance-Faraday's law and Lenz's law of electromagnetic induction-Energy stored in an inductor-Inductance in series and parallel-Testing of resistance and inductance using multimeter.

UNIT II   CAPACITORS

Principles of capacitance-Parallel plate capacitor-Permittivity-Definition of Dielectric Constant-Dielectric strength-Energy stored in a capacitor-Types of capacitors: Air, Paper, Mica, Teflon, Ceramic, Plastic and Electrolytic: Construction and application-Connecting capacitors in series and parallel-Factors governing the value of capacitors-Testing of capacitors using millimeters.

UNIT III   ELECTRICAL ELEMENTS AND CIRCUITS

Potential difference- Electric current-Electromotive force-Ohms law-Kirchoff's law-Kirchoff's current law-Analysis of resistance in series circuits, parallel circuits and series parallel circuits-Concept of voltage source and current source-Voltage source in series and current source in parallel-Simple problems in DC circuits.

UNIT IV   NETWORK THEOREMS

Superposition theorem-Thevenin Theorem-Thevenizing a circuit with two voltage sources-thevenizing a bridge circuit-Norton's Theorem-Thevenin Norton conversion-Conversion of voltage and current sources-Millman's Theorem-Star and Delta conversion-Maximum power transfer theorem-Simple problems in DC circuits.

UNIT V   AC CIRCUITS

Introduction to Sinusoidal wave-RMS value-Average value-AC circuits with resistance-Circuits with XL alone –Circuits with XC alone-Series reactance and resistance-Parallel reactance and resistance-Series parallel reactance and resistance-Real power-Series resonant circuit-Parallel resonant circuit-Q factor.

Passive filters: Low pass filters, High pass filters, Band pass filters, Band rejection filters.

TEXT BOOK:

1. S.Salivahanan, N.Suresh Kumar, A.Vallavaraj **"ELECTRONIC DEVICES AND CIRCUITS"**-Tata McGraw-Hill Publishing Company Limited, New Delhi. 1998.
2. B.V.Narayana Rao **"PRINCIPLES OF ELECTRONICS"**, Wiley Eastern Limited, 1992.
3. B.L.Theraja, **"BASIC ELECTRONICS-SOLID STATE DEVICES"**,S.Chand Company Ltd.2000
4. BernardGrob "**BASIC ELECTRONICS**"-Tata McGraw-Hill Publishing Company Limited, 9th Edition.

SEM –II   Core Paper- II

SEMICONDUCTOR DEVICES

UNIT I   PN JUNCTION DIODE

Energy band Structure and conduction in Insulator - Semiconductor, conductor - Intrinsic and Extrinsic semiconductor – doping – P type – N type semiconductor - Formation of PN Junction diode - Forward bias - Reverse bias condition – characteristics - Clipping and Clamping.

UNIT II   SPECIAL DIODES

Zener diode - VI Characteristics – Breakdown - Backward diode - Varactor diode - Step recovery diode - Point contact diode - Scott key diode - Tunnel diode - Gunn diode - Impaat diode - PIN diode - PNPN diode.

UNIT III   BJT

Introduction to Bipolar Junction Transistor – Construction - Transistor Biasing - Operation of NPN and PNP transistor - CB, CE & CC configuration - Bias stability - Load line.
Method of Biasing: Fixed bias - Collector to base bias - Voltage divider bias - Bias compensation - Thermal Runaway - Heat sink.

UNIT IV   FET AND UJT

Introduction to FET - Construction and operation of N-channel JFET - Drain characteristics - Comparison of JFET & BJT - Introduction to MOSFET - Enhancement MOSFET - Depletion MOSFET - FET as a voltage variable Resistor(VVR) - Introduction to UJT – Characteristics - UJT as relaxation oscillator - Introduction to PUT – SCR – TRIAC - DIAC

UNIT V   OPTOELECTROIC DEVICES

Principles, operation and characteristics of opto electronic devices: LDR – Photo diode - Photo Transistor – Photo Voltaic cell – Solar Cell – Photo Emissive sensors – Vacuum Photo tube – Gap filled photo tube – Photo Multiplexer – LED – IR Emitter – LCD – Opto – Couplers.

TEXT BOOK:

1.   S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, "ELECTRONICS DEVICES AND CIRCUITS", Tata McGraw Hill Publishing Company Limited, New Delhi, 8th edition.
2.   S. L. Kakani, K. C. Bhan Dai "A TEXT BOOK OF ELECTRONICS".
3.   B. L. Theraja, "BASIC ELECTRONICS – SOLID STATE DEVICES", S.Chand & Company Ltd. 2000.

BASIC ELECTRONICS LAB
(Any 16 Experiments)

1.   Study of Multimeter – Checking of components.
2.   Measurement of Amplitude, Frequency & Phase difference using CRO.
3.   Verification of Ohm's Law.
4.   Voltage sources in series, parallel and series – Parallel.
5.   Resistance in series, parallel and series – Parallel.
6.   Voltage and Current dividers
7.   Verification of Kirchoff's Law.
8.   Wheatstone Bridge.
9.   Verification of Norton's theorem.
10.   Verification of Thevenin's Theorem.
11.   Verification of Millman's Theorem.
12.   Verification of Superposition Theorem.
13.   LCR Bridge.
14.   Series resonance circuit.
15.   Parallel resonance circuit.
16.   Transient response of RC Circuit.
17.   Transient response of RL Circuit.
18.   Capacitors & Inductors in series & Parallel.
19.   Frequency response of R, L & c.
20.   Low Pass Filter & High Pass Filter.
21.   Band pass and Band Rejection Filter.
22.   Verification of Maximum power transfer Theorem
23.   Measurement of resistance and capacitance in series and parallel

SEMICONDUCTOR DEVICES LAB
(Any 16 Experiments)

1.   Band Gap energy of Silicon / Germanium Diode.
2.   V-I Characteristics of Junction Diode.
3.   V-I Characteristics of Zener Diode.
4.   Transistor Characteristics of CE Configuration.
5.   Transistor Characteristics of CB Configuration.
6.   Transistor Characteristics of CC Configuration.
7.   Clipping Circuits.
8.   Clamping Circuits.
9.   Measurement of stability factor of Fixed Bias.
10.   Measurement of stability factor of Self Bias.
11.   V-I Characteristics of JFET.
12.   V-I Characteristics of UJT.
13.   UJT as Oscillator.
14.   FET as Voltage Variable Resistor (VVR).
15.   Characteristics of LDR.
16.   Characteristics of Solar Cell.
17.   Study of IR (Tx & Rx).
18.   Study of LED and 7 Segment display.
19.   Temperature Co-efficient of Junction Diode.
20.   Zener as a Voltage regulator.
21.   ON / OFF control of relay using Opto – Couplers.
22.   Characteristics of SCR
23.   TRIAC Characteristics

ELECTRONIC CIRCUITS

UNIT I   REGULATORS
Half wave, Full waves and bridge rectifiers – Calculation of RMS value – Average value – Ripple factor – Efficiency – Transformer utility factor – Peak inverse voltage – Inductor filter – Capacitor filter – LC filter – Π filter

Voltage doubler – Voltage regulator – Zener diode shunt regulator – Transistor shunt and series regulator – Overload protection – Construction of DC power supply

UNIT II   SMALL SIGNAL AMPLIFIERS
CE, CB, CC amplifiers – Calculation of I/P resistance, O/P resistance – Current gain - Voltage gain – power gain – single stage transistor amplifier – DC and AC load line – RC coupled amplifier – RC coupled amplifier – gain frequency response – bandwidth – transformer coupled amplifier – impedance matching – FET amplifier.

UNIT III   POWER AMPLIFIERS
Operation and graphical representation of Class A, Class B, Class C and Class AB amplifiers – Maximum collector efficiency of class A power amplifier – Collector dissipation curve – Harmonic distortion – Class B push pull amplifier – Crossover distortion – Complementary symmetry push pull amplifier

UNIT IV   FEEDBACK AMPLIFIERS
Basic concepts of feedback – Positive feedback – Negative feedback – Effects of negative feedback on gain, bandwidth and distortion – Noise – Voltage series feedback - Voltage shunt feedback – Current series feedback – Current shunt feedback

UNIT V   OSCILLATORS AND MULTIVIBRATORS
Barkhausen criterion – Hartley Oscillator – Colpitts oscillator – Phase shift oscillator – Wein bridge oscillators –Peizo electric crystal and it effects – Crystal oscillator.

Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger.

TEXT BOOK
1.   S.K. Sahdev, "Electronic Principles", Dhanpat Rai & Co (P) Ltd, 2nd Edition, 1998
2   B.L.Theraja, **"BASIC ELECTRONICS"**,S.Chand Company Ltd.2000
3   BernardGrob "**BASIC ELECTRONICS**"-Tata McGraw-Hill Publishing Company Limited, 9th Edition.

DIGITAL PRINCIPLES AND APPLICATIONS

UNIT I   NUMBER SYSTEM AND CODES
Decimal, Binary, Octal and Hexa Decimal numbers – Conversion – Floating point representation – Binary addition, Subtraction and Multiplication – 1's and 2's compliments. Binary Coded Decimal (BCD) – Weighted codes and Non-weighted codes – Excess three – Grey code – Error detection codes – Hamming codes – ASCII codes – EBCDIC codes – Hollerith code – Parity advantages.

UNIT II   BOOLEAN ALGEBRA AND LOGIC GATES
Boolean logic operations – Boolean functions – Truth Tables – Basic laws – DeMorgans theorem – Sum of Products and Products of Sums – Karnaugh map – Logic gates – OR, AND, NOT, NAND, NOR, EX-OR AND EX-NOR GATES – Code conversion – VHDL Coding for Logic gates.

UNIT III   COMBINATIONAL LOGIC CIRCUITS
Half adder – Full adder – Half subtractor – Full subtractor – Parallel binary adder – 4 bit binary adder / subtractor – BCD adder – Multiplexer – Demultiplexer – Decoders – Encoders – Parity generators / checkers – Magnitude comparators – VHDL coding for Combinational Circuits

UNIT IV   SEQUENTIAL LOGIC CIRCUITS
Flip Flops – RS, Clocked RS, JK, JK Master Slave, D and T Flip Flops – Shift Registers and its types – Ring counters – Ripple counters – Synchronous counter – Up down counter – Mod-3, Mod-5 counters – Decade counter – Applications.

UNIT V   D/A AND A/D CONVERTERS
Digital to Analog converters: Resistive divider type and Ladder type – Accuracy and Resolution.
Analog to Digital converters: Counter – Ramp type – simultaneous conversion – Dual slope type – Successive approximation type – Accuracy and resolution.

TEXT BOOKS

1.   Malvino & Leech, "DIGITAL PRINCIPLES AND APPLICATIONS", Tata McGraw Hill Edition V, 2002.
2.   M.Morris Mano "DIGITAL LOGIC AND COMPUTER DESIGN" PHI 2005.
3.   M.Morris Mano "DIGITAL DESIGN" PHI 2005.

COMPUTER ARCHITECTURE AND ORGANIZATION

UNIT 1   MODERN COMPUTER ORGANIZATION

Introduction – Layers in modern computer - Computer organization – Main Memory – CPU Operation – Computer types – System performance and measurement – High performance techniques – Booting sequence – Computer design process – Computer structure – Computer Function – Architecture and Organization – CISC Vs RISC

UNIT 2   PROCESSOR DESIGN AND DATA PATH

Introduction – Processor role – Processor design goals – Processor design process – Data path organization – Main memory interface – Local storage register file – Data path simple instructions

UNIT 3   MEMORY DESIGN AND MANAGEMENT

Introduction – Memory parameters – Classification of memory – Memory Technology – Main memory allocation – Static RAM IC – Dynamic RAM – ROM logic – Multiple memory decoding – Memory Hierarchy – Main memory drawbacks –Cache memory – Principle of cache – Virtual memory Concept – Advantage of Virtual memory

UNIT 4   COMPUTER PERIPHERALS

Introduction – Keyboard – CRT display monitor – Printer – Magnetic storage devices – Floppy disk drive – Hard disk drive – Special types of disk drives – Mouse and Track ball – Modem – CD-ROM Drive – Scanner – Digital Camera – DVD – Special peripherals

UNIT 5   ADVANCED SYSTEM ARCHITECTURE

Introduction – High performance computer architecture – RISC systems – Superscalar architecture – VLIW architecture – EPIC architecture –Multiprocessor Systems

TEXT BOOK

1.   Govindarajalu.B "Computer Architecture and Organization Design Principles and Applications" Tata McGraw-Hill, 2006

PRINCIPLES OF COMMUNICATION SYSTEMS

UNIT I   MODULATION TECHNIQUES

Need for modulation – Amplitude modulation – Modulation factor – Analysis of AM wave – Side band frequencies – Transistor AM modulator – Power in AM wave – Limitation – Frequency modulation – Analysis of FM wave.

UNIT II   TRANSMITTERS

Block diagram of AM Transmitter – Single sideband principle – Balanced modulator – SSB generation – FM generation – Direct and indirect methods.

UNIT III   RECEIVERS

Super heterodyne principle – Image rejection – Choice of IF and oscillator frequencies – Tracking – Block diagram of AM receiver – FM receiver – SSB receiver

UNIT IV   ANTENNA

Qualitative theory of short dipole antenna – Radiation power – radiation resistance – Radiation pattern – Grounded and ungrounded antenna – folded dipole – Yagi uda antenna – Helical antenna – Rhombic – Horn – Fan dipole and Parabolic reflectors

UNIT V   PROPAGATION OF RADIO WAVE

Reflection and refraction of radio waves: Reflection of radio waves at the surface of the earth – Ground or surface wave propagation – Space wave propagation – Sky wave propagation – Structure of Ionospheric Layer – Skip distance – Maximum Usable Frequency (MUF)

TEXT BOOKS

1.   Kennedy Davis " ELECTRONIC COMMUNICATION SYSTEMS" Tata McGraw Hill Publishing Company Limited, New Delhi.
2.   Dennis Roddy, Hohn Coolen " ELECTRONIC COMMUNICAIONS" Prentice Hall of India Private Limited, New Delhi. 4th edition, 1995.
3.   Ashok raj " MODERN ELECTRONIC COMMUNICATION" Theory & Systems, Umesh Publcation, 2001.

BIO-MEDICAL INSTRUMENTATION

UNIT I

Cells and their structure – transport of ions through the cell membrane – resting and action potentials – characteristics of resting potential – bio electric potentials – nerve tissues and organs.

Design of medical instruments – component of bio medical instrument system – electrodes – half cell potential – purpose of electrode past – electrode material – types of electrodes: Micro electrode – micropipette – needle electrode – surface electrode – chemical electrodes.

UNIT II

Bio potential recorders: Introduction – characteristics of recording system – writer and pen damping effects – ECG origin of cardiac action potential – ECG lead configuration – ECG recording setup – practical considerations for ECG recording – analysis of recorded ECG signals – vector cardiography.

UNIT III

Phonocardiography: Echocardiography – electroencephalography (EEG) – origin of EEG – brain waves – placement of electrodes – recording setup – analysis of EEG – electromyography (EMG) – rerecording setup – electroretinography (ERG) and electrooculography (EOG)

UNIT IV

Pacemakers – energy requirements to excite heart muscle – methods of stimulation – different modes of operation – pacemaker batteries – artificial heart valves – different natural heart valves – different types of artificial heart valves – defibrillators – different types of defibrillators – heart lung machine

UNIT V

Introduction to diathermy – surgical diathermy – short-wave diathermy – microwave diathermy – ultrasonic diathermy

Introduction to biotelemetry: elements of biotelemetry system – design of biotelemetry – audio telemetry system – problems in telemetry – uses of telemetry.

TEXT BOOKS

1.　　　Leslie Cromwell, Fred J Weibell, Erich A. Pfeiffer, "BIOMEDICAL INSTRUMENTATION AND MEASURMENTS" PHI second edition.
2.　　　Dr. M. Arumugam "BIO MEDICAL INSTRUMENTATION" Anuradha Agencies second edition.

IC'S AND INSTRUMENTATIONS

UNIT I   IC FABRICATION TECHNOLOGY

Fundamentals of Monolithic IC technology – Basic planar process – Wafer preparation – Epitaxial growth – Oxidation – Photolithography – Diffusion of impurities – Isolation techniques – Metallization – Monolithic transistors –Integrated resistors – Integrated capacitors- integrated Inductors- Thin and Thick film technology

UNIT II   TIMER AND PLL

Functional block diagram of 555 timer – Monostable operation – Applications: – Linear ramp generator – Pulse width modulator – Astable operation – Applications: Schemitt trigger – FSK Generator
Phase locked loop: Functional block diagram – Phase detector / Comparator –Voltage Controlled Oscillator – Low pass filter – Applications: Frequency multiplier/Division – AM detection

UNIT III   OPERATIONAL AMPLIFIER

Inverting and non inverting amplifier – Op-amp parameters – Summing Amplifier – Difference Amplifier – Integrator – Differentiator – Instrumentation Amplifier – Voltage to current converter – Current to Voltage converter – Precision half wave rectifiers – Precision full wave rectifiers.

UNIT IV   TRANSDUCERS

Introduction – Electrical Transducer – Basic requirements of Transducer – Classification of transducers – selection of transducers – resistive transducers – potentiometers – Thermistors – Thermocouple – LVDT – RVDT – Piezoelectric transducers – hall effect transducers – Photoelectric transducers – digital displacement transducers.

UNIT V   ELECTRONIC INSTRUMENTS

Q Meters- CRO: Block Diagram – cathode ray tube – Measurement of frequency – Measurement of voltage and current – Digital Oscilloscope – digital voltmeter: Ramp type DVM – dual slope integrating type DVM – Digital multimeter – Humidity and humidity measurement – Measurement of PH.

TEXT BOOKS
1.   D.Roy Choudhury and Shahil B Jain, "Linear Integrated Circuits", Second Edition New Age International Publishers 2004.
2.   K.R.Botkar, "Integrated Circuits", 10th Edition Khanna Publishers 2006.
3.   J.B.GUPTA "A course in electronic and electrical measurements and instrumentation", 12th Edition,   S.K Kataria & sons

SEM – III & IV   Core Practical – III

ELECTRONIC CIRCUITS & ELECTRONIC COMMUNICATION LAB
(Any 16 Experiments)

ELECTRONIC CIRCUITS

1. DC regulated power supply using Zener diode
2. Voltage doubler
3. Feedback amplifier
4. Emitter follower
5. Transformer coupled amplifier
6. Hartley Oscillator
7. Colpitts oscillator
8. Phase shift Oscillator
9. Wein Bridge oscillator
10. RC coupled amplifier
11. Half wave and full wave rectifier
12. Filter circuits

ELECTRONIC COMMUNICATION

13. Performance of IF Amplifier
14. AM Modulation and Detection
15. FM Modulation and Detection
16. PAM modulation
17. PIN diode oscillator
18. Alignment of dish antenna
19. Alignment of satellite receiver
20. PWM modulation
21. PPM modulation
22. PCM modulation
23. GUNN diode oscillator

SEM – III & IV   Core Practical – IV

DIGITAL & MEDICAL ELECTRONICS LAB
(Any 16 Experiments)

DIGITAL ELECTRONICS

1.   Verification of basic gates and universal gates
2.   Verification of Demorgan's Theorem
3.   Half adder and full adder
4.   Half subtractor and full subtractor
5.   4-bit binary adder
6.   Multiplexer and De multiplexers
7.   Encoder and Decoder
8.   BCD to 7-segment Display
9.   Study of Flip Flops
10.   Binary to Grey and Grey to Binary conversion
11.   Shift registers and ring counter
12.   Analog to Digital converter
13.   Digital to Analog converter
14.   Design and Simulation of Logic Gate using VHDL Coding
15.   Design and Simulation of Adder Circuits using VHDL Coding
16.   Design and Simulation of Encoder and Decoder using VHDL Coding
17.   Parity checker and generator
18.   4 bit binary counter
19.   Decade counter
20.   BCD counter/ adder

     MEDICAL ELECTRONICS
21.   Pulse Rate Monitor.
22.   Temperature monitor using AD 590
23.   ECG Measurement
24.   Notch filter
25.   Pacemaker

VISUAL PROGRAMMING

UNIT I

Introduction to Windows Programming – Event Driven Programming – Data Types – Resources – Window Message – Device Context – Document Interfaces – Dynamic Linking – Software Development Kit (SDK) Tools – Context Help.

UNIT II

Visual Basic Programming – Forum Design – VBX Controls – Properties – Event Procedures – Menus and Toolbars – Using Dialog Boxes – Working with Control Arrays – Active X Controls – Multiple Documents Interface (MDI) – File System Controls – Data Control – Database Applications.

UNIT III

Visual C++ Programming – Frame Work Classes – VC++ Components – Resources – Event Handling – Message Dispatch System – Model and Modeless Dialogs – Important VBX Controls – Document view Architecture – Serialization – Multiple Document Interface – Splitter Windows – Coordination between Controls

UNIT IV

Database Connectivity – Min Database Applications – Embedding Controls in View creating user defined DLL's – Dialog Based Applications – Dynamic Data Transfer Function – Data Base Management with ODBC – Communicating with other applications – Object Linking and Embedding.

UNIT V

Basics of GUI Design – Visual Interface Design – File System – Storage and Retrieval System – Simultaneous Multi Platform Development

TEXT BOOKS

1.   Petzold, "Windows Programming", Microsoft Press, 1995.
2.   Marion Cottingham, "Visual Basic", Peachpit Press, 1999.
3.   Kate Gregory, "Using Visual C++", Prentice Hall of India Pvt. Ltd.

REFERENCES

1.   Pappar and Murray, "Visual C++: The Complete Reference", Tata McGraw Hill, Delhi, 2000.
2.   Brian Siler and Jeff Spotts, "Using Visual Basic 6", Prentice Hall India, Delhi, 2002.

8085 MICROPROCESSOR AND APPLICATIONS

UNIT I   MICROPROCESSOR ARCHITECTURE

Microprocessor architecture and its operation – Memory map of 1k memory chip – memory and instruction fetch – 8085 microprocessing unit – Bus timings – Demultiple4xing the bys AD 7 – AD0 – Generating control singles – Functional Block diagram of 8085.

UNIT II   TIMINGS AND INSTRUCTION SET

Decoding and Execution of an instruction – 8085 based microcomputer – Timing of the memory write cycle and read cycle – Opcode fetch cycle timing – Instruction classification – Instruction format – addressing modes - Data transfer operations – arithmetic operations – Logical operations – Branch operations – Looping, counting and indexing – addition, subtraction of 8 and 16 bit numbers – Time delay program.

UNIT III   INTERFACING CONCEPTS

Peripherals I/O instruction – device selection and data transfer – input interfacing – interfacing I/P using decoders – interfacing O/P display: LED display – 7 segment LED display – Interfacing memory bus contention memory time and wait states.

UNIT IV   PERIPHERALS

The 8255A Programmable peripherals interface : Block diagram of 8255A, Mode 0 Simple i/p or o/p BSR mode, Programming the 8255A in mode1, mode 2 – Bidirectional data transfer – The 8359 Programmable Interrupt Controller Block diagram of 8259A Interrupt Operation, Programming the 8259, priority modes and other features, additional features of the 8259A – Block diagram of 8253 – Programming the 8253 – The 8253 as a counter – direct Memory access and the 8257 DMA Controller – 8279 Keyboard/Display Interfacing

UNIT V   APPLICATIONS

Application of Microprocessors – System Requirements – Overall System design and software design, Temperature Monitoring System – Data acquisition system – Traffic control system – Stepper Motor control – Digital clock – Washing machine control

TEXT BOOKS

1.   Aditya P Mathur, "Introduction to Microprocessors "3rd edition.
2.   Ramesh S Goanker, "Microprocessor Architecture Programming and Application with 8085/8080A.2nd edition. New Age International (P) Ltd.

COMPUTER HARDWARE AND MAINTENANCE

UNIT I   COMPUTER HARDWARE OVERVIEW

Introduction – Computer organization – PC hardware – Functional block of a PC – Buses – Bus concept – Bus cycle – Bus interface unit – Peripheral devices – Keyboard – CRT display – Monitor – Printer – Floppy disk drive – SMPS

UNIT II   MOTHER BOARD FUNCTIONS

Introduction – Functional units and inter communication – Reset logic – CPU nucleus logic – DMA logic – Wait state logic – Bus arbitration logic – RAM logic – NMI logic – Speaker logic – Mode switch input logic – New generation mother board

UNIT III   FLOPPY DISK CONTROLLER

Introduction – Floppy disk controller overview – Disk format – FDC system interface – FDD interface – Overall operation of floppy disk subsystem – New generation floppy disk controller
Display adapter introduction – CRT display – 6845 CRT controller – CGA & AGA – Device interface

UNIT IV   HARD DISK CONTROLLER AND PRINTER

Introduction – Overview of HDC organization – Disc drives types and interface – Hard disk card – Hard disk format
Printer introduction: Centronics interface programming – Programming sequence – Hardware overview – Printer controller

UNIT V   TROUBLE SHOOTING

Introduction – Types of faults – Hardware and software – Nature of faults – Solids and intermittent – Fault elimination process – Systematic troubleshooting – FDC & HDC problems – CRT monitor problems – Keyboard problems – SMPS problems.

TEXT BOOK

1.   Govinda Rajulu B, "PC IBM and Clones – Hardware, Troubleshooting and Maintenance", Tata McGraw Hill Publishing Company Ltd., New Delhi, 1991

ADVANCED COMMUNICATION SYSTEMS

UNIT I   DATA COMMUNICATION

Introduction – Data Forms – Transmission Modes – Simplex, Half Duplex – Full Duplex – Point to Point Network – Star Network – Ring Network – Bus Network – Telephone Lines – Dial-up Lines – Dedicated Lines – Data Communication System – Asynchronous and Synchronous Transmission – USART's and ACIA's – RS 232 inter connect cable – Modems – Protocols

UNIT II   PULSE COMMUNICATION

Basic concepts of pulse modulation – Sampling Theorem – PAM – PTM – PFM – PPM – PCM – Differential PCM – Delta Modulation – Adaptive Delta modulation – TDM – FDM – ASK – FSK – PSK

UNIT III   SATELLITE CONMMUNICATION

Introduction – Satellite Orbit – Satellite Position – Up link – Down link – Cross link – Assignable Satellite Frequencies.
Inside Satellite: Transponder – Antenna System – Power Package and Station Keeping – Forms of Modulation – Free path space losses – Ground Station – Aligning the satellite dish

UNIT IV   CELLULAR COMMUNICATION SYSTEM

Introduction Cellular Mobile System – Basic Cellular System – Operational Cellular System – Maximum number of Calls per cell – Maximum number of Frequency channels concept of frequency channel cell splitting – permanent splitting – real time splitting – Frequency Management – Channel Assignment

UNIT V   OPTICAL COMMUNICATION

Introduction to Optical fibers – Optical fiber structure – Numerical aperture – Propagation of light rays through it – Application of Optical Fiber (Video link, Satellite link, Computer link, Communicating antenna Television link)

TEXT BOOKS:
1. Robert J.Shoernbeck, "Electronic communications modulation and transmission", PHI, 1999
2. Anok singh, "Principles of communication Engineering", S.Chand and Company, 2nd edition
3. Sanjeev Gupta, "Electronic Communication system", Kanna publishing company
4. William C.Y.Lee, "Mobile Cellular Communication systems", McGraw Hill Publications, 1995
5. Subir Kumar Sarkar "Optical Fiber Communication systems", S.Chand and Company

INDUSTRIAL ELECTRONICS

UNIT I   THYRISTORS AND THEIR OPERATIONS

Principles and operations of SCR – Voltage amplifier gate characteristics of SCR – Characteristics of two transistor models – Thyrister construction – Rectifier circuit using SCR – GTO – Operation and characteristics of DIAC – TRIAC – Silicon Controlled Switch – Silicon Unilateral Switch – Silicon Bilateral Switch – Light activated SCR

UNIT II   TURN ON/OFF MECHANISM

Types of turn on methods: AC gate triggering: R triggering – RC triggering – DC gate triggering – Pulse triggering – Types of turn off methods: Natural commutation – Forced Commutation: Self Commutation – Complimentary commutation – Auxiliary commutation – External pulse commutation – Line commutation – Thyrister rating

UNIT III   APPLICATION OF SCR

Multiple connections of SCR – Series operation – Triggering of series connected SCR – Parallel operation – Triggering of parallel connected SCR – SCR di/dt calculation – Snubber circuit – dv/dt calculation across SCR – Types of converters – Half wave rectifiers with resistive load – HWCR with inductive load – HWCR with free wheeling diode – Full wave controlled rectifier with resistive load – FWCR with inductive load – FWCR with free wheeling diode

UNIT IV   INVERTORS

Types of invertors – Single phase bridge inverter – Mc Murray impulse communication inverter – Single phase half bridge voltage source inverter – Single phase full bridge voltage inverter – Step down choppers – Step up choppers – Chopper classification

UNIT V   APPLICATIONS

Induction heating – Resistance welding – Over voltage protection – Zero voltage switch – SMPS-UPS-DC circuit breaker – Battery charger – AC static switch – DC static switch – Time delay – Fan regulator using TRIAC

TEXT BOOKS:

1.   Harish C Rai, " Power Electronic Devices, Circuits, Systems and Applications", Gac Gotia Publication Pvt. Ltd., 1st Edition, 1998
2.   Ramamourthy " Thyrister and their applications" East-West Publishers, 2nd Edition
3.   Shamir K Datta " Power Electronics and Controllers" PHI, 3rd Edition

INTERNET & JAVA PROGRAMMING

UNIT I

Internet – Introduction- Understanding Internet- Internet Addressing - Hardware Requirements to Connect to the Internet

UNIT II

DATA TYPES, ARRAYS, OPERATORS, FLOW CONTROL- BRANCHING, LOOPING.

UNIT III

Classes – New Operator, Dot Operator, Method Declaration and Calling, Constructors, This In Constructors, Inheritance, Super, Method Overriding Final, Finalize, Static, Package and Import Statement, Interface and Implements

UNIT IV

Exception Handling – Exception Types, Uncaught and Calling, Nested Try Statements, Java Thread Model, and Thread, Runnable, Thread Priorities, Synchronization, Deadlock

UNIT V

File – Input Stream, Output Stream, and File Stream. Applets-Tag, Order of Applet Initialization, Repainting, Sizing Graphics- Abstract Window Tool Kit Components

TEXT BOOKS

1. Harley Hahn, The internet complete reference,Tata McGraw publicity,2nd Edition , 1997
2. Patrick Naughton., " Patrick Naughton", Then Java hand book, Tata McGraw,1997

8051 MICROCONTROLLER AND IT'S APPLICATION

UNIT I

Microprocessor and Microcontroller – 8051 Microcontroller hardware: 8051 oscillator and clock – Program counter and data pointer – A & B CPU register – Flags & PSW – Internal memory – Internal RAM – Stack and stack pointer – Special function registers – Internal ROM – Input/Output pin, ports and circuits – External memory

UNIT II   PERIPHERAL

Counter & Timer: Timer/Counter interrupts – Timing – Timer modes of operation – Counting – Serial data input/output: Serial data interrupt – Data transmission – Data reception – Serial data transmission modes
Interrupts: Timer flag interrupt – Serial port interrupt – External interrupt – Reset – Interrupt control – Interrupt priority – Interrupt destination – Software generated interrupts

UNIT III   ARITHMETIC AND LOGICAL OPERATIONS

Introduction – Addressing modes – Byte level logical operations – Bit level logical operations – Rotate and swap operations – Simple program
Arithmetic Operations: Introduction – Flags – Increment and decrementing – Addition – Subtraction – Multiplication and Division – Simple programs

UNIT IV   INSTRUCTION SET

Introduction – External data move – Code memory read only data move – Push & pop – Opcodes – Data exchanges – Simple programs

Jump and call instruction: Introduction – Jump and call program range – Jumps – Calls and subroutine – Interrupt and returns – More detail on interrupts – Simple programs

UNIT V   APPLICATIONS

Keyboard interfacing – Display interface – 7 Segment and LCD display – D/A conversion – A/D conversion – Stepper motor interface

TEXT BOOKS:

1.   Kenneth J. Ayala, " The 8051 Microcontroller architecture, programming and application" 2nd Edition, Penram International
2.   Mohamed Ali Maszidi & Janice Gillispie Maszidi, " The 8051 Microcontroller and Embedded System", Pearson Publishers

MICRO PROCESSOR AND INTERFACING LAB

(ANY 16 EXPERIMENTS)

8085 MICROPROCESSOR LAB

1.   Addition / subtraction of 8 / 16 bit data.
2.   Multiplication / division 8 bit data.
3.   Block data transfer.
4.   Smallest / largest of N numbers.
5.   To arrange in ascending / descending order.
6.   Sum of N 8 bit numbers.
7.   1's and 2's compliment of an array (8 / 16 bit).
8.   UP/DOWN counter using 7 segment displays.
9.   Traffic light control interface.
10.   Data transfer using 8255 (PPI).
11.   Square wave generator using 8255.
12.   ADC interface.
13.   DAC interface.
14.   Stepper motor interface.
15.   Solid State Relay Interface
16.   Time Delay Programme
17.   Digital Clock
18.   Rolling and Blinking of a message
19.   LCD interface
20.   Frequency Counter
21.   Water level Indicator
22.   DC motor interface
23.   Temperature controller

MICROCONTROLLER LAB
(ANY 16 EXPERIMENTS)

8051 MICROCONTROLLER LAB

1.   Addition / subtraction of 8 / 16 bit data.
2   Multiplication / division 8 bit data.
3.   Block data transfer.
4   Smallest / largest of N numbers.
5.   To arrange in ascending / descending order.
6.   Sum of N 8 bit numbers.
7.   1's and 2's compliment of an array (8 / 16 bit).
8.   UP/DOWN counter using 7 segment displays.
9.   Traffic light control interface.
10   Wave form generation.
11.   ADC interface.
12.   DAC interface.
13.   Stepper motor interface.
14.   Solid State Relay Interface
15.   Time Delay Programme
16.   Digital Clock
17.   Rolling and Blinking of a message
18.   LCD interface
19.   Frequency Counter
20.   Water level Indicator
21.   DC motor interface
22.   Temperature controller

TELEVISION ENGINEERING

UNIT I   TELEVISION STANDARDS

Geometric form & Aspect ratio of the picture – Vertical scanning – Horizontal scanning – Number of scanning lines – Interlaced scanning – Vertical and horizontal resolution –negative modulation – Complete Channel bandwidth – Reception of VSD Signals – allocation of Frequency band for TV signal Transmission – Standards of TV System – Complete channel bandwidth – Composite video signal – CCIR – B standards – camera tubes.

UNIT II   TELEVISION RECEIVER SECTION

Monochrome receiver block diagram – Receiving antennas – Balun – IF Filters RF tuners – VHF Stage and Response – Video detector – sound section – video amplifiers DC restoration – Picture tubes.

UNIT III   SYNC SEPARATOR

Sync separator – Basic principle – Noise in sync pulses – Vertical and horizontal sync separation – Automatic frequency Control (AFC) – Horizontal AFC – Vertical and horizontal output stage – EHT generation.

UNIT IV   COLOUR TELEVISION

Nature of color – Color perception – Compatibility – Three color theory – Chromaticity diagram – Luminance and color difference signals – weighting factors – color picture tube – Bandwidth for color signal transmission – PAL Color TV systems- Block diagram of color TV Receiver.

UNIT V   ADVANCE TECHNIQUES

CCD camera – HDTV – Digital TV – Video Disc – Cable TV – Video Cassette Recorder.

TEXT BOOKS

1. R.R. Gulati, "MONOCHROME AND COLOUR TELEVISION", New Age International (P) Limited, Publishers, New Delhi.
2. R.R. Gulati, "MODERN TELEVISION PRACTICE", New Age International (P) Limited, Publishers, New Delhi.
3. R.R. Gulati, "COLOUR TELEVISION PRINCIPLES AND PRACTICE", New Age International (P) Limited, Publishers, New Delhi.
4. SP Bali, "COLOUR TELEVISION THEORY AND PRACTICE", Tata McGraw Hill Publishing Company Limited New Delhi, V edition 2002.

IC, TV AND INDUSTRIAL ELECTRONICS LAB

IC LAB

1.   Astable multivibrator using 555
2.   Monostable multivibrator using 555
3.   Inverting and Non Inverting amplifier
4.   Adder and Subtractor using IC 741
5.   Instrumentation Amplifier
6.   Voltage to Current Converter and Current to Voltage
7.   Wein Bridge oscillator using IC 741
8.   Square wave and Triangular generator
9.   Schmitt Trigger using IC 741

TV LAB

10.   Video IF section of TV Receiver
11.   EHT Generation
12.   Sync Separator
13.   Horizontal Section faults
14.   Vertical Section faults
15.   Tuner Section faults
16.   Video Section faults
17.   Picture tube basing faults
18.   Video IF section faults

INDUSTRIAL ELECTRONICS LAB

19.   Automatic Street light
20.   Single Phase Inverter
21.   DC Choppers (Step up and Step down)
22.   R and RC Triggering
23.   External Pulse Commutation
24.   DC motor controller and Light Dimmer
25.   Time delay circuit

VISUAL PROGRAMMING

1.   Building Simple Applications using Basic Tools.
2.   Working with Intrinsic Control and Active X controls.
3.   Create an Application with multiple forms and dialogs.
4.   Write a VB program to design an e-mail registration form.
5.   Create an Application with Menu editor.
6.   Create an Application with DAO controls
7.   Create an Application using Common dialogs.
8.   Write a program for Drag and Drop Events.
9.   Create a Database for library management using ADD controls.
10.   Creating an application using Active X control.
11.   Create a Scientific calculator in VB.
12.   Develop a VB application to either link or embed MS Word document to an OLE control.
13.   Display Student information using Grid control.
14.   Create an Application using RDO controls.
15.   Develop an application to perform the following operation in the Employee table using DAO.
    i)   Add a new Record.
    ii)   Delete a Record.
    iii)   Modify a Record.

SEM – VI   DCT Practical – II

JAVA PROGRAMMING
(ANY 10 EXPERIMENTS)

1.   Program to print the following triangle of numbers
    1
    12
    123
    1234

2.   Defining a class with the following attributes 1. xname 2. Date of Birth 3. Date on which leg
    injection has to be given (sixty days from date of birth) 4. xdate on which polio drops is to be given
    (45 days from Date of birth). Write a constructor to construct the baby object. The constructor must
    find out the leg and polio drops dates from the date of birth. In the main program define a baby and
    display its details.

3.   Program, to create and display a message on the window.

4.   Program to draw several shapes in the created window.

5.   Program to create an applet and draw gridlines.

6.   Java 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.

7.   Java program to create a frame with four text fields for name, age and qualification and a text field of multiple lines for address.

8.   Program to draw circle, ellipse, square and rectangle at the mouse click position.

9.   Java program to create four text fields for the name, street, city and pin code with suitable labels. Also add a button called my details, when you click the button your name, street, city and pin code must appear in the text fields.

10.   Java program to demonstrate the multiple selection list boxes.

11.   Program to create a canvas which displays a clock with hour hand and a minute hand depending upon an int variable minutes. Write another program with a frame, which displays the clock canvas. It must also have three buttons, tick, reset and close. When we click reset, the clock must reset to 12 hrs. When we click close, the frame closes.

12.   Java program to create a menu bar and pull down menus.

13.   Java program to create a window when we press M or m the window displays Good Morning A or a the window displays Good Afternoon E or e the window displays Good Evening N or n the window displays Good Night.

14.   Java program to move different shapes (Circle, Ellipse, Square, and Rectangle) according to the arrow key pressed.

15.   Java program to create a frame which responds to the mouse click. For each event with mouse (such as mouse up, mouse down etc) the corresponding message must be displayed.

16.   Program to handle the divide by zero exception.

17.   Program to explain the multithreading with the use of multiplication tables. Three threads must be defined and each one must create one multiplication table; they are 5 tables, 7 tables and 13 table.

18.   Program to illustrate thread priority. Create three threads and assign three different priorities.

MODEL QUESTION PAPERS

SEM - I   *Core paper - I*

BASIC ELECTRONICS

TIME :3 Hrs   **MARKS :100 Max**

SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS
All QUESTIONS CARRY EQUAL MARKS

1. In the colour coding of the resistor the third colour denotes
          a. Tolerance   b. no of zeroes to be added   c. Temperature fuce   d. no of digits
2. The reactance of a coil at 100Hz is 20ohm. Its reactance at 1 KHz would be
          a. 2ohm   b. 10ohm   c. 40ohm   d. 200ohm
3. A capacitor that stores 0.5C at 10volts has a capacitance of
          a. 5 Farad   b. 20 Farad   c.10 Farad   d. 0.05 farad
4. When the thickness of the dielectric medium between the plates of a capacitor is
          doubled, its capacitance becomes
          a. double   b. four times   c. halved   d. no change
5. Kichoff's voltage law is connected with
     a. IR drops   b. Battery Emf   c. Junction voltage   d. Both (a) and (b)
6. According to Ohm's law
     a. $I = R/V$ b. $I = V/R$ C. $V = I R$ D. none of the above
7. To apply Super position throem, the network should contain
          a. Transistors and resistors   b. Resistors and inductors
          c. Active components only   d. Passive component only
8. A 10V source has a 2 Ohm series resistance R. Its equivalent current source is
     a. 4A in parallel with 5 ohm   b. 5A in parallel with 2 ohm
     c. 10A in parallel with 2 ohm d. 20A in parallel with 1 ohm
9. The power factor of an AC circuit equals
      a. The cosine of the phase angle b. The tangent of the phase angle
      c. Zero for a resistive circuit   d. Unity for a reactive circuit
10. In a series RLC circuit, the current and the voltage are in phase when
          a. $R =0$ b. $X_c = X_L$ c. $X_c > X_L$ d. $X_c < X_L$

SECTION -B (5X6 = 30) - ANSWER ALL QUESTIONS

11. a) Describe the construction of the composition type of fixed resistors. State their uses OR
          b) State the Lenz's law of electromagnetic induction. Explain how it is in
12. a) What are the factors which control the capacitance of a capacitor
                accordance with principle of conversation of energy   OR
          b) Describe the construction and uses of paper capacitor
13.a) State and explain Kirchoff's current law with suitable example. OR
          b) When two resistances 20ohms and 40ohms are connected in series and this
               combination is connected to a 50V DC calculate the power dissipated
14. a) Discuss with suitable example, the Maximum power transfer theorem. OR
           b) State and explain Norton's throem. Explain how to Nortonise a given circuit.
15. a) Discuss on an AC circuit containing an inductance alone. OR
          b) Explain what is mean by Power factor

SECTION –C (5X12 = 60) - ANSWER ALL QUESTIONS

16. a) (i) How are metal film resistor manufactured?
   (ii) State their applications.   OR
 b) Explain in detail the different types of inductors used in communication circuits.
17. a) (i) Explain, how Monolithic capacitors manufactured.
   (ii) Describe its characteristics and applications.   OR
 b) Discuss the construction and application of
   i) Electrolytic capacitor
   ii) Glass capacitor
18. a) What is Shunt? Give it's uses. A resistance 1.08ohm is connected in parallel to a certain resistance to make the combination behaves exactly 1ohm. What is that resistance? OR
 b) Discuss the 'opens' and 'shorts' in series and parallel circuit.
19. a) Explain the conversion of star connection to delta connection OR
 b) State and explain Thevenin theorem with suitable electric circuit.
20. a) Discuss the R-C circuit response with an AC source. OR
 b) Discuss in detail, an ac circuit containing parallel reactance and resistance.

SEM - II   *Core paper - II*
SEMICONDUCTOR DEVICES
TIME :3 Hrs   **MARKS :100 Max**

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

1. The depletion region within a PN junction is reduced when the junction has
 a) Zero bias b) Forward bias   c) Reverse bias   d) all the above
2. The clamper circuit is used to
 a) remove a certain portion of the input signal   b) introduce a d.c level to a.c signal
 c) suppress amplitude variations in the input signal
 d) obtain an output which is integral of the input signal
3. Avalanche break down occurs when the
  a) forward current becomes excessive   b) forward bias exceeds a certain value
  c) reverse bias exceeds a certain value   d) potential barrier is reduces to zero
4. A tunnel diode is
  a) a very heavily doped PN junction diode   b) a slow switching device
  c) a high resistivity PN junction diode   d) used with reverse bias
5. When the collector junction in transistors is biased in the reverse direction and the
 emitter junction in the forward direction , the transistor is said to be in the
 a) active region   b) cut-off region   c) saturation region   d) none
6. Which of the following components are used for bias compensation in transistor circuits?
 a) Resistors   b) Rectifier diodes   c) Thermisters   d) both (b) and (c)
7. Indicate the voltage controlled device.
 a) Bipolar junction transistor   b) UJT   c) FET   d) all the above
8. An SCR is a semiconductor device which consists of
 a) four PN junctions   b) three PN junctions   c) two PN junctions
 d) one PN junction

9. Source of light for optical fiber is
    a) PIN diode b) Photo diode c) Photo transistor   d) LED
10. A photo diode
    a) is a two terminal PN junction device b) operates in a reverse bias
    c) has a small transparent window   d) all the above

SECTION - B   (5 X 6 = 30) - ANSWER ALL QUESTIONS

11. a)   Discuss in brief , the role of doping of impurities in pure silicon or germanium. (OR)
b)   What is the difference between positive and negative clippers? Explain with the help of output waveforms.
  12. a)   What is a varactor diode? Explain briefly , how it can be used in tuning circuits. (OR)
     b)   Briefly explain the PIN diode operation. Give it applications.
 13. a)   Derive the relation between alpha and beta of a transistor. (OR)
     b) Discuss thermal runaway. How it can be prevented in a high power transistor?
 14. a) Discuss the drain characteristics of Enhancement type MOSFET.   (OR)
     b) Elaborate the difference between SCR and TRIAC.
15. a) State the laws of Photo emission.   (OR)
    b) Describe the working of a photo transistor.

SECTION - C   (5 X 12 = 60) - ANSWER ALL QUESTIONS

16. a) Discuss how a barrier potential is developed at the PN junction. Using this
    concept , discuss the behavior of a PN junction when it is (i) forward biased
    and (ii) reverse biased.
                        (OR)
b) What do you understand by a clamping circuit? Discuss with the help of output
    waveforms , the operation f a clamping circuit.

17. a) Distinguish between avalanche diode mechanism and Zener diode mechanism.
        Explain how Zener diode maintains constant voltage across the load.
                        (OR)
    b) Explain the working of a tunnel diode. Draw the V – I characteristics of a tunnel
        diode and discuss the useful regions in the curve..

18. a) Describe the circuit arrangement and discuss the input and output characteristics
        of a transistor in common emitter configuration.
                        (OR)
b)   Describe the action of an voltage divider bias circuit and derive an expression for its stability factor.

19. a)   Explain the working of a JFET and discuss its V – I characteristics.   (OR)
     b) Explain the working of SCR with the help of its two transistor equivalent circuits.
         Discuss its forward and reverse characteristics
20. a) Describe the working principle of a photo voltaic cell. Mention its important uses. (OR)
     b) Explain the construction , working and characteristics of a Photo diode.

SEM - III   *Core paper - III*
ELECTRONIC CIRCUITS
TIME :3 Hrs   **MARKS :100 Max**

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

1)   The maximum effeminacy of full wave rectifier is A40.6%   b81.6%   c100%
2)   In Zener voltage regulator the Zener operates in _____ region.
3)   The point of intersection of DC and AC load line is the _____?
4)   Transformer coupled amplifier is used for power amplification (T\F)
5)   Class _____ power amplifier has the highest collector efficiency.
6)   A pair pf transistor such as NPN and PNP WITH _____is used in complimentary
           symmetry amplifier.
7)   The negative feed back _____ the gain.
8)   The current gain of emitter follower is _____ than unity.
9)   Oscillator employs both negative and positive feedback is _____
10)   _____ Multivibrator is a square wave oscillator.

SECTION - B   (5 X 6 = 30) - ANSWER ALL QUESTIONS

11)   a) What is ripple factor find its value for half wave rectifier   (OR)
        b.) Describe how Zener acts as a voltage regulator?
12)   a.) Give the importance of load line analyses.   (OR)
        b.) Draw a transformer coupled amplifier circuit explain how the response differ from RC
        amplifier.
13)   a.) what is called cross over distortion how it is reduced?   (OR)
        b.) Give how the action of class A, B, .C amplifier differs from each other.
14)   a.) Describe the action of emitter follower and how it is preferred to the transformer for the
        impedance matching.
        (OR)   b.) Write down the basic concept of feedback.
15)   a.) Draw a Colpitts oscillator circuit and explain the operation.   (OR)
        b.) What is piezo electric crystal and draw the equivalent circuit how it provides series and
        parallel resonance.

SECTION - C   (5 X 12 = 60) - ANSWER ALL QUESTIONS

16)   a.) Draw the full wave rectifier circuit and finds its efficiency.   (OR)
        b.) Explain the operation of capacitor filter with proper output wave form.
17)   a.) Draw the RC coupled amplifier and explain the frequency response in detail (OR)
        b.) Calculate input, output resistance and current gain using CE amplifier.
18)   a.)What is class A smplifier find its collector efficiency.   (OR)
        b.) Why push pull amplifier called so? Write down the detail of output response and calculate
         the efficiency.
19)   a.) what is called negative feedback write down its effect on stabilization of gain (OR)
      b.) Draw the block diagram of four different feedback amplifiers and explain.
20)   a.) Explain the operation of phase shift oscillator with neat diagram.   (OR)
      b.) Explain the operation of Monstable Multivibrator.

SEM - III   *Core paper - IV*

DIGITAL PRINCIPLES AND APPLICATIONS

TIME :3 Hrs   **MARKS :100 Max**

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

1. The octal equivalent of 111110010 is
    a) 267   b) 762   c) F90   d) 1F2
2. Which one of the following is a non-weighted code?
    a) Binary   b) 8421   c) Gray   d) BCD
3. Indicate the logic gate for which the following statement is true.
    " Output is HIGH if and only if all inputs are high."
    a) OR   b) AND   c) NOR   d) NAND
4. If an equation is expressed in the SOP form , the circuit can be designed using
    a) NAND gates only   b) NOR gates only   c) either NAND or NOR gates
    d) neither NAND nor NOR gates.
5. The SUM output of a half adder is given by _____ gate.
    a) AND   b) OR   c) NOR   d) EX – OR
6. A 4 :1 MUX logic circuit requires _____ select inputs.
    a) 1   b) 2   c) 3   d) 4
7. In a J-K flip flop when J=1 and K=1 , the output Q_{n+1} is
    a) Q_n b) 1   c) 0   d) $\overline{Q_n}$
8. A decade counter is also called as
    a) 4-bit binary counter   b) mod 10 counter   c) mod 5 counter   d) ripple counter
9. The LSB weight of a 6-bit resistive ladder DAC os
    a) 1/6   b) 1/64   c) 1/63   d) 1/16
10. The total conversion time of a 10-bit successive approximation ADC operating
    with a 1 MHz clock is
    a) 5 s   b) 10 s   c) 5μs   d) 10 μs

SECTION - B   (5 X 6 = 30) - ANSWER ALL QUESTIONS

11. a)   Add the following group of binary numbers.
     (i)   1011   (ii)   1010. 1101
        +   1111   +   101. 011
                       (OR)
   b) Explain Excess – 3 code with an example.

12. a) Give the truth table and logic symbol of NAND and EX-OR gates. (OR)
     b) Prove the following Boolean algebraic theorems.
       (i)   A + $\bar{A}$B = (A + B)   (ii) A ($\bar{A}$ + B) = AB
13. a) Explain the function of a Half subtractor circuit with its truth table. (OR)
   b) Describe a 4:1 multiplexer and explain its function with the truth table.
14. a) Draw the logic circuit of an RS Flip Flop and explain its function with the truth table.
     (OR)   b) Design a mod – 3 counter and explain its operation.
15. a) Briefly explain the basic conversion principle of a 2-bit simultaneous ADC. (OR)
   b)   Explain D/A accuracy , resolution and linearity.

SECTION - C   (5 X 12 = 60) - ANSWER ALL QUESTIONS

16. a) Perform the following conversions.
    (i) $(247)_{10}$ $= ($ $)_8$
    (ii) $(1100.1011)_2 = ($ $)_{10}$
    (iii) $(ABCD)_{16}$ $= ($ $)_2$

                          (OR)

b)   Represent the decimal number 27 in the following codes.
    (i) Straight binary   (ii) BCD   (iii) Excess – 3   (iv) Gray

17. a) Minimize the following expression using Karnaugh map.
           $f(A,B,C,D) = \sum m(1,3,7,11,15) + d(0,2,5)$
                          (OR)
b)   State and prove Demorgan's theorem.

18. a) Explain the function of a 4-bit parallel binary adder with suitable example.
                          (OR)
b)   Describe the action of a decimal-to-BCD encoder.

19. a) Explain in detail the working of a JK Master Slave flip-flop.
                          (OR)
    b) With the help of a logic diagram and waveforms describe the working of a
       Decade counter.
20. a) Describe a binary ladder DAC circuit and explain its operation.
                          (OR)
    b) Draw the block diagram of a Dual Slope ADC and explain its operation.

SEM -IV   *Core paper - VI*

PRINCIPLES OF COMMUNICATION SYSTEMS
TIME :3 Hrs   **MARKS :100 Max**

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

1) The frequency range of radio communication from
a. 3kHz to 300 kHz   b. 300 kHz to 3 GHz
c. 3 kHz to 300 GHz   d. 3 kHz to 3000 kHz.

2) A 400 – watt carrier is modulated to a depth of 75%. Calculate the total power in the amplitude
   modulated wave
a. 400W   b. 512.5 W
c. 8.47 W   d. 1.5 W

3) A super heterodyne receiver with an IF of 450 kHz is tuned to a signal at 1200 kHz. The image
   frequency is
a. 2100 kHz   b. 1650 kHz
c. 900 kHz   d. 750 kHz

4) The most commonly used filters in SSB generations are
a.lC   b. RC   c. Mechanical   d. Low – pass.
5) A receiver has good blocking means that
    a.   Its image frequency rejection is pass
    b.   There is no double spotting
    c.   There is no disturbance by nearby transmissions
    d.   Its dector suffers from bunout.
6) Indicate the antenna which is not wideband
a.Discone   b. Helical   c. Marconi   d. Yagi - Uda
7) An Antenaa that is circularly polarized is the
a.Helical   b. Yagi – Uda   c. Small circular loop   d. Paraboic reflector
8) The ………………. Is the physical path over which the data communication message travels.
a) protocol   b. medium   c. Signal   d. vacuum.
9) When microwave signals follow the curvature of the earth, this is known as
a. Ducting   b. Faraday effect   c. Raman Scattering   d. Ionospheres reflections.
10) Acronym for MUF is radio wave propagation
    a. medium usable frequency
    b. microwave ultra frequency
    c. maximum usable frequency
    d. maximum useful frequency

SECTION - B   (5 X 6 = 30) - ANSWER ALL QUESTIONS

11) a. Give four justification or needs for modulation.   (OR)
b. Define the term : Percentage of modulation specify its significance.
12) a. How does a balanced modulator work? (OR)
b. Discuss briefly the working AM transmitter.
13) a. Write short note on Horn Antenna   (OR)
b. Compare radiation power and radiation pattern.
14) a. Briefly discuss the role of IF oscillator in super heterodyne receiver   (OR)
b. Write short note on : Tracking.
15) a. What type of effects can happen in surface or ground wave propagation on considering earth as flat surface?
    (OR)   b. List out the layers of ionosphere.

SECTION - C   (5 X 12 = 60) - ANSWER ALL QUESTIONS

16) a. Discuss about the AM modulator and its limitations.   (OR)
b. With appropriate theory analyze FM wave.
17) a. Explain the principle of single band. (OR)
b. How does one can generator FM?
18) a. Give the construction and working of super heterodyne AM receiver. OR
b. Write short note on : Image rejection and double conversion.
19) a. Explain the salient features of grounded and ungrounded antenna. OR
b. Write short not on : Fan dipole and parabolic reflectors.
20) a. Explain in details the space wave propagation OR
b. Deduce Secant law and discuss various cases of MUF.

SEM -IV   *Core Paper VII*

BIO MEDICAL INSTRUMENTTATION

TIME :3 Hrs   **MARKS :100 Max**

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

1) The bundle of muscle fibers in a muscle supplied by a single motor nerve fiber is called
a. motor unit   b. Purkinje fibre system c. Bundle of His   d. Muscle spindle.
2) What is the purpose of applying electrode paste?
3) The word "Cardi(O)' denotes heart. So the heart muscle is called …… cardium.
a. Cyto   b. Endo   c. Myo   d. Intra
4) What is a linister?
5) The AV node is also called as cardiac pace maker (True/ False)
6) Epilepsy is a symptom of …… damage.
7) What type of pace maker is chosen for stable total AV Block?
8) What is a Pace maker?
9) The two basic system of modulation are …… and …………..
10) Pulse width modulation method offers the advantage that it is less perceptive to distortion and noise (True/ False)

SECTION - B   (5 X 6 = 30) - ANSWER ALL QUESTIONS

11. a.) Draw the block diagram of a Bio Medical Instrument system and briefly
          explain its components.   (OR)
  b.) Define Half cell potential. What are Polarisable and non Polarisable electrodes.
12.   a.) What is a transducer? Explain the two types of transducers with examples? (OR)
     b.) Explain the Augmented unipolar limb abed configuration used in ECG?
13.   a.) Describe the recording setup used in EMG?   (OR)
    b.) Discuss the different types of brain waves.
14.   a.) Compare and contract the external and internal Pacemakers?   (OR)
     b.) Draw the cardiac pacemaker wave form and discuss its energy requirements.
15.   a.) Explain the applications of telemetry in patient care.   (OR)
   b.) Explain   1. Pulse interval modulation (PIM)
                    2. Pulse interval ratio modulation (PIRM)

SECTION - C   (5 X 12 = 60) - ANSWER ALL QUESTIONS

16.   a.) Describe the metallic and non metallic micro electrodes with suitable
          diagrams and explain their action with electrical equivalent circuits. .   (OR)
   b.) Discuss the different types of chemical electrodes with suitable diagrams.
17. a). With a neat block diagram, explain the working of an ECG machine. (OR)
   b.) Discuss how measurement of respiration rate is carried out. Write short
        notes on vector cardiography.
18.   a). Explain the EEG recording setup with a neat block diagram? (OR)
   b.) Explain with a neat diagram, the working of electromyogram (EMG)
19.   a.) Explain the operation of heart lung machine with block diagram. (OR)
     b.) Explain the construction and working of synchronized DC defibrillator with block diagram
20.   a) Explain the biotelemetry with block diagram. (OR)
   b.) With a neat block diagram, explain the working of an ultrasonic diathermy machine.

SEM - IV   *Core paper - VIII*
IC'S & INSTRUMENTATIONS
TIME :3 Hrs   **MARKS :100 Max**
SECTION - A (10 X 1 = 10) - ANSWER ALL QUESTIONS
1. The current gain of a lateral p-n-p transistor in an IC is very low because
   a. Of inaccuracies in masking
   b. Of low base resistance
   c. The collector is always connected to negative supply
   d. This transistor uses the substrate for the collector

2. The break down voltage in diffused junction capacitor is about
   a. 5-20 volts   b. 20volts   20-50volts   5-20mV

3. The common mode voltage gain in an op-amp is
   a.   Smaller than differential voltage gain
   b.   Equal to differential voltage gain
   c.   Grater than differential voltage gain
   d.   None of the above

4. When slew-rate distortion of a sine wave occurs, the output
      a. Is larger   b. appears triangular   c. Is normal   d. has no effect

5. Under locked condition the phase difference between the input frequency and the VCO output of a PLL is   a. 2π b. π c. $\pi/2$ d. 0

6. IC 555 timer is triggered when the trigger input
   a.   Makes a positive transition
   b.   Become Vcc/3 while making a positive transition
   c.   Become Vcc/3 while making a positive transition
   d.   Is making either negative or positive transition

7. An aquadag is used in CRO to collect
   a.   Secondary emission of electrons
   b.   Primary electrons
   c.   All electronics
   d.   Positive charges

8. The operation of a Q-meter is based on
    a. Self – induction   b. series resonance   c. mutual induction   d. Eddy currents

9. The essential elements of an electronic instrument are
      a. Transducer   b. signal condition   c. indicating device   d. all the above

10. LVDT is a transduce of type
         a. Capacitive   b. Inductive   c. Resistive   d. Heating

SECTION-B (5X6 =30) - ANSWER ALL QUESTIONS
11.a) Explain the fabrication of monolithic diodes.OR
   b) Explain the photo-etching technique employed in IC fabrication.
12.a) Discuss the slew rate. What causes the slew rate?OR
   b) Draw the Schmitt trigger circuit using OP-AMP and explain its working..
13.a) Draw the circuit of a voltage to current converter if the load is floating and explain. OR
   b) Explain the function of precision half wave rectifier
14.a) What is transducers? Distinguish active and passive transducers .OR
   b) Discuss the working & principle of Piezoelectric transducers
15.a) Explain any two considerations in choosing a DVM.OR
   b) Explain how an oscilloscope can be used for the measurement of frequency.

SECTION – C (5X12 = 60) - ANSWER ALL QUESTIONS

16.a) List the steps involved in the fabrication process of an IC. Describe the process of epitaxial growth and diffusion in the fabrication of integrated circuits.   OR
   b) Explain the production growth of silicon epitaxial films with a diagram.
17.a) Draw the block diagram of PLL and Explain it's operation with an example.   OR
   b) Give the circuits of square wave & Linear ramp generator using Timer IC and explain their working.
18.a) Explain the following applications of an operational amplifier:
             i)   Integrator   ii) Differentiator   OR
   b) Explain how temperature is measured and monitored using instrumentation amplifier, with a suitable diagram.
19.a) Write a short note on
      i)   Hall effect transducers ii) Photoelectric transducers.   OR
   b) Explain the working of any two types of LVDT with suitable diagrams.
20.a) Explain the working of Q-meter. List its advantages.OR
   b) Draw the block diagram of Digital oscilloscope and explain its operations briefly. What are its advantages?

SEM - V   *Core paper - IX*
8085 MICROPROCESSOR AND APPLICATIONS
TIME :3 Hrs   **MARKS :100 Max**

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

   Choose the correct answer:
1.   Which signal is used for demultiplexing AD7 – AD0 lines?
a) $\overline{RD}$
b) $\overline{WR}$
c)   ALE
d)   None of the above.

2.   Which one of the register pair of 8085 is called memory address register?
a)   BC pair
b)   DE pair
c)   HL pair
d)   None of above.

3.   Memory read cycle of 8085 contains how many T states?
a)   3
b)   4
c)   2
d)   5

4.   Which type of instruction classification is not available in 8085?
a)   Data transfer
b)   String
c)   Arithmetic
d)   Logical

5.   If instruction OUT <device no> of 8085 is executed, from which register the data will be taken?
a)   B register
b)   A register
c)   C register
d)   A register.

6.   Due to bus contention, when memory is connected to microprocessor
a)   Data will be saved
b)   Data may be lost.
c)   Data will be processed.
d)   None of the above.

7.   In 8255 the pins A0 and A1 are used to
a)   Select the ports and control register
b)   Activate 8255
c)   Deactivate 8255
d)   None of the above.

8.   In 8279 operations to blank display output, which pin is employed
a)   Shift
b)   BD
c)   CS
d)   A0

9.   Which one of the following is not a part of system design and software design of a microprocessor based system?
a)   Problem definition
b)   Program design
c)   Testing
d)   Use of microcontroller

10.   In a microprocessor based system A/D converter is necessary between
a)   Input device and microprocessor
b)   Output device and microprocessor
c)   Input device and Output device
d)   None of the above

SECTION B   (5x6=30) - ANSWER ALL QUESTIONS

11.(a) Write a note on Flags available in 8085 operation and the register for it. (OR)
   (b) Explain the control signals of 8085 and their role.
12.(a) Explain the execution of the 2 arithmetic instructions (i) ADD B (ii)SUB C. (OR)
   (b) Explain the delay program using single register.
13.(a) Write a note on peripheral I/O instructions available in 8085.(OR)
   (b) Explain the concept of wait state with timing diagram.
14.(a) Write a note on BSR mode of 8255.   (OR)
   (b) State different modes of working of 8253 and draw timing diagram for any
   one of them.
15.(a) State and explain the requirements of microprocessor based temperature
   monitoring system.   (OR)
   (b) Explain output display of a microprocessor based digital clock.

SECTION C   (5x12=60) - ANSWER ALL QUESTIONS
All QUESTIONS CARRY EQUAL MARKS

16.(a) Explain the working of register organization of 8085 with proper diagram. (OR)
   (b) Explain the memory map of 1K memory chip and how it is connected to MPU.
17.(a) State any 4 data transfer operation of 8085 and explain their operation.   (OR)
   (b) Explain the execution of PUSH and POP instructions with illustrations.
18.(a) Explain the working of an input device interfaced with the microprocessor with
       a diagram using decoder.   (OR)
    (b) Explain the working of microprocessor based LED display with proper block diagram.
19. (a) Draw the block diagram of 8259 and explain its working.   (OR)
   (b) Explain the working of 8279 with 8085 by drawing the block diagram.
20. (a) Explain the working of data acquisition system using microprocessor along
       with block diagram.   (OR)
   (b) Describe the action and implementation of microprocessor based traffic
   control with proper diagram.

COMPUTER HARDWARE AND MAINTENANCE
TIME :3 Hrs   **MARKS :100 Max**

SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS
Choose the correct answer:

1. The sequences involved for the fetch of one instruction and its execution are known as
   e)   Instruction cycle
   f)   Machine cycle
   g)   Access time
   h)   Memory cycle time

2. Bootstrap is technique designed
   e)   To transfer control to specified closed subroutine
   f)   To suspend the main programme for a while
   g)   To bring itself into a designed state by means of its own action
   h)   none of above.

3. How many addresses are required for 25x40 video RAM?
   e)   1020
   f)   1920
   g)   1000
   h)   2000

4. The NMI is generated for any of the following reasons
   e)   RAM parity error on the motherboard, indicated by PCK signal
   f)   RAM parity error in the daughter board memory, indicated by I/OCHCK signal
   g)   All the above
   h)   None of the above.

5. Which is not the operation of a floppy disk drive?
   a) Reading data from the diskette when write enable signal is active
   b) Presenting the outputs of index sensor, write protect sensor, track 0 sensor, etc, to the controller When DRIVE SELECT is active
   c) Moving the R/W heads by one track for every STEP pulse. The defection signal decides the direction of the R/W heads movement
   d) Writing data (data, clock, gap, sync etc.) on the diskette when WRITE ENABLE signal is inactive

6. In CRT, the composite video signal includes
   a) HSYNC, VSYNC & VIDEO
   b) HSYNC, VIDEO & R/W_____
   c) HSYNC, VSYNC & MEMR
   d) None of above.

7. The recalibrate command is used to
   a) Format to track and sets the bad track flag in the corresponding field of HDC

b) Formats a particular track
c) Moves the Read/Write heads to track 0
d) None of the above.

8. The control signals used while interface printer to PC are
a) STROBE, INIT, SLCTIN, & AUTOFEEDXT
b) STROBE, INIT, SLCTIN, & Datalines
c) STROBE, INIT, SLCTIN, & AUTOFEEDXT
d) None of the above

9. The computer intermittently cancels job with any of the following message
a) Coprocessor fault
b) Power failure
c) NMI
d) File not found.

10. POST stands for
  a) Power On System Test
  b) Power On Self Test
  c) Power On Sequential Tester
  d) None of the above

SECTION B   (5x6=30) - ANSWER ALL QUESTIONS

11.(a) Explain how memory is organized in personal computers.   (OR)
        (b) Explain the operation of serial keyboard with block diagram.
12.(a) Explain the operation of wait state logic with block diagram. (OR)
        (b) Explain the function of RAM logic with suitable block diagram
13.(a) Explain the various functions of software routines used to access Floppy Diskette.(OR)
        (b) Explain the different types of CRT display techniques.
14.(a) Explain the various functions of data bus when it is interfaced with HDC.(OR)
        (b) Discuss in detail about the Hard Disk format.
15.(a) Discuss the possible faults occur in bus of personal computers.   (OR)
        (b) Enumerate the various key board problems.

SECTION C   (5x12=60) - ANSWER ALL QUESTIONS
16.(a) Explain in detail the functional blocks of a personal computer.   (OR)
        (b) Explain the construction and operation of switched mode power supply.
 17.(a) Explain the major functional blocks in a mother board.   (OR)
        (b) Explain the following   (i) CPU nucleus logic (ii) DMA logic.
18.(a) Explain the operation of FDC with a block diagram.(OR)
        (b) Explain the major blocks of CRT controller(6845) with necessary block diagram.
19. (a) Explain the functional blocks of hard disc controller with necessary diagram.(OR)
     (b) Explain the functional block diagram of printer controller with necessary diagram.
20. (a) Explain the various faults that affects the normal operation of computers.(OR)
        (b) Explain the different trouble shooting tools used in trouble shooting computers.

SEM : V   *Core Paper - XI*
ADVANCED COMMUNICATION SYSTEMS
TIME :3 Hrs   **MARKS :100 Max**
SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS

1. In multiple access system, for digital signals,
   - a) TDMA is employed
   - b) FDMA is employed
   - c) Both TDMA and FDMA are employed
   - d) None of these
2. The carrier-to-noise ratio for a satellite depends upon
   - a) effective isotropic ally radiated power
   - b) band with
   - c) free-space path losses
   - d) all of these
3. The spectrum allocated for the cellular communication
   - a) 800 MHz   b) 800 KHz   c) 800 GHz   d) 800 Hz
4. The transmitted power levels at both the cell sites and the mobile units
   - a) are controlled by MTSO
   - b) are remains constant
   - c) could not be controlled
   - d) none of these
5. Which of the following type of speakers is used in a telephone receiver?
   - a) coaxial   b) moving coil type c) fixed coil type d) tweeth type
6. So far as telephone networks are concerned, it is more economical to perform all switching functions at
   - a) central points   b) many places   c) both a and b   d) none of these
7. Total internal reflection can take place when light travels from
   - a) low refractive index to high refractive index
   - b) high refractive index to high refractive index
   - c) very low refractive index to low refractive index
   - d) none of these
8. Operating wave length window of 1550 nm is not yet is use with fiber optic system because
   - a) loss in fiber is higher at 1300 nm
   - b) suitable laser devices have not yet been obtained
   - c) wavelength multiplexing is not possible at this wavelength
   - d) None of the above
9. An optical repeater consists of
   - a) series of receivers
   - b) series of transmitter
   - c) a receiver and a transmitter placed back to back
   - d) none of the above
10. Function of receiver in optical fiber communication is to
   - a) reshape the degraded signal only
   - b) only amplify the degraded signal
   - c) both amplify and reshape the signal
   - d) none of the above

SECTION B – (5 x 6 = 30) - ANSWER ALL QUESTIONS
11. a) Write short notes on multiple access techniques. (OR)
    b) Explain the classification earth stations.
12. a) Explain briefly the basic cellular system. (OR)
    What is the need for cell splitting? What are the two kinds of cell splitting? Explain.
13. a) With a neat schematics diagram, discrete construction of a carbon granule microphone.
   (OR) b) Draw the trucking diagram for a 100 line exchange. Explain briefly the principles involved.

14. a) Explain briefly the principle light transmission inside an optical fiber communication.
(OR)   b) Mention any six advantages of optical fiber communication.
15. a) Explain the fiber optic computer link.(OR)
     b. Explain the fiber optic satellite link.

SECTION C-(5 x12 = 60) - ANSWER ALL QUESTIONS

16. a) Explain the tracking and servo system employed in satellite communication.(OR)
     b)   Describe the four important sub system present in a satellite space craft system.
17. a) Explain the idea of frequency reuse, frequency reuse schemes and frequency reuse distance.
(OR) Explain the operation of cellular system.
18. a) Explain with the help of a neat diagram the subscribers set used in a CB exchange
         and need for providing ant side tone circuit.   (OR)
     b) Explain the function of local battery exchange. What are the types of manual
         exchange?
19. a) What is acceptance angle and acceptance cone of a fiber? Deduce an Expression
         for half acceptance angle and numerical aperture.(OR)
     b)   Explain the modes of propagation. Discuss TE, TM and hybrid modes.
20. a) Explain the fiber optic based switched star community Antenna Television system.
(OR)   b) Describe some of the optical fiber products used in cable TV. Also mention the
         new developments in the field of recent applications of fiber optics technology.

SEM - VI   *Core paper - XII*

8051 MICROCONTROLLER AND ITS APPLICATION
TIME :3 Hrs   **MARKS :100 Max**

SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS
Choose the correct answer:
1. The stack pointer in the 8085 microprocessor is a
    a) 16bit register which points to stack memory locations.
    b) 16 bit accumulator
    c) memory location in the stack
    d) flag register used for the stack
2. The Intel 8051 microcontroller has the internal ROM of _____ bytes and internal RAM of
    _____ bytes.
    a) 128 bytes, 4k bytes
    b) 128 bytes, 64k bytes
    c) 4k bytes, 128 bytes
    d) none of above.
3. The internal clock frequency of the microcontroller ranges from
    a) 20 to 25 MHz
    b) 1 KHz to 16 KHz
    c) 1 MHz to 16 MHz
    d) 1 GHz to 16 GHz

4. Which port has no dual operation?
    a) Port 0
    b) Port 1
    c) Port 2
    d) Port 3
5. The rotate and swap operations are limited to
    a)   C registers
    b)   B registers
    c)   B & C registers
    d)   A registers
6. The following flags get affected when incrementing and decrementing instructions are executed
    a)   Auxillary carry
    b)   Carry
    c)   Overflow
    d)   None of above.
7. All bit jumps are related to
    a)   Program counter
    b)   Interrupt registers
    c)   PSW's carry flag
    d)   (a) & (c).
8. In absolute jump ranges
    a)   upto PC+127 bytes, PC-128 bytes away from PC
    b)   Anywhere on 2k byte space.
    c)   Anywhere in program memory
    d)   Nowhere in program memory

9. The valid key pattern, accepted after valid debounce delay; no additional keys accepted until all keys are seen to be up for certain period of time
    a)   rapid key hit
    b)   key held
    c)   multiple key
    d)   key debounce

10. There are _____ external interrupts in 8051
    e) three
    f) eight
    g) two
    h) four

SECTION B   (5x6=30) - ANSWER ALL QUESTIONS
11.(a) Compare microprocessor and microcontroller.   (OR)
        (b) Explain the function of program status word with bit pattern.
12.(a) Explain the operation of timer control register with respective bit pattern.   (OR)
        (b) What is interrupt ? Explain the types of interrupts.
13.(a) Write a note on rotate and swap instructions. (OR)
        (b) Write a note on arithmetic instructions of 8051.

14.(a) Write a note on jump of call instructions. (OR)
    (b) Write a microcontroller program to determine the largest number among the given numbers.
15.(a) Describe how server segment is interfaced with a microcontroller.(OR)
    (b) Explain how A/D converter is interfaced with a microcontroller.

SECTION C   (5x12=60) - ANSWER ALL QUESTIONS

16.(a) Describe in detail about the internal architecture of Intel 8051 microcontroller
        with a block diagram.   OR)
    (b) Describe the different special function registers. Give their memory mapping.
17.(a) Describe the various modes of operation of timer.   (OR)
    (b) Explain the serial data transmission modes and their functions.
18.(a) Explain the different addressing modes of 8051 with illustrations.   (OR)
    (b) Write a microcontroller program to arrange the given numbers in ascending
        order and explain it with a flow chart.
19. (a) Describe in detail about interrupts and interrupt control registers.   (OR)
    (b) (i)Write a program to generate Fibonacci series and explain it with a flow chart.
        (ii) Write a program to detect odd or even number and explain it with a flowchart.
20. (a) Describe in detail about the keyboard interface. (OR)
    (b) Explain the construction and operation of stepper motor interface.

SEM - V   *AOS Paper - I*
INDUSTRIAL ELECTRONICS
TIME :3 Hrs   **MARKS :75 Max**
SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS

1.   A forward voltage can be applied to an SCR after its
a)   Anode current reduces to zero
b)   Gate recovery time
c)   Reverse recovery time
d)   Anode voltage reduces to zero

2.   SCR can be turned on
a)   By applying a negative trigger signal at gate
b)   By applying negative voltage at anode
c)   By applying a positive trigger signal at gate
d)   By applying positive voltage to cathode.

3.   In induction heating depth of penetration 'δ' is proportional to
a) $\sqrt{\text{frequency}}$
b) $1/\sqrt{\text{frequency}}$
c) $1/\text{frequency}$
d)   Frequency

4.   Principle involved in induction heating is
a)   Production of eddy current
b)   Thermo emf
c)   Chemical effect
d)   Biological effect

5.   Ultrasonic waves
a)   can be seen by eyes
b)   can be heard by ears
c)   cannot be heard by ears
d)   are optical waves

6.   An UJT exhibits negative resistance region
a)   Before the peak point
b)   Between peak point and valley points
c)   After the valley point
d)   Both (a) and (b) are correct

7.   The digital timer in a resistance welding machine provides
a)   accurate timings
b)   identical welds
c)   synchronous operation
d)   all of these.

8.   The welding transformer used in resistance welding will
a)   Step up current
b)   Step down current
c)   Step up voltage
d)   Ste up power

9.   Ultrasonic waves are produced
a)   by thermoelectric effect
b)   by magneto strict ion
c)   by chemical reaction
d)   by induction

10.   In resistance welding fusing is done
a)   by passing ultrasonic waves
b)   by passing uv light
c)   by passing AC or DC current
d)   by sending visible light

SECTION – B (5X5=25) - ANSWER ALL QUESTIONS

11.   (a) Explain the voltage current characteristics of diac. OR
  (b) Explain the ON and OFF times of gate in SCR.
12. (a) Give the different methods of triggering on a thyristor? OR
  (b) Explain the Self-commutation method of a Thyristor.
13. (a) Give a short note on multiple connection of SCR. OR
  (b) Draw and explain the operation of Half wave rectifier circuit with resistive load.
14. (a) Construct a Single Phase Bridge inverter and explain its operations.OR
  (b) Write a note on different type of Chopper circuits
15. (a) Construct a Fan Regulator using TRIAC and explain its operation.OR
  (b) Design an AC static switch and explain its operation

SECTION – C (5X8=40) - ANSWER ALL QUESTIONS

16. (a) Explain the construction, working and V-I characteristics of TRIAC. OR
  (b) Write a short note on
   i) Silicon Uni -lateral switch ii) Silicon Bi-lateral switch.
17. (a) Explain the following turn off mechanisms
   i) Natural commutation ii) External pulse commutation.   OR
  (b) Discuss the operation of different types of RC firing circuits
18. (a) Design a triggering circuit for parallel connected SCR and explain its advantages
  OR (b) Draw and explain the function of snubber circuit.
19. (a) Explain the function of Mc Murray impulse communication inverter. **OR**
   (b) Explain the operation of Single phase full bridge voltage inverter.
20. (a) Explain the operation of SMPS with help of block diagram **OR**
  (b) Explain in details the various over voltage conditions and design the protection circuit.

SEM -VI   *AOS Paper II*
TELEVISION ENGINEERING
TIME :3 Hrs   **MARKS :75 Max**

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

1) The channel width in the India TV system …….. MH_2
2) What is horizontal scanning frequency.?
3) A balun converts impedances between 75 ohms and 150 ohms (True / False)
4) To radiate the energy from a transmitter in to space an element is used which is generally called
   ……………
5) Order of EHT voltage in TV receiver is …………..
6) In TV transmission the audio signal is ………….. modulated
7) The band width of TV Signal in colour TV transmission is more than that of B/W TV
   transmission (True / False)
8) The primary colours are ……………………
9) Frequency modulation cannot be used for video recording. (True / False)
10) Mention any two applications of CCTV

SECTION - B   (5 X 5 = 25) - ANSWER ALL QUESTIONS

11. a.) Explain vertical resolution in black and white TV   (OR)

b.) What are the merits and demerits of vidicon.

17.   a.) Sketch the constructional features of a Balun   (OR)

        b.) What are the various functions of a TV tuner.

18.   a.) Why electromagnetic deflection is per preferred over electromagnetic deflection in a TV picture tube.   (OR)

b.) Draw the basic circuit of EHT supply and discuss its functions

19.   a.) What is superiority of Trinitron colour picture tube.   (OR)

        b.) Explain the chromaticity diagram.

20.   a.) Bring out difference between VCR and Video disc recorders   (OR)

        b.) What are the advantage of cable TV system.

SECTION - C   (5 X 8 = 40) - ANSWER ALL QUESTIONS

21.   a.) Explain with a diagram the working of vidicon camera tube. Will the
             output of its give composite signal.

                                        (OR)

     b.) Draw the dross sectional view of an image orthicon camera tube and
      explain its operation.

22.   a). Give the block diagram of monochrome TV receiver and explain the
     function of each block briefly.

      (OR)

      b.) Describe the function of video detect and video amplifiers with circuits.

23.   a) Explain the concept of beam deflectors in detail with proper diagrams in TV picture tube.

                                    (OR)

b.) Draw the block diagram of sound channel in a TV receiver. Explain briefly how inter carrier sound
    signal is processed to produce sound output.

24.   a.) Describe the essential features of a Trinitron colour picture tube. Explain briefly why it is
    considered superior to both the delta gum and PIL picture tubes.

                                    (OR)

    b.) Briefly discuss about colour difference signals and weighting factors.

25.   a)Discuss the different methods of video recording? Why is the Helical scan method of
    recording prepared for VCRS.

                                    (OR)

    b.) Bring out the difference between digital TV and HDTV. Explain with a
        diagram the working of Digital TV.

SEM . III   *Dip. Paper I*

COMPUTER ARCHITECTURE AND ORGANIZATION

TIME :3 Hrs   **MARKS :100 Max**

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

1. The _____is collection of I/O drivers for different peripheral devices in the computer
(a) BIOS   (b) ALU   (c) CRT   (d) DOS
2. CISC means_____
(a) Complementary Instruction Set Computing   (b) Complex Instruction Set Computing
(c) Complex Instruction Set Computer   (d) Complementary Instruction Set Computer
3. _____ micro-operations copy the contents of one register to another register without any change in contents.
(a) Arithmetic   (b) Logic   (c) Register transfer   (d) none of the above
4. The _____ flag indicates whether a memory operation is already in progress
(a) MR/W   (b) MAR   (c) SMMA   (d) MFC
5. The _____ allows only read operations by the CPU
(a) RAM   (b) ROM   (c) EPROM   (d) EEPROM
6. The ____ is an intermediate buffer between the CPU and the main memory
(a) Auxiliary Memory(b) Main Memory
(c) Cache Memory   (d) Virtual Memory
7. In colour monitors, the screen is coated with a pattern of little circular or rectangular _____ dots.
(a) Cadmium   (b) Phosphor   (c) Silicon   (d) Germanium
8. Detecting a key pressed and generating the corresponding code is known as _____.
(a) Encoding   (b) Decoding   (c) Scanning   (d) Multiplexing
9. _____ level parallelism is implemented by the designers in the ALU designs.
(a) Processor   (b) Program   (c) Instruction (d) Arithmetic and bit
10. The Pentium-pro supports a ___ to record the information about the previously in-progress transactions.
(a) Memory order buffer   (b) Rapid execution engine
(c) Advanced dynamic execution   (d) none of the above

SECTION B – (5 x 6 = 30) - ANSWER ALL QUESTIONS
11.   (a)   Briefly explain the layers in modern computer   (OR)
       (b)   Give the drawbacks of CISC systems
12. (a) Describe the sequence of steps to design a processor (OR)
    (b) Briefly explain the role of a processor
13. (a) Explain the four important memory parameters (OR)
    (b) Give the advantages of virtual memory
14. (a) Explain the following pointing devices
          1. Mouse   2. Trackball
   (OR)
   (b) List out the differences in concepts between FDDs and HDDs

    15. (a)   Give the standard features of the RISC processors   (OR)
        (b)   Briefly explain the levels of parallelism in a computer

SECTION B – (5 x 12 = 60) - ANSWER ALL QUESTIONS

16. (a) Explain the Computer Organization in detail with necessary diagram (OR)
    (b)   What is an interrupt in CPU? Explain the types of Interrupts in detail
17. (a)   Describe the design of Shifter and ALU with necessary diagrams (OR)
(b) Draw and Explain the data path for the following instructions
(i) HALT   (ii) JUMP   (iii) LOAD
18. (a)Describe the memory classification based on functional role played in a computer (OR)
(b)   Explain the Principle of Cache memory with necessary diagram
19. (a)   Describe the keyboard function in detail with necessary diagram (OR)
    (b)   Write short notes of the following
    (i) FDD   (ii) HDD
20. (a)   Explain the Dynamic Scheduling in superscalar designs.   (OR)
    (b)   Draw the block diagram of VLIW processor and explain its architecture.

SEM -IV   *Dip. Paper II*
VISUAL PROGRAMMING
TIME :3 Hrs   **MARKS :100 Max**

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

1.What are the objects of GDI
        (a) Pen Font   (b) Brush Color   (c) Palette Fill (d) Color Fill
2.Pick up the data type in the Hungarian notation format
        (a) Cname   (b) Int   (c) h   (d) Sz
3.Which one is a intrinsic control
        (a) Textbox   (b) Rich textbox   (c) Image list   (d) ADODC
4.   How many controls will be loaded in a form
        (a) 256   (b) 269   (c) 52   (d) none of the above
5.   A dialog based MFC application is derived from_____
        (a) CDialog   (b) CFrame   (c) CDocument   (d) CWinApp
6.   The syntax for referring external files in a resource is
  (a) Imagename IMAGETYPE DISCORDABLE { } (b) DIR-ICON ICON DISCORDABLE { }
  (c) IMAGETYPE Imagename DISCORDABLE { }   (d) none of the above
7.   The method used to activate the modelless dialog is _____
        (a) Create ( )   (b) Domodel ( )   (c) both (a) and (b)   (d) none of the above
8.   Expand DDX
(a) Delete Data Entry (b) Do Data Exchange   (c) Dialog Definition Entry (d) None of the above
9.   Expand UID
(a) User Interface Data (b) User Interface Design (c) User Interact Data (d) Utility Interface Design
10.   Expand WYSIWYG
(a) What You See Is What You Get
(b) What You See Is Why you Get
(c) When You See Is What You Get
(d) What You See Is When You Get

SECTION B – (5 x 6 = 30) - ANSWER ALL QUESTIONS

11.　　　　(a) Explain windows message processing (OR)
　　　　　　(b) What is Device context? How will you get a Device context Handle?
12.　　　　(a) Give the relationship between properties, methods and events (OR)
　　　　　　 (b) Write a program to connect to a database using VB and perform addition
　　　　　　　and deletion
13.　　　　(a) Write a note on nested dialogs(OR)
　　　　　　(b) Explain the serialize( ) function
14.　　　　(a) Write a short note on Dialogs in MFC(OR)
　　　　　　(b) Explain the process OLE automations
15.　　　　(a) Explain the following classes
　　　　1. CPaint　　　2.CPen　　(OR)
　　　　　　(b) Discuss the elements of GUI along with its advantages

SECTION C – (5 x 12 = 60) - ANSWER ALL QUESTIONS

16.　　　　(a) Using API function create a window. Also discuss the parameters that it
takes while creating a window　　　　　　(OR)
　　　　　　(b) Write a program in MFC without using wizards to do the following
(i) Initially the program should display a window with a square at its
　　Center
(ii) On pressing the left mouse button down, the square should be replaced
　　by a circle
17.　　　　(a) Explain the various file system controls and their methods which are used
　　　　　　　in manipulating the file system　　　(OR)
　　　　　　(b) Write a program to bring out the context of control arrays
18.　　　　(a) Explain document view architecture in detail　　　(OR)
　　　　　　(b) Design a simple calculator using VC++ to perform add., sub., mul., div.
19.　　　　(a) Explain the ODBC architecture with neat sketch　　(OR)
　　 (b) What is DLL? Create a DLL to perform addition and multiplication of two
　　　　numbers and also develop an exe to use the DLL.
20.　　　　(a) Give step by step procedure in designing visual interface　　(OR)
　　　　　　(b) Explain an environment to show how a graphics application reduces time
　both in development and learning. Also discuss on drawbacks associated with GUI.

SEM -V   *Dip. Paper III*
INTERNET AND JAVA PROGRAMMING
TIME :3 Hrs   **MARKS :100 Max**
SECTION - A   (10 X 1 = 10) - ANSWER ALL QUESTIONS
Choose the Correct Answer

1. MODEM is a translator that translates
(a)   Analog signals   (b) Digital signal   (c) Analog and Digital signal (d) None of the above
2.   What kind of topology does an internet have a) Bus   (b) Star   (c) Ring   (d) Mesh
3.   ____ is a linear data structure (a) Heap   (b) Arrays (c) Tree   (d) None of the above
4.   Which among the following is a bitwise operator (a) || (b) <=   (c) +   (d) ~
5.   Which is a template for an object
(a) method   (b) variables   (c) class   (d) None of the above
6. All standard class are stored in some named _____
(a) Constructors   (b) Finalize function   (c) Interface   (d) Package
7. _____ class lists the types of exception that a method might throw
(a) multiple catch class   (b) try class   (c) catch   (d) throws
8. Mention the method that returns the true value of the thread upon which is called, running
(a) ( ) function (b) alive   (c) call   (d) None of the above
9. The IOstream are handled by _____   (a) Character stream   (b) Byte stream
                                    (c) Predefined stream   (d) Byte and predefined stream
10. _____ is an abstract class that encompasses all the attributes of visual screen
(a)Container   (b) Panel   (c) Window   (d) Component

SECTION B – (5 x 6 = 30) - ANSWER ALL QUESTIONS
11.   (a)   List out the uses of internet   (OR)
      (b)   Briefly explain Hosts and Terminals with suitable diagram
12.   (a)   Define array. Briefly explain the different types of arrays in JAVA (OR)
       (b)   Define data type. Explain different data types with an example
13.   (a) Explain the following
       (i) Constructors   (ii) Finalize Class   (OR)
       (b)   Explain the term " Package" with an example along with import statement
14.   (a) Write a java program to implement the Nested try statement   (OR)
           (b) Write short note on (i) Synchronization (ii) Dedlock
15.   (a) How will you initialize an applet? Illustrate it with an example (OR)
      (b)   Explain any six applet tag with an example

SECTION C – (5 x 12 = 60) - ANSWER ALL QUESTIONS
16.   (a)   (i) Explain clients and servers in internet
                (ii) Explain X window and X clients   (OR)
      (b) What is TCP/IP? Explain in detail.
17.   (a) Explain the different types of operators in JAVA. (OR)
           (b) List out the Looping statements in JAVA and explain each with an example
18.   (a)   List out the types of inheritance in JAVA and explain any two with an Example
      (OR)   (b) Write a JAVA program to implement method overriding
19.   (a)   Explain any two types of exceptions in JAVA with example   (OR)
           (b) Define the term thread and describe its life cycle
20.   (a) Write a program to display the student rank list by using files in JAVA. (OR)
           (b) Explain the life cycle of applet.