

<b>Annexure No.</b>	<b>35 B</b>
<b>SCAA Dated</b>	<b>29.02.2008</b>

**BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046**

**REGULATIONS FOR B.Sc. ELECTRONICS AND COMMUNICATION SYSTEMS  
DEGREE WITH COMPULSORY DIPLOMA IN COMPUTER TECHNOLOGY  
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 and Communication Systems** 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 3<sup>rd</sup> 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 (4<sup>th</sup> or 5<sup>th</sup> or 6<sup>th</sup> 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 from 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 and Communication Systems 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	University Examination		
				Dura- tion Hrs.	Max Marks	
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	<b>Gr.A Core</b>				
			Paper I Principles of Electronics	5	3	100
			Pract. I Electric Circuits and Electronic Devices Lab	3	-	-
			Pract.II Electronic Circuits Lab	3	-	-
	<b>Gr.B Allied A</b>					
	Paper I Mathematics -I	5	3	100		
II	I	Language Paper I Tamil/Hindi/French/Malayalam	6	3	100	
	II	English Paper II English – II	6	3	100	
	FC	Foundation Course –A General Awareness	2	3	100	
	III	<b>Gr.A Core</b>				
			Paper II Electronic Circuits	5	3	100
			Pract. I Electric Circuits and Electronic Devices Lab	3	3	100
			Pract.II Electronic Circuits Lab	3	3	100
	<b>Gr.B Allied A</b>					
	Paper I Mathematics -II	5	3	100		
III	FC	Foundation Course–B Environmental Sciences	2	-	-	
	III	<b>Gr.A Core</b> Paper III Principles of Communication Systems		4	3	100
			Paper IV Digital Principles and Applications	4	3	100
			Paper V Communication Skills	4	3	100
			Pract. III Digital Electronics Lab.	3	-	-
			Pract. IV Radio, TV and Instrumentation Lab	3	-	-
			<b>Gr.B Allied B</b>			
			Paper I Programming in C	4	3	075
	<b>Allied</b> Pract. Computer Programming Lab	3	-	-		
	<b>Diploma in Computer Technology</b>					
	Paper – I Computer Architecture and Organization	3	3	100		

SEM	Part	Subject and Paper	Instr- uction Hrs. / Week	University Examination	
				Dura- tion Hrs.	Max Marks
IV	FC	Foundation Course–B Environmental Sciences	2	3	100
		<b>Gr.A Core</b> Paper VI IC's and Instrumentations	4	3	100
	III	Paper VII Television Engineering	4	3	100
		Paper VIII Microwave and Optical Fiber Communication Systems	4	3	100
		Pract. III Digital Electronics Lab.	3	3	075
		Pract. IV Radio, TV and Instrumentation Lab	3	3	075
		<b>Gr.B Allied B</b>			
		Paper II Object Oriented Programming using C++	4	3	075
		<b>Allied</b> Pract. Computer Programming Lab	3	3	075
		<b>Diploma in Computer Technology</b> Paper – II Visual Programming	3	3	100
V	III	<b>Gr.A Core</b> Paper IX Digital Communications	4	3	100
		Paper X 8085 Microprocessor and Applications	5	3	100
		Paper XI Satellite and Network Communications	4	3	100
		Pract. V Electronic Communication Lab.	3	-	-
		Pract. VI Microprocessor and Microcontroller Lab	3	-	-
		<b>Gr.C Application Oriented Subject - A</b>			
		Paper I Bio-Medical Instrumentation	5	3	075
		<b>AOS</b> Pract. I Industrial and Medical Electronics Lab	3	-	-
		<b>Diploma in Computer Technology</b> Paper – III Internet and Java Programming	3	3	100
		VI	II	<b>Gr.A Core</b> Paper XII 8051 Microcontroller and Embedded Systems	5
Pract. V Electronic Communication Lab	3			3	100
Pract. VI Microprocessor and Microcontroller Lab	3			3	100
Project work and Viva voce	8			-	200
<b>Gr.C Application Oriented Subject - A</b>					
Paper II Industrial and Power Electronics	5			3	075
<b>AOS</b> Pract. I Industrial and Medical Electronics Lab	3			3	075
<b>Diploma in Computer Technology</b> Practical I Visual Programming &	3			3	50
Practical II Java Programming				3	50

SEM –I**PRINCIPLES OF ELECTRONICS**Core Paper- I

**Subject Description :** This subject is the introductory for electronics, it presents the basic components theorems, devices and circuits

**Goals :** Enable the students to learn the basics of Electronics

**Objectives :** Upon completion of the subject, the student should Understand the Basic components and its operations Gain knowledge about Electric and Electronic circuits and Network theorems

**UNIT I PASSIVE CIRCUIT COMPONENTS**

**RESISTORS:** Fixed resistor – Variable resistor – Color coding – Tolerance - Series and parallel connection.

**CAPACITORS:** Basic structure and symbol – Fixed capacitor – Variable capacitors – Dissipation factor – Series and parallel connection

**INDUCTORS:** Inductance of the coil – Fixed inductors – Variable inductors – Inductive reactance – Energy stored in an inductor – Q factor – Mutual inductance – Series and parallel connection

**UNIT II AC AND DC CIRCUITS FUNDAMENTALS**

Alternating current – peak value – average value – rms value – frequency – time period – wave length – phase angle – Three phase AC Power - AC circuits with resistance – AC circuits with XL – AC circuits with XC – Series reactance and resistance – Parallel reactance and resistance – Series parallel reactance and resistance - Real power – Apparent power – Series resonance circuit – Parallel resonance circuit.

Ohm's law – Kirchoff's law – Analysis of series circuit, parallel circuits and series parallel circuits – Voltage divider – Current divider – Simple problems in DC circuits.

**UNIT III NETWORK THEOREM**

Superposition theorem – Thevenin's theorem – Thevenizing a circuit with two Voltage Source – Thevenizing a bridge circuits – Norton theorem – Thevenin's Norton conversion – Conversion of voltage and current source – Millman's theorem – Maximum power transfer theorem – Simple problems in DC circuits

**UNIT IV SEMICONDUCTOR DEVICES**

Conductor – Semiconductor – Intrinsic semiconductor – Extrinsic semiconductor – P type and N type semiconductor – PN junction diode –V-I characteristics - Zener diode - V-I characteristics Construction of NPN and PNP transistors – Operation of NPN, PNP transistors – Characteristics of CE and CB Transistor configurations

**UNIT V**

Introduction and V-I characteristics of JFET, MOSFET, SCR, DIAC, TRIAC and UJT.

**TEXT BOOKS**

1. R.S.Sedha "A Text Book Of Applied Electronics" S.Chand and Company Ltd., 2005
2. Bernard Grob "Basic Electronics" Tata McGraw – Hill, 9<sup>th</sup> edition 2003.



**SEM – II      ELECTRONIC CIRCUITS****Core Paper – II**

**Subject Description** : This subject describe the classification and operation of amplifiers, oscillators, rectifiers and filter circuits

**Goals**      Enable the students to become a electronic technician and circuit designer

**Objectives**      : Upon completion of the subject, the student should be able to design and troubleshoot the amplifiers, oscillators, power supply and filters

**UNIT I              SMALL SIGNAL AMPLIFIERS**

Classification of amplifiers – Methods of transistor biasing – CE amplifiers – RC coupled amplifiers – Gain – Frequency response – Multistage amplifiers – Transformer coupled amplifiers.

**UNIT II              POWER AMPLIFIERS**

Classification of amplifiers – Class A operation – Class B operation – Push pull configuration – Class AB operation – Class C operation – Power relation – Load power – Power dissipation – Current drain – stage efficiency – Complementary pair operation – Distortions.

**UNIT III            FEEDBACK AMPLIFIERS**

Basic concept – Effect of negative feedback on gain – Gain stability – Band width – Distortion and noise – Analysis of voltage and current feedback amplifier circuits.

**UNIT IV            OSCILLATORS**

Classification – Barkhausen criterion – Hartley oscillator – Colpitts oscillator – clap oscillator – Phase shift oscillator – Wein bridge oscillator

**UNIT V              WAVESHAPING CIRCUITS**

Clipping, Clamping circuits – Half wave, full wave and bridge rectifiers – Average value – RMS value – Ripple factor – Rectification efficiency.

Filters: Capacitors, Inductors, LC and PI filter – Regulated power supplies using Zener diode – Fixed voltage regulators using IC's.

**TEXT BOOKS**

1. Grob, "Basic Electronics", Tata McGraw Hill, 8<sup>th</sup> edition.
2. V.K.Mehta, "Principles Of Electronics", S.Chand&Co, New Delhi, 2<sup>nd</sup> edition
3. R.S.Sedha "A Text Book Of Applied Electronics" S.Chand & Company Ltd, Secondly revised edition

SEM – I & II

Core Practical – I

**ELECTRIC CIRCUITS AND ELECTRONIC DEVICES LAB**

(ANY 16 EXPERIMENTS)

1. Study of CRO, Multimeter and color codes of resistors and capacitors
2. Measurement of resistance and capacitance in series and parallel
3. Series resonance circuit
4. Parallel resonance circuit
5. Verification of Ohm's Law
6. Verification of Kirchoff's Law
7. Verification of Thevenin's Theorem
8. Verification of Norton Theorem
9. Verification of Millman's theorem
10. Verification of Maximum power transfer Theorem
11. Verification of Superposition Theorem
12. Temperature Coefficient of Junction diode
13. Band gape energy of Silicon.
14. Characteristics of PN junction diode
15. Characteristics of Zener diode
16. Transistor DC Load line Analysis
17. Characteristics of Transistor – CE configuration
18. Characteristics of Transistor – CB configuration
19. Characteristics of FET
20. Characteristics of UJT
21. Characteristics of SCR
22. Characteristics of TRIAC
23. Characteristics of DIAC

SEM – I & II

Core Practical – II

**ELECTRONIC CIRCUITS LAB**

(ANY 16 EXPERIMENTS)

1. Transistor biasing – self bias
2. Transistor biasing – Fixed bias
3. RC coupled amplifier
4. Feedback amplifier
5. Emitter follower
6. Class B push pull amplifier
7. Complementary symmetry push pull amplifier
8. Transient response of RC circuits
9. Hartley Oscillator
10. Colpitts oscillator
11. Phase shift Oscillator
12. Wein Bridge oscillator
13. UJT relaxation Oscillator
14. Crystal Oscillator
15. Function generator using 8038
16. Low pass, High pass and Band pass filters using Passive Components
17. Clipping circuits
18. Clamping circuits
19. Voltage doubler
20. Half wave and full wave rectifier
21. Bridge rectifier
22. DC regulated power supply using Zener diode
23. DC regulated power supply using IC's

**SEM – III      PRINCIPLES OF COMMUNICATION SYSTEMS      Core Paper – III**

**Subject Description :** An important consideration in the design of the subject is to provide knowledge about communication medium, transmitter, receiver and modulation techniques

**Goals :** Enable the students to learn the basic principles used in communication systems

**Objectives :** After successful completion of the course the students should understand the concepts and techniques in communication systems

**UNIT I                      WAVE PROPAGATION**

EM waves – Free space propagation – Surface wave propagation – sky wave propagation – space wave propagation – Trophospheric scatter propagation – Structure of Atmosphere – Virtual height – MUF – LUF – Skip Distance – OWF – Isonoperic abnormalities- duct propagation

**UNIT II                      ANTENNAS**

Electro magnetic radiations – Elementary doublet – Current and Voltage Distribution – Resonant antennas, radiation patterns and length calculations – Non resonant antennas – Antenna gain and Effective radiated power – Antenna resistance – Bandwidth, Beam width and Polarization – Grounded and Ungrounded antennas – Effects of height – Feed point – Couplers – Impedance matching – Dipole Arrays - Yagi Uda antenna – Parabolic antenna – Horn and Lens antenna – Helical antenna

**UNIT III                      MODULATION TECHNIQUES**

Introduction to Communication Systems – Information – Transmitter – Channel – Noise – Receiver – Need for Modulation Band width requirement – Amplitude modulation: AM Theory – frequency spectrum of AM wave – Representation of AM – Power relations in AM wave – AM Transmitter block diagram – Frequency modulation – System description – Mathematical representation – Frequency Spectrum – Generation of FM – Direct and Indirect methods.

**UNIT IV                      SINGLE SIDEBAND MODULATION**

Introduction – Principles – Balanced modulator – SSB Generation: Filter method, Phase shift method and Third method – SSB Reception: Pilot Carrier SSB and Independent Side band – vestigial sideband transmission – Introduction to PAM, PWM and PPM

**UNIT V                      RECEIVER**

Introduction – Super heterodyne Receiver – Choice of IF and Oscillator Frequencies – Image Rejection – Adjacent Channel Selectivity – spurious response - Tracking – AGC – Double conversion receiver

**TEXT BOOKS**

1. Kennedy and Davis “Electronic Communicaiton Systems” Tata McGraw Hill, 8<sup>th</sup> edition, 1999
2. Dennis Roddy and John Coolen, “Electronic Communicaitons” PHI, 4<sup>th</sup> edition, 1995
3. K.D. Prasad and Satyaprakahan “Antenna Wave Propagation” 3<sup>rd</sup> edition

SEM – IIICore Paper – IV**DIGITAL PRINCIPLES AND APPLICATIONS**

**Subject Description** : The design of the subject is to impart the knowledge about code conversion, Boolean algebra, logic gates, combinational and sequential logic, and converters.

**Goals** : Enable the students to design the logical circuits

**Objectives** : Upon Completion of the subject, the student should be able to \* Convert one number system to another number system, \*Construct truth tables for logic gates, \* Simplify Boolean expression, \* Write VHDL coding for logic circuits

**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, 5<sup>th</sup> edition, 2002.
2. M.Morris Mano "Digital Logic And Computer Design" PHI 2005.
3. M.Morris Mano "Digital Design" PHI 2005.

SEM – III

DCT Paper – I

**COMPUTER ARCHITECTURE AND ORGANIZATION**

**Subject Description** : This subject presents the Modern computer organization, Processor and memory design, Peripherals and recent system architecture.

**Goals** : Enable the students to learn the newest computer technology and trends.

**Objectives** : Upon Completion of the subject, the student should : Gain the knowledge of

Processor and Memory Design and understand the recent computer organization and architecture

**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

**SEM – IV IC'S AND INSTRUMENTATION****Core Paper – VI**

**Subject Description :** The design of the subject is to impart the knowledge on IC fabrication, Timer, PLL, Op-amp., transducers and electronic instruments

**Goals :** Enable the students to acquire the knowledge of IC fabrication, and its application in electronic circuits and know the measurements using electronic instruments

**Objectives :** Upon Completion of the subject, the student should : Understand the IC fabrication, Design circuits with ICs and Gain knowledge about electronic instruments.

**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”, 10<sup>th</sup> Edition Khanna Publishers 2006.
3. J.B.GUPTA “A course in electronic and electrical measurements and instrumentation”, 12<sup>th</sup> Edition, S.K Kataria & sons

SEM – IV

Core Paper – VII

**TELEVISION ENGINEERING**

**Subject Description** : The design of the subject is to impart the knowledge on Television standards, receiver section, sync separator color television with advanced techniques.

**Goals** : Enable the students to acquire the knowledge about television and its recent Developments.

**Objectives** : Upon Completion of the subject, the student should acquire knowledge of television standards and be skilled in trouble shooting of television

**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 theories – 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.



SEM – IV

Core Paper – VIII

**MICROWAVE AND OPTICAL FIBER COMMUNICATION SYSTEMS**

**Subject Description** : An important consideration in the design of the subject is to provide knowledge about microwave, microwave devices, radar and optical fiber communication.

**Goals** : Enable the students to learn the microwave and fiber optic communication systems.

**Objectives** : After successful completion of the course the students should :  
understand the concepts and techniques in microwave and optical communication, \*acquire  
knowledge about radar and optical fiber systems

**UNIT I INTRODUCTION TO MICROWAVES**

Introduction – Maxwell’s equation – Amperes law – Faradays law – Gauss law – Wave equation  
– Types of wave guides – TE and TM modes – Propagation of TM waves in rectangular wave  
guide – TM modes in rectangular wave guides.

**UNIT II MICROWAVE AMPLIFIERS AND OSCILLATORS**

Microwave tubes: - Two cavity Klystron – Multi cavity Klystron – Reflex Klystron – Traveling  
wave tube (TWT) – Backward wave Oscillator (BWO) – Magnetron – Applications

**UNIT III MICROWAVE DEVICES**

Microwave transistors – Gallium Arsenide (GaAs) metal semi-conductor FET – Varactor Diode  
– PIN diode – Schottky diode – Tunnel diode – Gunn diode – IMPATT diode – TRAPATT  
diode – BARITT diode – Maser principle – Applications

**UNIT IV RADAR**

Introduction – Block diagram – Classification – Radar range equation – Factors affecting the  
range of a radar receivers – Line pulse modulator – PPI (Plane Position Indicator) – Moving  
Target Indicator (MTI) – FM CW Radar- Applications.

**UNIT V OPTICAL FIBER COMMUNICATION**

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

**TEXT BOOKS**

1. Kennedy; Davis – “ELECTRONIC COMMUNICATION SYSTEMS” Tata McGraw Hill  
Publishing Company  
Limited, III edition.
2. Robert J Schoenbeck “ELECTRONIC COMMUNICATIONS MODULATION AND  
TRANSMISSION”,  
PHI,1999

## REFERENCE

1. M.Kulkarni – “MICROWAVE AND RADAR ENGINEERING” Umesh Publications, 2<sup>nd</sup> edition.
2. Samuel Y.Liao – “MICROWAVE DEVICES AND CIRCUITS” PHI Private Limited, 2<sup>nd</sup> edition.
3. Anikh Singh – “PRINCIPLES OF COMMUNICATION ENGINEERING” S.Chand & Company Limited, 2<sup>nd</sup> Edition

SEM – III & IV

Core Practical – III

## DIGITAL ELECTRONICS LAB

(ANY 16 EXPERIMENTS)

1. Verification of basic gates and universal gates
2. Verification of Demorgan's Theorem
3. 2-bit comparator using gates
4. Half adder and full adder
5. Half subtractor and full subtractor
6. 4-bit binary adder
7. Multiplexer and De multiplexers
8. Encoder and Decoder
9. BCD to 7-segment Display
10. Study of Flip Flops
11. Binary to Grey and Grey to Binary conversion
12. Shift registers and ring counter
13. Analog to Digital converter
14. Digital to Analog converter
15. Op-Amp: adder and subtractor
16. Op-Amp: integrator and differentiator
17. Current to Voltage and Voltage to Current
18. IC 555 : Monostable multivibrator
19. IC 555 : Astable multivibrator
20. VCO using IC 555
21. Design and Simulation of Logic Gate using VHDL Coding
22. Design and Simulation of Adder Circuits using VHDL Coding
23. Design and Simulation of Encoder and Decoder using VHDL Coding

SEM – III & IV

Core Practical – IV

**RADIO, TV AND INSTRUMENTATION LAB**

(ANY 16 EXPERIMENTS)

1. Amplitude modulation and Detection
2. Frequency modulation and Detection
3. First IF Amplifier
4. Second IF Amplifier
5. Audio Amplifier using TBA 810
6. Study of AM Radio Receiver
7. Study of FM Radio Receiver
8. Study of Tape Recorder
9. Study of CD / DVD Player
10. Study of DTH Receiver
11. Alignment of Color Television Using Video Pattern Generator
12. Sync Separator
13. Vertical Section and Horizontal Section fault of a TV Receiver
14. Video Amplifier Fault
15. EHT Generation
16. Study of Pincushion correction and error magnets
17. Degaussing in Color Television
18. Temperature Measurement Using Thermistor
19. Displacement Measurement Using LVDT
20. Weighing machine Using Load Cell
21. Flow measurement
22. Instrumentation Amplifier
23. Characteristics of Photo Voltaic cell (solar cell)

SEM – IV

DCT Paper – II

**VISUAL PROGRAMMING**

**Subject Description** : The subject presents windows programming, visual basic programming, visual c++ programming, ODBC and GUI

**Goals** : Enable the students to learn the Visual programming

**Objectives** : After successful completion of the course the students student acquire knowledge about visual programming and able to program the applications using VB and VC++

**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. Pappas 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.

SEM – V

Core Paper – IX

## **DIGITAL COMMUNICATIONS**

**Subject Description** : An important consideration in the design of the subject is to enhance the knowledge

in communication with digital and cellular systems

**Goals** : Enable the students to learn the digital and cellular technology

**Objectives** : After successful completion of the course the students understand the Digital carrier modulation and Quantization, Gain knowledge about Cellular systems

### **UNIT I DATA TRANSMISSION**

Introduction – Representation of data signal – Parallel and serial data transmission – 20milli amps loop and line drivers – Transient noise – Data signal – Signal shaping and signaling speed – Noise and error analysis – Repeaters.

### **UNIT II COMMUNICATION SYSTEM**

Model of communication system – Elements of digital communication system: Information source, Source encoder/decoder, Communication channel, Modulator, Demodulator, Channel encoder/decoder, other functional blocks – Analysis of communication system – Design of communication system.

### **UNIT III DIGITAL CARRIER MODULATION SCHEMES**

Binary phase shift keying – Differential phase shift keying – Differentially encoded PSK – Quadrature phase shift keying – Base band signal receiver – Phase shift keying – frequency shift keying – Non-coherent detection of FSK – Differential PSK.

### **UNIT IV QUANTIZATION AND PULSE MODULATION SYSTEMS**

Quantization of signals – Quantization error – Pulse code modulation – Electrical representation of Binary digits – PCM system – Companding – Multiplexing PCM signals – Differential PCM – Delta modulation – Adaptive delta modulation – Voice coders – Channel decoder – Linear predictive coder – Synchronization.

### **UNIT V DIGITAL CELLULAR SYSTEMS**

GSM Architecture – Layer modeling – transmission – Data Service – Multiple Access Scheme – Channel Coding Inter leaving – Radio resource management – Mobility management – Communication management – Network management – TDMA Architecture – Transmission and Modulation – CDMA – Terms of CDMA Systems – Call Processing – Hand over Procedures

### **TEXT BOOKS**

1. Sam K.Shanmugam, “Digital and Analog Communication Systems”, John Wiley Publications,2005
2. John G.Proakis, “Digital Communications”, Tata McGraw Hill International, 2001.
3. W.C.Y.Lee, “Mobile Cellular Telecommunication”, McGraw Hill Publications, 1995

SEM – V

Core Paper – X

## **8085 MICROPROCESSOR AND APPLICATIONS**

**Subject Description** : This subject presents the architecture, Programming in 8085ALP and real world applications of the 8085 microprocessor

**Goals** : To enable the students to learn the instruction set, programming, and interfacing concepts of 8085microprocessor

**Objectives** : On successful completion of the course the students should have:  
Developed the programming skills in 8085ALP Understood the interfacing concept memory, & I/O devices. Understood the concept of microprocessor based system design

### **UNIT I INTRODUCTION TO 8085**

Pin Diagram – Architecture – Demultiplexing the bus – Generation of control signals – Fetching, decoding and execution of instruction – Instruction timing and operation status.

### **UNIT II INSTRUCTION SET AND ADDRESSING MODES**

Instruction set – Addressing modes – Instruction format – Simple program – Memory Read machine cycle – Memory write machine cycle.

### **UNIT III INTERFACING CONCEPTS**

Peripheral I/O instructions – device selection and data transfer – Input Interfacing – Practical Input interfacing using decoders – Interfacing O/P Devices: LED and 7 segment Display – Interfacing memory – Memory time and unit states.

### **UNIT IV PARALLEL AND SERIAL INTERFACE**

Introduction to programmable Peripheral Interface 8255 – Pin Diagram – Architecture – Modes of Operation: I/O and BSR – Architecture and operation of 8251 (USART).

### **INTERRUPT AND TIMER LOGIC**

8085 interrupts - Architecture of programmable interrupt controller 8259 — Architecture of 8254 Programmable Interval timer / counter – Modes of Operation of 8254 – Generating square wave using 8254.

### **UNIT V APPLICATIONS**

Time delay program – Traffic Light Control System – Water Level Controller – Stepper Motor Control – Interfacing DAC – Interfacing ADC – Temperature measurement.

### **TEXT BOOKS**

1. R.S.Gaonkar “Microprocessor Architecture, Program And Its Application With 8085”, New Age International (P) Ltd,
2. S.Malarvizhi, “Microprocessor And Its Application”, - Anuradhe Agencies Publications – I edition, March 1999.

**SEM – V SATELLITE AND NETWORK COMMUNICATION SYSTEMS Core Paper – XI**

**Subject Description :** An important consideration in the design of the subject is to provide orbital aspects, space craft and satellite system, data communication, network protocols and LAN.

**Goals :** Enable the students to learn the digital and cellular technology

**Objectives** After successful completion of the course the students should : Understand the Digital carrier modulation and Quantization, Gain knowledge about Cellular systems enhance the knowledge in communication with satellite and network systems

**UNIT I ORBITAL ASPECTS**

Brief history and current state of satellite communications – Equations of the orbit locating the satellite in the orbit – Orbit element – Look angle – Elevation and azimuth calculation – Geostationary orbit – MEO – LEO – Visibility – Orbital perturbations – Orbital effects in communication system performance.

**UNIT II SPACE CRAFT**

Space craft subsystem – Altitude and orbit control system – Telemetry, Tracking and Command (TT&C) – Power systems – Description of communication system – Transponder – Implementation – Transmission impairments – Space craft antennas – Equipment reliability.

**SATELLITE LINK:** Basic transmission theory – System noise temperature – Noise figure – Down link and up link – Limits on link performance – Design of satellite links for specified  $9C/N$  – rain attenuation model.

**UNIT III DATA COMMUNICATION**

Trends in computer communications and networks – Messages, characters, bit streams, symbols and waveforms – Digital/analog, serial/parallel, simplex/half duplex/full duplex – Synchronous/asynchronous – Modulation and keying alternatives – Multiplexing alternatives.

**UNIT IV NETWORKS PROTOCOLS AND OSI MODEL**

Introduction – Advantages of Networks – Structure of the Communication Network- Point to Point and Multi drop Circuits – Data Flow and Physical Circuits – Network Topologies Goals of Layered Protocols - Network Design Problems- Communication between Layers- the Layers of OSI

**UNIT V LOCAL AREA NETWORKS**

Introduction – Primary Attributes Of A LAN- Broadband And Base Band LANS – IEEE LAN Standards – Relationship Of The 802 Standards To The ISO/CCITT Mode 1 – Connection Options With LANS LLC And Mac Protocol Data Units- LAN Topologies And Protocols – CSMA/CD and IEEE 802.3 – Token Ring and IEEE 802.5 – Token Bus and IEEE 802.4 – Concept of MAN and WAN

**TEXT BOOKS**

1. Dr.D.C.Agarwall, “Satellite Communications”, Khanna Publications, 3<sup>rd</sup> edition, 1995.
2. K.N Raja Rao “Fundamentals Of Satellite Communication”
3. Uyles Black- Computer Networks Protocols, standards and Interfaces- 2<sup>nd</sup> Edition PHI
4. Johan Freer- Computer Communication and Networks – East –West Press (P) Ltd –First Edition.

SEM – V

AOS Paper – I

## **BIO-MEDICAL INSTRUMENTATION**

**Subject Description :** This subject presents various bio-potentials and working principles of medical instruments.

**Goals :** To enable the students to learn about bio-potentials and medical instruments.

**Objectives :** On successful completion of the course the students should have : Understood the concept of bio-potential, Understood the concept of medical instruments and Develop the troubleshooting skills of medical instruments.

### **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 Measurements” PHI 2<sup>nd</sup> edition.
2. Dr. M. Arumugam “Bio Medical Instrumentation” Anuradha Agencies, 2<sup>nd</sup> edition.



SEM – V

DCT Paper – III

## **INTERNET & JAVA PROGRAMMING**

**Subject Description** : The design of the subject is to provide knowledge about internet, Java data types, classes and files

**Goals** : Enable the students to learn the internet concept and Java programming systems

**Objectives** : After successful completion of the course the students should Gain knowledge about the concepts of Internet and able to program the applications using Java

### **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, 2<sup>nd</sup> Edition, 1997
2. Patrick Naughton., “ Patrick Naughton”, Then Java hand book, Tata McGraw, 1997

SEM – VI

Core Paper – XII

**8051 MICROCONTROLLER AND EMBEDDED SYSTEMS**

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

**Goals** : To enable the students to learn the instruction set, programming, and interfacing concepts of 8051 microcontroller.

**Objectives** : On successful completion of the course the students should have : Developed the programming skills in 8051ALP Understood the concept of Embedded C programming Understood the concept of embedded system design

**UNIT I OVERVIEW AND INSTRUCTION SET**

Microcontrollers and embedded processors – microcontrollers for embedded systems – overview of 8051 family – 8051 instruction set and registers.

**UNIT II ASSEMBLY PROGRAMMING & ADDRESSING MODES**

Introduction to 8051 assembly programming – the program counter and ROM – Data types and directives – flag bits and PSW register – register bank and stack – loop and Jump instructions – I/O port programming – addressing modes.

**UNIT III ARITHMETIC AND LOGICAL OPERATIONS IN ALP & C**

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

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

**UNIT IV 8051 INTERRUPTS & PERIPHERALS**

Basic registers of timer – programming 8051 timer – counter programming – basics of serial communication – 8051 connection to RS 232 – 8051 serial communication. Programming – 8051 interrupts – programming external hardware interrupts.

**UNIT V REAL WORLD APPLICATIONS**

Interfacing LCD to the 8051 – interfacing ADC – sensors to 8051 – interfacing Stepper motor – 8051 interfacing to the keyboard – interfacing DAC to the 8051

**TEXT BOOK**

1. Muhammad Ali Mazidi, Janice Gillispie Mazidi and Rolin D. McKinlay, “The 8051 Microcontroller And Embedded Systems Using Assembly And C ”, PHI, 2<sup>nd</sup> edition 2006

SEM – V & VI

Core Practical – V

**ELECTRONIC COMMUNICATION LAB**

(ANY 16 EXPERIMENTS)

1. Pulse Amplitude Modulation (PAM) and Detection
2. Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM)
3. Generation and Detection of PCM
4. Generation of delta and Adaptive delta modulation
5. Amplitude Shift Keying
6. Frequency Shift Keying
7. Phase Shift Keying
8. QPSK
9. DPSK
10. Study of TDM/FDM
11. Full duplex communication model
12. Alignment of satellite receiver
13. Alignment of dish antenna
14. LED Characteristic
15. PIN Diode Characteristics
16. Laser Diode Characteristics
17. Fiber Optics T<sub>x</sub> and R<sub>x</sub>
18. Signal Sampling and Reconstruction
19. GUNN diode Oscillator
20. Reflex Klystron Characteristics using microwave bench
21. Radiation pattern of HORN antenna.
22. Radiation pattern of Dipole & Yagi Uda antennas
23. Radiation pattern Loop & array antennas

SEM – V & VI

Core Practical – VI

## **MICRO PROCESSOR AND MICROCONTROLLER 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.

### **8051 Microcontroller Lab**

15. Arithmetic and Logical Programs
16. Key Interface
17. LED Interface
18. Solid State Relay Interface
19. Square wave Generation
20. ADC interface.
21. DAC interface.
22. Stepper motor interface
23. LCD Interface

SEM – VIAOS Paper – II**INDUSTRIAL AND POWER ELECTRONICS**

**Subject Description** : This subject presents the principles and applications of industrial and power electronics

**Goals** : To enable the students to learn and design industrial & power electronic circuits.

**Objectives** : On successful completion of the course the students should have : Developed the circuit designing skills power electronics. Understood the concept industrial electronics system design.

**UNIT I**

Principles of single phase inverter, converter, cyclo converter and DC chopper – UPS – HVDC – static circuit breaker – over voltage protection – battery charging circuit – SCR current limiting circuit breaker – static AC and DC switches – flasher circuits - time delay circuits – fan regulator using TRIAC – thyristor protection circuits: over current protection – over voltage protection – gate protection.

**UNIT II**

Welding and Heating: resistance welding – types of resistance welding – electronic control in resistance welding: ignitron contractor – heat control – non synchronous timer – synchronous weld timer – sequence timer – energy storage welding systems – induction heating – applications of induction heating – high frequency power source for induction heating – dielectric heating – application of dielectric heating.

**UNIT III**

Generation of ultrasonic waves – applications of ultrasonic – production of X rays – applications – Measurement of non electrical quantities: pressure measurements – displacement measurements – level measurements – flow measurements – measurement of thickness.

**UNIT IV**

Application in industrial systems: Thermistor control of quench oil temperature – proportional mode pressure control system – strip tension controller – automatic weighing system – control of relative humidity in a textile moistening process – warehouse humidity controller.

**UNIT V**

Industrial Robotic Systems: Parts of robotic systems – Classifications of robotic systems – robotic system configurations – degrees of freedom of robotic system – programming robotic systems – motions of robotic systems – sensor for robotic systems – mechanical parts – control systems.

Microprocessor based industrial applications: Speed control of DC motor – measurement of physical quantities – water level indicator – firing angle control of thyristor.

**TEXT BOOKS**

1. Harish C Rai, “Industrial And Power Electronics” 10th edition, Umesh publications 2002
2. Timothy J Maloni, “Industrial Solid State Electronic Devices And Circuits” 2nd edition 1986

SEM – V & VI

AOS Practical – I

**INDUSTRIAL AND MEDICAL ELECTRONICS LAB**

(ANY 16 EXPERIMENTS)

1. Triggering of SCR by R, C and Diac.
2. Design of snubber circuit.
3. Fan regulator using Triac.
4. Thyristor chopper.
5. TRIAC Flasher.
6. Commutation Techniques.
7. Speed control of DC motor using SCR.
8. Automatic street light controller.
9. Burglar Alarm
10. Sequencer Circuit.
11. Power Inverter
12. Switching Regulator
13. Automatic Battery Charger
14. Fire alarm
15. ON / OFF relay control using opto – coupler
16. Servo stabilizer
17. Layout and Art Work preparation for PCB
18. Etching Drilling and Component mounting of PCB
19. Temperature monitor using AD 590
20. Pulse Rate monitor.
21. ECG Measurement
22. Blood pressure measurement using Sphygmomanometer
23. Notch filter

SEM – VI

DCT Practical – I

**VISUAL PROGRAMMING LAB**

(ANY 10 EXPERIMENTS)

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 LAB**

(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****PRINCIPLES OF ELECTRONICS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

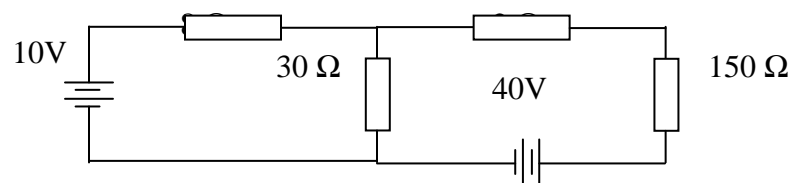
- 1) For precision resistors the tolerance may be a)  $\pm 1\%$  b)  $\pm 5\%$  c)  $\pm 10\%$
- 2) Define self inductance?
- 3)  $VI \cos \Phi$  is called apparent power.(T\F)
- 4) In parallel resonant circuit the dynamic resistance at impedance at \_\_\_\_\_
- 5) A complete network can be converted in to its equivalent voltage source and series impedance using Norton's theorem(T\F)
- 6) When the load resistance is equal to the \_\_\_\_\_ power is transferred.
- 7) The Knee voltage for silicon pn junction is \_\_\_\_\_.
- 8) In n type semiconductor \_\_\_\_\_ are the minority carriers.  
a) electrons b) protons c) holes
- 9) A TRIAC is a \_\_\_\_\_ power switch.
- 10) A UJT is switched on when I/P voltage becomes equal to \_\_\_\_\_

**SECTION - B ( 5 X 6 = 30 )**

- 11) a.) The Total voltage drop across three resistors of 2k, 5k, 8k connected in series is 300volt. What is the voltage drop across each resistor? (OR)
- b.) What are the types of variable capacitors? Give their constructional details.
- 12) a.) Draw a RLC parallel resonance circuit. Find the conditions for resonance. (OR)
- b.) Calculate the average voltage for a sinusoidal voltage.
- 13) a.) State and explain Thevenin's theorem. (OR)
- b.) State and explain maximum power transfer theorem.
- 14) a.) Explain how the P-type semiconductor is formed. (OR)
- b.) Give the constructional detail and action of pnp transistor.
- 15) a.) Write down the action of JFET. (OR)
- b.) Write down the action of MOSFET.

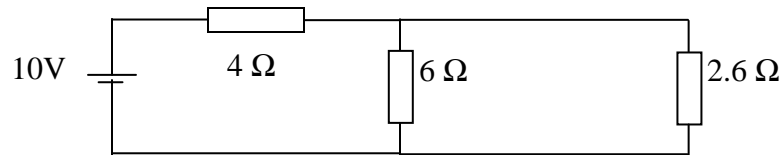
**SECTION - C ( 5 X 12 = 60 )**

- 16) a.) What are the various types of resistors? Give the operation of each. (OR)
- b.) What is called Q factor? Obtain the equation for energy stored in a capacitor.
- 17) a.) Define the term i) Parallel reactance and resistance  
ii) Series reactance and resistance (OR)
- b.) Explain mesh current analysis of a network with suitable examples.
- 18) Find the current in 150ohm load resistor and power consumed in it by the principal of super position.



(OR)

b.) Find the Norton equivalent of the circuit shown. The load resistance between A and B is  $2.6 \Omega$



19) a.) What is the difference between Zener diode and junction diode? Explain the VI characteristics of Zener diode. (OR)

b.) Explain the characteristics of common emitter configuration.

20) a.) Define the term in SCR characteristics. i) break over voltage

ii) Holding current

iii) Forward current rating (OR)

b.) Give the constructional detail of UJT and explain its characteristics.

**SEM - III****Core paper - II****ELECTRONIC CIRCUITS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

- 1) The maximum efficiency of full wave rectifier is  
A.40.6% b.81.6% c.100% d. None of the above
- 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 of transistors such as NPN and PNP WITH \_\_\_\_\_ is used in complementary symmetry amplifier.
- 7) The negative feedback \_\_\_\_\_ the gain.
- 8) The current gain of emitter follower is \_\_\_\_\_ than unity.
- 9) Oscillator employing both negative and positive feedback is \_\_\_\_\_
- 10) \_\_\_\_\_ Multivibrator is a square wave oscillator.

**SECTION - B ( 5 X 6 = 30 )**

11) a.) Give the importance of load line analysis. (OR)

b.) Draw a transformer coupled amplifier circuit explain how the response differs from RC amplifier.

12) 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.

- 13) 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.
- 14) 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.
- 15).a. What is ripple factor find its value for half wave rectifier (OR)  
 b.) Describe how Zener acts as a voltage regulator?

**SECTION - C ( 5 X 12 = 60 )**

- 16 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.
- 17.a.) What is class A amplifier find its collector efficiency. (OR)  
 b.) Why push pull amplifier called so? Write down the detail of output response and calculate the efficiency.
- 18.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.
- 19.a.) Explain the operation of phase shift oscillator with neat diagram. (OR)  
 b.) Explain the operation of Monstable Multivibrator.
20. a.) Draw the full wave rectifier circuit and find its efficiency. (OR)  
 b.) Explain the operation of capacitor filter with proper output wave form.

**SEM - III**

**Core paper - III**

**PRINCIPLES OF COMMUNICATION SYSTEMS**

**TIME :3 Hrs**

**MARKS :100 Max**

**SECTION - A ( 10 X 1 = 10 )**

- 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    c) Its detector suffers from burnout.
- 6) Indicate the antenna which is not wideband  
 a. Discone    b. Helical    c. Marconi    d. Yagi - Uda
- 7) An Antenna that is circularly polarized is the

- a. Helical      b. Yagi – Uda      c. Small circular loop      d. Parabolic 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 )**

- 11)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.
- 12)a. Write short note on Horn Antenna (OR)  
b. Compare radiation power and radiation pattern.
- 13)a. Give four justification or needs for modulation. (OR)  
b. Define the term : Percentage of modulation specify its significance.
- 14)a. How does a balanced modulator work?(OR)  
b. Discuss briefly the working AM transmitter.
- 15)a. Briefly discuss the role of IF oscillator in super heterodyne receiver (OR)  
b. Write short note on : Tracking.

**SECTION - C ( 5 X 12 = 60 )**

- 16)a. Explain in details the space wave propagation OR  
b. Deduce Secant law and discuss various cases of MUF.
- 17)a. Explain the salient features of grounded and ungrounded antenna. OR  
b. Write short note on : Fan dipole and parabolic reflectors.
- 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 principle of single side band. (OR)  
b. How does one can generate FM?
- 20)a. Discuss about the AM modulator and its limitations. (OR)  
b. With appropriate theory analyze FM wave.

**SEM - III**

**Core paper - IV**

**DIGITAL PRINCIPLES AND APPLICATIONS**

**TIME :3 Hrs**

**MARKS :100 Max**

**SECTION - A ( 10 X 1 = 10 )**

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)  $\bar{Q}_n$
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) 5  $\mu$ s    d) 10  $\mu$ s

**SECTION - B ( 5 X 6 = 30 )**

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 )**

16. a) Perform the following conversions.  
(i)  $(247)_{10} = ( \quad )_8$     (ii)  $(1100.1011)_2 = ( \quad )_{10}$   
(iii)  $(ABCD)_{16} = ( \quad )_2$     (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****IC's & Instrumentation****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

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
  - e.
2. The break down voltage in diffused junction capacitor is about
  - a. 5-20 volts
  - b. 20volts
  - c. 20-50volts
  - d. 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.  $2\pi$
  - b.  $\pi$
  - c.  $\pi/2$
  - d. 0
6. IC 555 timer is triggered when the trigger input
  - a. Makes a positive transition
  - b. Become  $V_{cc}/3$  while making a positive transition
  - c. Become  $V_{cc}/3$  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
  - e. 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)**

- 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)**

- 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 -IV****Core Paper VII****TELEVISION ENGINEERING****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

- 1) Total number of line/elements to be resolved in the vertical direction is equal to .....
- 2) What is horizontal scanning frequency.
- 3) The antennas widely used with TV for locations with 40 to 60 km from the transmitter is known as .....
- 4) The purpose of video detector is to suppress audio signals (True/False)

- 5) The output of the vertical amplifier applied to the Yoke in a TV receiver consist of sawtooth current (True / False)
- 6) Order of EHT voltage in TV receiver is .....
- 7) The band width of TV signal in colour TV transmission is more than that in B/w TV transmission (True / False)
- 8) The colour to which eyes are most sensitive is  
a. black      b. green      c. red      d. blue
- 9) For video recording .....modulation is used.
- 10) Mention any two applications of CCTV

**SECTION - B ( 5 X 6 = 30 )**

- 11) a.) Explain vertical resolution in black and white TV (OR)  
b.) Explain the functions of composite video signal.
- 12) a.) Explain the function of any one TV receiver antenna with proper diagram.(OR)  
b.) What is a “Balun”. Give its constructional details.
- 13) a.) What are synchronizing pulses? Explain. (OR)  
b.) Draw the basic circuit of EHT supply and discuss its functions
- 14) a.) Explain the chromaticity diagram (OR)  
b.) What are the requirements in a colour TV compatible with a monochrome TV
- 15) a.) Bring out difference between VCR and Video disc recorders (OR)  
b.) Why it is not possible to record video signal using by conventional magnetic recording techniques.

**SECTION - C ( 5 X 12 = 60 )**

- 16) a.) Explain the vestigial side band transmission why is it employed for transmission of TV picture signals? Also discuss why SSB is not used for picture signal transmission.(OR)  
b.) Explain the operation of an Image Orthicon Camera with the help of a neat sketch
- 17) a.) Describe the function of a monochrome TV receiver with the help of block diagram. (OR)  
b.) What are tuners? Give the basic block diagram of UHF-VHF tuner. What are the various functions of a TV receiver tuner.
- 18) a) What are the significance of the Horizontal output system. With necessary block diagram discuss the horizontal output stage. (OR)  
b.) Explain how the yoke is fixed as the tube neck? Describe how the centering of the electron beam is accomplished with the help of centering magnets.
- 19) a.) Explain with suitable block diagram the encoding process in the PAL colour system. (OR)  
b.) Describe the constructional details of a PIL tube. What are its distinguishing features.
- 20) a.) In what aspects does a conventional TV receiver differ from a digital TV receiver. List out the advantages of a digital TV receiver.(OR)  
b.) With the help of a neat sketch, describe in detail the operation of Helical scan Video tape recorder of professional grade.



**SEM : IV****Core Paper - VIII****MICROWAVE AND OPTICAL FIBRE COMMUNICATION SYSTEMS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

1. If the reflection coefficient is 0.2 then SWR is equal to  
a. 1.5                      b. 066                      c. 0.8                      d.1.2
2. Which of the following statements is not true?  
a. Wave guides posses more advantage over coaxial cables  
b. Power handling capacity of wave guides is more  
c. power losses in wave guides are more  
d. Wave guides are simpler to manufacture
3. The fundamental quantity measured with regard to transmission lines and wave guides is  
a. Current      b. Voltage      c. Power                      d. Resistance
4. The wavelength along the transmission system operating at 8 GHz is  
a. 37.5 cm                      b. 37.5 mm  
c. 37.5 mm                      d. 3.75 m
5. A low power lay efficiency microwave oscillator is known as  
a. Magnetron   b. Multi cavity klystron      c. Klystron      d. Reflex klystron
6. Which of the following is incorrect for the wide use of microwaves?  
a. bandwidth   b. improve directivity   c. reliability      d. high power requirement
7. The time required for an electromagnetic wave to travel a nautical mile is about  
a. millisec      b. microsec      c. nanosec                      d. picosec
8. The output of radar transmitter is expressed in terms of  
a. Peak power              b. Average power      c. Pulse rate      d. Duty cycle
9. Gunn effect  
a. is a bulk property of semi conductor  
b. does not depend on junction or contact properties  
c. is not affected by magnetic fields  
d. is dependent on total voltage or current
10. A pin diode consists of ..... doped P and N regions separated by .....  
Region  
a. Lowly, undoped      b. lowly doped              c. heavily, undoped              d. heavily, doped

**SECTION B – (5 x 6 = 30)**

11. a) Obtained the basic transmission line equations(OR)  
b) Show that the velocity of propagation of the wave in a guide is greater than the phase velocity in free space.
12. a) Describe how you will measure low microwave power. (OR)  
b. Define noise factor. How will you measure it?
- 13.a) Give the schematic diagram of a klystron amplifier and briefly discuss its working(OR)  
b) Discuss II mode oscillations in a magnetron.
14. a) Discuss gunn effect (OR)  
b) Give the theory of MASER
15. a) Explain the block diagram of basic fibre optics communication system(OR)  
b. Compare analog and digital transmitter.

**SECTION C-(5 x12 = 60 )**

16. a) State and explain Maxwell's four equations(OR)  
 b) Discuss the transmission of TM waves in rectangular wave guide.
17. a) Describe with the help of block diagram how you will measure Q by transmission.(OR)  
 b) What is a bolometer?. Describe the working of a balanced bolometer bridge.
18. a) Give the mathematical analysis's of two cavity Klystron (OR)  
 b) Describe the construction features and working of a cavity magnetron.
- 19.a) Explain the construction and working of a varactor diode. Give a typical doublers circuit using an ordinary varactor diode.(OR)  
 b) Sketch the characteristic curved for  
 i. Tunnel diode and ii Scottky diode account for their shapes
20. a) Explain how fibre is fabricated by external chemical vapor deposition. Discuss its characteristics. (OR)  
 b. i. Discuss the function of the strength member in fibre cable and selection criteria for a strength member.  
 ii) Explain the process of minimum bend radius.

**SEM : IV****Core Paper - VIII****MICROWAVE AND OPTICAL FIBRE COMMUNICATION SYSTEMS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

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6. Which of the following is incorrect for the wide use of microwaves?  
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 a. Peak power                      b. Average power      c. Pulse rate      d. Duty cycle
9. Gunn effect

- a. is a bulk property of semi conductor
  - b. does not depend on junction or contact properties
  - c. is not affected by magnetic fields
  - d. is dependent on total voltage or current
11. A pin diode consists of ..... doped P and N regions separated by .....  
Region
- a. Lowly, undoped
  - b. lowly doped
  - c. heavily, undoped
  - d. heavily, doped

**SECTION B – (5 x 6 = 30)**

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**SECTION C-(5 x12 = 60 )**

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- 19.a) Explain the construction and working of a varactor diode. Give a typical doublers circuit using an ordinary varactor diode.(OR)
- c) Sketch the characteristic curves for
  - i. Tunnel diode and ii Scottky diode account for their shapes
- 21. a) Explain how fibre is fabricated by external chemical vapor deposition. Discuss its characteristics. (OR)
- b. i. Discuss the function of the strength member in fibre cable and selection criteria for a strength member.
- iii) Explain the process of minimum bend radius.

**SEM - V**

**Core paper - X**

**8085 MICROPROCESSOR AND APPLICATIONS**

**TIME :3 Hrs**

**MARKS :100 Max**

**SECTION - A ( 10 X 1 = 10 )**

- 1. The memory capacity of microprocessor 8085 is
  - (a) 65 KB
  - (b) 32 KB
  - (c) 65536 B
  - (d) 1024 B

2. How many flags are available in 8085 microprocessor  
(a) 5            (b) 2            (c) 4            (d) 3
3. Which one of the following addressing mode cannot be used in 8085?  
(a) Direct addressing            (b) Immediate addressing  
(c) Base register addressing    (d) Register indirect addressing
4. Which one of the following is not a conditional branch instruction?  
(a) JNZ            (b) JPE            (c) RET            (d) CNZ
5. Pick out the two types of 7-segment display  
(a) Common cathode, active, anode  
(b) Common cathode, common anode  
(c) Active cathode, common anode  
(d) Cathode, anode
6. The role of decoders in interfacing I/O is  
(a) To get unique address for that device  
(b) To get data from device  
(c) To multiplex data and address bus  
(d) To reset microprocessor
7. In 8255 which port has bi-directional data transfer facility?  
(a) Port - C    (b) port - A    (c) port – C    (d) None of the above
- . How many interrupts can be implemented using 8259?  
(a) 2            (b) 4            (c) 8            (d) 1
9. To produce a long time delay  
(a) Two register pairs are used  
(b) One register pairs are used  
(c) A single register is used  
(d) A register pair and a register are used.
10. Stepper motor can be rotated \_\_\_\_\_?  
(a) In specified angle  
(b) Clockwise direction only  
(c) Anticlockwise direction only  
(d) And cannot be stopped

**SECTION B – (5 x 6 = 30)**

- 11.(a) Explain how control signals are generated in 8085.[OR]  
(b) Write a note on flags available in 8085 operation and register for it.
- 12.(a) State the different fields of instruction format and explain.[OR]  
(b) Explain the execution of the two logical operations  
(i) AND B    (ii) XRI data
- 13.(a) Write a note on peripheral I/O instruction[OR]  
(b) Explain the basic concept of interfacing.
- 14.(a) Write a note on mode – 1 of 8255A.            [OR]  
(b) Explain the purpose of the pin GATE in 8253.
- 15.(a) Explain the time delay program using single register in 8052 operation.[OR]  
(b) Explain briefly stepper motor control using 8085.

**SECTION C – (5 x 12 = 60)**

- 16.(a) Explain the concept of decoding and execution of an instruction by drawing the timing diagram.[OR]  
 (b) Explain the pin details of 8085 microprocessor?
- 17.(a) State any three data transfer and Arithmetic operations of 8085 and explain their operation.  
 [OR] b) Explain the concept of the following w.r to 8085 with diagram.  
 (i) Memory Read Cycle (ii) Memory Write cycle
- 18.(a) Explain how i/p device can be interfaced to 8085 using decoders with suitable diagram.[OR]  
 (b) Explain how seven segment display is interfaced with microprocessor with suitable diagram.
- 19.(a) Draw the Architecture of 8251 and explain the function briefly.[OR]  
 (b) Draw the block diagram of 8259 and explain its working briefly.
- 20.(a) Describe how traffic control system is designed using microprocessor.[OR]  
 (b) Explain software design of temperature monitoring system based on 8085.

**SEM : V****Core Paper - XI****SATELLITE AND NETWORK COMMUNICATION SYSTEMS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

- 1) Low earth orbit satellites have orbits  
 a. Below 500 km      b. Below 1500km      c. Around 15000km      d. Above 30000km
- 2) Geostationary satellites rotate at the ..... rate and in the . direction as the earth.  
 a. same, same      b. same, opposite      c. different, same      d. different, opposite
- 3) The velocity of satellite in a circular orbit 1600 km above the earth's surface is around  
 a. 70 km/sec      b. 11.5 km/sec      c. 3.5 km / sec      d. decreases
- 4) A rocket explodes in air. Its total momentum  
 a. increases      b. remains the same      c. becomes zero      d. decreases
- 5) Which topology should you use if you want to use routers to search among multiple active paths and decide upon the best path at any given moment?  
 a. Star      b. Bus      c. Ring      d. mesh
- 6) In communication, data can travel in either direction, but not simultaneously.  
 a. simplex      b. half – duplex      c. full duplex      d. duplex
- 7). Which topology would you choose if you need to set up a temporary network for six computers in an office with no preinstalled wiring?  
 a. Bus      b. Star      c. Mesh      d Ring
- 8) Which of the following WAN technologies uses packet assemblers and disassemblers?  
 a. ATM      b. ISDN      c. X. 25      d. Frame relay
- 9) What data transfer rate does TI technology offer?  
 a. Upto 1.54 Mbps      b. Upto 45 Mbps      c. Upto 100 Mbps      d. Upto 622 Mbps
- 10) ..... Communication allows communication in only one direction.  
 a. Simplex      b. half – duplex      c. full – duplex      d. all

**SECTION - B ( 5 X 6 = 30 )**

- 11). a. Discuss the two main classes of communication satellite (OR)  
 b. Discuss the orbital effects in communication system.
- 12) a. Distinguish Geostationary and geo synchronous satellites (OR)  
 b. Explain the propulsion of a rocket.
- 13) a. Discuss the trends in computer communication networks (OR)  
 b. Explain the serial and parallel transmission.
- 14).a. Explain the various network topologies (OR)  
 b. Explain the concept of packet switching
- 15). a. Discuss about distributed networks (OR)  
 b. Explain the basic concept of an Internet.

**SECTION - C ( 5 X 12 = 60 )**

- 16) a. Write about the current state of satellite communication (OR)  
 b. How will you locate a satellite?
- 17).a. Describe the mechanics of launching a synchronous satellite.(OR)  
 b. Explain the working of expandable launch vehicle
- 18).a. Discuss about Serial / Parallel and Simplex / Half – duplex / Duplex transmission(OR)  
 b. Describe the asynchronous and synchronous transmission.
- 19).a. Compare any five CCITT and AT & T modern standards(OR)  
 b. Describe any two kinds of multiplexing.
- 20) a. Describe the various components of LAN (OR)  
 b. Explain any four features of an Internet.

**SEM : VI****Core Paper - XII****8051 MICROCONTROLLER AND EMBEDDED SYSTEMS****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

- A microcontroller normally has which of the following devices on-chip?  
 (a) RAM (b) ROM (c) I/O (d) All the above
- The AT89C51-12PC chip can handle a maximum frequency of \_\_\_ MHz  
 (a) 6 (b) 12 (c) 18 (d) 32
- The flag register in the 8051 is called \_\_\_\_  
 (a) SP (b) PSW (c) ALE (d) none of these
- What is the size of the SP register  
 (a) 4 bit (b) 8 bit (c) 16 bit (d) 32 bit
- The instruction “ ADD A, source” places the sum in \_\_\_\_  
 (a) A register (b) B register (c) C register (d) D register
- How many timers do we have in the 8051?  
 (a) One (b) Two (c) Three (d) Four
- The CJNE instruction alters the contents of its operands (True/ False)
- The TMOD register is a bit-addressable register (True/ False)
- For the LCD to recognize information at the data pins as data, RS must be set to .....
- A stepper motor with a step-angle of 5 degrees has .....steps per revolution

**SECTION – B (5 X 6 = 30)**

11. a) Give the criteria for choosing a microcontroller(or)  
b. Briefly explain the RAM allocation in 8051
12. a. Describe briefly the function of stack operation(or)  
b. Explain the flag bits and PSW register
13. a. Write a program to multiply two eight bit numbers?(or)  
b. Write a program to subtract a number from another number by 2's complement method using a microcontroller
14. a. What do you understand the word software and hardware interrupt(or)  
b. Write a 8051 ALP to generate square waveform using Timer 0
- 15.a. What are the steps involving in AD conversion processing(or)  
b. Describe the function of scanning keyboard

**SECTION – C (5 X 12 = 60)**

- 16.a. Draw the 8051 architecture and explain(or)  
b. Classify the 8051 instruction and explain each with two examples
- 17.a. Explain loop and jump instruction with an example(or)  
b. Discuss about addressing modes of 8051 microcontroller in detail
18. a. Write a 8051 ALP and C program to add an array of data(or)  
b. Explain the data types and operators in Embedded 'C'.
- 19.a. Explain the 8051 interrupts in detail(or)  
b. Explain the mode 1 operation of 8051 URT
- 20.a. With necessary Hardware and software explain the concept of interfacing temperature sensor(or)  
b. Write an 8051 ALP to generate triangular waveform by interfacing a DAC.

**SEM -V****AOS Paper : I****BIO MEDICAL INSTRUMENTTATION****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

- 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. Cytob. 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 )**

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 )**

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 : VI****AOS Paper - II****AOS- INDUSTRIAL AND POWER ELECTRONICS****TIME :3 Hrs****MARKS :75 Max****SECTION - A ( 10 X 1 = 10 )**

- 1) A triac is a  
 a. 2 terminal switch b. 2 terminal bilateral switch  
 c. 3 terminal unilateral switch d. 3 terminal bilateral switch.
- 2) The thyristor is turned off when the anode current falls below  
 a. forward current b. latching current c. holding current d. break over current
- 3) The sequence timer used in welding circuits provide  
 a. Signal to squeeze the welding electrode together b. signal to start the flow of welding current  
 c. Stop the welding current d. All the above
- 4) The electrode used in seam welding  
 a. point electrode b. wheel shape electrode c. any type of welding electrode d. none of the above



- 5) The frequency ultrasonic wave ranges  
 a. From 20 Hz to 20 kHz    b. above 20 KHz    c. below 20 KHz    d. 20 MHz and above
- 6) When certain crystal is subjected to pressure or tension develop electric changes on definite crystal surfaces is  
 a. magnetosmitive effect    b. seeback effect    c. piezo electric effect    d. none of the above
- 7). Induction heating is used for  
 a. Insulating materials    b. magnetic materials  
 c. Conducting materials    d. none of the above
- 8) In the recent resistance welding sets the line contact used is  
 a. ignitron controlled    b. SCR controlled    c. Thyatron Controlled    d. Transistor controlled
- 9) In the case of seam welding the flow of current through the electrode should be a. Continuous    b. intermittent    c. can be continuous or intermittent    d. none of these
- 10) Method of switching off a thyristor is known as  
 a. commutation    b. triggering    c. snuffing    d. none of these.  
 c. Raman Scattering    d. Ionospheres reflections.

**SECTION - B ( 5 X 5 = 25 )**

- 11). a. Describe the construction and working of TRIAC, Draw the v- I characteristics. (OR)  
 b. What is snubber circuit? Describe the operation of snubber circuit.
- 12) a. Describe the construction and working of High frequency power source used in induction heating (OR)  
 b. What is the principle of dielectric heating? Enumerate the problems occur in dielectric heating.
- 13) a. Describe the operation of resistance welding with a respective circuit diagram. (OR)  
 b. Describe the operation of sequence timer with suitable circuit diagram.
- 14).a. Describe the operation of automatic weighing system (OR)  
 b. Describe the operation of Ware House humidity controller.
- 15). a. What are the classification of robotic systems. (OR)  
 b. Write a program to control the speed of DC motor.

**SECTION - C ( 5 X 8 = 40 )**

- 16) a. Explain the various deceive specifications of thyristor. (OR)  
 b. Explain the series and parallel operation of thyristor.
- 17).a. Explain how the thyristors are protected from over voltage and over current (OR)  
 b. Describe in detail about the digital fixing scheme of thyristors.
- 18).a. Explain the principle of operation induction heating. Give the advantages and applications.(OR)  
 b. Explain the different application of Dielectric heating
- 19).a. Describe the different types of resistance welding mention its uses.(OR)  
 b. Describe the operation of weld control circuit with circuit diagram.
- 20) a. Explain the following :  
 i. Parts of robotic system    ii. Configuration of robotic system (OR)  
 b. Write a program for the following  
 i. Water level indicator    ii. Firing angle control of thyristor.

**SEM . III****Dip. Paper I****COMPUTER ARCHITECTURE AND ORGANIZATION****TIME :3 Hrs****MARKS :100 Max****SECTION - A ( 10 X 1 = 10 )**

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)**

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  
(c)

**SECTION B – (5 x 12 = 60)**

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 )**

- What are the objects of GDI  
 (a) Pen Font (b) Brush Color (c) Palette Fill (d) Color Fill
- Pick up the data type in the Hungarian notation format  
 (a) Cname (b) Int (c) h (d) Sz
- Which one is a intrinsic control  
 (a) Textbox (b) Rich textbox (c) Image list (d) ADODC
- How many controls will be loaded in a form  
 (a) 256 (b) 269 (c) 52 (d) none of the above
- A dialog based MFC application is derived from\_\_\_\_\_  
 (a) CDialog (b) CFrame (c) CDocument (d) CWinApp
- 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
- The method used to activate the modelless dialog is \_\_\_\_\_  
 (a) Create ( ) (b) Domodel ( ) (c) both (a) and (b) (d) none of the above
- Expand DDX  
 (a) Delete Data Entry (b) Do Data Exchange(c) Dialog Definition Entry (d) None of the above
- Expand UID  
 (a) User Interface Data (b) User Interface Design (c) User Interact Data (d) Utility Interface Design
- 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)**

- (a) Explain windows message processing(OR)  
 (b) What is Device context? How will you get a Device context Handle?
- (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)**

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 )**

**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)**

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)**

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.