TEACHING & EXAMINATION SCHEME
For the Examination – 2015
ELECTRONICS

B.Sc. Final

THEORY

			Pd/W (45mts.)	Exam. Hours	Max. Marks 150
Elec. 301	Paper I	Audio and Video systems	2	3	50
Elec. 302	Paper II	Electronic Instrumentation	2	3	50
Elec. 303	Paper III	Digital computer electronics	2	3	50
PRACTICAL			6	5	75
		Total			**225**

B.Sc. Part III

PAPER I : AUDIO AND VIDEO SYSTEMS

Note: The question paper for the examination will be divided in three parts i.e., Section – A, Section – B and Section – C.

Section – A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited upto 30 words. Each question will carry 1 mark.

Section – B: Will consist of 10 questions. Two questions from each unit will be set and students will answer one question from each Unit. Answer of each question shall be limited upto 250 words. Each question carry 3.5 marks.

Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1 :

Radio Receiver : Characteristics and their measurements, tuned radio frequency receiver, frequency translation, superheterodyne receiver – block diagrams, typical transistor receiver circuit – explanation of various stages, FM receiver, trouble shooting and servicing of radio receiver, no sound, weak and noisy receiver, stereo transmission and reception.

UNIT 2 :
Televison transmission : Broadcast channels, picture scanning, frequency band and resolution, camera tubes, block diagrams of transmitter and explanation of each block, colour transmission.

UNIT 3:
Television Receiver : Scanning sequence and interlacing, synchronization and blanking, block diagrams of colour and monochrome receivers and explanation of each block, video tap recording and reproduction, troubles and trouble shooting.

UNIT 4 :
Sound recording and reproduction : Construction of microphones and speakers, block diagrams of a tape recording system, recording, playback and erasing processes, tape transport system, trouble in tape transport system and magnetic heads of tape recorders, disc recording, Hi- Fi systems and stereophony system.

UNIT 5 :
Radar system : Basic radar system, radar range equation, pulsed radar system, Doppler effect. CW Doppler radar system, moving target indicator principle, FM radar system.
satellite communication : orbital satellites, geo stationery satellite, orbital patterns, look angles, orbital spacing , satellite systems. link modules

PAPER II: ELECTRONIC INSTRUMENTATION

Note: The question paper for the examination will be divided in three parts i.e., Section – A, Section – B and Section – C.

Section – A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited upto 30 words. Each question will carry 1 mark.

Section – B: Will consist of 10 questions. Two questions from each unit will be set and students will answer one question from each Unit. Answer of each question shall be limited upto 250 words. Each question carry 3.5 marks.

Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1 :
Wave shaping circuits : Waveform terminology, RC wave shaping circuits, Differentiation and integration of step, pulse and square wave inputs, clipping and clamping circuits.

UNIT 2 :
Wave form generators : Astable, monostable and bistable multivibrators, Schmitt trigger, UJT as sawtooth waveform generator, synchronisation, general features of a time base signal, simple voltage and current sweep circuits.

UNIT 3 :
Regualted power supplies and controlled rectification : voltage regulation using transistors, Op-Amps and IC's, Controlled rectification using SCR, current rating of SCR, DIAC and TRIAC, phase control circuits

UNIT 4 :
Laboratory Equipments : Standard signal generators, FETVM, digital voltmeter, digital multimeter, frequency counter, harmonic distortion – tuned circuit harmonic distortion analyzer, heterodyne harmonic analyzer, data acquisition system.

UNIT 5 :
Pulse height analysis : SCA and MCA, nuclear electronics systems, scintillation detectors, radiation counter, origin of bio-electric signals, ECG, cardiac monitor, sonography

PAPER III : **DIGITAL COMPUTER ELECTRONICS**

Note: The question paper for the examination will be divided in three parts i.e., Section – A, Section – B and Section – C.

Section – A: Will consist of 10 compulsory questions. There will be two questions from each unit and answer of each question shall be limited upto 30 words. Each question will carry 1 mark.

Section – B: Will consist of 10 questions. Two questions from each unit will be set and students will answer one question from each Unit. Answer of each question shall be limited upto 250 words. Each question carry 3.5 marks.

Section – C: Will consist of total 05 questions. The paper setter will set one question from each Unit and students will answer any 03 questions and answer of each question shall be limited upto 500 words. Each question will carry 7.5 marks.

UNIT 1:
Number system and basic logic circuits : Binary , decimal, octal, hexadecimal, BCD, Excess-3, gray codes and their inter-conversion, ASCII code
logic circuits : Invertors, OR, AND, NOR, NAND, XOR, XNOR gates,
Boolean Algebra, De'Morgan theroems, study of logic circuit : SOP, and POS
Karnaugh Map.

UNIT 2 :
Building block Computer : Half and full adder and substractors, RS, clocked RS, D, JK master slave and edge triggered flip flops, counter and shift registers, multiplexer and demultiplexers, decoders and encoders.

UNIT 3 :
Memories: Semiconductor memories, RAM, ROM, magnetic drum storage, magnetic disc, floppy disc, magnetic tape, magnetic bubble and CCD type memories, Hard disk, optical disk. Main and secondary memory, cache memory.

UNIT 4 :
Microcomputer hardware : CPU instruction, register and decoder, ALU working registers, control and timing circuits, data, address and control buses, microcomputer memory, minimum micro computer configuration interrupts, 8085 architecture and instruction set, flow charts, programming.

UNIT 5 :
Data transfer: Data transfer to an from I/O devices, programmable DMA, parallel peripheral interface, programmable key board and display interface, A/D and D/A converter and interfacing

Books Suggested :

A.P. Malvino and D. Leach: Digital Principle and applications IV Ed TMM
G. Kennedy and B. Davis., Electronic Communication Systems IV Ed McGraw Hill
B. Ram, Fundamental of Microprocessor and Microcomputers, Dhanpat Rai Publications, New Delhi
W.D. Cooper and A. P Helfrick ., Electronics Instrumentation and Measuring Techniques III Ed PHI
Sharma : Basic Radio and Televison
Millman and Taub: Pulse Digital and switching waveforms McGraw Hill

EXPERIMENTS FOR PRACTICAL WORK

The practical work is divided into two parts, namely (A) Laboratory experiments and (B) Project, laboratory experiments will carry 30 marks and the project will carry 20 marks

Part A

1. AM Modulation and demodulation
2. Study of filp- flop circuits
3. RC Phase shift Oscillators
4. Hartley Oscillators
5. UJT Relaxation Oscillator
6. Differential and Integrating Circuits
7. Clipping and Clamping Circuits
8. Free running Multi-vibrator
9. Various logic Gates
10. 555 Timer application as Astable, monostable multivibrator
11. Simple exercise on microprocessors
12. Study of Timing circuit using IC555
13. Study of various characteristics of Radio receivers.
14. FM modulation and Demodulation.
15. Schmitt trigger circuit.
16. Study of registers and counters.
17. Study of multiplexer and demultiplexer.
18. Study of TV receiver

Part B: PROJECT