

Proposed Syllabus

3

'Electronics' Syllabus Session ²⁰⁰⁹⁻²⁰¹⁰~~2007-08~~

B.Sc. Part-II

Paper-I (Audio Electronics)

	No. of Lectures
1- <u>Microphone & Loudspeaker:</u>	8
Principle and type of microphones and loudspeakers, Woofer, Mid-range and Tweeter; Frequency response, Impedance, Power rating, Directionality, application areas etc. Surround, Echo and Quadraphonic sound.	
2- <u>Audio Amplifier:</u>	8
Types of Audio Amplifiers, Characteristics of Audio Amplification, Power amplifier circuits, Transformer coupled amplifier, equivalent circuit, Push-Pull amplifiers, Control in audio amplifiers, Negative feedback in amplifiers.	
3- <u>Noise and Distortion:</u>	4
Noise, Causes of noise (Environmental noise, Electrical noise), Methods of reducing noise, Distortion, Types of distortion, Methods of reducing distortion.	
4- <u>Tape Recorders:</u> †	6
Principle of magnetic recording, Characteristic of Ferro- and Ferri- magnetic materials, Hysteresis loop, Recording head, Recording wavelength, Gap width & Tape speed, Response of head during replay, Effect of gap width, Equalization, Graphic equalizers, Recording bias, DC bias, AC bias, Erasing head, Tape transport system, Wow & Flutter.	
5- <u>Hi-Fi and stereo systems:</u>	4
Concept of Hi-Fi, Pre-amplifier, Stereo System and their components, Dolby systems.	
6- <u>Digital Recording and Reproduction:</u> †	10
Introduction to Digital recording, Digitization of sound: PCM, Sampling rate, Resolution, Bit rate, Quantization error, S/N ratio, Nyquist sampling Theory; MIDI interface, Protocol and data formats, Audio capture, Music/Voice on a computer, Architecture of sound card, Processing of .WAV and .MIDI files, Introduction to Audio compression techniques: DPCM, ADPCM, SBC, MPEG.	
7- <u>Compact Disc Technology:</u>	8
Drawback of Audio tape and LPs, Advantage of compact disc, Disc specifications, CD player optical requirements, CD technology, Compact Disc based systems: CD ROM, CD Video, DVD.	

Paper-II (Principles of Television)

	No. of Lectures
1- <u>Elements of television system:</u>	6
Picture transmission, sound transmission, Reception of picture and sound, synchronization.	
2- <u>Analysis and Synthesis of a T V picture:</u>	7
Structure, Aspect ratio, Horizontal and vertical scanning, Interlaced scanning, Number of scanning lines, Resolution, Frequency band width requirement.	
3- <u>Composite Video signals and Signal Transmission:</u>	8
Scanning sequence details of the 525 & 625 line systems, Composite video signal waveform, Setting of pedestal height, Horizontal and Vertical sync details, Equalizing pulses, Channel bandwidth, Vestigial side band transmission, Reception bandwidth, Allocation of frequency bands for television signal transmission, Television standards.	
4- <u>B/W Picture tube:</u>	6
Beam deflection, Screen phosphor, Face plate, Picture tube characteristics and picture tube control circuits.	
5- <u>Television Receiver:</u>	10
Block diagram of B/W TV receiver, Function of each block, Response curves of RF and Video amplifiers, Choice of IF controls like contrast, Brightness, AGC, AFC. Circuit diagram of video detector, Video amplifier - high frequency and low frequency compensation, Sync separation circuits, Sound detector cks., differential peak detector and phase-locked loop detector, EHT.	
6- <u>Colour TV:</u>	10
Fundamentals, Three colour theory, Luminance, Chrominance, Hue and saturation, Chromaticity diagram, Phosphors for colour display, Luminance signal, Colour picture tube, Delta gun, Trinitron, Principle of colour TV transmission, Colour TV antennas, Different colour systems (NTSC, PAL and SECAM), Their merits and demerits, Block diagram of NTSC and PAL colour systems.	

3/1/20

Paper-III (Microprocessor and its applications)

	No. of Lectures
1-The Microprocessor Architecture (8085):	8
Introduction to microprocessor, Microprocessor Architecture and its operations, Uses of Address Bus, Data Bus, Control Bus, Registers and the stack pointer. Pin diagram of 8085 and their functions, interrupts of 8085, Addressing mode.	
2. Memories:	7
Introduction, Classification of memories, Primary memories: RAM, ROM, PROM, EPROM, EEPROM etc. Secondary memories: Disc, Floppy, Magnetic tape etc. Communication of Microprocessors with memory, Memory map and Address.	
3- Interfacing I/O Devices:	7
Interfacing basics, Interfacing with ROM and RAM, I/O interfacing: Memory mapped I/O, Memory and I/O, Data transfer etc., Synchronizing I/O data, Transfer using interrupts.	
4- Microprocessor (8085) Programming:	8
Instruction set: Data transfer, Arithmetic and Logical operation set, Machine and assembly languages, Writing programs like Addition, Subtraction, Multiplication, Division, Data transfer, Carry and Flag set using assembly language.	
5- Applications of microprocessors:	8
8255 - general purpose programmable peripheral device. Some projects like Traffic control, Temperature control, Lift control, Rolling display, Digital clock and Motor control.	
6- Fundamentals of computers:	6
Introduction to computers, Computer generations, Computer organization, Block diagram, Peripheral devices, Application of computer to society.	

30/3/20