SYLLABUS

SEMESTER- 7

Sound Recording & Sound Design

SP.PAPER-7

Audio Electronics

Credits-3

L	T	P
3	0	10

1. Audio plugs, cables and connections:

Connecting a audio system to the mains, Connecting programme source to amplifier, connections to loudspeakers, connecting headphones.

2. Operational Amplifier:

Principle of differential amplifier, characteristics and circuit symbol of operational amplifier, some applications of operational amplifier, Integrated circuits(IC), Integrated circuit components.

3. Audio Power Amplifiers:

Voltage amplifier, Power amplifier (class A, class B, class C, class AB, class D), PUSH-PULL amplifier, complimentary symmetry amplifier and RC coupled amplifier, principle of negative feedback amplifier, cross-over.

4. Oscillator:

Principle of oscillator, essential components of oscillator, different types of oscillator (Hartley, collpit, phase shift, Wein Bridge, Crystal).

5. Digital Electronics:

Number system(Binary and Decimal), number system conversion, ASCII code,Excess-3 code, Binary arithmetic(addition, Subtraction, Multiplication, Division), Logic gates (NOT,OR,AND,NAND,NOR,XOR,XNOR), Boolean algebra, Boolean Theorem, DeMorgan's theorem,

Combinational logic circuit- Half adder, Full adder, Half subtractor, Full Subtractor, Encoder, Decoder, Multiplexer, Demultiplexer.

Sequential logic circuit: Flip Flop and its uses.

References Books:-

1. Robert Boylestad and Louis Nashelsky, "Electronic Devices and Circuit Theory" PHI; 8th Edition.2000
2. Thomas L. Floyd, "Electronic Devices" 8th Edition, Pearson Education, Inc., 2007
3. A.S. Sedra and K.C. Smith, "Microelectronic Circuits", 6th Edition, Oxford University Press, 2006

Audio Electronics Practice

1. Test and verify different types of audio cables
2. Observe the working of an operational amplifier in inverting, non-inverting and differential modes. Verify different applications of an Operational amplifier.
3. Obtain the output waveforms of a class-A transformer coupled power amplifier and calculate the power conversion efficiency.
4. Obtain the output waveforms of a class-B push pull power amplifier and calculate the efficiency and distortion.
5. Generate a sinusoidal signal using different oscillators like (RC phase shift , Colpitts , Wein bridge) at a desired frequency.
6. To study and verify the truth table of logic gates.
7. Design and verification of the truth tables of Half and Full adder circuits.
8. Design and verification of the truth tables of Half and Full subtractor circuits.
9. Verification of the truth table of the Multiplexer.
10. Verification of the truth table of the De-Multiplexer.
11. Design, test and verify the truth table of S-R, J-K and D flip-flop.