

BASIC ELECTRONICS ENGINEERING.

TH-4(b)

Periods/Week – 03, Total periods – 45

Th – (40)

Examination – 1.5 Hours

la – (10).

Topic wise distribution of periods

| Sl. No. | Topics | Periods |
|---------|---------------------------------------|-----------|
| 1. | Electronic devices | 12 |
| 2. | Electronic circuits | 15 |
| 3. | Communication system | 7 |
| 4. | Transducers and measuring instruments | 11 |
| | Total | 45 |

OBJECTIVES :

1.0 Electronics plays major in our day to day life. In each and every field electronics system are used. Basic electronics is one of the subject which is the base of the all advance electronics. It starts with PN junction which makes the students follow the functioning of all semi-conductor devices. The students will also acquire brief knowledge about communication system as well as sensors, transducers and instruments.

2.0 ELECTRONIC DEVICES (12 Period)

- 2.1 Define Electronics.
- 2.2 Different type of Electronic Emission.
- 2.3 Classification of material according to electrical conductivity (Conductor, Semiconductor & Insulator) with respect to energy band diagram only.
- 2.4 Discuss Intrinsic & Extrinsic Semiconductor.
- 2.5 Explain the difference between vacuum tube & semiconductor.
- 2.6 State the principle of working & use of P-N junction diode, Zener diode & Light Emitting Diode (LED), Bipolar junction Transistor.
- 2.7 State basic concept of integrated circuits (I.C) & its use.

3.0 ELECTRONIC CIRCUITS (15 Period)

- 3.1 Define Rectifier & state its use.
- 3.2 Explain the principles of working of different types of Rectifiers & their merits & demerits.
- 3.3 State the functions of filters and name the types of filters.
- 3.4 Explain d.c. Power Supply system by help of block diagram.

- 3.5 Explain the different types of Transistor configuration and state output and input current relationship in CE, CB & CC configuration.
- 3.6 Need of biasing and state the different types of Biasing with circuit diagram need of Biasing.
- 3.7 Define Amplifier and explain how amplification of signal is achieved by the help of Transistor.
- 3.8 Explain working principle of a single stage CE transistor Amplifier with voltage divider biasing
- 3.9 Explain the working of a single stage RC Coupled Amplifier & discuss its frequency response & Bandwidth.
- 3.10 Define Oscillator.
- 3.11 Explain essentials of Transistor oscillator .
- 3.12 Name different types of oscillator.

4.0 COMMUNICATION SYSTEM (7 Period)

- 4.1 Define basic communication system with the help of block diagram.
- 4.2 Define Modulation.
- 4.3 Discuss the need of Modulation.
- 4.4 Name different types of Modulation. (AM, FM & PM)
- 4.5 Discuss Amplitude Modulation & Frequency Modulation. (Signal, Carrier Wave & Modulated Wave, No Mathematical Derivation).
- 4.6 Define Demodulation.
- 4.7 Explain the working principle of Super heterodyne Radio Receiver with the help of block diagram.
- 4.8 Explain the block diagram of Radio Transmitter.

4.0 TRANSDUCERS AND MEASURING INSTRUMENTS (11 Period)

- 4.1 Define transducer.
- 4.2 Classify different types of transducers.
- 4.3 Discuss mechanical primary transducers, devices, springs, and Bourden tube diaphragm, Belows.
- 4.4 Describe working principle and application of LVDT.
- 4.5 Explain working principle of photo emissive, photoconductive, photovoltaic cell & it's application.
- 4.6 Discuss the application of multimeter.
- 4.7 Discuss the advantages of Digital multimeter over analog multimeter

- 4.8 Block diagram of CRO .
- 4.10 State the applications of CRO.

Reference Books:

1. Principle of Electronics by V.K.MEHTA & ROHIT MEHTA, S.CHANDA publication.
2. Principle of Electronics by S. K. Sahadev. (Dhanpatray Publication)
3. Electrical & Electronic measurement & Instrumentation by A.K. Sawhency.
4. Basic Electronic and Linear circuits – by N. N. Bhargava, D. C. Kulashrestha, S. C. Gupta, TTTI, Chandigarah.
5. Electronic Principles – by Albert Malvino, David J. Bates (TMH)
6. Radio Engg.– by G. K. Mythal
7. A Text Book Of Electronics Circuits-R.S.Sedha(S.Chand Publication)
8. Electrical and Electronic Measurements & Instrumentation-R.K.Rajput

BASIC ELECTRONICS ENGG PRACTICAL:

Periods / week – 2

Total periods – 30

Marks – 25

OBJECTIVES:

1. Understand the behavior characteristics of passive components.
2. On completion of the lab course, the student will be able to comprehend the art of Soldering and understand it's utility.

(10 numbers of practical to be conducted)

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|----|---|
| 1 | Identify different types of tools and essential equipment in Electronics Laboratory |
| 2 | Draw the symbols of different Electronic components |
| 3 | Study of Analog & Digital Multimeter (Front Panel) |
| 4 | Identify & test the different Active & Passive components, calculation of resistance, and capacitance by using colour codes. |
| 5 | Measurement of voltage, current and resistance using Multimeter |
| 6 | Soldering practice- tools, bending & bunching of wires, soldering of active & passive components, familiarization of PCB & SMD mountings. |
| 7 | Familiarization & study following hardware materials, Fuses- Rewirable, cartridge, high rupturing capacity fuse, Keys- Rectangular buttons, Spring loaded, Mechanical, Electronic feather touch, Plugs & Sockets- 2 pin, 3 pin, Multiple, round type, Connectors-IC & relay connector, PCB connector, BNC, threaded neutral modular, Terminals- Different sizes, Cables- Twisted pair, co-axial cable, flat cable, optical cable, Clips & Plugs- Crocodile, banana. |
| 8 | Study of V-I characteristics of a PN junction diode. |
| 9 | Study of half wave & full wave rectifier. |
| 10 | Study of AF & RF oscillator(Front Panel) |
| 11 | Study of Public Addressing system. |
| 12 | Study of oscilloscope & it's uses of the front panel control & its application. |