

PNS school of Engineering & Technology

Nishamani Vihar, Mershaghai, Kendrapara



Department of Electronics & Telecommunication Engineering

QUESTION BANK

ON

Basic Electronics (Th-4b)

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Lecture in ETC ENGG.

CH-1 : ELECTRONIC DEVICES

SHORT QUESTIONS :

1. **Define Electronics & its application.**

Ans. ❖ It is the branch of engineering which deals with the study of current conduction through vacuum or gas or semiconductor.

❖ Application: ❖ Electronic Communication ❖ Medical ❖ Defence

2. **Define work function ?**

Ans. The amount of additional energy required to remove an electron from a metallic surface, is known as work function. It is expressed in electron volt (eV)

3. **Define Electron emission and its types.**

Ans. The process of liberation of electron from the surface of a metal, is known as electron emission.

Types : ❖ Thermionic emission ❖ Field emission
 ❖ Photo electric emission ❖ Secondary emission

4. **Define doping. Why it is required ?**

Ans. ❖ The process of adding impurities to a pure semiconductor, called as Doping.
❖ It is required to increase the current conduction capability, of a pure semiconductor.

5. **Define free electrons and valance electrons.**

Ans. ❖ The valance electrons which are very loosely attached to the nucleus are known as Free Electrons.

❖ The electrons present in the outermost shell of an atom are known as Valance Electrons.

6. **Define acceptor atom and donor atom ?**

Ans. ❖ The atom which produces P-type semiconductor, is called as Acceptor atom.

❖ The atom which produces N-type semiconductor, is called as Donor atom.

7. **Define Forbidden energy gap.**

Ans. ❖ The separation between conduction band and valance band is known as Forbidden energy gap.

8. **Define Knee Voltage and Break down Voltage.**

Ans. ❖ Knee Voltage : It is the forward voltage at which the current through the Pn-junction starts to increase rapidly.

❖ Break down Voltage : It is the minimum reverse voltage at which the Pn-junction breaks down with sudden rise in reverse current.

9. **Specify some characteristics of Semiconductor diode ?**

Ans. ❖ Current flows only in one direction. ❖ The forward resistance of the diode is very small.

10. Define depletion region.

Ans. ❖ The region which have no charge carriers, are called Depletion region.

11. State the basic function of Zener diode.

Ans. ❖ A properly doped semiconductor diode which has a sharp break down voltage is known as Zener diode.

❖ The basic function of Zener diode is to be operated in break down region.

12. Define IC. State uses of IC.

Ans. An integrated circuit is an electronic circuit, in which active components like transistors, diodes etc and passive components like resistors, capacitor etc are part of a small semiconductor chip.

Uses : ❖ It is used in electronic calculator
 ❖ Digital watch ❖ Mobile phones ❖ TV

LONG QUESTIONS :

Q.1. Classify the materials according to electrical conductivity with energy band diagram ?

Q.2. Explain different types of electron emission briefly, with diagram ?

Q.3. Explain the working of Pn-junction diode ?

Q.4. Explain the working of LED ?

Q.5. Write short notes on : (a) IC, uses, its advantages
 (b) Zener diode.

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UNIT-2: ELECTRONIC CIRCUITS

Short Question

1) Define Rectifier?

Ans- A rectifier is device which converts ac voltage/current into dc voltage/current.

2) Define Ripple factor?

Ans- The ratio of r. m. s value of ac components to the value of dc components in the rectifier output, is known as ripple factor

➤ i.e Ripple factor= $\left(\frac{\text{R.M.S value of ac component}}{\text{Value of dc component}}\right)$

3) Define filter. Where it is used?

Ans-

- A filter is a device, which removes the ac component of the rectifier output, and allows the dc component to reach the load.
- It is installed between rectifier output and Load.

4) Why transistor is called as BJT?

Ans- A transistor is known as Bipolar junction Transistor, Because the current conduction is due to both types of charge carriers i. e By electrons and by Holes.

5) What are the Needs for Transistor biasing?

Ans-

- It is needed for faithful Amplification.
- For faithful amplification, 3 conditions should be satisfied.
 - The Emitter-Base junction should be forward biased.
 - The collector-Base junction should be Reverse biased.
 - There should be proper flow of Zero signal collector current.

6) Define Amplifier?

Ans- An Amplifier is an electronic device which increases the strength of a weak signal.

7) Define Oscillator?

Ans- An oscillator converts dc energy into ac energy at a very high frequency.

8) What is Bark hausen criteria of oscillation?

Ans- $\beta A=1$

Where β = Feedback factor

A= Voltage gain without feedback

9) Write down the stages used in a Dc power supply?

Ans- A dc power supply consists of 5 stages.

- (i) Transformer
- (ii) Rectifier
- (iii) Filter
- (iv) Voltage Regulator
- (v) Voltage divider

Long Questions

- 1) Explain working of Centre tapped full wave rectifier with merits and demerits?**
- 2) Explain working of full wave Bridge Rectifier with merits and demerits?**
- 3) Explain working of different types of filter circuits with neat diagram?**
- 4) Explain working of dc power supply with block diagram?**
- 5) Explain different types of Transistor configuration with neat diagram?**

- 6) Explain different types of Transistor biasing with neat diagram?
- 7) Explain working principle of single phase CE amplifier?
- 8) Explain working of basic oscillator with block diagram?

UNIT-3: COMMUNICATION SYSTEM

Short Question

1) Define Modulation?

Ans- The process of changing some characteristics i.e Amplitude, Frequency or Phase of a carrier signal in accordance with the intensity of the message signal, is known as modulation.

2) What are the Needs for Modulation?

Ans-

- (i) It avoids the signals from mixing up each other.
- (ii) Interference is avoided.
- (iii) Without Modulation, Very Large size Antennas required.
- (iv) Without modulation, a high frequency carrier signal is needed.

3) What are the types of modulation?

Ans- Modulation are of 3 types.

- (i) Amplitude Modulation (AM)
- (ii) Frequency Modulation (FM)
- (iii) Phase Modulation (PM)

4) Define Demodulation?

Ans- The process of separating the message signal from the modulated signal, is known as Demodulation.

Long Questions

- 1) Explain different types of modulation (AM, FM, PM)?
- 2) Explain the block diagram of basic communication system?

UNIT-4: TRANSDUCER AND MEASURING INSTRUMENTS

Short Question

1) Define Transducer?

Ans- Transducer is a device which converts a Non electrical quantity into an electrical quantity.

2) What are the 2 types of Transducer?

Ans-

- (i) Active Transducer
- (ii) Passive Transducer

3) What is multimeter?

Ans- A multimeter is an electronic instrument which can measure resistances, currents and voltages.

4) What is CRO?

Ans- The cathode Ray oscilloscope (CRO) is a very useful and versatile laboratory instrument used for display, Measurement and analysis of wave forms and other phenomena, in electronic and electrical circuits.

Long Questions

- 1) Explain Working principle of photo emissive, photo conductive and photo voltaic Transducer?
- 2) Explain working principle of multimeter with block diagram?
- 3) Explain working principle of CRO with simple block diagram?