

Seat No. **OCT-NOV 2025 WINTER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Electronics Systems(ETC)****Sub. Code: 114451/112441****Day and Date: Wednesday,10-12-2025****Total Marks: 60****Time: 02:30 PM To 05:00 PM**

- Instructions:**
- 1. All questions are compulsory**
  - 2. Draw neat labelled diagrams wherever necessary**
  - 3. Figures to the right indicate full marks**
  - 4. Use of Scientific calculator is allowed**

**Q1) Solve following MCQ. Each question carries 2 marks****[12]**

- i.** What is the function of a resistor in an electronic circuit?
  - A. To store energy
  - B. To oppose the flow of current
  - C. To amplify signals
  - D. To change voltage levels
  
- ii.** Which material is primarily used for doping semiconductors?
  - A. Copper
  - B. Silicon
  - C. Gallium
  - D. Iron
  
- iii.** What is the key feature of a Field-Effect Transistor (FET)?
  - A. It uses current for control
  - B. It operates with a base-emitter junction
  - C. It uses voltage to control current
  - D. It has a high gain for small signals
  
- iv.** In a combinational logic circuit, the output is:
  - A. Dependent on past inputs
  - B. Dependent on present inputs only
  - C. Stored as a state
  - D. Independent of the inputs
  
- v.** Which of the following devices uses a magnetic field to control current flow?
  - A. FET
  - B. SCR
  - C. BJT's
  - D. Hall-effect sensor
  
- vi.** In frequency modulation (FM), the information is carried by changes in the:

- A. Amplitude
- B. Phase
- C. Frequency
- D. Time

**Q2)** Attempt any two of the following. Each question carries 6 marks. **[12]**

- a. Explain the working of a Bipolar Junction Transistor (BJT) with a diagram. **[6]**
- b. Convert binary number to decimal number i)110110 ii)101101 iii)100001 **[6]**
- c. What are the applications of operational amplifiers in electronic circuits? **[6]**

**Q3)** Attempt any two of the following. Each question carries 6 marks. **[12]**

- a. Compare and contrast amplitude modulation (AM) with frequency modulation (FM) **[6]**
- b. Explain the operation of a SCR (Silicon-Controlled Rectifier) and its industrial applications. **[6]**
- c. What are the key components of an embedded system, and how do they function? **[6]**

**Q4)** Attempt any two of the following. Each question carries 6 marks. **[12]**

- a. What is VLSI technology? Discuss its impact on modern electronics. **[6]**
- b. Explain how the Internet of Things (IoT) has influenced automation systems. **[6]**
- c. Discuss the significance of MEMS in sensors and actuators. **[6]**

**Q5)** Attempt any two of the following. Each question carries 6 marks **[12]**

- a. What is the role of a microcontroller in embedded systems? **[6]**
- b. Explain the working principle of an operational amplifier and its applications. **[6]**
- c. Compare open-loop and closed-loop control systems? **[6]**

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

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