**Student Copy**

MANJARA CHARITABLE TRUST

# RAJIV GANDHI INSTITUTE OF TECHNOLOGY, MUMBAI

## Department of Applied Sciences & Humanities

### INTERNAL ASSESMENT (IA) - II

Date: - 11/04/2025

**Max. Marks: 15** **Duration: 45 minutes**
**Class: FE**
**Name of the Course:** Semiconductor Physics (BSC2022)
**Branch:** All

**Instructions:**

1. Question 1 (i&ii) is **compulsory for 6 Marks**
2. From Question 2 (**Solve any one** )
3. From Question 3 (**Solve any one** )
4. Figures to the right of the question indicate full marks.
5. Assume the suitable data wherever necessary.
6. Illustrate your answers using neat diagrams wherever necessary.

| Questions | Maximum Marks | Bloom's Taxonomy Level | Course Outcomes |
|---|---|---|---|
| **Q1. i.** Derive the relation between current amplification factor alpha $\alpha$ and beta $\beta$ ? | 3 | 2 | CO4 |
| **Q1. ii.** Define following parameters of FET<br>A)A.C drain resistance<br>B) Tranconductance<br>C) Amplification factor | 3 | 1 | CO5 |
| | | | |
| **Q2. a** Explain Top-Down and Bottom-up approach to prepare nanomaterial? | 5 | 2 | CO6 |
| | **OR** | | |
| **Q2. b** Distinguish between BJT and JFET? | 5 | 2 | CO4 |
| | | | |
| **Q3. a** Calculate IE in a transistor for which $\beta = 50$ and IB = 20 $\mu$A. | 4 | 2 | CO4 |
| | **OR** | | |
| **Q3. b.** Explain the construction of N-channel JFET with neat diagram? | 4 | 3 | CO5 |