

Enrollment No: \_\_\_\_\_

Exam Seat No: \_\_\_\_\_

# C. U. SHAH UNIVERSITY

## Summer Examination-2022

Subject Name : Advances in Solid State Electronic Devices

Subject Code : 5SC04ASS1

Branch: M.Sc. (Physics)

Semester: 4

Date: 09/05/2022

Time: 11:00 To 02:00

Marks: 70

### Instructions:

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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### SECTION – I

**Q-1          Attempt the Following questions          (07)**

- a. List the requirements for Bipolar devices. **01**
- b. What problems can be observed in Bipolar devices? **01**
- c. What is the full form of HBTs? **01**
- d. How emitter is doped in HBTs? **01**
- e. Band gap of amorphous Si is? **01**
- f. What do you mean by MOSFET? **01**
- g. Name the terminals of MOSFET and list the types of MOSFET. **01**

**Q-2          Attempt all questions          (14)**

- a. Write a note on JFET and discuss its various regions with necessary diagram with the necessary formulation. **07**
- b. What are the requirements of BJT and list the demands, problems and solutions for it. **07**

**OR**

**Q-2          Attempt all questions          (14)**

- a. Explain and discuss with necessary diagram the Current-Voltage characteristics of JFET and MESFET. **08**
- b. Explain the channel length modulation in detail with diagram. **06**

**Q-3          Attempt all questions          (14)**

- a. Write a note on MOSFET structure and Fabrication in detail with necessary diagrams. **07**
- b. Explain Depletion and enhancement modes of MOSFETs. **07**

**OR**

**Q-3          Write a note on MOS capacitor in detail with necessary diagrams and explain its three important regions.          07**



