

UNIT - IV

8. (a) Describe a tunnel diode with its application as an electronic switch. 8
- (b) How is negative resistance advantage for electronic circuits? Give examples. 8
9. (a) What do you mean by Thyristor? Explain its characteristics. 4
- (b) Describe rate effect in NR devices. How is it removed? 4
- (c) Describe switching action in monostable, bistable and astable operations using NR devices. 8

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Roll No.

72604

M. Sc. (Physics) 1st Sem.
Examination - December, 2015

ELECTRONIC DEVICES

Paper : IV

Time : Three Hours] [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) Compare the emitter, base and collector currents in a BJT. 4
- (b) Compare positive and negative resistance in electronic circuits. 4
- (c) What do you mean by breakdown in solid state electronic devices? What are the reasons for breakdown? 4

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(d) How is static RAM different from dynamic RAM? 4

UNIT - I

2. (a) Draw and explain the slopes of common emitter input and output characteristics for a pnp transistor. 4

(b) How do you obtain voltage and current amplifications in a BJT? 4

(c) Describe Ebers-moll model for a BJT.

3. (a) Describe the role of an emitter follower circuit for impedance matching. 8

(b) Describe various FET parameters. 4

(c) Explain the shapes of depletion layers in BJT and FET. 4

UNIT - II

4. (a) Describe IC fabrication techniques. 8

(b) What are the various advantages and disadvantages of ICs? 4

(c) Explain how is circuit complexity handled? 4

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5. (a) How are analog ICs different from digital ICs? 4

(b) What do you mean by single crystal and why do we need it for IC? 4

(c) What is the role of packaging and testing in IC fabrication? 4

(d) Compare active and passive components. 4

UNIT - III

6. Describe the following: 16

(a) Zener diode

(b) Photo diode

(c) Varactor diode

(d) Solar cell

7. (a) What do you mean by LASER? Describe various properties of LASER. 4

(b) Compare RAM and ROM. 4

(c) Describe a Piezo electric crystal. Explain its applications. 8

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