Roll No. ....

3035

B. Tech. 3rd Semester (ECE)
Examination – December, 2022

ELECTRONIC DEVICES

Paper : PCC-ECE-201-G

Time : Three hours]   [Maximum Marks : 75

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 Section. Question number 1 is compulsory.

1. Explain the following :   2.5 × 6 = 15

    (a) Metal, insulator & semiconductor

    (b) Mobility

    (c) Clipper

    (d) Common base configuration of transistor

    (e) Miller's theorem

    (f) UJT

SECTION – A

2. (a) Explain drift and diffusion current. 8

   (b) Explain Hall's effect and derive an expression for Hall coefficient. 7

3. What do you mean by p-n junction diode ? Explain its working with current equations and also draw its V-I characteristics. 15

SECTION – B

4. Explain full wave rectifier. Discuss centre tap and bridge type full wave rectifier with waveform. 15

5. (a) Explain input & output characteristics of common emitter configuration. 8

   (b) Explain transistor as an amplifier. 7

SECTION – C

6. (a) Write about stability factor for transistor. 7

   (b) Design equivalent hybrid model for common base configuration of transistor. 8

7. (a) Discuss Dual of Miller theorem. 8

   (b) What is collector to base bias technique ? 7

SECTION – D

8. Explain following :   15

    (a) P- Channel FET & N-Channel FET

    (b) Laser Diode & Schottky Diode

9. (a) Discuss basic construction and operation of MOSFET.   7

    (b) Explain the architecture of LED & LCD.   8

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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 : Question Number 1 is *compulsory*. Attempt *one* question from each Unit.

1. (a) Define law of Mass action. 2.5 × 6 = 15

   (b) Define rectifier. Give its types.

   (c) Draw npn and pnp schematic diagram.

   (d) Define thermal stability of BJT.

P. T. O.

(e) What do you mean by h-parameter ?

(f) What is the principle of photodiode ?

UNIT – I

2. (a) Derive and explain Poisson and continuity equation. 10

   (b) What do you mean by drift and diffusion current ? 5

3. (a) Explain diode transition and diffusion capacitance. 8

   (b) Explain zener and avalanche breakdown. 7

UNIT – II

4. What do you mean by full wave rectifier ? Explain centre tap and bridge rectifier with waveform. 15

5. What is CE configuration of transistor ? Draw its input and output characteristics. 15

UNIT – III

6. What do you mean by biasing of transistor ? Explain fixed bias, voltage divider and collector to base bias voltage in detail.   15

7. Define transistor hybrid model. Give conversion of CE, CB and CC configuration to equivalent hybrid model.   15

UNIT – IV

8. What do you mean by JFET ? Explain operation and characteristics of JFET.   15

9. Explain construction & working of SCR.   15

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B. Tech. (ECE) 3rd Semester Examination – February, 2022

ELECTRONIC DEVICES

Paper : PCC-ECE-201-G

Time : Three Hours]   [Maximum Marks : 75

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 Number 1 is *compulsory*. All questions carry equal marks.

1. Write note on the following :   2.5 × 6 = 15

   (a) Explain Band Theory of semiconductors.

   (b) What do you mean by drift current ?

   (c) Explain unbiased transistor.

(d) Describe circuit for +ve clampper.

(e) Describe the need of biasing a transistor.

(f) Explain photo-diode.

UNIT – I

2. (a) Explain Law of Mass Action.   7.5

   (b) Explain Poisson and Continuity equation.   7.5

3. (a) Explain switching characteristics of diode.   8

   (b) Describe Zener and Avalanche Breakdown in diodes.   7

UNIT – II

4. Describe any full wave rectifier and calculate ripple factor & rectification efficiency for the same.   15

5. (a) Explain CE, configuration in detail; giving its i/p & o/p V-I curves.   10

   (b) Explain transistor as an oscillator.   5

UNIT – III

6. (a) Explain the Voltage Divider Biasing circuit.   8

   (b) Describe Miller's theorem.   7

7. What are the importance of H-parameters. Convert & explain CE configuration to equivalent hybrid model.

15

UNIT – IV

8. (a) Explain transfer characteristics of FET. 5

(b) Explain completely enhancement mode of MOSFET. 10

9. Write a short note on :

$5 \times 3 = 15$

(a) Optocoupler

(b) Laser Diodes

(c) TRIAC

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