Total number of printed pages:3

D/3rd/DIE302

2021

ELECTRONICS DEVICES AND CIRCUITS-I

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.

a) Explain the behaviour of p-n junction under no bias. 6

b) What is biasing of p-n junction diode? 2

c) Explain the operation of forward biased diode. 6

d) Explain breakdown of diode due to Avalanche effect. 6

2.

a) Draw and explain the V-I characteristics of a p-n junction diode. 6

b) Draw the circuit and explain the operation of a half wave rectifier. 8

c) Derive the expression for the D.C. load current for half wave rectifier. 6

3.

a) What is transistor? Explain the working principle of npn transistor. 2+8=10

b) Explain different types of transistor circuit configuration. 6

c) A transistor has I_B=100 μA and I_C=2 mA. Find 4

i) β of the transistor

ii) α of the transistor

iii) Emitter current I_E

4.

a) Explain the operation of n-channel JFET. 10

b) What is the difference of Enhancement MOSFET and Depletion MOSFET? Explain the operation of N-channel E-MOSFET. 2+8=10

5.

a) Give the difference between voltage amplifier and power amplifier. 4

b) Explain the following 6+6=12

i) Class A power amplifier

ii) Class B power amplifier

c) Explain Harmonic distortion in amplifiers. 4

6.

a) Differentiate between series and shunt voltage regulator. 8

b) Explain the block diagram of basic three terminal IC regulator. 8

c) Define Line regulation and Load regulation. 4

7. Write short notes on (any four): 5X4=20

i) Full Wave Rectifier

ii) Zener Breakdown

iii) Power amplifier

iv) Adjustable voltage regulator

v) Field Effect Transistor.