

Roll No.

OLE-24024

B. Tech. 3rd Sem. (EEE) Examination – April, 2021

ELECTRONIC DEVICES & CIRCUITS

Paper : EE-201-F

Time : Three Hours]

[Maximum Marks : 100

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 No. 1 is *compulsory*. All questions carry equal marks.

1. (a) What are the characteristics of good Amplifier ? 5
- (b) Discuss two applications of LED. 5
- (c) Define Mobility of electrons in conductor. Prove the conductivity of conductor is directly proportional to the concentration of free electrons. 5
- (d) Explain Drift and Diffusion current in details. 5

SECTION – A

2. (a) Explain the meaning of valence band, conduction band and forbidden energy gap. 10
- (b) State and explain Conductivity, Collision time, Relaxation time. 10
3. (a) State and discuss various factors which effect the Conductivity of materials. 10
- (b) Write notes on : 10
- (i) Applications of super conductors.
- (ii) Effect of magnetic field on conductivity of materials.

SECTION – B

4. (a) Explain how the process of Zener breakdown occurs in PN Junction diode. How it is different from process of avalanche breakdown. 10
- (b) Derive and explain Continuity equation. 10
5. (a) Derive an expression for diffusion capacitance in a PN Junction diode. 10
- (b) Explain Planner technology for device fabrication. 10

SECTION – C

6. Explain construction, working and characteristics of P-type MOSFET in detail. 20
7. Explain the following : 20
- (a) MESFET
 - (b) MISFET
 - (c) Common Emitter BJT

SECTION – D

8. Write notes on the following : $10 \times 2 = 20$
- (a) DIAC
 - (b) SCR
9. Write short note on : $10 \times 2 = 20$
- (a) TRIAC
 - (b) NPN diode