

B.E./B.TECH. Degree Examination, December 2020

Third Semester

EE16301-ELECTRON DEVICES AND CIRCUITS

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. In a PN junction with no external voltage, the electric field between acceptor and donor ions is called a
 - A. Peak
 - B. Barrier
 - C. Threshold
 - D. Path
2. The element that has the biggest size in a transistor is
 - A. collector
 - B. base
 - C. emitter
 - D. collector-base-junction
3. The input control parameter of a JFET is
 - A. gate voltage
 - B. source voltage
 - C. drain voltage
 - D. gate current
4. In a UJT, the p-type emitter is _____ doped
 - A. Lightly
 - B. Heavily
 - C. Moderately
 - D. None of the above
5. Identify the cause of Zener breakdown phenomenon
6. The intersection of AC and DC load lines result in establishment of quiescent point. Comment on the implication of this.
7. Analyse the condition for dark current to flow in a photo diode.
8. In the fabrication process of grown junction transistor what is the rate of pull of seed crystal?

PART B - (4 X16 = 64 marks)

09. (a) Analyze critically and elaborately the breakdown phenomenon in diodes. **(16)**

(OR)

- (b) (i) Through cogent reasoning discuss the need for biasing a transistor. (8)
- (ii) Analyze the thermal runaway phenomenon in a transistor and its subsequent consequence. (8)

- 10. (a) (i) Analyze a source follower through its small signal model. (10)
- (ii) Justify how handling precautions of MOSFET enable its protection. (6)

(OR)

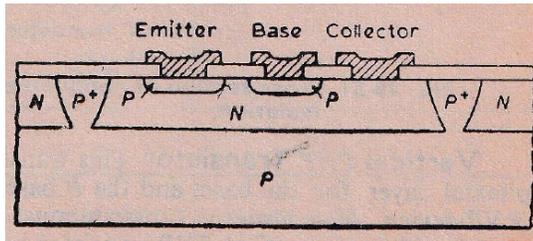
- (b) Through small signal h parameter analysis derive the following parameters Z_i , Z_o , A_v , A_i and A_p for a common emitter amplifier. (16)

- 11. (a) Critically examine operation of an UJT through its equivalent circuit along with its construction. (16)

(OR)

- (b) (i) Illustrate how an opto coupler provides the electrical isolation in high power electronic circuit. (8)
- (ii) Through polarization of light phenomenon analyze the operation of a twisted-nematic field effect liquid crystal display. (8)

- 12. (a) Deduce and explain in detail the fabrication process of the following transistor shown in figure. (16)



(OR)

- (b) How the following integrated circuit capacitors can be fabricated? Describe in detail (16)

