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Question Paper Code : 40949

06/06/18

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B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018
Second Semester

Electronics and Communication Engineering
EC6201 – ELECTRONIC DEVICES
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Mention the advantages and applications of PN junction diode.
2. Differentiate between the drift and diffusion current.
3. The transistor has $I_E = 10 \text{ mA}$ and $\alpha = 0.98$. Find the value of base and collector currents.
4. Draw the characteristics curve of CE configuration.
5. What do you mean by channel length modulation ?
6. Compare MOSFET with JFET.
7. List out the applications of schottky diode.
8. Define : Avalanche breakdown voltage.
9. What is TRIAC ? Give the symbol and structure of TRIAC ?
10. Give some advantage and disadvantage of LCD.

PART – B

(5×16=80 Marks)

11. a) Explain the operation of PN junction under forward biased and reverse biased condition with its characteristics. (16)
- (OR)
- b) i) Derive the expression of diode current equation of the PN junction. (10)
- ii) Write notes on switching characteristics of the diode. (6)



12. a) Give a detailed description of the input and output characteristics of transistor in CE, CB, CC configuration. (16)
- (OR)
- b) i) The reverse leakage current of the transistor when connected in CB configuration is $0.2\mu\text{A}$ and it is $18\mu\text{A}$ when the same transistor is connected in CE configuration. Calculate $\alpha_{d.c}$ and $\beta_{d.c}$ of the transistor. (8)
- ii) A transistor operating in CB configuration has $I_c = 2.98\text{ mA}$, $I_E = 3\text{mA}$ and $I_{CO} = 0.01\text{ mA}$. What current will flow in the collector circuit of this transistor when connected in CE configuration with a base current of $30\mu\text{A}$? (8)
13. a) Demonstrate the operation of JFET and derive the drain transfer characteristics. (16)
- (OR)
- b) With neat diagram explain the operation of MOSFET in Enhancement mode and derive its current equation. (16)
14. a) From the energy band diagram explain the V-I characteristic of (a) tunnel diode (b) PIN photodiode. (16)
- (OR)
- b) i) With neat diagram give the working principle of LASER diode. (8)
- ii) Draw the equivalent circuit and characteristics of (a) UJT (b) PNPN diode. (8)
15. a) Explain the construction, operation, equivalent circuit of V-I characteristics and its applications of DIAC. (16)
- (OR)
- b) Explain the following : (16)
- i) Power BJT
- ii) Power MOSFET.