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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ECE) (2018 Batch) (Sem.-3)

ELECTRONIC DEVICES

Subject Code : BTEC-301-18

M.Code : 76444

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Write briefly :**

- Q1. Describe the behaviour of p-n junction diode under forward and reverse biased conditions.
- Q2. Define the terms Knee voltage (VC) and Breakdown voltage (VB).
- Q3. Compare and contrast between P-N junction diode and Zener diode.
- Q4. Derive the relation between α and β with respect to BJT.
- Q5. Mention any two advantages of MOSFET over JFET.
- Q6. Give reasons why common emitter (CE) configuration is widely used in amplifier circuits?
- Q7. What is reverse saturation current?
- Q8. What is ripple factor?
- Q9. In a bipolar transistor which region is wider and which region is thinner? Why?
- Q10. How implant damage is repaired by annealing?

SECTION-B

- Q11. Illustrate and explain the energy bands of gallium arsenide and silicon semiconductors.
- Q12. What is P-N junction diode? How potential barrier is formed in a P-N junction diode?
- Q13. What is the difference between centre-tapped full-wave rectifier and bridge full-wave rectifier?
- Q14. Draw Ebers-Moll model and hence explain transistor action.
- Q15. What do you mean by oxidation process? Explain in detail. Also give characteristics of different oxide films.

SECTION-C

- Q16. In a CE configuration, the collector supply voltage is 10 V. When a resistor $R_C = 1 \text{ k}\Omega$ is connected in the collector circuit, the voltage drop across it is 0.5 V. For $\alpha = 0.98$, determine the collector-emitter voltage and the base current.
- Q17. Explain the operation of a tunnel diode. Draw its V-I characteristics and list the possible applications of the device.
- Q18. How doping is done using Ion implantation? Draw and explain the working of ion implanter.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.