Register Number: ……..

B.E DEGREE EXAMINATIONS: JUNE 2013

Second Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE103: Electron Devices

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The maximum operating frequency of a diode that has reverse recovery time of 9 ns is
   a) 11.11MHz b) 10 MHz
   c) 12 MHz d) 9 MHz
2. An ideal germanium diode has reverse saturation current of 20μA. The dynamic resistance for a forward bias of 0.1volt is
   a) 26.77 b) 27.77
   c) 27 d) 25.77
3. In CE configuration β is given as
   a) I_B/I_C b) I_C/I_B
   c) I_E/I_B d) I_B/I_E
4. When operated in cutoff and saturation region , the transistor act like
   a) Linear Amplifier b) Variable Resistor
   c) Switch d) Variable Capacitor
5. For $V_{GS} = 0$, the I_D becomes constant when V_{DS} exceeds
   a) 0 b) V_{DD}
   c) V_P d) Cut off
6. FET is a
   a) Current Controlled Device b) Voltage Controlled Device
   c) Bipolar Device d) Both (a) & (c)
7. A Photo Diode has dark current I = 20μA at V_R = -2V find Dark Resistance
   a) 10kΩ b) 100kΩ
   c) 1kΩ d) 101kΩ
8. Photo Diode is a ----------Device
   a) Variable Resistance b) Variable Capacitance
   c) Constant Resistance d) both (a) & (c)

9. In UJT, R = 100KΩ , C = 0.4μf and intrinsic standoff ratio 0.57. The Oscillating frequency f_0 = ----------

a) 29.6 Hz b) 29.6 KHz

c) 28.5 Hz d) 28.5 KHz

10. SCR is a ---------- Device

a) uni directional b) bi directional

c) uni junction d) Both (a) & (c)

PART B (10 x 2 = 20 Marks)

11. What is meant by reverse dynamic resistance?
12. If the reverse saturation current in a PN junction silicon diode is 1nA . Find the applied voltage for a forward current of 0.5μA
13. Draw the hybrid model for CE configuration of BJT
14. Define delay time in transistor
15. List the important features of FET
16. Define pinch off voltage
17. What is dark current of photo diode?
18. Compare LED and PN junction diode
19. Give some applications of TRIAC
20. Draw the equivalent circuit of Varactor diode

PART C (5 x 14 = 70 Marks)

21. a) (i) Write brief notes on Volt-Ampere characteristics of PN junction Diode (10)

(ii) Draw and compare VI characteristics of typical Germanium and Silicon diodes (4)

(OR)

b) (i) Derive the expression for transition capacitance of a PN junction diode (7)

(ii) Explain switching characteristics of a diode with the help of appropriate waveforms (7)

22. a) Draw and explain the input and output characteristics of a transistor in the CE configuration

(OR)

b) (i) Explain the construction of NPN and PNP transistors (7)

(ii) Explain the various current components of the transistor (7)

23. a) With the help of suitable diagram, Explain the working and characteristics of Enhancement type MOSFET

(OR)

b) Write brief notes on construction ,working , characteristics and application of UJT

24. a) (i) Explain in detail about the construction and working principle of photdiode. Also list its applications. (10)

(ii) Explain the working principle of photo conductive cell (4)

(OR)

b) Describe with the help of a relevant diagram, the construction of LED and explain its working and application

25. a) Explain tunneling phenomenon. Draw the characteristics of the device which uses this property. What is the application of device?

(OR)

b) With Volt Ampere characteristics describe the working principle of SCR. Explain its construction details.

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