KUMARAGURU
college of technology
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Register Number: ……..

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2013)

Second Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U13EIT201: Electronic Devices

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Diode is used as
   a) voltage regulator b) amplifier
   c) Oscillator d) a switch
2. The PN diode can be operated in_____
3. The arrow on the symbol of transistor indicates_____
4. Common-collector transistor configuration is used for_____
5. JFET is a
   a) voltage controlled device b) current controlled device
   c) energy controlled device d) power controlled device
6. MOSFET is used for
   a) regulator control b) maintaining constant voltage
   c) automatic gain control d) low input impedance applications
7. Solar cell is works on the principle of_____ effect.
8. The sensitivity of Phototransistor is_____.
9. A silicon controlled rectifier is a
   a) single-layer solid state current controlling device b) double-layer solid state current controlling device
   c) four-layer solid state current controlling device d) three-layer solid state current controlling device

10. An LDR is a

a) light-controlled variable inductor
b) light-controlled variable resistor
c) light-controlled variable capacitor
d) light uncontrolled variable resistor

PART B (10 x 2 = 20 Marks)

11. Define Drift and diffusion current.
12. Outline the concepts of diode switching times.
13. Justify BJT as a current controlled device.
14. A transistor has $\beta = 150$, $I_E = 10mA$, calculate I_C and I_B.
15. How FET act as a variable voltage resistor?
16. What is pinch off voltage?
17. Mention the applications of opto couplers.
18. Compare photo diode and photo transistor.
19. Draw the circuit symbol of varactor diode.
20. List any two applications of thermistor.

PART C (5 x 14 = 70 Marks)

(Not more than 400 words)

Q.No. 21 is Compulsory

21. a) i) Analyze the transition and diffusion capacitance of PN junction diode and derive their expressions. (10)

ii) Derive the expression for a PN junction diode resistance. (4)

22. a) i) Examine the concepts of transistor switching times. (7)

ii) Derive Ebers-Moll equation of transistor. (7)

(OR)

b) With neat circuit diagram elucidate the CE configuration of an NPN transistor with the input and output characteristic curves.

23. a) Illustrate the operation of n-channel JFET with its drain and transfer characteristics.

(OR)

b) Illustrate the operation of N-channel Enhancement MOSFET with its drain and transfer characteristics.

24. a) Enlighten the construction, working and characteristics of (7+7)

i) Light emitting diodes

ii) Liquid crystal cell

(OR)

b) Elucidate the construction, working and characteristics of (7+7)

i) Photo conductive cell

ii) Solar cell

25. a) Explain the operation of SCR and TRIAC with its characteristics. (7+7)

(OR)

b) Illustrate the working of piezo electric devices and charge coupled devices. (7+7)

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