Register Number: ……

B.E. DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

ELECTRICAL & ELECTRONICS ENGINEERING

EEE104: Electronic Devices and Circuits

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. The display device that consumes least power is:

(a) LED (b) LCD (c) Laser diode (d) CRT

2. In zener diodes breakdown of the barrier is caused by:

(a) doping (b) electric field intensity (c) applied voltage (d) high current

3. Negative resistance region occurs in the characteristics of:

(a) UJT (b) BJT (c) JFET (d) MOSFET

4. The high frequency response of a transistor is limited by:

(a) h-parameters (b) junction capacitance (c) junction resistance (d) pi model

5. The parameter that determines the voltage gain of a transistor amplifier is:

(a) h_{ie} (b) h_{fe} (c) h_{re} (d) h_{oe}

6. The best biasing method for transistors is:

(a) self bias (b) fixed bias (c) base to collector bias (d) emitter current bias

7. The amplifier with the highest efficiency is:

(a) Class A (b) Class B (c) Class AB (d) Class C

8. When two amplifiers are connected in cascade:

(a) gain-bandwidth product decreases (b) gain-bandwidth product increases

(c) bandwidth increases (d) gain-bandwidth product remains constant

9. A CE amplifier without an emitter bypass capacitor is:

(a) current series FB (b) voltage series FB (c) current shunt FB (d) voltage shunt FB

10. The circuit with maximum stability is:

(a) crystal oscillator (b) RC oscillator (c) FET (d) UJT

PART B (10 x 2 = 20 Marks)

11. What is barrier potential?
12. Define line and load regulation.
13. Distinguish between JFET and MOSFET.
14. Define intrinsic standoff ratio in UJT.
15. Explain what is meant by gain-bandwidth product of amplifiers.
16. What are the small signal parameters of FET?
17. Define CMRR.
18. State any two applications of tuned amplifiers.
19. What are the types of negative feedback?
20. Compare RC, LC and crystal oscillators.

PART C (5 x 14 = 70 Marks)

21. (a) (i) Explain drift and diffusion currents in pn junction diodes along with their mathematical equations. (7)

(ii) Explain how LEDs are used in seven segment display devices. (7)

(OR)

b) (i) Explain the concept of transition and diffusion capacitance in pn junction diode.(7)

(ii) Describe how a zener diode is used as a voltage regulator. (7)

22. a) (i) With neat diagrams, explain the structure and working of a bipolar junction transistor. (7)

(ii) Explain the drain and transfer characteristics of a n-channel JFET, with graphical illustrations. (7)

(OR)

b) (i) Compare BJT and FET. (7)

(ii) Explain the principle of a unijunction transistor with circuit diagram and characteristics. (7)

23. a) (i) Derive the expressions for voltage gain, current gain, input and output impedances of a CE amplifier using a low frequency model. (10)

(ii) What is the significance of biasing in a transistor amplifier? (4)

(OR)

b) (i) Derive the expressions for voltage gain, current gain, input and output impedances of a CS amplifier using a low frequency model. (10)

(ii) State the advantages and disadvantages of CB and CC configurations. (4)

24. a) (i) With neat diagrams , explain the working of class B power amplifier and derive its efficiency. (10)

(ii) Explain the crossover distortion produced in the above amplifier and how it can be eliminated. (4)

(OR)

b) (i) What are differential amplifiers? Perform a common mode and difference mode analysis of a differential amplifier using the equivalent circuit. (10)

(ii) What are the advantages of using a FET amplifier in the input stage of a system? (4)

25. a) (i) Explain the working of a full wave rectifier with circuit diagram and waveforms. (7)

(ii) Compare the performance of the above rectifier with a capacitance filter. (7)

(OR)

b) (i) State Barkhausen criterion for oscillations. Explain the principle of Hartley oscillator. (7)

(ii) Enumerate the advantages and disadvantages of negative feedback amplifiers. (7)

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