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Question Paper Code : 11325

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2012.

Third Semester

Electronics and Communication Engineering

EC 2205/147304/080290011 — ELECTRONIC CIRCUITS — I

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define three stability factors.
2. Why is temperature compensation required?
3. Draw the small signal equivalent circuit of CE amplifiers.
4. State Bisection theorem.
5. Define Gain Bandwidth product.
6. Draw the high frequency equivalent circuit of FETs.
7. What do you mean by second order harmonic distortion?
8. List the applications of MOSFET power amplifier.
9. A power supply has 4% voltage regulation and an open circuit voltage of 48 V DC. Calculate the full load voltage.
10. Compare Half wave and full wave rectifier.

PART B — (5 × 16 = 80 marks)

11. (a) What is the need for biasing? Design a voltage divider bias circuit for the specified conditions. $V_{CC} = 12V$, $V_{CE} = 6V$, $I_C = 1mA$, $S = 20$, $\beta = 100$ and $V_E = 1V$.

Or

- (b) Explain the following :
- (i) Method of stabilizing the Q point. (8)
 - (ii) Bias compensation. (8)

12. (a) (i) Explain the methods of increasing input impedance. (10)
- (ii) Discuss the advantages and limitations of multistage amplifier. (6)

Or

- (b) Define h parameters of a CE transistor. A transistor has the following parameters $h_{ie} = 800\Omega$, $h_{re} = 10^{-4}$, $h_{fe} = 80$, $h_{oe} = 10^{-7}$, for a load of 3 kilo ohm. Calculate the current gain, voltage gain and power gain.

13. (a) Discuss the frequency response characteristics of RC coupled amplifiers. Derive general expression for gain at low, middle and high frequencies.

Or

- (b) (i) Explain the high frequency analysis of FET amplifiers. (8)
- (ii) Explain the upper and lower cut off frequencies of multistage amplifier with expressions. (8)

14. (a) Explain the working of complementary symmetry class B push pull amplifier. What are its merits, demerits and applications?

Or

- (b) Derive the expression for efficiency of class A audio power amplifier. Describe in detail about its working principle with neat diagrams. (16)

15. (a) (i) In a full wave rectifier a signal of 300 volts at 50 Hz is applied at the input. Each diode has an internal resistance of 800Ω . If the load is 2000 ohms calculate

- (1) Instant peak value of current in the output, (3)
- (2) Output dc current and, (3)
- (3) Efficiency of power transfer. (3)

- (ii) Explain about voltage multipliers. (7)

Or

(b) Explain the following :

- (i) Switched Mode Power Supply (SMPS) (8)
 - (ii) Power control using SCR. (8)
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