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Question Paper Code : 51397

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Third Semester

Electronics and Communication Engineering

EC 2205/EC 36/080290011 — ELECTRONIC CIRCUITS — I

(Common to Medical Electronics Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you mean by punch through?
2. What is thermal runaway?
3. What is Darlington connection?
4. Write about the characteristics of common emitter amplifier.
5. What do you mean by rise time?
6. State miller's theorem.
7. What do you mean by harmonics?
8. What is conversion efficiency?
9. Draw the basic building block of linear mode power supply.
10. What is CLC filter?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Briefly describe about any two bias compensation techniques of BJT (6)
- (ii) With neat circuit diagram and needed expressions, explain the working principle of self bias of Transistor. (10)

Or

- (b) (i) What is stability? What is the need for load line and quiescent point calculation? (6)
- (ii) Calculate the operating point of the self biased JFET having the supply Voltage $V_{DD} = 20V$, maximum value of drain current $I_{DSS} = 10mA$ and $V_{GS} = -3V$ at $I_D = 4mA$. Also determine the values of resistors R_D and R_S to obtain the bias condition. (10)

12. (a) With neat diagram, analyze the transistor amplifier circuit using h -parameter (16)

Or

- (b) (i) Describe with neat circuit diagram, the operation of Common Drain amplifier with small signal equivalent circuit. Derive the equation for voltage gain, input impedance and output amplifier. (10)
- (ii) What is a differential amplifier? (6)
13. (a) Derive the needed expressions for high frequency π model for a transistor with neat circuit diagram. (16)

Or

- (b) With the help of high frequency model of FET, derive the necessary expressions for gain and Bandwidth. (16)
14. (a) Describe the basic concept involved with Class B and Class B push pull amplifier. (16)

Or

- (b) Write notes on:
- (i) MOSFET power amplifiers. (10)
- (ii) Thermal Stability and heat sink. (6)
15. (a) Explain the basic operation of full wave rectifier and bridge rectifier. Derive the expression for ripple factor, efficiency, transformer utilization factor for full wave rectifier. (16)

Or

- (b) Describe the basic principle of operation of SMPS. (16)
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