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Question Paper Code: 50434

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electronics and Communication Engineering

15UEC304 - ELECTRONIC CIRCUITS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- Which of the following factors contribute to thermal instability in transistor?
 - reverse saturation current
 - current amplification
 - base-emitter voltage
 - all mentioned above
- Which of the following configurations does (do) not involve the Miller effect capacitance?
 - Common – emitter
 - Common – base
 - Common – collector
 - all the above
- Which of the following influences the high frequency response of FET amplifiers?
 - inter electrode capacitance
 - doping concentration
 - size of the transistor
 - all mentioned above
- The main features of a large-signal amplifier are the circuit's
 - power efficiency
 - maximum power limitations
 - impedance matching to the output device
 - all the above
- Negative feedback is advantage in
 - amplifier
 - oscillator
 - inverter
 - rectifier

PART - B (5 x 3 = 15 Marks)

- What is the need for biasing a transistor?

7. What is meant by bootstrapping?
8. Clarify how the number of stages in a multistage amplifier influences the cut-off frequency and bandwidth.
9. Why are power transistors provided with heat sinks?
10. Mention the applications of class C tuned amplifier.

PART - C (5 x 16 = 80 Marks)

11. (a) Consider a fixed bias transistor amplifier with collector resistor $R_C = 8\text{ k}\Omega$, load resistor $R_L = 24\text{ k}\Omega$ and bias voltage $V_{CC} = 24\text{V}$. Draw the DC load line and determine the optimum operating point. Also draw the AC load line. (16)

Or

- (b) Explain about the fixed bias configuration for JFET with analysis. (16)

12. (a) Draw the AC equivalent of a common emitter amplifier with fixed bias using hybrid parameter model and derive the equations for input impedance, output impedance, voltage gain and current gain. (16)

Or

- (b) State and prove the Miller's theorem. (16)

13. (a) Draw the equivalent circuit of common source amplifier at high frequencies and derive expressions for voltage gain, input admittance and output admittance. (16)

Or

- (b) What is rise time? Derive the relation between rise time and upper Cut-off frequency and bandwidth. (16)

14. (a) Draw the circuit of a complementary symmetry (class B) amplifier and explain its operation. (16)

Or

- (b) Explain with suitable diagrams the various applications of MOSFET power amplifiers. (16)

15. (a) Explain the Nyquist criterion for stability of feedback amplifiers. (16)

Or

- (b) What are the various types of tuned amplifiers? Explain the working of class C tuned amplifier with input output waveforms and derive the expression for efficiency. (16)