Reg. No. : | | | | | | | | | | |

Question Paper Code: 31434

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Third Semester

Electronics and Communication Engineering

01UEC304 - ELECTRONIC CIRCUITS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Mention the need for biasing.
2. List the advantages and disadvantages of voltage divider bias.
3. Draw the h-parameter model for a CC amplifier. Write the equations governing the model.
4. State Miller's theorem.
5. For an amplifier, midband gain=100 and lower cut off frequency is 1kHz.Find the gain of an amplifier at frequency =20 Hz.
6. Give the relationship between Bandwidth and rise time.
7. Why class A amplifier must not be operated under no signal conditions?
8. What is the drawback of class B amplifier? How is this minimized?
9. State Nyquist criterion for stability of feedback amplifiers.
10. List the two advantages of negative feedback.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Discuss self bias circuit using BJT. Explain how it stabilizes the Q-point by deriving the stability factor. (8)

(ii) Explain Thermistor compensation technique. (8)

Or

(b) (i) Define 3 stability factors. Derive and explain the condition to avoid thermal runaway. (8)

(ii) Prove that self bias is better bias compared to collector to base bias. (8)

12. (a) Employ boot strapping technique in the emitter follower circuit and derive its input impedance. (16)

Or

(b) Derive the expression for the voltage gain of (i) Common source amplifier, (ii) Common drain amplifier configurations, under small signal low frequency conditions. (16)

13. (a) (i) Sketch the high frequency hybrid π model for a transistor in CE configuration and explain the significance of each component. (10)

(ii) Derive the lower cut-off frequency of Multistage amplifiers. (6)

Or

(b) Sketch the equivalent circuit of Common-Drain amplifier (source follower) at high frequencies and derive expressions for voltage gain, Input Admittance and output admittance. (16)

14. (a) (i) Explain the working of push-pull class-B amplifier with neat sketch. (10)

(ii) What is heat sink? How does it contribute to increase in power dissipation? (6)

Or

(b) (i) Explain the operation of the transformer coupled class A audio power amplifier. (12)

(ii) Explain the salient features and applications of class D and class S amplifiers. (4)

15. (a) (i) Sketch a tuned class C amplifier with an LC tank circuit as load. Derive its efficiency. (10)

(ii) Discuss the various effects of negative feedback. (6)

Or

(b) (i) Derive and explain the Nyquist criterion to analyse the stability of feedback amplifiers. (8)

(ii) With block diagram of current series feedback amplifier derive expression for Rif and Rof. (8)

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