B. Tech. 5th Semester (F) Scheme (EEE) Examination, December-2018

ANALOG ELECTRONIC CIRCUIT

Paper-EE-305-F

Time allowed: 3 hours] [Me

[Maximum marks: 100

Note: First question is compulsory. Attempt five questions in all, selecting one question from each section.

- 1. (a) Explain the effects of coupling and bypass capacitor in a circuit.
 - (b) What is an oscillator? How does it differ from an amplifier?
 - (c) Distinguish between Class -A, Class-B and Class-C operation of amplifiers.
 - (d) Differentiate between linear and non linear applications of operational amplifiers. 5×4

Section-A

2. Define the lower cut-off frequency and upper cut-off frequency. Derive expression for these frequencies in terms of circuit components. Draw the frequency response curve of an R-C coupled amplifier.

- 3. (a) Differentiate between positive and negative feedback. How does negative feedback modify the gain of an amplifier?
 - (b) What is the effect of unbypassed emitter lead resistance R_E on the gain of an amplifier? 10

Section-B

- 4. (a) What are the Barkhausen condition of oscillations in electronic systems? What are the factors which affect the frequency stability of an oscillator? 10
 - (b) Explain how oscillations are initiated and sustained in an oscillator. Draw the ckt diagram of an R-C phase shift oscillator and briefly explain the principle of operation.
- 5. Enumerate the advantages of R-C oscillators. Explain the working of an R-C phase shift oscillator and find the expression for its frequency of oscillation. Find the limit on the gain of amplifier used in this oscillator.

Section-C

- 6. (a) Explain how the position of Q-point varies in case of Class-A, B and C operation.
 - (b) Draw the circuit of a push-pull amplifier and

op-amp and derive the expression for its voltage gain.
Explain the significance of virtual ground. Define CMRR of a differential amplifier. Realize a differentiator using op-amp.

Section-D

8. Write note on –

(i) Bridge amplifier

- (ii) Current to voltage converter
- (iii) Scale changer
- (iv) Phase shifter

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9. Write notes on:

- (i) Comparators
- (ii) Logarithmic Amplifier
- (iii) APC
- (iv) Waveform Generator.

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