Code: 15A04409

R15

B.Tech II Year II Semester (R15) Regular & Supplementary Examinations May/June 2018

ANALOG ELECTRONIC CIRCUITS

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) A multistage amplifier has the following voltage gains: A_{V1} = 10, A_{V2} = 15, A_{V3} = 20. What is the overall voltage gain?

(b) State various methods of cascading transistor amplifiers.

(c) Compare negative feedback and positive feedback.

(d) An amplifier without feedback has a gain-bandwidth product of 4 MHz. Its closed loop gain is 40. What is the new bandwidth?

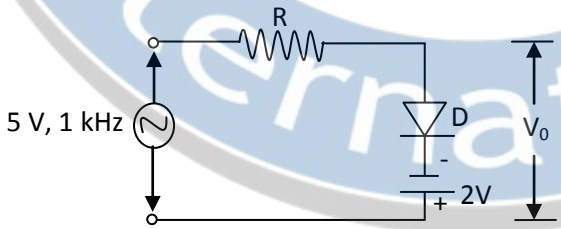
(e) What are the factors which affect the frequency stability of an oscillator?

(f) State Barkhausen condition for oscillation.

(g) What is thermal runaway?

(h) What are the advantages of using transformer less class-B push-pull amplifier?

(i) Draw the input and output voltage waveforms for the given circuit.



(j) What is astable multivibrator?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Discuss the essential difference between RC coupled and direct coupled amplifier.

OR

3 Three amplifier stages are working in cascade with 0.05 V peak-to-peak input providing 150 V peak-to-peak output. If the voltage gain of the first stage is 20 and input to the third stage is 15 V peak-to-peak, determine the voltage gain of second and third stages, the overall voltage gain and the input voltage of the second stage.

UNIT – II

4 Compare the four feedback amplifier topologies on the basis of feedback connection, input resistance and output resistance. Draw necessary diagrams.

OR

5 An amplifier has a midband gain of 1500 and a bandwidth of 4 MHz. The midband gain reduces to 150 when a negative feedback is applied. Determine the value of feedback factor and the bandwidth.

UNIT – III

6 Explain the operation of a Wien bridge oscillator with the help of a neat circuit diagram. How is amplitude stability achieved in this circuit?

OR

7 Explain with neat circuit diagram, the operation of RC phase shift oscillator. Derive the expression for frequency of oscillation and the minimum gain of the amplifier for sustained oscillations.

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UNIT – IV

8 Draw the circuit diagram of a transformer less class-B power amplifier. Explain its operation.

OR

9 Compare the maximum collector efficiency of transformer coupled class-A amplifier and class-B amplifier. Do the necessary derivations.

UNIT – V

10 Derive an expression for the output of a low pass RC circuit excited by a step input. Explain the circuit operation.

OR

11 Draw the circuit diagram of a monostable multivibrator and explain its working. Derive an expression for the gate width of a monostable multivibrator.

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