CBCS SCHEME

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15EE34

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019
Analog Electronic Circuits

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Module-1

1 a. Explain diode positive shunt clipper circuit with waveforms and transfer characteristics. **(05 Marks)**

b. What is transistor biasing? Explain emitter bias circuit with relevant circuit and equations. **(06 Marks)**

c. Design a suitable circuit represented by the box shown below, which has input and output waveforms as indicated. **(05 Marks)**

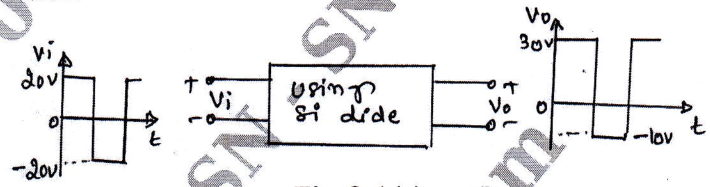

Fig.Q.1(c)

OR

2 a. What is Clamping circuit? Explain the negative Clamping circuit with necessary waveforms. **(05 Marks)**

b. Obtain the expression for stability factors $S(I_{CO})$ and $S(V_{BE})$ for fixed bias circuit. **(06 Marks)**

c. For the fixed bias circuit as shown in below Fig.Q.2(c). Assuming $V_{BE} = 0.7V$ and $\beta = 60$. Find: i) I_{BQ}, I_{CQ} and V_{CEQ} ii) V_B and V_C. **(05 Marks)**

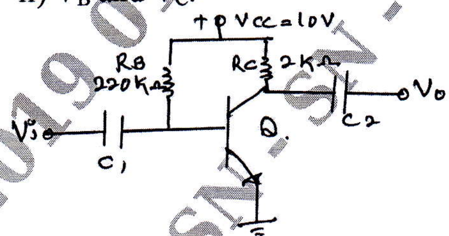

Fig.Q.2(c)

Module-2

3 a. What are the advantages of h-parameters? **(04 Marks)**

b. Obtain an h-parameter equivalent circuit of CB and CE configuration. **(06 Marks)**

c. For the circuit shown below. Determine: i) re ii) Z_i, Z_o, A_v and AI taking $r_o = \infty\Omega$. **(06 Marks)**

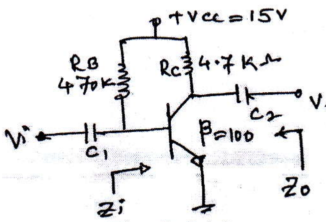

Fig.Q.3(c)

OR

4 a. Explain the law frequency response of single stage RC coupled amplifier. **(08 Marks)**

b. What is Miller effect? Derive the equations for miller input and output capacitance. **(08 Marks)**

Module-3

5 a. What is a cascading amplifier? Obtain the expression for over all voltage gain for 3 stage amplifier. **(06 Marks)**

b. With the help of block diagram, explain the concept of feed back. **(07 Marks)**

c. Write the important characteristics and application of Darlington emitter follower. **(03 Marks)**

OR

6 a. Obtain expression for voltage gain, input impedance and output impedance of a Darlington emitter follower. Draw the necessary equivalent circuit. **(08 Marks)**

b. Write the important advantages of a negative feed back amplifier and show that how band width of an amplifier increases with negative feed back. **(08 Marks)**

Module-4

7 a. Explain the operation of a class B push-pull amplifier and derive its conversion efficiency. **(06 Marks)**

b. With a neat circuit diagram, explain the operation of BJT Colpitt's oscillator. **(05 Marks)**

c. The following distortion readings are available for a power amplifier: $D_2 = 0.2$, $D_3 = 0.02$, $D_4 = 0.06$ with $I_1 = 3.3A$ and $R_C = 4\Omega$. Calculate: i) THD ii) Fundamental power component (P_1) iii) Total power (P_T). **(05 Marks)**

OR

8 a. Mention the classification of power amplifier and explain series fed class A power amplifier with conversion efficiency. Write its merits and demerits. **(08 Marks)**

b. With a neat circuit diagram, explain the working of series resonant crystal oscillator. A crystal has L = 0.334H, C = 0.065 PF, C_M = 1PF and R = 5.5KΩ. Calculate its series and parallel resonant frequency. **(08 Marks)**

Module-5

9 a. Explain the construction, working and characteristics of n-channel JFET. **(08 Marks)**

b. For the FET amplifier shown below: i) Calculate Z_i and Z_o ii) Calculate A_v. I_{DSS} = 15mA, V_p = -6v, Y_{os} = 25μs. **(05 Marks)**

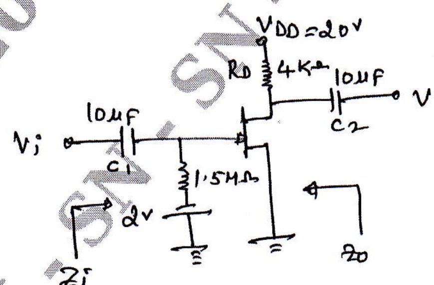

Fig.Q.9(b)

c. Write important characteristics of common-source configuration of JFET. **(03 Marks)**

OR

10 a. Define trans conductance gm and derive an expression for gm. **(06 Marks)**

b. Compare JFET and MOSFET. **(04 Marks)**

c. Explain the operation and characteristic of n-channel MOSFET. **(06 Marks)**

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