U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: MD/EIE **Duration: 3 hrs.**
Course Code: 22ES3PCAME **Max Marks: 100**
Course: Analog Micro Electronics

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) Determine Vo for the network shown in figure 1. A, **06**

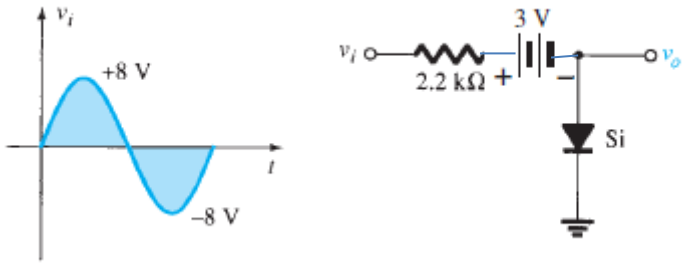

Fig1.a

b) Estimate I_C,V_E,V_B,R_1 for the network shown in figure 1.b, **06**

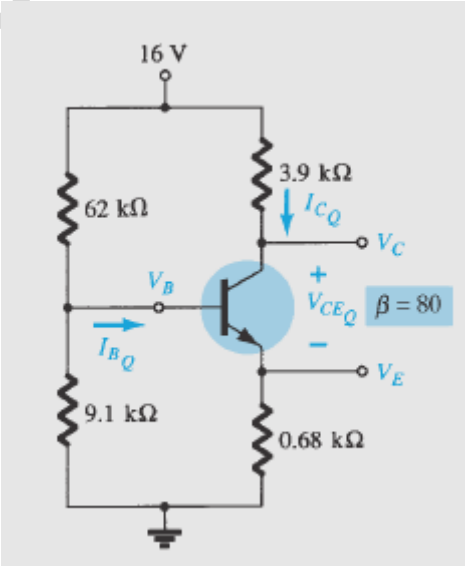

Fig1.b

c) Obtain the AC equivalent model of a CE voltage divider bias network and derive Zi, Zo, Av, AI using re model **08**

OR

2 a) Sketch vo for the positive clamping circuit and explain the operation with negative reference voltage **06**

b) Determine re, Zi, Zo and Av for the network shown in figure2.b **08**

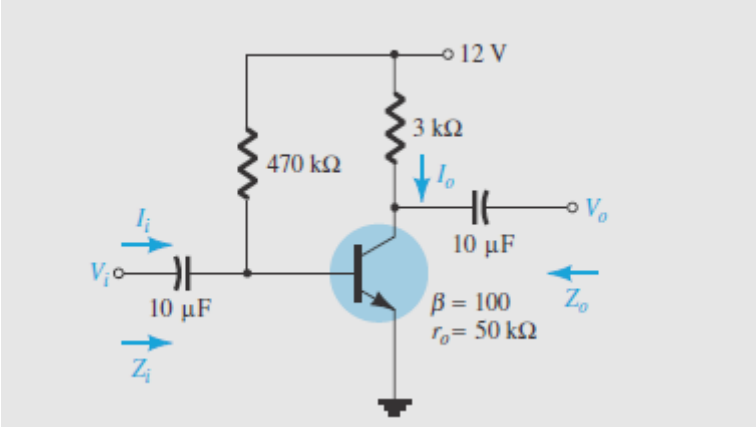

Fig2.b

c) Derive an equation for IB and VCE of voltage divider biasing, using approximate analysis. **06**

UNIT - II

3 a) Demonstrate the low frequency response of a RC coupled amplifier **08**

b) Illustrate the significant of negative feedback on bandwidth of an amplifier. **04**

c) Derive an expression for gain , input impedance and output impedance of a voltage shunt feedback amplifier **08**

UNIT - III

4 a) Explain the operation of a series fed class A power amplifier and obtain the efficiency. **08**

b) calculate the input power, output power, and power handled by each output transistor of a class B power amplifier and the circuit efficiency for an input of 12 V rms with Vcc=25v, and a load 4Ω **06**

c) What is harmonic distortion? Explain the causes of distortion. **06**

UNIT - IV

5 a) With a neat diagram and id-vds characteristics explain the operational of n – channel enhancement MOSFET. When **08**

(a)VGS $\leq$ Vt
(b)VGS > Vt & VDS < VGS -Vt
(c)VGS > Vt & VDS $\geq$ VGS – Vt.

b) Analyze the circuit shown in figure 5.b having Vt=1v, Kn'(W/L)=1mA/V2, λ = 0. determine I_D, Vs, V_{GS}, V_D. **06**

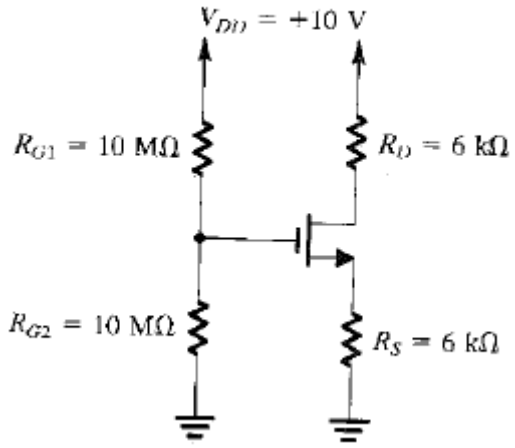

Fig 5.b

c) Using the transfer characteristics of a MOSFET , obtain the analytical expression of drain-to-source resistance in the triode region **06**

UNIT - V

6 a) Sketch the T-equivalent model of an n channel enhancement MOSFET. **08**

b) Construct the small signal model of a Common Source amplifier and derive an expression for gain, input and output impedance. **08**

c) Compare Common Gate and Common Soruce amplifier **04**

OR

7 a) Derive an expression for transconductance of MOSFET. **06**

b) With relevant circuits and expressions, explain the MOSFET steering circuits. **06**

c) Develop the overall gain, input and output impedance of a source follower using small, signal model of MOSFET **08**

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