B.E. III Semester Examination
BE(LE)-III/02(A)
25086
IT. ENGG.
Course No. ECE - 313
(Analog Electronics)

*Time Allowed-3 Hours*   *Maximum Marks-100*

Note :   Attempt any **five** questions in all by selecting at two questions from each **section.** All questions carry **equal** marks.

SECTION - I

1.   a)   Explain with neat diagram the working of zener diode. Draw its characteristics and show breakdown phenomenon. Explain types of breakdown phenomenon in zener diodes and derive an expression for current limiting resistor in zener diodes.   (15)

      b)   For silicon diode with reverse current of 0.2μ A, calculate the dynamic forward and reverse resistance at a voltage of 0.72V and -0.72V applied across the diode at a room temperature of 27°C.   (5)

2.   a)   Draw and discuss the transistor in C.E. Configuration with I/P and O/P characteristics. Derive an expression for collector current.   (10)

b) Design a voltage divider circuit for specified conditions:-
V_{cc} = 2V, V_{ce} = 6V, I_c = 1mA, S = 20, β=100,
V_e =1V. Draw the fig and find DC load line.   (10)

3. a)   Explain N stage cascaded amplifier, find its gain in db.(5)

b)   Draw the generalized hybrid model for a transistor. Also
draw the models for CB,CE and CC configurations. Write
the i/p and o/p equations. Derive the necessary equations
for Av, Ai, Ri, Ro, Avs, Ais by taking CC transistor
configuration with source resistance Rs.   (15)

4. a)   Draw the half wave rectifier circuit and derive an expression
for all the parameters.   (10)

b)   The amplifier shown in fig.1 has hfe = 100,
hie = 3.37kΩ. Calculate Ri, Av = vo/vi, Ai = Io/II   (10)

Fig 1.
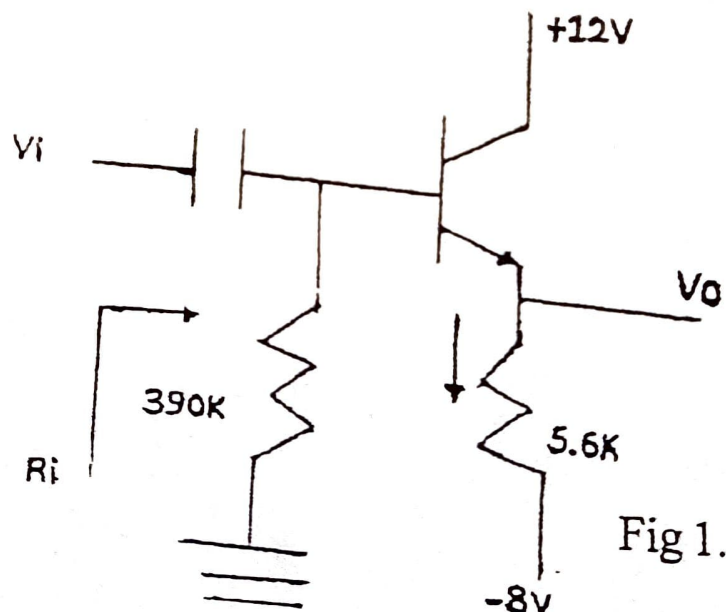
SECTION - II

5. a) Discuss JFET parameters, find their values from the JFET characteristics.   **(10)**

    b) Derive an expression for id and Vds in case of fixed bias circuit. Draw the load line.   **(10)**

6. a) Explain with neat diagram the working of Enhanced MOSFET with characteristics Symbol, transfer characteristics.   **(10)**

    b) A common drain amplifier as shown in fig2 has following components values:- R1 = 2.7MΩ, R2 = 820KΩ, Rs = 4.7KΩ RL = 33KΩ, gm = 6000 μS, rd = 70KΩ. Calculate Ri, Ro, Av.   **(10)**
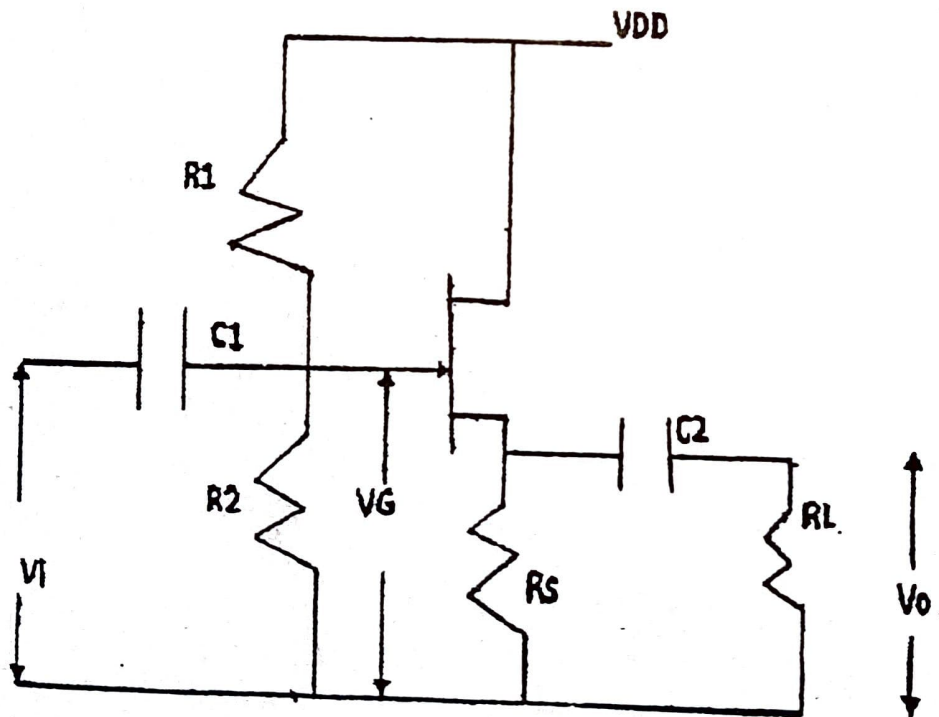

Fig. 2

[Turn Over

7. a) Explain with neat diagram and wave form the working
op-amp as AC amplifier with single power supply.   (1

b) Explain with neat diagram the working of op-amp as bar
pass filter. Draw its waveform.   (1

8. Write short notes on :-

i) D/A convertor using Binary weighted resistors   (1

ii) Differential amplifier using two op-amps.   (i

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