National Institute of Technology, Kurukshetra
End Semester Exams (Theory) Dec 2022

Programme: B. Tech, ECE | Semester: III
Subject Code: ECPC-30 | Subject Name: Electronic Devices and Circuits
Time: Three Hours | Max. Marks: 50

Instructions:

1. All the questions are compulsory. Internal choice as applicable
2. All parts of a question must be done at one place.
3. Unless stated otherwise, the symbols have their usual meanings in context with the subject
4. Assume suitable data, if required.

Q. No. 1 Attempt any two **2*5**

(a) Explain the difference between Zener and Avalanche breakdown.
(b) Explain the working of FET as an amplifier with the help of a suitable diagram.
(c) Write a short note on diffusion and transition capacitances in a diode.

Q. No. 2 **2*5**

(a) Determine V_{O1}, V_{O2}, and I for the network given in Fig. 1.

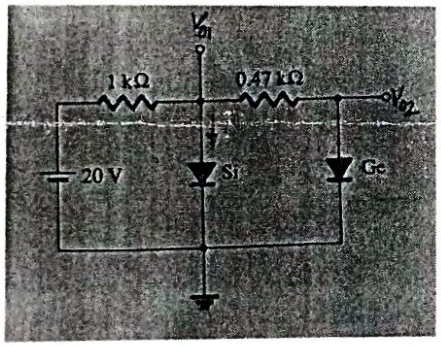

Fig. 1

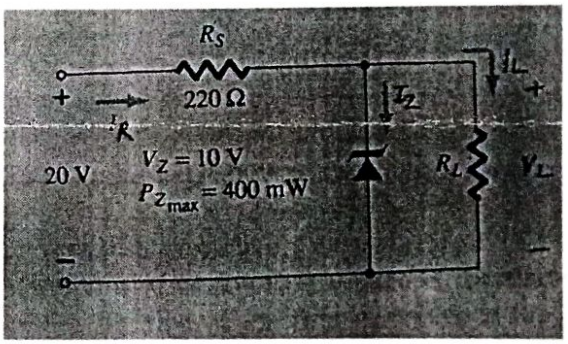

Fig. 2

(b) Determine V_L, I_L, I_Z and I_R for the network given in Fig. 2, if R_L=180Ω. Repeat if R_L=470Ω

Q. No. 3 **2*5**

(a) For the voltage divided bias configuration of Fig. 3, determine I_{BQ}, I_{CQ}, V_{CEQ}, V_C, V_E and V_B. Also, write the region of operation.
(b) Draw the transfer and output characteristics in JFET. Define pinch off voltage and threshold voltage.

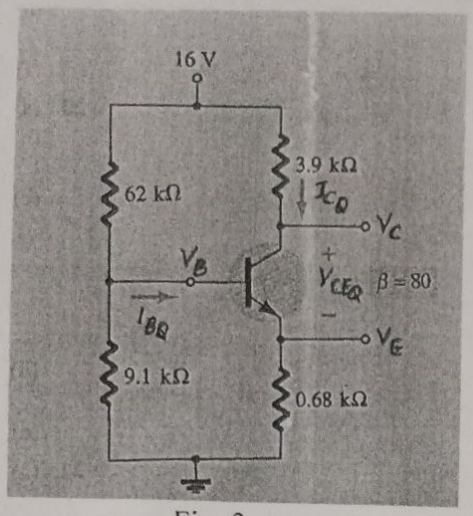

Fig. 3

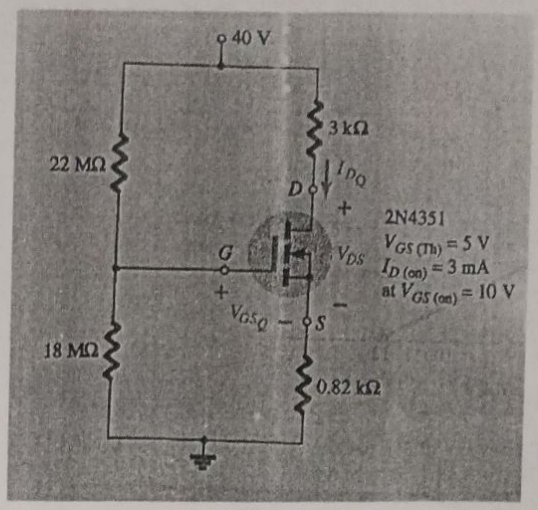

Fig. 4

Q. No. 4 2*5

(a) Determine I_{DQ}, V_{GSQ} and V_{DS} for the network given in Fig. 4

(b) Draw the r_e equivalent model for the CE configuration given in Fig. 5 and determine input impedance, output impedance, voltage gain and current gain.

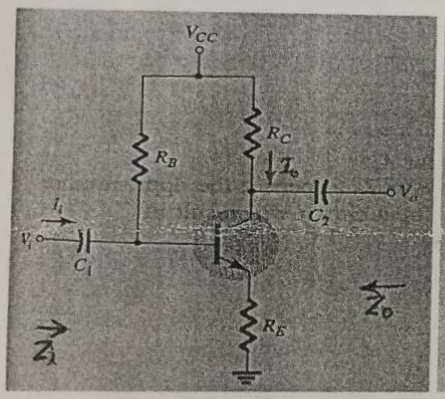

Fig. 5

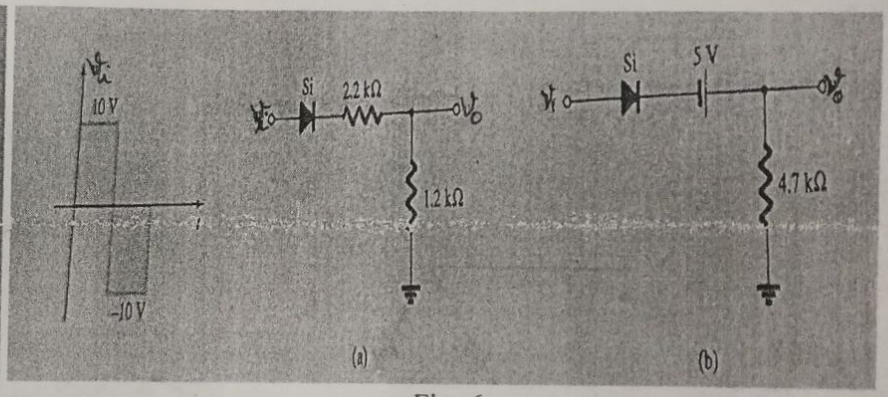

Fig. 6

Q. No. 5 2*5

(a) Draw the hybrid equivalent model of CE transistor and explain all the important parameters of the model.

(b) What is a clipper circuit? Determine v_o for each network shown in Fig. 6.