

SCHOOL OF ELECTRICAL ENGINEERING
FALL SEMESTER 2025-2026
CONTINUOUS ASSESSMENT TEST - II

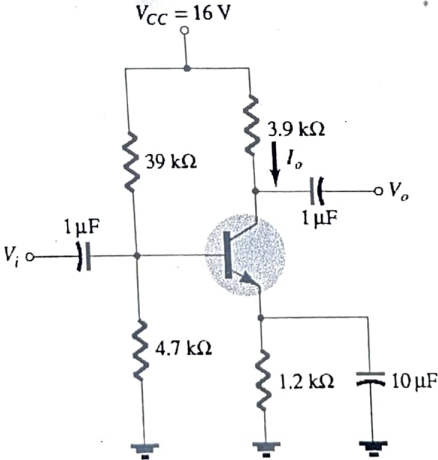
Programme Name & Branch : BTech EEE/EIE
Course Code and Course Name : BEEE205L and Electronic Devices and Circuits
Faculty Name(s) : Profs. Sankardass V, C. Venkata Mahendra and P. Uma Sathyakam
Class Number(s) : VL2025260101210, VL2025260101215, VL2025260101214
Date of Examination : 08/10/2025
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

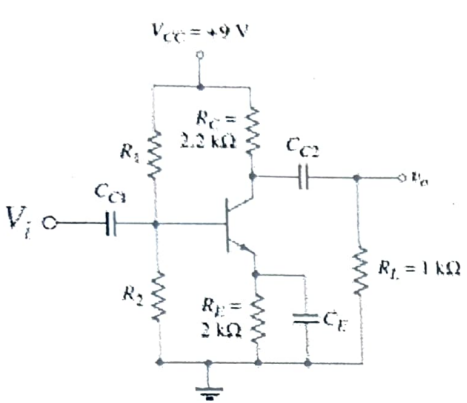
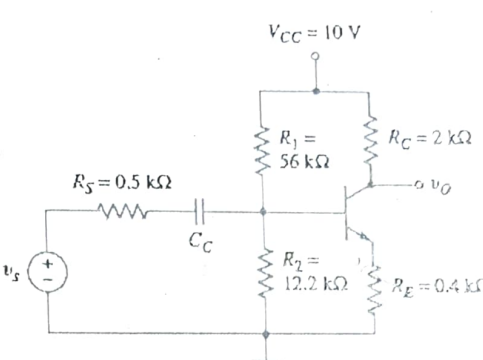
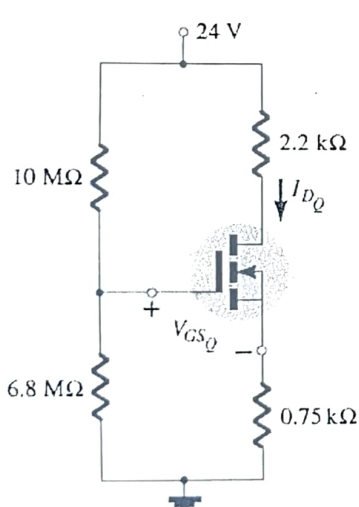
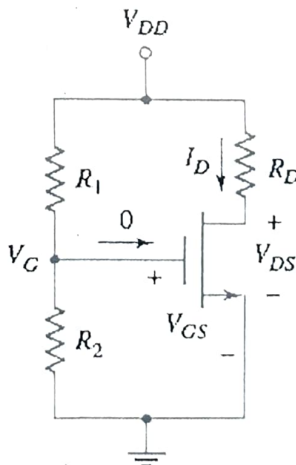
- Answer All Questions
- Rough work should not be done on question paper. It will be treated as malpractice.
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Course Outcomes Statements:

CO. 2: Analyze and design BJT and MOSFET DC circuits and their amplifier configurations.

Q. No	Question	M	CO	BL
1.	For the given network in Fig. 1, find (i) DC parameters of I_B and I_E, (ii) r_e, (iii) Z_i and Z_o, (iv) the small signal gain A_v, (v) What could be the gain A_v if the emitter bypass capacitor is removed?. Consider $\beta = 100$. Draw the small signal equivalent circuit.  Fig. 1	10	2	3
2.	Consider the VDB CE amplifier in Fig. 2. For $R_1 = 1k\Omega$, $R_2 = 2k\Omega$, $\beta = 120$. Calculate the DC parameters of I_B and I_E, input and output impedances, r_e, A_v. What would be the output voltage V_o, if $V_i = 10mV$.	10	2	3

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3.	For the VDB amplifier with emitter resistor in Fig. 3, calculate the I_E, input and output impedances, r_e, small signal voltage gain, and small signal current gain. Draw the small signal equivalent circuit. Consider $\beta = 100$ and $V_{BEon} = 0.7V$.   Fig. 2 Fig. 3	10	23
4.	Use graphical method to calculate the Q point values of I_{DQ} and V_{GSQ} for the circuit in Fig. 4. Also determine k_n, V_D and V_S. Consider $V_{GSTh} = 3V$, $I_{Don} = 5mA$ and $V_{GSon} = 6V$.	10	23
5.	The E-MOSFET in Fig. 5 has parameters $V_{GSTh} = 0.35V$, $K_n = 25\mu A/V^2$. The Circuit parameters are $V_{DD} = 2.2V$, $R_1 = 355k\Omega$, $R_2 = 245k\Omega$, $R_D = 100k\Omega$. Find V_G, I_D, V_{GS}, V_{DS}. Draw the output characteristics in a graph sheet and draw the load line.   Fig. 4 Fig. 5	10	23