

Enroll No

Q.P.Code

UT 3087

Day & Date: Thursday 18-09-2025

Time: 11:45AM-12:45PM

Max Marks- 25

Instructions: 1. All questions are compulsory.

2. Figures in rounded () brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.

3. CO is the index number of the Course Outcome statement.

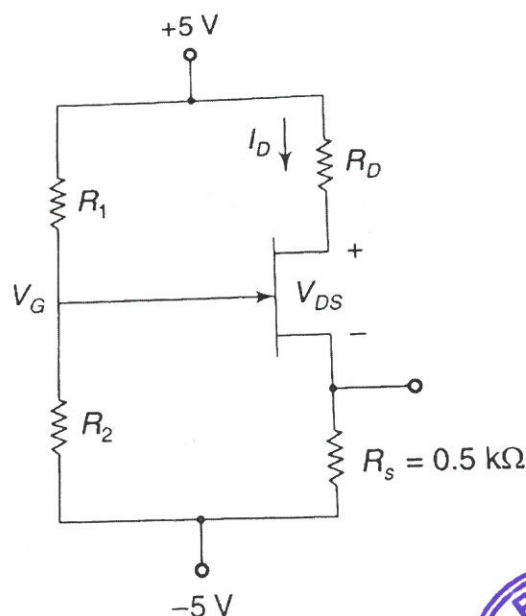
4. The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.

5. Assume suitable data if necessary.

6. Use of non-programmable calculator is allowed.

Solve the Following
Mark BL CO

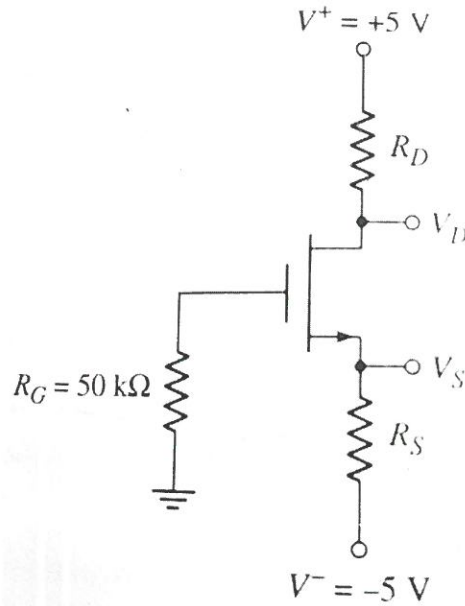
- Q.1 A Explain construction (2M) & working (2M) of n-channel Enhancement MOSFET with its drain & transfer characteristics (2M). 6M L2 CO1
- B Design voltage-divider bias circuit using n-channel JFET for $I_D = 5 \text{ mA}$ and $V_{DS} = 5 \text{ V}$ with $V_{DD} = 5 \text{ V}$, $V_{SS} = -5 \text{ V}$, $I_{DSS} = 10 \text{ mA}$, $V_P = -3.5 \text{ V}$, $R_S = 0.5 \text{ k}\Omega$ and $R_1 + R_2 = 20 \text{ k}\Omega$. 7M L5 CO4



OR



- B Design n-channel EMOSFET circuit for $I_D = 0.5 \text{ mA}$ and $V_{DS} = 4\text{V}$ with $V_{DD} = 5\text{V}$, $V_{SS} = -5\text{V}$, $V_{TN} = 1.2\text{V}$, $K_n = 0.25 \text{ mA/V}^2$. 7M L5 CO4



- Q.2 A Derive Voltage Gain, input impedance and output impedance with feedback for Voltage-Series & Current-Shunt Feedback Amplifier with circuit diagram (4M each). 8M L4 CO3
- B Elaborate Positive and Negative feedback with the help of diagram. 4M L2 CO3

