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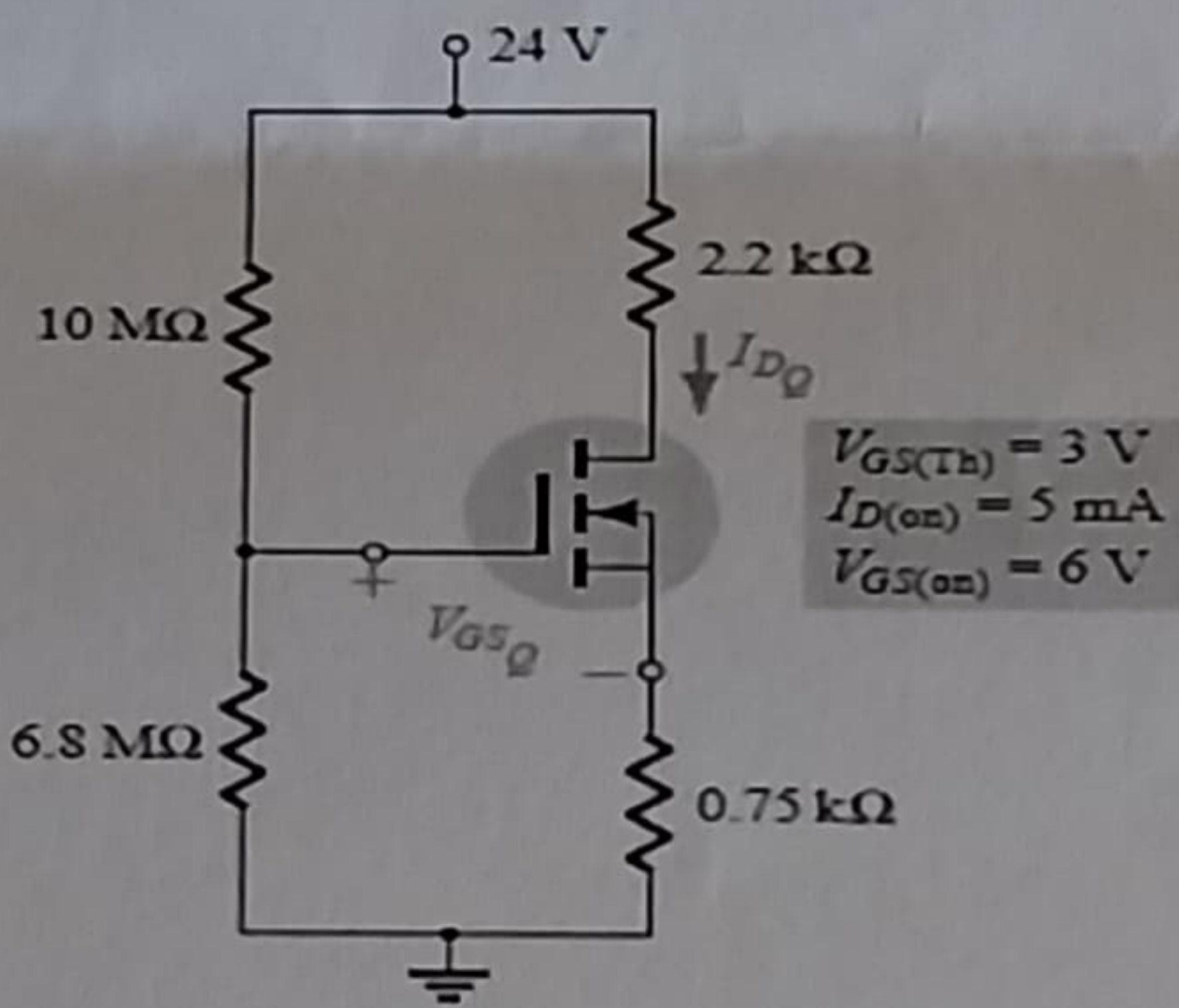
Vellore Institute of Technology
(Deemed to be University) under section 3 of UGC Act, 1956

SCHOOL OF ELECTRONICS ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

Programme Name & Branch :B.Tech
Course Code and Course Name :BECE206L and Analog Circuit
Faculty Name(s) : Dr.M.Jasmin Pemeena Priyadarsini
Class Number(s) : VL2024250502599
Date of Examination : 27.1.25
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions

Q. No	Question- $5 \times 10 = 50$	Marks
1.	Calculate the midband gain and upper 3 dB frequency of the CE amplifier in high frequency band. The amplifier has $V_{CC} = V_{EE} = 20V$, $I_C = 2.5 \text{ mA}$, $R_B = 25k\Omega$, $R_C = 20k\Omega$, $R_{sig} = 4k\Omega$, $R_L = 4K\Omega$, $\beta_0 = 100$, $V_A = 150 \text{ V}$, $C_\mu = 2\text{pF}$, $f_T = 700 \text{ MHz}$ and $r_x = 50 \Omega$.	10
2.	Determine I_{DQ} , V_{GSQ} and V_{DS} for the network of Fig.1  Fig.1	10
3.	A BJT operating at $I_C = 2\text{mA}$ has $C_\mu = 3.25 \text{ pF}$, $C_\pi = 10 \text{ pF}$, and $\beta = 200$. What are f_T and f_β for this situation? If C_π of the BJT includes a relatively constant depletion-layer capacitance of 2 pF , find the f_T of the BJT when operated at $I_C = 0.2 \text{ mA}$.	10
4.	For the CS amplifier circuit given in Fig.2. The circuit is biased to have $g_m = 1\text{mA/V}$. Find A_M , f_{P1} , f_{P2} , f_{P3} and f_L	10



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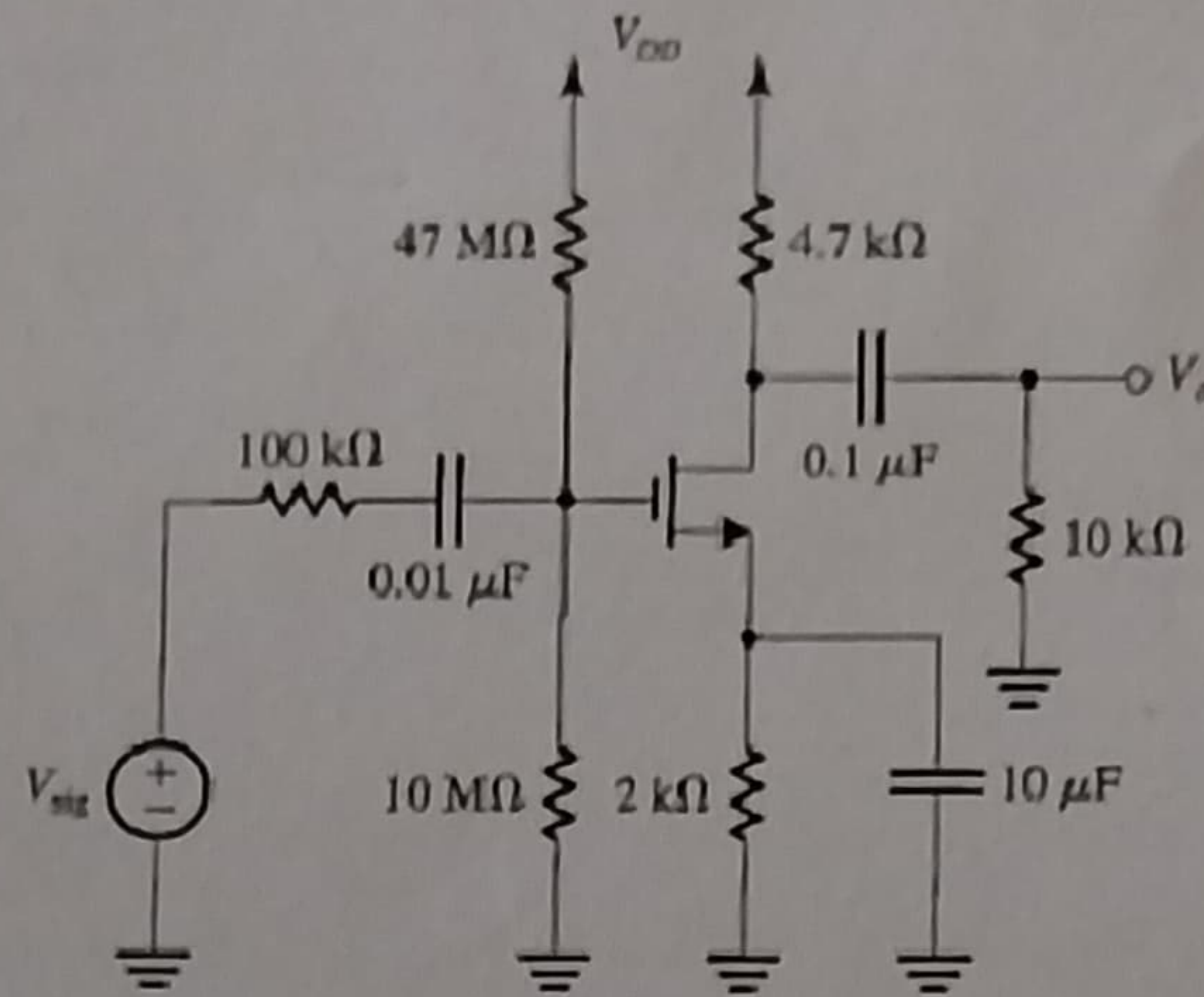


Fig.2

5a.	Derive the expression for voltage gain (A_M) and higher cutoff frequency f_H using BJT(CE) with a neat diagram.	10
OR		
5b.	Derive the expression for voltage gain (A_M) and lower cutoff frequency f_L using MOSFET (CS) with a neat diagram.	10
