

COURSE CODE: 10B11EC211

MAX MARKS:35

COURSE NAME: BASIC ELECTRONIC DEVICES AND CIRCUITS

COURSE CREDITS:4

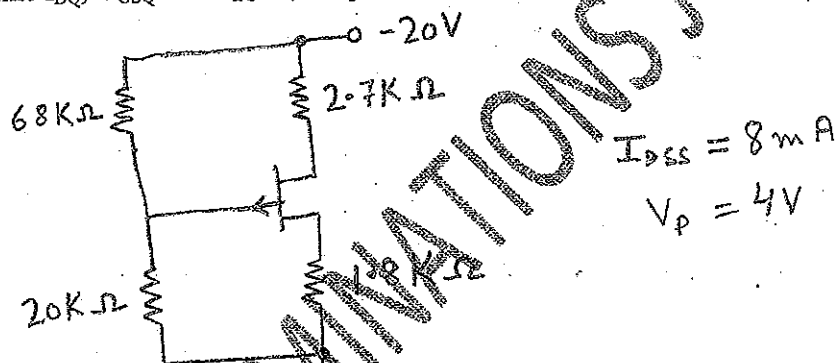
MAX TIME: 2HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

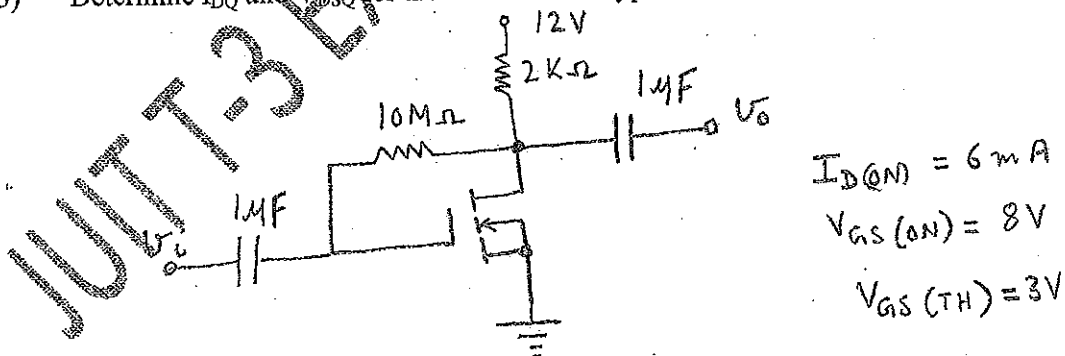
Q1)

- What is the significant difference between the construction of an enhancement-type MOSFET and a depletion-type MOSFET?
- In what ways is the construction of a depletion-type MOSFET similar to that of a JFET? In what ways is it different?
- Why I_G is effectively zero amperes in enhancement-type MOSFET? (2+3+1=6)

Q2) Determine I_{DQ} , V_{GSQ} and V_{DS} for the p-channel JFET (3)

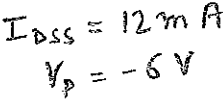


Q3) Determine I_{DQ} and V_{DSQ} for the enhancement type MOSFET (4)

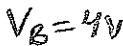


Q4) Design a voltage-divider bias network using a depletion type MOSFET with $I_{DSS} = 10 \text{ mA}$ and $V_P = -4 \text{ V}$ to have a Q-point at $I_{DQ} = 2.5 \text{ mA}$ using a supply of 24V. In addition, set $V_G = 4 \text{ V}$ and use $R_D = 2.5 R_S$ with $R_1 = 22 \text{ M ohms}$. (3)

- (3+3=6)**



- (4)



- (4)

