# Class Test-04

Total marks = 30                     Duration : 35+10= 45 minutes total

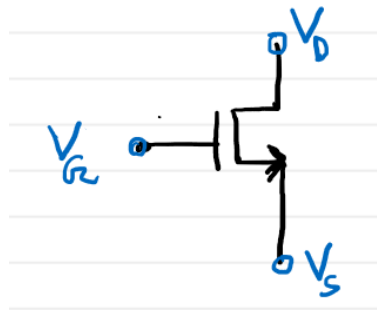1) Consider the following circuit:                                        3*6=18

    X= last Digit of your ID

    Y= 2nd last digit of your ID

    Z= 3rd last digit of your ID



**Case 1)**

    $V_G$=X Volt,

    $V_D$= Y Volt,

    $V_t$= 2V

Determine Maximum Source Voltage so that, MOSFET remain in cut off mode

**Case 2)**

    $V_D$= Z Volt,

    $V_t$= 0.5 V

    $V_S$= -1 Volt,

Determine the Gate voltage so that circuit operates at the edge of saturation

**Case 3)**

    $V_G$=X Volt,

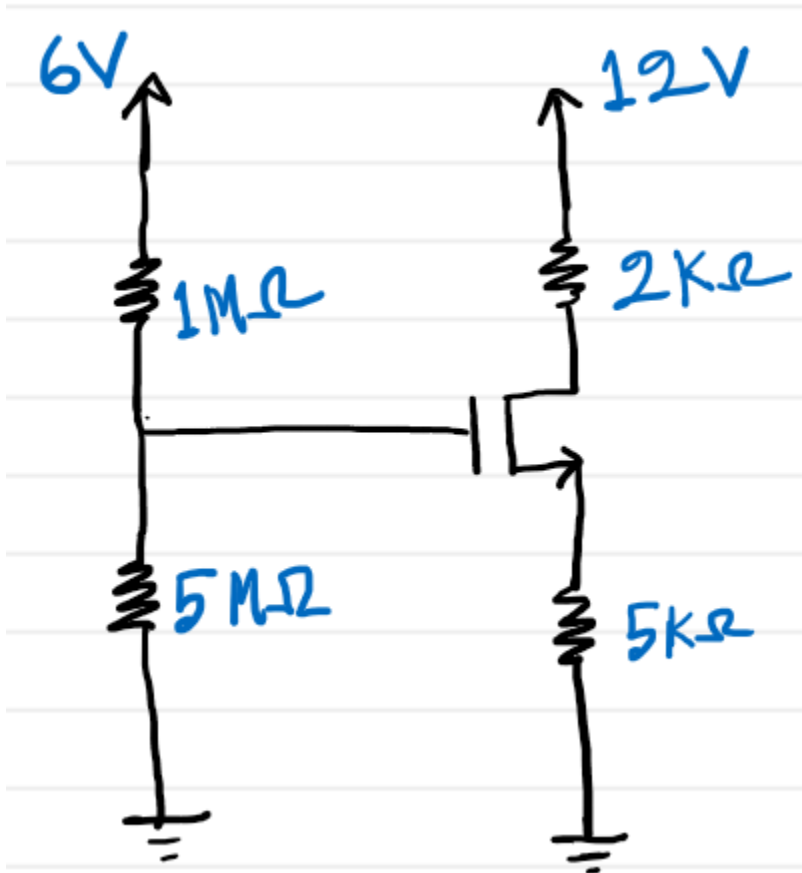    $V_t$= 3 Volt

    $V_S$= (X-Vt-1)   Volt,

Determine the maximum Drain voltage so that circuit operates in triode region

2) Consider the following circuit:                                          12

Vt= $\log_{10}$ (last digit of your ID/2+2)

6V                                              12V

$1M\Omega$                                      $2K\Omega$

$5M\Omega$                                      $5K\Omega$

The MOSFET is operating with Kn' =1 mA/V², W/L= 2um/ 1 um;

Find the mode of operation and values of and voltage at drain, source and gate