Islamic University Faculty of Engineering Department of Electrical Engineering		الجامعة الإسلامية كلية الهندسة قسم الهندسة الكهربائية

EE 212 - ELECTRONICS I

Fall semester 2017

QUIZ 3

Grade
10

Name, Family Name: [redacted]

ID No.: [redacted] **Section No.: 1050** **Signature:** [redacted]

Quiz Duration: 15 minutes.

Instructions: Write "the correct" answer in the space provided under each question.

Question: [CO_7, PI_5_53, SO_5]

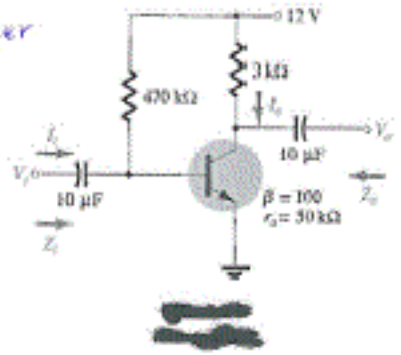
Caculate the following parameter for Common Emitter Bias configuration

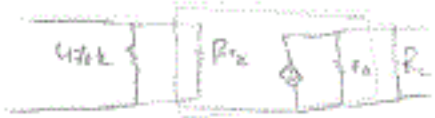
Z_i

Z_o

A_v

to calculate Z_i we need R_{re}





$\frac{V_o}{V_i}$

2830.18

Solution:

we need R_{re} $\quad I_B = \frac{12 - 0.7}{470k} = 24.04\mu A$

$\therefore I_E = (\beta+1)I_B \Rightarrow (101)(24.04\mu A) = 2.43\,mA$

$\therefore r_e = \frac{26mV}{(101)(24.04\mu A)} = 10.708\,\Omega$

$\therefore Z_i = R_B \| R_{re} \Rightarrow \frac{470k \times 10.708 \times 100}{470k + 10.708 \times 100} = 1069.25\,\Omega$

$Z_o = \frac{3K \times 50k}{3k + 50k} = 2830.19\,\Omega$

$A_v = \frac{-R_c}{r_e} = \frac{-3k}{10.708}$

$= -280.16\ V$

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EE 212 - ELECTRONICS I

Fall Semester 2017

QUIZ 2

Grade
17

Name, Family Name : [redacted]

ID No.: [redacted] **Section No.: 1050** **Signature :** [redacted]

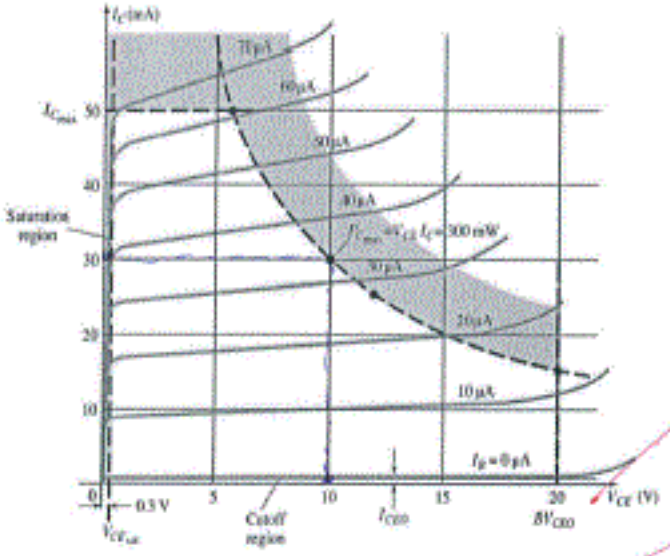
Quiz Duration: 15 minutes.

Instructions: Write "the correct" answer in the space provided under each question.

Question: [CO_5, PI_5_49, SO_5]

Q1. Figure below shows typical characteristic curve for BJT transistor. For maximum power value calculate V_{CE} and I_C at least on 2 point. Show those points one the curves. (8)

Q2. What value BV_{CEO} Represent? (2)



$P_{CE} = I_C V_{CE}$

$V_{CE} = \frac{P}{I}$

5

Ans.1) $I_C = 30$ mA $V_{CE} = 10$ V → Second point

Ans.2) It represents the Break down voltage b/w emitter and collector.

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EE 212 - ELECTRONICS I

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QUIZ 1

Grade
2

Name, Family Name : [redacted]

ID No.: [redacted] **Section No.: 2888** **Signature :** [redacted]

Quiz Duration: **15 minutes.**

Instructions: **Write "the correct" answer in the space provided under each question.**

Question: **[CO_3, PI_5_51, SO_5]**

Consider the diode circuit shown in Figure P1.
(a) Draw the output wave form (10 points)
(b) Calculate the output DC level. (10 points)
(c) Calculate the PIV for each diode (5 points)

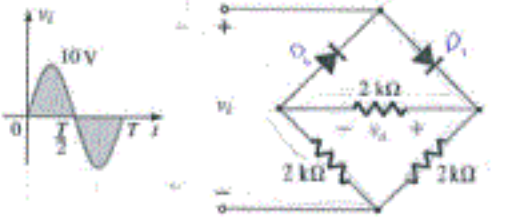


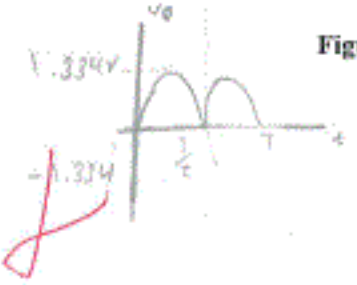
Figure P1

Solution:

a) $I = \frac{10}{1.333k} = 7.502mA$

$I_o = \frac{2k}{6k} \times 7.502 \times 10^{-3} = 0.667\ mA$

$\therefore V_o = (0.667m)(2k) = 1.334V$



b) $V_{dc} = 0.318 V_p \Longrightarrow V_{dc} = (0.318)(1.334) = 0.424V$

for half cycle

for full $(0.636)(V_p)$

c) for D_1 PIV < -10 V like if it's -ive it'll breakdown

for D_2 PIV > 10 V like if it's +ive

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QUIZ 4

Grade
7

Name, Family Name: [redacted]

ID No.: [redacted] **Section No.: 1050** **Signature:** [redacted]

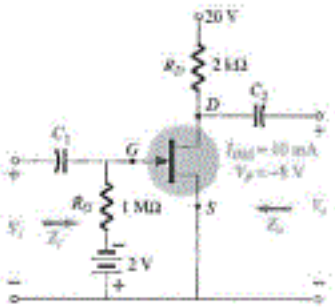
Quiz Duration: 15 minutes.

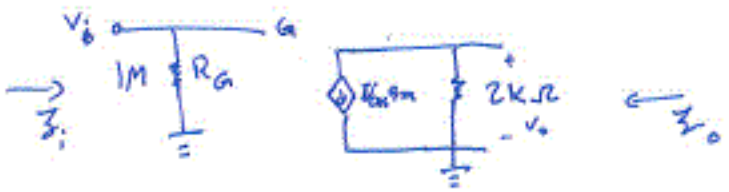
Instructions: Write "the correct" answer in the space provided under each question.

Question: ~~[CO_9, PI_1_73, SO_1]~~

[CO_4, PI-5-54, SO-5].

Question1. Calculate the Input impedance, Output Impendence and Voltage gain for JFET Amplifier





$Z_i = R_G = 1M\Omega$ ✓

$Z_o = R_D = 2K\Omega$ ✓

$A_v = -g_m R_D$

$g_m = g_{m_0}\left(1 - \frac{V_P}{V_{GS}}\right)$ ✓

$\left(1 - \frac{V_{GS}}{V_P}\right)$

$V_{GS} = -V_{GG} = \boxed{-2\ V}$

$g_{m_0} = \frac{2 I_{DSS}}{|V_P|} = \frac{(2)(10m)}{8} = \boxed{2.5\ mA/V}$ ✓

$g_m = 2.5m\left(1 - \frac{V_P}{V_{GS}}\right) \Rightarrow 2.5m\left(1 - \frac{-8}{-2}\right) = -7.5\ mA/V$ ✓

~~$I_D = I_{DSS}\left(1 - \frac{V_P}{V_{GS}}\right)^2$~~

$A_v = -(-7.5m)(2k) = 15$