

# Class Assessment (Week 12)

Started: Nov 17 at 11:55am

## Quiz Instructions

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### Question 1

1 pts

In a MOSFET, it is understood that currents flow between:

- ☐ All 3 terminals
- ☐ Gate and Drain
- ☐ Drain and Source
- ☐ Gate and Source

### Question 2

1 pts

In an E-type n-channel MOSFET, the substrate/body is an n-type semiconductor.

- ☐ True
- ☐ False

### Question 3

1 pts

In an E-type MOSFET, the channel appears between:

- ☐ Drain and Source
- ☐ Gate and Drain
- ☐ Gate and Source

**Question 4****1 pts**

In an E-type MOSFET (where the body is connected to the source), which of the following determines whether the device is switched on or off?

- ☐ Gate-Drain voltage
- ☐ No answer text provided.
- ☐ Drain-Source voltage
- ☐ Gate-Source voltage

**Question 5****1 pts**

In an E-type MOSFET, with respect to controlling the drain current,  $V_{GS}$  controls the  while  $V_{DS}$  controls the

.

**Question 6****1 pts**

With reference to the circuit in Fig 1, the function of the capacitors is to:

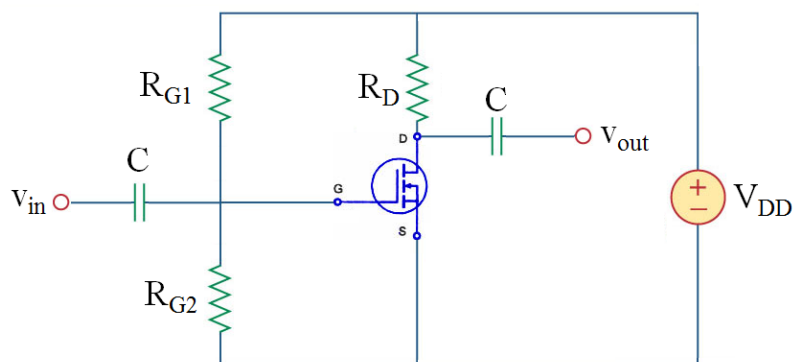


Fig 1

- ☐ Block DC current from the input and output

- ☐ Decrease the gain due to the filtering effect
- ☐ Stabilize the input and output
- ☐ Increase the gain due to the filtering effect

**Question 7****1 pts**

Given that  $V_{DD} = 12V$ ,  $R_D = 1k\Omega$ ,  $R_{G2} = 100k\Omega$ ,  $R_{G1} = 300k\Omega$ , Drain-source current = 4mA,  $V_{GS}$  is  in V,  $V_{DS}$  is  in V.

**Question 8****1 pts**

Find the input resistance of the amplifier in  $k\Omega$ .

**Question 9****1 pts**

Find the small signal gain of the amplifier given that for the MOSFET:  $g_m = 20 \text{ mS}$  and  $r_o = 4 \text{ k}\Omega$ .

**Question 10****1 pts**

To realize a linear amplifier, which bias condition is required for the E-type NMOS (where  $V_T$  is the threshold voltage)?

- ☐  $V_{GS} > V_T$  and  $V_{DS} < V_T$
- ☐  $V_{GS} > V_T$  and  $V_{DS} > V_T$
- ☐  $V_{GS} > V_T$  and  $V_{DS} < (V_{GS} - V_T)$
- ☐  $V_{GS} > V_T$  and  $V_{DS} > (V_{GS} - V_T)$

Not saved

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