Assignment 11

Due on 2020-04-13, 23:59 IST.

1. Which of the following is the most appropriate statement, regarding the gate current drawn by a MOSFET during the process of turning off?
   1 point
   a) The gate current is negligibly small and does not become high.
   b) The gate current is negligibly small and does become negligibly small.
   c) The gate current is negligible constant and has a high value.
   d) The gate current is negligible constant and has a high value.
   
   Accepted Answer: b

2. The gate current is negligibly small and then becomes negligibly small.
   1 point

3. In a stable characteristic of a MOSFET, the Vgs voltage drops with:
   1 point
   a) Increase in gate-source voltage
   b) Increase in gate-source voltage
   c) Decrease in gate-source voltage
   d) Increase in gate-source voltage
   e) Decrease in gate-source voltage
   
   Accepted Answer: a

4. The answer is incorrect. Score: 0

5. Which of the following is not an advantage of using a booster supply in DC and AC in series with an IC?
   1 point
   a) It causes lower turn-on.
   b) It causes higher turn-on.
   c) It causes lower turn-off.
   d) It causes higher turn-off.
   
   Accepted Answer: b

6. The answer is incorrect. Score: 0

7. In gate-driver circuits, the need of using two gate resistors for turn-on and turn-off process arises mainly due to:
   1 point
   a) Difference in parasitic impedances during turn-on and turn-off processes.
   b) Difference in parasitic capacitances during turn-on and turn-off processes.
   c) Difference in turn-on and turn-off times.
   d) Difference in the DC link voltage.
   
   Accepted Answer: b

8. The answer is incorrect. Score: 0

9. In gate-driver circuits, the voltage rating of the D204 diode in bootstrap circuit is:
   1 point
   a) Same as DC link voltage
   b) Same as control supply voltage
   c) Half of DC link voltage
   d) Half of control supply voltage
   
   Accepted Answer: a

10. Which among the following statement is not true with respect to gate resistance voltage?
    1 point
    a) Faster turn-on
    b) Higher turn-off
    c) Increase in realized Di 2
    d) Higher switching losses
    
    Accepted Answer: b

11. The total gate charge required from a gate drive circuit to turn on the device is 250 nC. The control supply voltages are VCC = 5 V and VDD = 5 V. If the device is operating at 20 kHz switching frequency, then the total power loss in gate side of the device (including gate drive circuit) is approximately equal to:
    1 point
    a) 50 mW
    b) 75 mW
    c) 500 mW
    d) 225 mW
    
    Accepted Answer: b

12. In an application, the maximum DC link voltage is equal to 30 V and switching frequency is 1 MHz. Assuming collector output voltage transition time is:
    1 point
    a) Higher than 1 nsec
    b) Higher than 0.1 nsec
    c) Lower than 1 nsec
    d) Lower than 0.1 nsec
    
    Accepted Answer: a

13. In the driving gate circuit, with increase in switching frequency, the size of the bootstrap capacitor will:
    1 point
    a) Increase
    b) Decrease
    c) Not change with frequency
    d) Cannot be said
    
    Accepted Answer: b