Electronics & Communication

1 The drain of an n-channel MOSFET is shorted to the gate so that VGS = VDS. The threshold voltage (VT) of MOSFET is 1 V. If the drain current (ID) is 1 mA for VGS = 2V, then for VGS = 3V, ID is
A) 2 mA
B) 3 mA
C) 9 mA
D) 4 mA
Answer : (D) 2 The first and the last critical frequency of an RC-driving point impedance function must respectively be
A) a zero and a pole
B) a zero and a zero
C) a pole and a pole
D) a pole and a zero
Answer : (D)

3 In what range should Re(s) remain so that the Laplace transform of the function $e^{(a+2)t+5}$ exits?
A) Re (s) > a + 2
B) Re (s) > a + 7
C) Re (s) < 2
D) Re (s) > a + 5
Answer : (A)

4 A parallel plate air-filled capacitor has plate area of10-4 m2 and plate separation of 10-3 m. It is connected to a 0.5 V, 3.6 GHz source. The magnitude of the displacement current is (e0 = 1/36p x 10-9 F/m)
A) 10 mA
B) 100 mA
C) 10 A
D) 1.59 mA
Answer : (A)
5 For the polynomial P(s) = s5 + s4 + 2s3 + 2s2 + 3s + 15, the number of roots which lie in the right half of the s-plane is
A) 4
B) 2
C) 3
D) 1
Answer : (B)

6 The phase velocity of an electromagnetic wave propagating in a hollow metallic rectangular waveguide in the TE10 mode is
A) equal to its group velocity
B) less than the velocity of light in free space
C) equal to the velocity of light in free space
D) greater than the velocity of light in free space
Answer : (D)

7 A device with input x(t) and output y(t) is characterized by: y(t) = x^2(t). An FM signal with frequency deviation of 90 kHz and modulating signalbandwidth of 5 kHz is applied to this device. The bandwidth of the output signal is
A) 370 kHz
B) 190 kHz
C) 380kHz
D) 95kHz
Answer : (C)

8 The Q - meter works on the principle of
A) mutual inductance
B) self inductance
C) series resonance
D) parallel resonance

Answer : (C)

9 The Fourier transform of a conjugate symmetric function is always
A) imaginary
B) conjugate anti-symmetric
C) real
D) conjugate symmetric
Answer : (C)

10 An ideal op-amp is an ideal
A) voltage controlled current source
B) voltage controlled voltage source
C) current controlled current source
D) current controlled voltage source
Answer : (B)