1. Consider a transmission line of characteristic impedance 50 ohms and the line is terminated at one end by +j50 ohms, the VSWR produced in the transmission line will be
(A) +1
(B) zero
(C) infinity
(D) -1

2. In a certain medium \( E = 10 \cos(108t - 3y) \) a V/m. What type of medium is it?
(A) Free space
(B) Lossy dielectric
(C) Lossless dielectric
(D) Perfect conductor

3. If \( D \cdot \nabla = \varepsilon \nabla \cdot E \) and \( \nabla \cdot J = \sigma \nabla \cdot E \) in a given material, the material is said to be
(A) Linear
(B) Homogeneous
(C) Isotropic
(D) Linear & Homogeneous

4. For a 300 \( \Omega \) antenna operating with 5A of current, the radiated power is
(A) 7500 W
(B) 750 W
(C) 75 W
(D) 7500 mW

5. An OPAMP has a slew rate of 5 V/\( \mu \)S. The largest sine wave O/P voltage possible at a frequency of 1MHZ is
(a) 10 volts
(b) 15 volts
(c) 5/3 volts
(d) 5/2 volts

6. The early effect in a bipolar junction transistor is caused by
(a) fast turn-on
(b) fast turn-off
(c) large collector-base reverse bias
(d) large emitter-base forward bias

7. MOSFET can be used as a
(a) current controlled capacitor
(b) voltage controlled capacitor
8 An AM signal is detected using an envelop detector. The carrier frequency and modulating signal frequency are 1MHz and 2 kHz respectively. An appropriate value for the time constant of the envelope detector is.
(A) 500 μsec
(B) 20 μsec
(C) 0.2 μsec
(D) 1μ sec

9 An AM modulator has output x(t)=A cos400 nt+Bcos 380 nt +Bcos420nt and The carrier power is 100 W and the efficiency is 40%. The value of A and B are
(A) 14.14, 8.16
(B) 50, 10
(C) 22.36, 13.46
(D) None of the above

10 A super heterodyne receiver is designed to receive transmitted signals between 5 and 10 MHz. High side tuning is to be used. The tuning range of the local oscillator for IF frequency 500 kHz would be
(A) 4.5 MHz-9.5 MHz
(B) 5.5 MHz-10.5 MHz
(C) 4.5 MHz-10.5 MHz
(D) none of these

11 An analog signal is sampled at 36 kHz and quantized into 256 levels. The time duration of a bit of the binary coded signal is
(A) 5.78μs
(B) 3.47μs
(C) 6.43 ms
(D) 7.86 ms

12 The minimum sampling frequency (in samples/sec) required to reconstruct the following signal form its samples without distortion would be x(t)= 5(sin2 π 1000t/πt)3 +7(sin 2πt 1000t/πt)2
(A)2x103
(B)4x103
(C) 6x103
(D) 8x103

13 Three identical amplifier, each having a spot effective input noise temperature of 125 K and available power G are cascaded. The overall spot effective input noise temperature of the cascade is 155 K. The Gis
(A) 3
(B) 5
(C) 7
(D) 9

14 In the Op-Amp circuit shown, assume that the diode current follows the equation I=I s exp(V/Vt) VI=2V , V0=V01 and for VI=4V , V0=V02 The relationship between V01 and V02 is
15 The counter shown in fig. below is a

(A) MOD–8 up counter
(B) MOD–8 down counter
(C) MOD–6 up counter
(D) MOD–6 down counter

16 The MUX shown in fig. multiplexer. The output Z is

(A) A xor C
(B) A and C
(C) B xor C
(D) B and C