

Telecommunications

1. Identify the correct statement.
 - a. DSB-SC modulation is used for broadcast purposes.
 - b. Bandwidth required for SSB-SC is half of that required for VSB.
 - c. At high power levels, conventional AM is easier to generate than SSB-SC wave.
 - d. SSB and DSB-SC are linear modulation schemes whereas VSB and SSB-SC are non-linear.

2. The modulation schemes used in GSM and CDMA mobile communication are _____ respectively.
 - a. GMSK and BPSK
 - b. QPSK and BPSK
 - c. GMSK and QPSK
 - d. M-ary PSK and GMSK

3. Which of the following errors may occur in delta modulation when the modulating input signal is changing at a very slow rate?
 - a. Slope-overload
 - b. Under-sampling
 - c. Granular noise
 - d. Both 1 and 2

4. When critical magnetic field is applied along the axis of a cylindrical cavity magnetron, then the electrons will _____.
 - a. traverse a straight-line path from cathode to anode
 - b. traverse a slightly curved path terminating on anode
 - c. traverse a curved path just grazing on anode surface and terminates back on the cathode
 - d. traverse a curved path terminating on cathode, without touching the anode surface

5. Match the antennas with their applications and select the correct option.

A-Yagi antenna, B-Parabolic reflector, C-Helical antenna, D-Microstrip Patch antenna

1-Satellite tracking, 2-TV reception, 3-Mobile Phones, 4-Directional transmission

- a. A2, B3, C1, D4
 - b. A4, B2, C3, D1
 - c. A2, B4, C1, D3
 - d. A2, B1, C3, D4
6. A lossless transmission line having a characteristic impedance of 40 ohm is terminated in an 80 ohm load. The line is excited by a 15 MHz source, having an internal resistance of 40 ohm. If it is known that the maximum power is being delivered to the load, find the length of the transmission line.
- a. 2.5 m
 - b. 5.5 m
 - c. 1.25 m
 - d. 10 m
7. A lightning conductor on top of a building is made into a pointed spike because ____.
- a. charge per unit area becomes very high for lightning to discharge
 - b. to prevent flow of charge from the lightning conductor
 - c. to prevent accumulation of charged particles
 - d. all of the above
8. Following components are used to measure the output power of a travelling wave amplifier
- 1. A low-pass/high-pass filter.
 - 2. A low power attenuator.
 - 3. A directional coupler with matched load.
 - 4. Power meter.
- Identify the correct sequence of the connection of these components.
- a. 1,3,4,2
 - b. 2,1,4,3
 - c. 1,3,2,4
 - d. 2,3,1,4

9. A 2 m long wire carrying a current of 10 A is placed at an angle of 60° with magnetic field $B = 4 \text{ Wb/m}^2$. The magnitude and direction of force acting on it are ____.
- a. $40 \sqrt{3} \text{ N}$ perpendicular to wire and B
 - b. 40 N perpendicular to wire and B
 - c. $40 \sqrt{3} \text{ N}$ perpendicular to wire and 150° to B
 - d. 40 N perpendicular to wire and 180° to B

Aspiring Minds