

BSNL Senior Executive Sample Paper

Q1. What will be the change in bandwidth of the frequency modulation signal as the frequency of modulation tends to increase from 12 kHz to 24 kHz?

- (a) Bandwidth remains unaffected
- (b) 40 kHz
- (c) 58 kHz
- (d) 24 kHz

Q2. Modulation of the source signal with multiple frequency components, is called _____

- (a) Frequency
- (b) Phase Modulation
- (c) Multitone
- (d) Amplitude

Q3. Which of the following is not a characteristic of Frequency Modulation?

- (a) It improves the signal-to-noise ratio
- (b) It is basic to the operation of the FM receiver
- (c) It increases the bandwidth of the signal at high modulation indices
- (d) It is used for the transmission of audio signals

Q4. The satellite communication system between two points is established with a carrier-to-noise ratio of 30 dB and a bandwidth of 10 MHz. The signal-to-noise ratio is _____ dB. (Take $\log(90.90) = 1.957$)

- (a) 20.3 dB
- (b) 19.5 dB
- (c) 18.7 dB
- (d) 18 dB

Q5. For satellite communication, the frequency bands in the C-band are :

- (a) 12 GHz and 5 GHz
- (b) 6 GHz and 4 GHz
- (c) 4 GHz and 6 GHz
- (d) 12 GHz and 8GHz

Q6. By measuring the VSWR values in the main and auxiliary waveguide of a directional coupler, we can determine is—

- (a) phase co-relation and efficiency
- (b) frequency shift and phase variations
- (c) attenuation and radiation efficiency
- (d) directivity and coupling factor



Q7. A dual directional coupler is connected in a microwave reflectometer measurement setup. The reading of the power meter in the forward direction is 100 mW and in the reverse direction 4 mW. The VSWR is :

- (a) 4
- (b) 0.4
- (c) 1.5
- (d) 10

Q8. Which of the following statement is FALSE for refractive index of a Graded index fiber?

- (a) Decreasing from core axis to core end
- (b) Constant in the cladding
- (c) Maximum at the center
- (d) Maximum at the core end

Q9. The band

- (a) 3 kHz to 30 kHz
- (b) 3 MHz to 30 MHz
- (c) 30 MHz to 300 MHz
- (d) 30 THz to 300 THz

Q10. The reflection coefficient Γ of a load impedance Z_L connected to an open circuit is $\Gamma = 0.646$. How much is aperture coefficient Γ_a ?

- (a) 0.646
- (b) 0.312
- (c) 0.552
- (d) 0.812

Q11. For a feed length of 0.25λ which of the following will be the reflection coefficient?

- (a) 0.23λ
- (b) 0.425λ
- (c) 0.35λ
- (d) 0.525λ

Q12. A satellite is in a circular orbit at a height of 1000 km above the ground. The distance between the satellite and the ground station, when the satellite is overhead of the station is:

- (a) Zero
- (b) Maximum
- (c) Infinity
- (d) None of the above

Q13. For direct reception of TV signals from a communication satellite, the type of antenna required is:

- (a) Horn
- (b) Parabolic
- (c) Chicken mesh
- (d) Loop

Q14. MTI radar is based on:

- (a) Einstein theory
- (b) Faraday's laws of EM induction
- (c) Doppler effect
- (d) Edison effect

Q15. Which of the following is the measuring device used in satellite communication?

- (a) Transponder
- (b) Payload
- (c) Apogee
- (d) Perigee

Q16. Calculate the noise power spectral density of a resistor having a noise power of 5 watt and an area of 100 cm².

- (a) 42
- (b) 49
- (c) 50
- (d) 52

Q17. The noise spectrum of a vacuum tube is determined by the arrival of electrons at the anode of an amplifying device.

- (a) White noise
- (b) Flicker
- (c) Shot noise
- (d) Transit time

Q18. A resistor of 100 Ω has a thermal noise voltage of 10 μ V across it under certain conditions. If the resistor value is changed, then the noise voltage under same conditions will be:

- (a) 10 μ V
- (b) 20 μ V
- (c) 14.14 μ V
- (d) 5 μ V

Q19. Radio frequency

- (a) Mixer stage
- (b) IF stage
- (c) Baseband recording system
- (d) Preamplifier of radio receiver

Q20. A system has a receiver noise resistance of 50 Ω . It is connected to an antenna with an input resistance of 50 Ω . Calculate the noise figure of the system.

- (a) 1
- (b) 2
- (c) 50
- (d) 101

