1.- Define what measures *spectral efficiency*.

2.- what is the unit of measurement of spectral efficiency.

3.- What are the three basic ways to modulate a sine wave radio carrier.

4.- OOK and ASK are AM digital modulation techniques, what is the difference?

5.- FSK produce a *bandwidth* which is a function of:

6.- m represents the *index modulation*, it is calculated by m=Δt(T): what represent Δt and (T).

7.- What means *continuous phase.*

8.- What means *coherent operation.*

9.- Which are the ways to further improve the spectral efficiency for both ASK and FSK.

10.- What digital modulation shifts the carrier sine wave 180° for each change in binary state.

11.- In this digital modulation, the received bit phase is compared to the phase of the previous bit signal.

12.- What does QPSK.

13.- C = B log2 (1 + SNR) means?

14.- How is calculated Data rate in bits/s.

15.- Define baud rate.

16.- By using smaller phase shifts, more bits can be transmitted per symbol. TRUE( ) FALSE( ).

17.- Transmitting more bits per symbol, the baud rate is faster than the bit rate. T ( ) F( ).

18.- In M-PSK using smaller phase shifts, more bits can be transmitted per symbol. T( ) F( ).

19.- In M-PSK the greater the number of smaller phase shifts, the more difficult the signal is to demodulate in the presence of noise. TRUE ( ) FALSE ( ).

20.- Generate symbols that are some combination of amplitude and phase can carry the concept of transmitting more bits per symbol further, it is called?.

21.- Despite QAM is enormously efficient of spectrum, what is the difficult?.

22.- Where is QAM very widely used.

23.- Which is the reason to use QAM modulation in those communications systems (question 22).

24.- What means OFDM and how operate it?.

25.- Which are the most common forms of modulation defines with 802.11.

26.- Why OFDM is less prone to signal loss due to fading, multipath reflections, and similar effects common in UHF and microwave radio signal propagation.

27.- What means: LTE, DSL, PLC, Wi Fi LAN.

28.- What is and means SNR.

29.- What is BER, describe it.

30.- As the noise becomes smaller compared to the signal level, more errors occur. TRUE ( ) FALSE ( ).

31.- What means FEC, and what does it?

32.- What is MIMO?.

33.- Describe de MIMO technique.