EEEN 464-DIGITAL COMMUNICATION
CONTINUOUS ASSESSMENT TEST 2
Tuesday, August 26, 2025

Answer all 30 Questions

1. The frequency band of Bluetooth radio is around _____
◯ 2.1 GHz
◯ 2.3 GHz
◯ 2.4 GHz
◯ None of the above

2. What are the benefits of Bluetooth technology?
◯ Cable replacement, ease of file sharing
◯ No Internet connectivity
◯ Low-cost technology
◯ All of the above

3. The frequency range of WI-FI is around _____
◯ 2.4 GHz and 5GHz
◯ 2.9 GHz and 5GHz
◯ 3.4 GHz and 5GHz
◯ 4.4 GHz and 5GHz

4. The bandwidth and power consumption of WIFI is high compared to Bluetooth is it true?
◯ True
◯ False

5. If the baud rate is 400 for a 4-PSK, the bit rate is _____ bps.
◯ 100
◯ 400
◯ 800
◯ 1600

6. Determine the channel capacity of a 4 kHz channel with S/N = 10 dB.
◯ 8.02 kbps
◯ 4.17 kbps
◯ 13.74 kbps
◯ 26.58 kbps

7. A broadcast TV channel has a bandwidth of 6 MHz. Ignoring noise, calculate the maximum data rate that could be carried in a TV channel using a 16-level code and determine the minimum possible signal-to-noise ratio in dB for the calculated data rate.
◯ 24 Mbps, 48 dB
◯ 48 Mbps, 24 dB
◯ 24 Mbps, 24 dB
◯ 48 Mbps, 48 dB

8. Which medium is the most widely used in LANs?
◯ Twin Lead
◯ Fiber-optic cable
◯ Twisted Pair
◯ Coax

9. Which of the following is not a benefit of spread spectrum?
◯ Jam – proof
◯ Security
◯ Immunity of fading
◯ Noise proof

10. In Plesiochronous Digital Hierarchy, What is equal to the reciprocal of the voice sample rate?
◯ Slot Time
◯ Transmission time
◯ Frame time
◯ Bit rate

11. The basic idea behind Huffman coding is to …….
◯ compress data by using more bits to encode more frequently occuring characters
◯ compress data by using fewer bits to encode more frequently occurring characters
◯ expand data by using fewer bits to encode more frequently occurring characters
◯ compress data by using fewer bits to encode fewer frequently occurring characters

12. Huffman coding is an encoding algorithm used for ……
◯ broadband systems
◯ lossy data compression
◯ files greater than 1 Mbit
◯ lossless data compression

13. Down sampling is to make a digital image file smaller by ……
◯ removing pixels
◯ removing noise
◯ adding pixels
◯ adding noise

14. In a typical picture, most pixels will be ……..
◯ very similar to their neighbours
◯ very different to their neighbours
◯ bright
◯ equal

15. Which among the following compression techniques is/are intended for still images?
◯ JPEG
◯ H.263
◯ MPEG
◯ All of the above

16. Which lossy method for audio compression is responsible for encoding the difference between two consecutive samples?
◯ Silence Compression

◯ Linear Predictive Coding (LPC)
◯ Adaptive Differential Pulse Code modulation (ADPCM)
◯ Code Excited Linear Predictor (CELP)

17. What is one principal difference between synchronous and asynchronous transmission?
◯ The bandwidth required is different
◯ The pulse heights are different
◯ The clocking is mixed with the data in asynchronous
◯ The clocking is derived from the data in synchronous transmission

18. Which of the following transmission media is not readily suitable to Carrier Sense Multiple Access (CSMA) operation?
◯ Radio
◯ Optical fibers
◯ Coaxial cable
◯ Twisted pair

19. Which of the following functions is not provided as part of the basic Ethernet design?
◯ Access control
◯ Addressing
◯ Automatic retransmission of a message
◯ Multiple virtual networks

20. The typical maximum logical reach supported by standard GPON (G.984) is …….
◯ 10 km
◯ 20 km
◯ 60 km
◯ 100 km

21. The ratio of the speed of light in a vacuum and the speed of light in the material used.
◯ S/N ratio
◯ Refractive index
◯ Intermodal dispersion
◯ Monomode ratio

22. Which is not a possible cause of optical fiber loss?
◯ Impurities
◯ Glass attenuation
◯ Stepped index operation
◯ Microbending

23. A single mode optical fiber has a core diameter of _____ nm.
◯ 0.1
◯ 0.01
◯ 0.2
◯ 0.05

24. Under normal condition, a single fiber should not be used for a two-way communication mainly because of ……..
◯ Loss
◯ Fading
◯ Noise
◯ Attenuation

25. 1G technology uses _____ for the division of channels.
◯ TDMA
◯ FDMA
◯ CDMA
◯ SDMA

26. GSM in Kenya is operated at _____ MHz band of frequency.
◯ 800
◯ 900
◯ 2400
◯ 2100

27. The type of cell in which the height of antenna is above the average level of roof top is _____.
◯ Macro cell
◯ Micro cell
◯ Pico cell
◯ Umbrella cell

28. What are the main reasons for using cellular systems?
◯ Support many users, low power and localization
◯ Profit maximization for service providers
◯ Easy to manage and maintain
◯ Simplified frequency planning

29. IMT-2000/UMT systems operate at around ……..in Kenya.
◯ 3500 MHz
◯ 1800 MHz
◯ 2100 MHz
◯ 2400 MHz

30. A GSM TDMA frame has a duration of 4.615 ms and contains 8 time slots. Each time slot carries 156.25 bits, including guard periods and control information. Determine (a) The bit duration (b) The raw data rate per user channel
◯ (a) 3.69 µs, (b) 33.854 kbps
◯ (a) 3.69 µs, (b) 270.833 kbps
◯ (a) 0.577 µs, (b) 33.854 kbps
◯ (a) 0.577 µs, (b) 270.833 kbps