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|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---|---|---|
| 11. What is pass band data? | | 1 | 1 | 3 |
| (A) Data transmitted over a single cable without modulation | (B) Data transmitted using high-frequency carrier signals | | | |
| (C) Data transmitted over long distances without amplification | (D) Data transmitted through optical fibers | | | |
| 12. What is a software radio? | | 1 | 1 | 3 |
| (A) A type of radio that runs on software-defined batteries | (B) A radio that uses software to generate encryption keys | | | |
| (C) A radio system where much of the functionality is implemented in software | (D) A radio that can only receive software updates wirelessly | | | |
| 13. What does WPAN stand for? | | 1 | 1 | 4 |
| (A) Wide Personal Area Network. | (B) Wireless Personal Area Network | | | |
| (C) Wireless Private Area Network | (D) Wide Private Area Network | | | |
| 14. Which wireless technology is commonly used for creating PANs? | | 1 | 1 | 4 |
| (A) Wi-Fi | (B) Bluetooth | | | |
| (C) Ethernet | (D) Zigbee | | | |
| 15. Which organization is responsible for regulating and allocating radio frequencies in the United States? | | 1 | 1 | 4 |
| (A) IEEE (Institute of Electrical and Electronics Engineers) | (B) ITU (International Telecommunication Union) | | | |
| (C) FCC (Federal Communications Commission) | (D) NATO (North Atlantic Treaty Organization) | | | |
| 16. What is one of the challenges associated with millimeter wave communication? | | 1 | 1 | 4 |
| (A) Limited bandwidth | (B) Poor signal quality | | | |
| (C) Difficulty in generating millimeter wave signals | (D) Low power consumption | | | |
| 17. What is the defining characteristic of UWB technology? | | 1 | 1 | 5 |
| (A) It uses a single, narrow frequency band for data transmission. | (B) It utilizes a very wide frequency spectrum for data transmission. | | | |
| (C) It primarily operates in the microwave frequency range. | (D) It is limited to short-range communication. | | | |
| 18. What is MB-OFDM? | | 1 | 1 | 5 |
| (A) A type of military communication system | (B) A wireless networking technology based on OFDM | | | |
| (C) A type of fiber-optic communication | (D) A satellite communication protocol | | | |
| 19. Which organization or standardization body has worked on defining standards for VLC communication? | | 1 | 1 | 5 |
| (A) IEEE (Institute of Electrical and Electronics Engineers) | (B) ITU (International Telecommunication Union) | | | |
| (C) IETF (Internet Engineering Task Force) | (D) NASA (National Aeronautics and Space Administration) | | | |
| 20. Which parameter is often used to describe the sensitivity of a photodetector in the presence of noise? | | 1 | 1 | 5 |
| (A) Dark current | (B) Signal-to-noise ratio (SNR) | | | |
| (C) Quantum efficiency | (D) Responsivity | | | |

PART - B ($5 \times 4 = 20$ Marks)

Answer **any 5** Questions

Marks BL CO

21. Write about Wi-Fi. And mention its advantages and disadvantages	4	1	1
22. What is UWB Technology and Explain with spectrum?	4	1	1
23. Explain the role of base band coding in digital systems and how it contributes to data transmission reliability and efficiency?	4	1	2
24. What are the key components of a wireless microphone system, and how do they work together to provide reliable and high-quality audio transmission?	4	1	2
25. What is SAW band pass filter matching?	4	1	3
26. What are the main challenges and solutions related to frequency standardization in the context of global telecommunications	4	1	4
27. How does Ultra-Wideband (UWB) technology contribute to the development of precise indoor positioning systems?	4	1	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

Marks BL CO

28. (a) Draw and explain the block diagram of wireless communication System? Also give the merits.	12	1	1
(OR)			
(b) Draw and explain the block diagram of WLAN Architecture for communication System.			
29. (a) What is spread spectrum technology? Explain DSSS with neat block diagram.	12	1	2
(OR)			
(b) What is the radiation mechanism of a single wire antenna, and how does its length and orientation influence its ability to emit or receive electromagnetic waves effectively with expression?			
30. (a) How does the tuning process work in a TRF receiver, and how is the selectivity achieved to isolate desired radio signals?	12	1	3
(OR)			
(b) Draw and explain the block diagram of direct conversion Receivers. Also list its advantage and disadvantages.			
31. (a) What are the key methods and techniques used in multipath propagation modeling for wireless communication systems, and how do these models aid in the design and optimization of wireless networks and devices?	12	1	4
(OR)			
(b) What are all the characteristics of mm Waves and also explain mm Wave for 5G Cellular in PAN.			
32. (a) How does laser and photodetector noise impact the performance of optical communication systems, and what strategies are used to minimize its effects?	12	1	5
(OR)			
(b) How does optical microwave mixing contribute to the transmission of UWB signals over various communication systems, including fiber-optic and wireless networks?			

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