



# MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

## DEPARTMENT OF MECHATRONICS

### VII SEMESTER B.TECH. (MECHATRONICS)

#### END SEMESTER EXAMINATIONS (PART-A), December 2021

#### SUBJECT: WIRELESS SENSOR NETWORKS [MTE 4083]

(Date: December 20, 2021)

Time: 45 + 5 Minutes

MAX. MARKS: 30

Q. No		M	CO	PO	LO	BL
<b>MCQ Type Questions (1 × 30 = 30)</b>						
1.	WSN are spatially distributed _____ sensors. a. Autonomous b. Dependent c. Bi-directional d. None of these	1	1	1	1	1
2.	_____ sensor is selected to measure a physical quantity at the point of the sensor node without actually manipulating the environment by active probing. a. Active b. Passive, omnidirectional c. Passive, narrow-beam d. None of these	1	1	1	1	2
3.	In BPSK (Binary Phase Shift Keying), phase shifts of _____ are utilized. a. 0 and $\pi/2$ b. 0 and $\pi$ c. $\pi/2$ and $\pi$ d. $\pi/2$ and $3\pi/2$	1	1	1	1	1
4.	The solution for hidden-terminal and exposed-terminal problems is _____. a. Busy-tone solution b. Multihop frequency solution c. Collision detection d. None of these	1	2	1	1	2
5.	In low duty cycle protocols, the _____ is called as node's duty cycle. a. Ratio of listen period length to the sleep period length b. Ratio of listen period length to the wakeup period length c. Ratio of sleep period length to the wakeup period length d. Ratio of sleep period length to the listen period length	1	2	1	1	1
6.	The number of channels used for PAMAS protocol are _____. a. One	1	2	1	1	1

	<ul style="list-style-type: none"> <li>b. Two</li> <li>c. Three</li> <li>d. Four</li> </ul>					
7.	<p>In LEACH protocol, the function of the clusterhead is ____.</p> <ul style="list-style-type: none"> <li>a. To create and maintain a TDMA schedule</li> <li>b. To perform data communication between two slave nodes</li> <li>c. To identify errors in data communication</li> <li>d. None of these</li> </ul>	1	2	1	1	2
8.	<p>_____ adaptive protocol is used to send data packets to all of its neighbors without having to evaluate the nodes' capability.</p> <ul style="list-style-type: none"> <li>a. Flooding</li> <li>b. Gossiping</li> <li>c. Synthesis</li> <li>d. None of these</li> </ul>	1	3	1	1	2
9.	<p>A process that selects paths for traffic in a network is called ____.</p> <ul style="list-style-type: none"> <li>a. Routing</li> <li>b. Flooding</li> <li>c. Connecting</li> <li>d. None of these</li> </ul>	1	3	1	1	1
10.	<p>The real-time routing protocol, SPEED selects a _____ data packet format for its operation.</p> <ul style="list-style-type: none"> <li>a. Single</li> <li>b. Double</li> <li>c. Triple</li> <li>d. Quadruple</li> </ul>	1	3	1	1	1
11.	<p>A sensor node with a processing unit has ____ computational power.</p> <ul style="list-style-type: none"> <li>a. Limited</li> <li>b. Minimum</li> <li>c. Maximum</li> <li>d. Zero</li> </ul>	1	3	1	1	1
12.	<p>UDP is selected as a _____ transport protocol.</p> <ul style="list-style-type: none"> <li>a. Connection-oriented</li> <li>b. Connectionless</li> <li>c. End-to-end connection</li> <li>d. None of these</li> </ul>	1	3	1	1	1
13.	<p>In _____ protocol, only one phase decides the establishment of connection between the sender and the receiver.</p> <ul style="list-style-type: none"> <li>a. Connection-oriented</li> <li>b. Connectionless</li> <li>c. End-to-end connection</li> <li>d. None of these</li> </ul>	1	3	1	1	2
14.	<p>In middleware, _____ protocol examines the effectiveness of data transmission from sensor nodes to the sink.</p> <ul style="list-style-type: none"> <li>a. Data dissemination</li> <li>b. Data compression</li> <li>c. Data storage</li> <li>d. None of these</li> </ul>	1	3	1	1	1
15.	<p>The disadvantages of middleware in WSN are ____.</p> <ul style="list-style-type: none"> <li>a. System services to diverse applications</li> <li>b. Slow connection between application and database server</li> <li>c. Coordinates and supports multiple applications</li> <li>d. None of these</li> </ul>	1	3	1	1	2

16.	Sensor-based operating systems make use of _____ service/s to manage and coordinate the system resources. a. An application layer for communication b. A physical layer for interconnection c. A hardware abstraction layer for accessing the various sensing devices and a network interface for communication d. None of these	1	4	1	1	2
17.	In TinyOS operating system, multiple modules and other configurations bundled together build a newly abstracted component known as _____. a. Expansion b. Congestion c. Configuration d. nesC	1	4	1	1	1
18.	WiMAX-enabled devices are designed basically for _____ communication. a. Short-distance b. Long-distance c. Medium-range d. None of these	1	4	1	1	2
19.	The piconet Bluetooth network is designed such that only _____ nodes can communicate with each other. a. Slave-slave b. Master-master c. Master-slave d. None of these	1	4	1	1	2
20.	Bluetooth is selected as a _____ technology for interconnecting devices over short distances. a. WLAN (Wireless Local Area Network) b. WMAN (Wireless Metropolitan Area Network) c. WPAN (Wireless Personal Area Network) d. WWAN (Wireless Wide Area Network)	1	4	1	1	1
21.	Zigbee is an open worldwide standard for mesh networking that utilizes _____ power. a. Zero b. Low c. High d. None of these	1	4	1	1	2
22.	Zigbee is an open worldwide standard for mesh networking that utilizes _____ bandwidth. a. Zero b. Low c. High d. None of these	1	4	1	1	2
23.	_____ technology is to be chosen for radio communication of up to 65000 cell nodes. a. Bluetooth b. Zigbee c. WiMAX d. None of these	1	4	1	1	2
24.	_____ technology is to be chosen for radio communication of maximum of 8 cell nodes.	1	4	1	1	2

	<ul style="list-style-type: none"> <li>a. Bluetooth</li> <li>b. Zigbee</li> <li>c. WiMAX</li> <li>d. None of these</li> </ul>					
<b>25.</b>	Zigbee make use of _____ IEEE standard for radio communication. <ul style="list-style-type: none"> <li>a. 802.15.1</li> <li>b. 802.15.2</li> <li>c. 802.15.3</li> <li>d. 802.15.4</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>26.</b>	Bluetooth make use of _____ IEEE standard for radio communication. <ul style="list-style-type: none"> <li>a. 802.15.1</li> <li>b. 802.15.2</li> <li>c. 802.15.3</li> <li>d. 802.15.4</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>27.</b>	The Wi-Fi technology which utilizes multiple wireless signals and antennas instead of one is _____ IEEE standard. <ul style="list-style-type: none"> <li>a. 802.11a</li> <li>b. 802.11b</li> <li>c. 802.11g</li> <li>d. 802.11n</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>28.</b>	For shared media operation, Wi-Fi networks utilize _____ technique. <ul style="list-style-type: none"> <li>a. Simplex</li> <li>b. Half-duplex</li> <li>c. Full-duplex</li> <li>d. None of these</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>29.</b>	The unlicensed ISM (Industrial, Scientific, and Medical) band operates at _____ frequency. <ul style="list-style-type: none"> <li>a. 950 Hz to 1090 Hz</li> <li>b. 180 KHz to 290 KHz</li> <li>c. 50 MHz to 150 MHz</li> <li>d. 2.4 GHz to 2.485 GHz</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>30.</b>	The Wi-Fi technology that utilizes multiple wireless signals and antennas supports _____ bandwidth. <ul style="list-style-type: none"> <li>a. 1 Mbps</li> <li>b. 10 Mbps</li> <li>c. 100 Mbps</li> <li>d. 1000 Mbps</li> </ul>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>