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Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Which of the following protocols is more favorable for a wireless Ad hoc network environment?
Option A:	TDMA
Option B:	CDMA
Option C:	CSMA/CD
Option D:	CSMA/CA
2.	The basic function of router is _____
Option A:	To set the data rate
Option B:	To transfer the packets between the networks
Option C:	To offer the maximum speed
Option D:	To support the quality of service for multimedia applications
3.	A scatternet is a collection of _____
Option A:	One master and slave
Option B:	Only master
Option C:	Piconets
Option D:	Only slaves
4.	The technology that promises a potentially revolutionary approach to radio communication in WBANs is
Option A:	WiMAX
Option B:	UWB
Option C:	Bluetooth
Option D:	WiFi
5.	The access method of IEEE 802.15 is _____
Option A:	DSS-TDD-TDMA
Option B:	FHSS-FDD-FDMA
Option C:	FHSS-TDD-TDMA
Option D:	DSSS-FDD-FDMA
6.	The RTS and CTS frames in CSMA/CA _____ solve the hidden station problem. The RTS and CTS frames in CSMA/CA _____ solve the exposed station problem.
Option A:	Cannot; Cannot
Option B:	Can; Cannot
Option C:	Cannot; Can
Option D:	Can; Can
7.	Wireless wide area network uses which of the following techniques to connect to Internet
Option A:	only Wi-Fi
Option B:	only WiMAX
Option C:	only LMDS
Option D:	WiFi and LMDS

8.	To establish size of cellular network, network planner should know the
Option A:	Network topology and link capacity
Option B:	BSC sizing and MSC sizing
Option C:	Network Capacity
Option D:	Network topology, link capacity, BSC sizing and MSC sizing
9.	Which scheme/ strategy is suitable to establish the communication between the access point (AP) and the infrastructure of LANs?
Option A:	Wireless
Option B:	Wired
Option C:	Wireless & Wired
Option D:	Cannot Predict
10.	A sensor network is designed to collect information from a _____ environment.
Option A:	Logical
Option B:	Physical
Option C:	Logical & Physical both
Option D:	Logical or Physical
11	Which of the following is a measure of the rate at which radio frequency energy is absorbed by the body when exposed to radio frequency electromagnetic field?
Option A:	Data rate
Option B:	Frequency absorption rate
Option C:	Specific absorption rate
Option D:	Data absorption rate
12	According to the specifications, how many Bluetooth devices can actively participate in a small network, called piconet?
Option A:	2
Option B:	4
Option C:	6
Option D:	8
13	The ZigBee is a commercial standard developing the application on top of which of the following standards that define the PHY and the MAC layers:
Option A:	IEEE 802.15.4
Option B:	IEEE 802.11
Option C:	IEEE 802.16
Option D:	IEEE 802.3
14	UWB bandwidth is.
Option A:	7.5GHz
Option B:	5.5GHz
Option C:	6.5GHz
Option D:	8.5GHz
15	Packet binary convolutional coding (PBCC) is an optional coding scheme defined in_____
Option A:	IEEE 802.11a
Option B:	IEEE 802.11b
Option C:	IEEE 802.11n

Option D:	IEEE 802.11p
16	IEEE 802.16 supports data rate up to.
Option A:	54 Mbps
Option B:	100 Mbps
Option C:	134 Mbps
Option D:	150 Mbps
17	WMAN-OFDM PHY layer is the version of.
Option A:	12 point OFDM
Option B:	24 point OFDM
Option C:	125 point OFDM
Option D:	256 point OFDM
18	WiMAX uses licensed and unlicensed spectrum to deliver a.
Option A:	Point-to-point connection
Option B:	Point-to-multipoint connection
Option C:	Both P2P and P2MP
Option D:	None of these
19	In wireless ad-hoc network _____.
Option A:	Access point is not required
Option B:	Access point is must
Option C:	Nodes are not required
Option D:	All nodes are access points
20	Wireless sensor networks are used when _____
Option A:	Topology of the network does not change
Option B:	Topology of the network changes very frequently
Option C:	Sensor nodes are having unlimited power
Option D:	Having limited power

Option 1

Q2, Q3 and Q4 (20 Marks Each)	Solve any Four out of Six 5 marks each
A	Describe the VANET network architecture.
B	Draw and explain wireless sensor node.
C	Explain WMAN network architecture.
D	Write a short note on Classification of wireless networks.
E	Define link types in Bluetooth.
F	Discuss issues in deploying the WLAN.

Option 2

Q2, Q3 and Q4 (20 Marks Each)	Solve any Two Questions out of Three 10 marks each
A	Using the following data for GSM1800, develop downlink and uplink budgets and determine the cell radius Data : Base station transmit power (Pt) : 32 dBm Mobile station transmit power (Pm) : 24 dBm Mobile station noise figure : 7 dB Base station noise figure : 4 dB

	Base station transmit and receive antenna gain (GA) : 18 dBi Mobile antenna gain : 0 dBi Required signal-to-noise ratio (SNR) : 10 dB BS transmit antenna cable, connector and filter losses (Lc) : 5 dB BS receiver antenna cable, connector and filter losses (Lc) : 3 dB Orientation/body losses at mobile : 3 dB Shadow fading: 10.5 dB Thermal noise density: -174 dBm/Hz Antenna diversity gain at BS: 5 dB Note : 1) Consider diversity for uplink link budget 2) Consider Hata model for calculating cell radius
B	Explain various Bluetooth connection establishment states. Draw a complete flow diagram.
C	Write a short note on different routing protocols in wireless sensor networks.

D	Write short note on
	   i IoT Architecture
	   ii Machine to machine communication

E	Describe MANET architecture and hence explain MAC protocols in MANET.
F	Describe IEEE 802.11 architecture.
G	What are the architecture components of RFID? Explain types of tags in RFID.
H	Describe ZigBee topologies. List general characteristics of ZigBee.
I	Describe IEEE 802.11 equipment. Why is it preferable to use smaller packets in a WLAN environment?
J	What is a wireless mesh network (WMN)? Explain the characteristics of WMN.
K	Enumerate the three phases of the wireless network planning process. Explain each phase.
L	Explain link budget analysis and its requirement in wireless network. Estimate the average SINR of HSDPA when the maximum transmit power of DSCH is 5.5 W and total base station power is 18 W. Use α and G as 0.2 and 0.363, respectively.

Option 3

Q2, Q3 and Q4. (20 Marks Each)	
A	**Solve any Two** **5 marks each**
i.	Explain Zigbee network components and network topologies.
ii.	Compare infrastructure based and infrastructureless WLAN.
iii.	Explain with examples centralized and distributed schemes in localization of WSN nodes.
B	**Solve any One** **10 marks each**
i.	Explain link budget analysis requirements of wireless networks.
ii.	Explain 802.16 protocol architecture.

Note: This is the sample Question bank. The questions from question bank may or may not be included in final examination.