Sample Questions

Information Technology

Subject Name: Wireless Technology   **Semester: VI**

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	The IEEE 802.15.1 Bluetooth system has a typical frequency-hop rate of hops per second.
Option A:	2.5
Option B:	**1600**
Option C:	3200
Option D:	800
2.	Assuming each mobile node to be connected to exactly four adjacent mobile nodes in a MANET of 100 nodes, the total number of wireless links are
Option A:	100
Option B:	**200**
Option C:	400
Option D:	800
3.	Which layer in the Bluetooth protocol stack performs the connection establishment within a piconet?
Option A:	Physical layer
Option B:	Application layer
Option C:	Logical link control adaptation layer
Option D:	**Baseband layer**
4.	IEEE 802.15.4 is to provide transfer data rates of
Option A:	450 kbps
Option B:	350 kbps
Option C:	**250 kbps**
Option D:	150 kbps
5.	There are Comparisons between Cellular network and Ad Hoc Wireless Networks? except :
Option A:	High cost and time of deployment (cellular network) and Quick and cost-effective deployment (MANET)
Option B:	Reuse of frequency spectrum through geographical channel reuse (cellular network) and Dynamic frequency reuse based on carrier sense mechanism (MANET)
Option C:	Centralized routing (cellular network) and Distributed routing (MANET)
Option D:	**Fixed infrastructure-based (MANET), and Infrastructureless (cellular network)**
6.	The size of a file transferred in 8 seconds in the IEEE 802.11 WLAN system

	operating at 2 Mbps data transmission rate is
Option A:	**2 MB**
Option B:	4 MB
Option C:	16 MB
Option D:	32 MB
7.	Identify the spread spectrum techniques which were used in the original IEEE 802.11standard
Option A:	**FHSS and DSSS**
Option B:	THSS and FHSS
Option C:	THSS and DSSS
Option D:	Hybrid Technique
8.	The … in a wireless LAN consists of some number of stations executing the same MAC protocol and competing for access to the same shared wireless medium.
Option A:	**Basic Service Set(BSS)**
Option B:	Extended Service Set(ESS)
Option C:	Distributed System(DS)
Option D:	Access Point(AP)
9.	Considering the end devices in LoRaWAN , Which end devices is the most energy-efficient and results in long battery life…
Option A:	**Class A**
Option B:	Class B
Option C:	Class C
Option D:	Class D
10.	When a mobile subscriber originates a call, a call initiation request is sent on the_____
Option A:	forward control channel
Option B:	**reverse control channel**
Option C:	forward voice channel
Option D:	reverse voice channel
11.	A network operator is planning to upgrade from GSM to GPRS. Identify the component that needs to be added/changed to deploy a GPRS architecture.
Option A:	A whole new base station
Option B:	New transceiver at base station
Option C:	New channel cards
Option D:	**New packet overlay including routers and gateway.**
12.	With wireless network management, what device is used to track more than one the device at a time?
Option A:	WCS
Option B:	WCS Navigator
Option C:	**Location Appliance**
Option D:	Rogue AP detector

13.	What is the type of network in which the routers themselves are mobile?
Option A:	Wide Area Network
Option B:	**Mobile Ad hoc Network**
Option C:	Mobile Network
Option D:	Local Area Network
14.	What kind of AP does a controller manage?
Option A:	**Lightweight AP**
Option B:	Managed AP
Option C:	LDAP AP
Option D:	Autonomous AP
15.	Of all the Cisco Wireless LAN Controllers, what is the greatest number of APs you can support?
Option A:	Upto 50
Option B:	Upto 150
Option C:	**Upto 300**
Option D:	Upto 30,000
16.	What protocol is used for communication between an AP and a WLC?
Option A:	STP
Option B:	**LWAPP**
Option C:	LDAP
Option D:	TCP
17.	To which one of the following generations does OFDM belong?
Option A:	Second generation
Option B:	**Fourth generation**
Option C:	First generation
Option D:	Third generation
18.	IEEE 802.11a standard provides for _____ non-overlapping channels
Option A:	2
Option B:	3
Option C:	4
Option D:	**8**
19.	IEEE _____ WLANs primarily operate on the 2.4 GHz Industrial, Scientific, and Medical (ISM) frequency band.
Option A:	802.13
Option B:	802.15
Option C:	**802.11**
Option D:	802.16
20.	_____ scanning allows a wireless NIC to connect to an access point without needing to wait for a beacon from the access points within its range.
Option A:	Passive

Option B:	Network
Option C:	Frame
Option D:	**Active**
21	_____ Coordination Function is a mandatory part of the MAC function in 802.11 and it operates much like the CSMA/CA protocol.
Option A:	Navigation
Option B:	Point
Option C:	**Distributed**
Option D:	Data
22	Which Bluetooth protocol performs link setup, authentication, link configuration, and the discovery of other Bluetooth devices?
Option A:	**LMP**
Option B:	L2CAP
Option C:	SIG
Option D:	Radio
23	A _____ is self-created when roaming wireless devices are connected over a wireless link.
Option A:	NTDR
Option B:	WPAN
Option C:	DARPA
Option D:	**MANET**
24	A Bluetooth scatternet is formed when two or up to _____ piconets are connected through one or more common devices.
Option A:	4
Option B:	8
Option C:	6
Option D:	**10**
25	TDMA allows the user to have
Option A:	Use of same frequency channel for same time slot
Option B:	**Use of same frequency channel for different time slot**
Option C:	Use of same time slot for different frequency channel
Option D:	Use of different time slot for different frequency channels
26	What is the frequency range of IEEE 802.11a standard?
Option A:	2.4 Gbps
Option B:	5 Gbps
Option C:	2.4 Ghz
Option D:	**5 GHz**
27	UMTS use which multiple access technique?
Option A:	**CDMA**
Option B:	TDMA
Option C:	FDMA

Option D:	SDMA
28	WPA2 is used in security for _____
Option A:	ethernet
Option B:	bluetooth
Option C:	**Wi-fi**
Option D:	e-mail
29	WPA uses _____Algorithm to check integrity of the packets.
Option A:	**TKIP**
Option B:	SAP
Option C:	DOA
Option D:	TKP
30	VANET refers for ------ .
Option A:	**Inter vehicuar communication**
Option B:	Communication between devices
Option C:	Communication between Aps
Option D:	Communication between Wired Network

Descriptive Questions

10 marks each
Illustrate OFDMA with a neat diagram
Explain spread spectrum and briefly outline DSSS and FHSS
Explain the LTE network architecture.
Illustrate GSM architecture with a neat labelled diagram , highlighting all the interfaces
a) Assume a cellular system of 32 cells with a cell radius of 1.6 km, a total spectrum allocation that supports 336 traffic channels, and a reuse pattern of 7. Calculate the total service area covered with this configuration, the number of channels per cell, and a total system capacity. Assume regular hexagonal cellular topology. (b) Let the cell size be reduced to the extent that the same area as covered in Part (a) with 128 cells. Find the radius of the new cell, and new system capacity. Comment on the results obtained.
Explain the 802.16 physical and MAC layer
Identify the two system architectures for the WLAN defined in the IEEE 802.11 standard. Explain them briefly.
Outline the WSN architecture along with neat diagrams
Explain the 802.15.4 LR-WPAN device architecture.
Illustrate the steps to ensure security in UMTS.
Identify the wireless technology which is adopted in many products such as headset, in car audio system, printer, keyboard and mouse etc. Explain the security mechanism implemented in these devices.

Explain the controller redundancy design with neat diagrams
Explain the lightweight AP Discovery and join process.
Illustrate the RF site survey process and their importance in the design process of designing an wireless network with Lightweight AP and WLC.

5 marks each
List out and explain the key requirements and drivers of 5G
Write a short note on Massive MIMO
Compare and contrast 1G to 5G based on the technological differences and advancements
Give a brief overview on LoRa and LoRaWAN.
Write a short note on Frequency reuse concept.
Compare the various IEEE 802.11 standard
Explain the two modes by which the wireless terminal can detect the presence of an access point in IEEE 802.11
Explain the IEEE 802.16 mesh mode.
Give a brief overview on E-VANET
Compare and Contrast MANET and VANET.
Illustrate 802.15.1 piconet and scatternet with a neat diagram.
Write a Short Note on WPA2.
Write a Short Note on GSM security.
Explain WEP and infer the flaw in the security standard.
Explain the CISCO Unified Wireless Network Architecture.
Outline the method that supports mobility in CISCO Unified Wireless Network deployment