B.E DEGREE EXAMINATIONS: NOV /DEC 2024

(Regulation 2014)

Seventh Semester

COMPUTER SCIENCE AND ENGINEERING

U14CST701: Mobile and Pervasive Computing

COURSE OUTCOMES

CO1: Explain the concepts and features of mobile networks.

CO2: Explain the working of wireless communication protocols.

CO3: Compare the routing protocols of mobile networks.

CO4: Explain the transport and application layer protocols of mobile networks.

CO5: Outline the basics of pervasive computing.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match List I with List II   CO1 [K$_2$]

List I	**List II**
A. Base Station	i. Frequency is borrowed and assigned to cells.
B. MTSO	ii. Each cell is served by at least one fixed-location transceiver.
C. DCA	iii. MSC automatically transfers the call to a new FDD channel.
D. Handoff	iv. Monitors the quality of the communications signal.

	A	B	C	D
a)	ii	i	iii	iv
b)	iii	iv	ii	i
c)	ii	iv	i	iii
d)	iii	i	ii	iv

2. GSM uses the _____ for internal unique identification of a subscriber.   CO1   [K$_1$]

    a)   IMSI   b)   MCC

    c)   MSIN   d)   MNC

3. Which of the following connection establishment states are valid?   CO2 [K₁]
    1. Standby
    2. Page
    3. Switch off
    4. Wait

    a) 1,3
    b) 1,4
    c) 1,2
    d) 2,3

4. WiFi hotspots can be open or secure. If a hotspot is open, then anyone with a WiFi card can access the hotspot. If it is secure, then the user needs to know a_____ key to connect.   CO2 [K₁]

    a) WAP
    b) Private
    c) Public
    d) WEP

5. Assertion (A): Routing is the act of moving information across the network from a source to a destination.   CO3 [K₂]
    Reason (R): At least one intermediate node within the internetwork is encountered during the transfer of information.

    a) Both A and R are Individually true and R is the correct explanation of A
    b) Both A and R are Individually true but R is not the correct explanation of A
    c) A is true but R is false
    d) A is false but R is true

6. _____ is a simple and efficient routing protocol designed specifically for use in multi-hop wireless ad hoc networks of mobile nodes.   CO3 [K₁]

    a) DSR
    b) DSDV
    c) LAR
    d) AODV

7. Sequence the 1st four steps involved in MTSO controlled call connecting mobile units.   CO4 [K₂]

    1. Paging
    2. Mobile unit initialization
    3. Call accepted
    4. Mobile originated call

    a) 2-4-1-3
    b) 1-3-2-4
    c) 3-4-2-1
    d) 4-1-3-2

8. _____can be used by WDP nodes and gateways to report errors.   CO4 [K₁]

    a) ICMP
    b) WCMP
    c) UDP
    d) TCP

9. Assertion (A): The core functionality of every pervasive computing device is determined by its operating system.   CO5 [K₁]
    Reason (R): The major differences of operating systems for pervasive devices from the user's point of view are the human-machine interface, and the speed with which a task can be performed.

    a) Both A and R are Individually true and R is the correct explanation of A
    b) Both A and R are Individually true but R is not the correct explanation of A
    c) A is true but R is false
    d) A is false but R is true

10. Trojan, is a non-self-replicating type_____ of which gains privileged access to the operating.   CO5 [K₁]
    a) Keylogger   b) Logic bomb
    c) Virus   d) Malware

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11.	Define Cellular Network with its subsystem.	CO1	[K₂]
12.	Summarize the types of handover.	CO1	[K₂]
13.	List any four design goals of WLAN.	CO2	[K₂]
14.	Outline the features of HiperLAN.	CO2	[K₂]
15.	Compare static routing and dynamic routing.	CO3	[K₂]
16.	Explain the advantages of DSR.	CO3	[K₂]
17.	Summarize the features offered by WSP.	CO4	[K₂]
18.	What are the capabilities offered by the WML Script that are not supported by WML?	CO4	[K₁]
19.	Explain how pervasive computing is used in Sales Force automation?	CO5	[K₂]
20.	List any four human-machine interfaces with its purpose.	CO5	[K₂]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

21. Illustrate GSM architecture and explain about its subsystems.   CO1 [K₂]

22. List the characteristics of GPRS and with illustration explain about the architecture reference model.   CO1 [K₂]

23. a) Explain about the advantages and disadvantages of WLAN over WIRED LAN. (7)   CO2 [K₂]
     b) List the feature of Bluetooth and illustrate its protocol stack. (7)   CO2 [K₂]

24. a) Explain the purpose of DHCP protocol and explain how client initialization is (10) CO3 [K₂]
         done via DHCP with relevant illustrations.
     b) Classify the routing protocols. (4)   CO3 [K₂]

25. a) Illustrate WAP architecture and explain about its components and interface. (10) CO4 [K₂]

b) List the features of WML and explain how it differ from WML Script. (4) CO4 [K₂]

26. a) Explain about Ubiquitous computing and explain the most important (7) CO5 [K₂]
characteristics of pervasive environment.

b) Outline various security concepts and with illustration explain about server-side (7) CO5 [K₂]
security of a web application.

27. a) Outline the issues occurs during installation of new software and updating the (4) CO5 [K₂]
old one.

b) Explain about smart card-based authentication via internet with neat illustration. (10) CO5 [K₂]

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