KUMARAGURU
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Register Number:……….……

M.E DEGREE EXAMINATIONS: JUNE 2018

(Regulation 2015)

Second Semester

COMPUTER SCIENCE AND ENGINEERING

P15CSTE05: Mobile and Pervasive Computing

COURSE OUTCOMES

CO1: Explain emerging technologies in wireless networks.

CO2: Explain about the transmission methods and data management.

CO3: Compare the working of wireless routing protocols.

CO4: Develop Markup language for wireless application protocols.

CO5: Outline the characteristics of pervasive computing applications including the major system components and architectures of the systems.

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Assertion (A): The IEEE 802 Standard comprises a family of networking standards that cover the physical layer specifications of technologies from Ethernet to wireless.   CO1 [K$_2$]

    Reason (R): IEEE 802.11ac providing high-throughput Wireless Local Area Networks (WLANs) on the 5GHz band.

    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

2. _____ allows the user to write short programs for mobile phones and other small hand-held devices.   CO1 [K$_2$]

    a) HTML
    b) Wireless Application Protocol
    c) VimL
    d) CSS

3. The network centric mobile computing uses the _____ architecture.   CO2 [K$_2$]

    a) 2-tier
    b) 4-tier
    c) 3-tier
    d) 6-tier

4.

List I	List II	CO2 [K₂]
A. 802.16	i. VLAN	
B. 802.15	ii. Broadband Wireless	
C. 802.3	iii. Ethernet	
D. 802.1Q	iv. Wireless Personal Area Network	

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

5. Assertion (A): In a cellular network, each cell is served by a base station.   CO3 [K₂]

Reason (R): The base station is able to communicate with mobile stations using radio transceiver.

   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. In the_____ strategy, the cellular system keeps the individual subscriber's   CO3 [K₂]
mobility pattern in his/her profile.

   a) Profile based location management
   b) Time based location management
   c) Distance based location management
   d) Location based location management

7. Choose the correct charactertics of pervasive computing: CO4 [K₂]

   1. Pervasive computing aims at availability and invisibility.

   2. Devices and applications are continuously running and always available.

   3. Several pervasive computing devices and users are wired and desktop machine.

   4. Pervasive computing is characterized by a high degree of heterogeneity.

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

8. _____ translates to adaptation of the behavior of an application as a function of   CO4 [K₂]
its current environment.

   a) Authentication
   b) Mobile driver
   c) Device translator
   d) Context awareness

9. _____ protocol is a general protocol for the advertisement and discovery of   CO5 [K₂]
network services at the scale of an enterprise network.

a) SSL		b) Service location	
c) SFTP		d) TCP/IP	

10. Consider the following access to services on an IP network: CO5   [K$_2$]

1. The client request the IP address of the machine on which the server is running.

2. The client needs to learn and to run a protocol understood by the server.

3. The client requires port number of the socket on which the server is listening.

4. To establish an association with a server process from machine to machine on the Internet.

The correct sequence is?

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

PART B (10 x 2 = 20 Marks)

No.	Question	CO	K
11.	List the mobile computing functions.	CO1	[K$_2$]
12.	Differentiate pervasive computing and ubiquitous computing.	CO1	[K$_2$]
13.	List out four major mobile security concerns.	CO2	[K$_2$]
14.	Explain perfecting operation in cache scheme.	CO2	[K$_2$]
15.	Differentiate hard handoff and soft handoff operation.	CO3	[K$_2$]
16.	How can a mobile user reduce the power consumption in personal communicators?	CO3	[K$_2$]
17.	List out four pervasive computing devices.	CO4	[K$_2$]
18.	Outline the uses of smart sensor and smart actuators.	CO4	[K$_2$]
19.	Explain the need of open protocols in pervasive computing.	CO5	[K$_2$]
20.	Illustrate the interaction among a user agent, discovery agent and service agent.	CO5	[K$_2$]

PART C (10 x 5 = 50 Marks)

No.	Question	CO	K
21.	Develop a WML program that receives the user name and password and display the contents again for verification.	CO1	[K$_3$]
22.	During the movements of mobile node from old location to new location; how the internet and other services will reach the mobile node.	CO1	[K$_2$]
23.	Interpret data management in WAE with examples	CO2	[K$_2$]
24.	Explain various security functions ensure by security manager in mobile environment.	CO2	[K$_2$]
25.	Explain various performance evaluations in mobile location management.	CO3	[K$_2$]
26.	Describe the time and movement based location update strategies.	CO3	[K$_2$]
27.	Describe the various hardware components involved in pervasive computing devices.	CO4	[K$_2$]

28.	List and explain the issues involved in pervasive computing technology.	CO4	[K$_2$]
29.	How the advertisement and discovery of services can be provided in wireless network.	CO5	[K$_2$]
30.	Explain a framework for context aware sensors with suitable illustration.	CO5	[K$_2$]

Answer any TWO Questions

PART D (2 x 10 = 20 Marks)

31.	Discuss the working of Bluetooth. How is power saving achieved in Bluetooth devices?	CO1	[K$_2$]

32.	Suppose you are assign a task to develop a smart plant watering System:	CO4	[K$_3$]

    i) List out the major components required for build a system. (5)

    ii) Design your own architecture for the above system. (5)

33.	You are asked to design a user interface for a wrist watch. In your research you find out that people will use it indoors and outdoors, they will use in the dark as well as in sunlight, also they will use it when they run to catch the train as well as when they sit in a lecture and are bored.	CO5	[K$_3$]

Design a sketch for context aware watch for the above scenario and discuss how it helps the user.

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