

R16

Code No: 136CX

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, July - 2023

MOBILE COMPUTING

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

- 1.a) What multiplexing schemes are used in GSM and for what purpose? [2]
- b) List the limitations of a GSM cell in terms of diameter and capacity (voice, data) for the traditional GSM and GPRS. [3]
- c) What is the main physical reason for the failure of many MAC schemes known from wired networks? [2]
- d) List the basic prerequisite for applying the FDMA. [3]
- e) What information has to be transferred to which entity to maintain consistency for the TCP connection? [2]
- f) List the state and function of foreign agents and home agents before, during and after handover. [3]
- g) What is digital video broadcasting? [2]
- h) Differentiate between one-to-many synchronization and many-to-many synchronization. [3]
- i) What do you mean by spectrum requirement in mobile ad-hoc networks? [2]
- j) Why is routing in multi-hop ad-hoc networks complicated? Explain. [3]

PART - B

(50 Marks)

- 2.a) Discuss the issues and challenges in mobile computing with possible solutions.
- b) Name the main elements of the GSM system architecture and describe their functions. What are the advantages of specifying not only the radio interface but also all internal interfaces of the GSM system? Explain. [5+5]

OR

- 3.a) Explain the evolutions of mobile systems with their pros and cons.
- b) Describe the functions of the MS and SIM. Why does GSM separate the MS and SIM? How and where is user-related data represented/stored in the GSM system? How is user data protected from unauthorized access, especially over the air interface? How could the position of an MS be localized? Note that MS reports regarding signal quality. Explain. [5+5]

- QA QA QA QA QA QA QA QA QA
- 4.a) Discuss the problem of hidden and exposed terminals with a suitable diagram.
b) What are the basic differences between wireless WANs and WLANs, and what are the common features? Consider the mode of operation, administration, frequencies, capabilities of nodes, services and national/international regulations. [5+5]

OR

- 5.a) How does the near/far effect influence TDMA systems? What happens in CDMA systems? What are countermeasures in TDMA systems? What about CDMA systems?
b) Why is the PHY layer in IEEE 802.11 subdivided? How does IEEE 802.11 solve the hidden terminal problem? Explain. [5+5]

- 6.a) How and why does I-TCP isolate problems on the wireless link? What are the main drawbacks of this solution? Explain.
b) Discuss the advantages and disadvantages of hoarding. [5+5]

OR

- 7.a) Show the interaction of mobile IP with standard TCP. Draw the packet flow from a fixed host to a mobile host via a foreign agent. Then a handover takes place. What are the following actions of mobile IP and how does TCP react? Explain.

- b) Explain the methods for cache consistency maintenance. [5+5]

- 8.a) Explain the multi-disk model with repetition rate proportional to priority and skewed disk model.

- b) What is an Information Dispersal Algorithm (IDA)? Give one example. Discuss its functions. [5+5]

OR

- 9.a) Discuss the indexing methods and state their advantages and disadvantages.

- b) Explain full and partial copy synchronization. [5+5]

- 10.a) Discuss the challenges and applications of a mobile ad-hoc network.

- b) Explain the WAP 2.0 protocol layers with a suitable diagram. [5+5]

OR

- 11.a) Explain the dynamic source routing protocol with an example of your choice.

- b) List the features of PalmOS. [5+5]

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