8. (a) Explain Dynamic source routing protocol of MANET? What is meant by route caching and give the disadvantages of DSR protocol? 7

(b) List few technical issues for proper design and planning of a cellular network. 3

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B. Tech Odd Semester Examination, February, 2023

Computer Science & Engineering

(7th Semester)

Course No.: CSE-701/CSEEL-08

(Mobile Computing)

Full Marks: 50
Pass Marks: 15

Time: 2 hours

Note:
1. Attempt any five questions.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data wherever required.
5. The figures in the right margin indicate full marks for the question.
6. All the mathematical symbols and abbreviations have their usual meanings.

1. (a) What is mean by handoff? What are the main reasons for handoff in cellular networks? Explain the types of handoffs in GSM. 5

(b) Consider two different cellular sysyems A and B, each allocated a spectrum of 20 MHz and use 30 kHz channel spacing for uplink and downlink separately. The system A is configured with a frequency reuse factor of 4, and the system B with frequency reuse factor of 7.

(i) Suppose that in case of these systems, the cluster of cells is duplicated 16 times. Determine the number of simultaneous

communications that can be supported by each system.

(ii) Find the number of simultaneous communications that can be supported by a single cell in each system.

(iii) What is the area covered by each system in terms of cells?

(iv) Suppose the cell size is the same in both systems and a fixed area of 100 cells is covered by each system.Compute the number of simultaneous communications that can be supported by each system.? 5

2. (a) Discuss the count to infinity problem in distance vector routing algorithm. Explain with proper example how DSDV routingalgorithm overcome such problem. 2+5

(b) What are the main problems of signal propagation? Why do radio waves not always follow a straight line? Why is reflection both useful and harmful? 3

3. (a) Explain the congestion control mechanism of TCP? Can Standard TCP directly replicate in the wireless environment? Justify your answer with reasons 1+2

(b) What is the primary goal of the routing protocol of an ad-hoc network? Explain the classification of routing protocols in MANET with an example of each of them. 3

(c) Describe in detail about agent discovery and registration in Mobile IP. 4

4. (a) What is Mobile AdHoc network? Explain its properties and limitations. 3

(b) Explain the hidden terminal and exposed terminal problems and also explain the solution to solve it. 4+3

5. (a) Why can the actual shape of the cell may not be either a circle or a regular geometric shape? What is the significance of cell size? Mention the major limitations of conventional radio communications system? 1+2+2

(b) Explain about Indirect TCP and Snooping TCP and write down their advantages and disadvantages. 5

6. (a) Write short notes on antenna and different modes of propagation of signals. 3

(b) Define cochannel cell and cochannel interference. How does cochannel interference become a severe concern in the design of a cellular mobile system? 2+2

(c) The radius of the split cell is one-half of that of the original cell (before splitting). Show that the overall system capacity increases by four times. 3

7. (a) Write short notes on satellite communication system. Also mention the advantages of satellite communication as compared to traditional conventional communication system. 3+2

(b) Write short notes on i) Wireless Sensor Networks and ii) VANET 5