

Wireless Networks

QP Code : 31771

(3 Hours)

[Total Marks : 80

- N. B. : (1) Question No. 1 is **compulsory**.
 (2) Solve any **three** from remaining **five**.
 (3) Draw neat sketches wherever required.
 (4) Assum suitable data if required.

1. (a) What is HSDPA explain 5
 (b) Explain sensor node components with suitable diagram 5
 (c) Explain E-UTRAN with suitable diagram 5
 (d) What is RFID. Discuss the different components of RFID and explain how communication takes place among the components. 5

2. (a) Using the following data for a GSM 1800 network calculate (1) average busy hour traffic per subscriber. (2) Traffic capacity per BTS (3) required number of base stations per zone (4) The hexagonal cell radius for the zone. 10
 - Subscriber usage per month = 150 minutes
 - Days per month = 24
 - Busy hour per day = 06
 - Allocated spectrum = 4.8 MHz
 - Frequency reuse plan = 4/12
 - RF channel width = 200 KHz (full rate)
 - Present number of subscribers in the zone = 50,000
 - Subscriber growth = 5% per year
 - Area of the zone = 5000 km²
 - Initial installation based on a four year design
 - capacity of a base station (transceiver) (BTS) = 30 Erlangs
 - Traffic capacity of a GSM cell at 2% Gos (using Erlang B table) = 8.2 Erlangs.

- (b) List out the factors affecting size of the cellular network and the frequency planning. Discuss these factors in detail. 10

3. (a) Explain Bluetooth security features and security levels with proper diagrams. 10
 (b) Explain zigbee network components and network topologies. 10

4. (a) Why TCP and UDP protocols are unsuitable for implementation in WSN. 10
List out transport protocols designed for WSN explain any one in detail.
- (b) What is the key feature of SMAC explain it in detail justify its use in 10
sensor network.
5. (a) Why network management design is critical issue in WSN? Give 10
reasons.
- (b) What is localization of WSN nodes. Explain with examples centralized 10
& distributed schemes in localization algorithms.
6. Write short notes :- 20
- (a) Middleware Architecture of WSN
- (b) IEEE 802.16 protocol Architecture
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