Seat No.

T.E. (Computer Engineering) (Semester – I) Examination, 2014
DATA COMMUNICATION AND WIRELESS SENSOR NETWORKS
(2012 Course)

Time : 3 Hours Max. Marks : 70

Instructions : 1) *Question **1, 2, 3, 4** (**10** marks **each**). Solve either Question **1** or Question **2** and Question **3** or Question **4**.*
2) *Question **7** and **8** (**18** marks). Solve **any one**.*
3) *Question **5, 6, 9, 10** (**16** marks **each**). Solve either Question **5** or Question **6** and Question **9** or Question **10**.*
4) ***Neat** diagrams must be drawn **wherever** necessary.*
5) *Assume **suitable** data if **necessary**.*
6) *Figures to the **right** indicate **full** marks.*

1. A) Encode the following binary data stream into unipolar, polar (RZ, NRZ), Bipolar NRZ and Manchester codes for given Data stream : 11100101. **5**

   B) A network of CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time (including the delays in the devices and ignoring the time needed to send a jamming signal) is 25.6 μs, what is the minimum size of the frame ? **5**

2. A) What are different application of WSN ? **7**

   B) Give definitions. 1) Baud rate 2) Bit rate 3) SNR. **3**

3. A) Explain what is meant by slope overload and granular noise distortion. Also explain how adaptive delta modulation improves system tolerance to slope overload. **7**

   B) Write short note on Virtual LAN. **3**

4. A) Explain stop and wait ARQ, GO back-n ARQ and selective repeat ARQ. Comment on the performance of each. **6**

   B) Explain WSN architecture in details. **4**

5. A) Write short notes on : **10**
      1) S-MAC
      2) Sparse Topology and Energy Management (STEM).

   B) Explain in detail contention based protocols. **6**

6. A) With the help of detail flow schematic diagram explain slotted CSMA-CA protocol. **8**

   B) What do you mean by LEACH protocol ? Explain organization of LEACH protocol. **8**

P.T.O.

7. A) What are different routing challenges and design issues in WSN ? **8**

   B) Explain in detail data dissemination and gathering. **8**

   C) What is piconet ? **2**

8. A) Write short notes on : **10**

     1) Sensor Protocol for Information via Negotiations (SPIN).

     2) Geographic and energy aware routing.

   B) What are different types of routing strategies in WSN ? **8**

9. A) Explain various parameters needed for determining distances to anchor nodes. **8**

   B) Explain the impact of anchor placement. **8**

10. A) Write short note on : **8**

     1) Tiny OS

     2) Magnet OS.

   B) Explain information based sensor tracking. **8**

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