

Total No. of Questions : 10]

SEAT No. :

P1752

[5058]-392

[Total No. of Pages : 3

T.E.(Computer Engineering)

**DATA COMMUNICATION AND WIRELESS SENSOR NETWORK
(2013Course) (310243) (Semester-I)**

Time : 2.5 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 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) *Figurs to the right indicate full marks.*

- Q1) a)** We have four sources, each creating 250 characters per second. If the interleaved unit is a character and each synchronizing bit is added to each frame find **[6]**
- i) The data rate of each frame
 - ii) The duration of each character in each source
 - iii) The frame rate
 - iv) The duration of each frame
 - v) The number of bits in each frame
 - vi) The data rate of the link

- b) Explain RFID Based Data Communication **[4]**

OR

- Q2) a)** Write key Definitions of following components of Sensor Networks **[6]**
- i) Sensor
 - ii) Sensor Node
 - iii) Routing
 - iv) Data Centric routing
 - v) Collaborative processing
 - vi) Localization and tracking

- b) Explain the Scrambling technique in encoding . What are different types of scrambling techniques? **[4]**

P.T.O.

Q3) a) Explain ALOHA, SLOTTED ALOHA and CSMA/CD, Comment on the efficiency of each random access technique. [6]

- b) Write short note on:
- i) Bluetooth architecture
 - ii) Virtual private networks. [4]

OR

Q4) a) Explain stop and wait ARQ, GO back-n ARQ and selective repeat ARQ. Comment on the performance of each. [6]

- b) Explain in detail Delta modulation. Draw block diagram of delta modulator and demodulator, What are its advantages on PCM. [4]

OR

Q5) a) Define the following related to WSN and explain in brief

- i) Unit node identifier
- ii) Mach address
- iii) Resource Identifier
- iv) Network indentifier [8]

- b) With the help of detail flow schematic diagram explain

- i) Slotted CSMA-CA protocol.
- ii) CSMA-CD protocol [8]

Q6) a) Explain the concept of low duty cycle protocol with wakeup period Also explain how it differs from Sparse Topology and Energy Management (STEM) Protocol. [8]

- b) Explain the following with respect to WSN

- i) Forward Error Correction (FEC)
- ii) Block Coded FEC
- iii) Convolutional codes
- iv) Interleaving [8]

Q7) a) Explain the concept of range based localization in WSN

Explain “Range based” localization with distance measurement giving example. [8]

- b) Explain following terminologies related to attribute based routing in WSN [6]
- i) Direct diffusion
 - ii) Rumor Routing
 - iii) Geographical hash tables

- c) Enlist different routing challenges in WSN and Enlist the design issues in WSN? [4]

OR

- Q8)** a) Explain in brief: [8]
- i) PICONET
 - ii) Tunneling protocol

- b) What are different types of routing strategies/ protocols [6]

- c) Write a short note on :

i) SPIN-PP

ii) SPIN-EC [4]

- Q9)** a) Write short note on:

i) Tiny OS

ii) Magnet OS [8]

- b) What do you mean by Content Delivery Network (CDN)? What are different services provided by CDN? [8]

OR

- Q10)** a) Explain with the help of suitable architectural diagram of Nano-RK OS [8]

- b) Write short notes on:

i) Task driven Sensing

ii) LiteOS [8]

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