Total No. of Questions : 10]

SEAT No. :

P1752

[Total No. of Pages : 3

[5058]-392

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 question1 or Question 2 and Question 3 or Question 4.***
2) ***Question 7 and 8 (18 Marks) solve any one.***
3) ***Question 5,6,910(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

i) Sensor
ii) Sensor Node
iii) Routing
iv) Data Centric routing
v) Collaborative processing
vi) Localization and tracking **[6]**

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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