Q. P. Code: 36600

Duration-3hrs   Marks -80

N.B i) Question no.1 is compulsory

   ii) Solve any **three** from the remaining **five** questions

1a Discuss the Advanced Antenna systems used in HSPA and LTE.   5

 b Draw and explain with a neat diagram the various components of a sensor node.   5

 C What are the different Network Topologies supported by Zigbee?   5

 d Explain the 'Zone planning' concept for the Indoor radio planning.   5

2a What are the different requirements to plan a good Link Budget for Wireless Networks?   10

 b Explain 'hidden node' and 'exposed node' problems in WLANs.   10

3a What is UMTS? List important features of UMTS air interface.   10

 b Explain various Bluetooth connection establishment states .Draw a complete flow diagram.   10

4a Explain Middleware architecture for WSNs.   10

 b Discuss Wimax in detail and compare its performance with Wifi .   10

5a Discuss the various routing challenges and design issues in WSNs.   10

 b Why Network Management Design is a critical issue in WSN? Justify.   10

6a What are the different types of handovers in GSM?   10

 b How does a typical RFID system work ? Discuss its components and list its applications.   10

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Duration: 3 Hours   **Marks: 80**

Note:

1) Q.1 is **compulsory**.
2) Attempt any **three** questions from the remaining **five** questions.
3) Assume Suitable data wherever necessary

Q1. Attempt any **FOUR**   20

    a) Explain Launching of Geostationary satellites
    b) Explain design considerations of Earth station
    c) State and explain Kepler's Laws
    d) Explain different orbital parameters
    e) Differentiate window and frame organization

Q2. a) What is EIRP, Discuss importance of [G/T] ratio. Calculate Overall [C/N] for a satellite link, if [C/N] up link =25dB and [C/N] downlink=20dB and intermodulation noise =13dB

                                                                   10

    b) Explain TT & C subsystem. Explain role of multi-tone frequency in tracking system.   10

Q3. a) Describe different stabilization technique   10

    b) What are different types of lasers used for satellite communication? Explain acquisition link model for optical communication   10

Q4. a) With the help of block diagram explain transmit receive type of earth station   10

    b) Draw and explain satellite network architecture   10

Q5. a) Explain SPADE system and SCPC of FDMA   10

    b) Which types of antennas used in satellite communication. Explain any one in detail.   10

Q6. Write short note on any TWO   20

    a) Onboard connectivity with transparent processing
    b) VSAT and GPS
    c) Reliability and space Qualification

(3Hours)   [Total marks 80]

Note: (1) Question No 1 is compulsory
      (2) Solve any three from remaining questions.
      (3) Assume suitable data if required.

Q.1 (a) Why TCP is not suitable for interactive multimedia traffic, while UDP is.   [5]
    (b) How iterative resolution differs from recursive resolution in DNS?   [5]
    (c) Differentiate between Subnetting and Supernetting.   [5]
    (d) Define network address and network mask.   [5]

Q.2 (a) Draw the DHCP packet format. With referenec to this which fields determine   [10]

    i) The no. of hops a packet can tarvel?

    ii) The command is a request or reply?

    iii) Why there is a need of transaction Id apart from IP address and port address?

    iv) What is the maximum number of seconds that can be stored in the Number of Seconds field of
        a DHCP packet?

    v) Which field determine that the response from the server is unicast or broadcast?

    vi) If DHCP packet is request from client, which fields are used?

    vii) If DHCP packet is a reply message from server, which fields are used?

    (b) Explain how voice is transmitted over packet switched network using H.323.   [10]

Q.3 (a) Explain the IP datagram header with suitable illustrations.   [10]

    (b) Explain the various phases of congestion control in TCP with suitable diagram.
        How the window size is set in each phase.   [10]

Q.4 (a) Name the various components of Email system. List the function of them.   [10]
        Which protocol defines the MTA client and server in internet?   [10]

    (b) Differntiate between TELNET and SSH.Explain the various components of SSH.   [10]

Q.5 (a) What are various scheduling schemes to improve Qos ? Explain any one in brief.   [10]

    (b)What are the limitations of File Transfer Protocol and how they are overcome in Trivial File
       Transfer Protocol?   [10]

Q.6 (a) What are the special addresses used in classful addressing. Explain any 3 with suitable example.
                                                                                          [10]
    (b) Explain the connection establishment & termination Process in TCP with suitable diagram.
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Sem- VIII -(CBSaS)

Time: 3 Hours   **Marks: 80**

N.B: (1) Question No. 1 is compulsory
    (2) Attempt any Three questions from the remaining Five questions
    (3) Figures to the right indicate full marks

1. (a) What are the properties of the autocorrelation function ?   [4]
  (b) What is phoneme? Explain in detail about semivowels and diphthongs?   [4]
  (c) How are formants useful in speech processing?   [4]
  (d) Describe the equations involved in the design of an all-pole filter of order 1.   [4]
  (e) What are the uses of pitch period estimation?   [4]

2. (a) Describe the speech production mechanism and identify the different categories of excitation?   [10]
  (b) Explain the different losses involved in modeling of the vocal tract. Explain how each of them affects the resonance frequency of vibration of the vocal cords   [10]

3. (a) Explain the different time domain parameters derived from the speech signal. Briefly describe with equations how they can be computed.   [10]
  (b) Explain narrowband spectrogram of a speech signal with suitable examples   [10]

4. (a) (i) What is 'complex ceptrum' of a speech signal? Specify its properties, with related equations?.   [8]
    (ii) What is the need to generate Linear Predictor coefficients for a speech signal?   [2]

  (b) Levinson-Durbin acts as a recursion function for calculation of prediction coefficients. Explain?   [10]

5. (a) Compare and contrast the different speech standards.   [10]

  (b) How would you compare two speech signals using Dynamic Time Warping algorithm. [10]

6. (a) Explain Text-to-Speech conversion using a block schematic? State the different applications of TTS   [8]
  (b) Explain the different challenges involved in the design of a speaker recognition system. [7]
  (c) How is HMM used for speech recognition?   [5]

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