(3 Hours) **[Total Marks: 80]**

NB: 1) **Question no. 1** is **compulsory**.
2) Solve **any three** from remaining **five** questions.
3) Draw **neat sketches** wherever **require**.
4) Assume suitable **data** if **required**.

1. A) Explain Softer and soft handoff in CDMA. **5**
   B) Define open loop closed loop and outer loop power control. **5**
   C) Explain concept of HSDPA w.r.t. WCDMA. **5**
   D) What is the role of GPRS in GSM? **5**

2. A) What is localization in wireless sensor network? Explain with examples centralized and Distributed schemes in localization algorithms. **10**
   B) Give the distributed radio access network overview. Explain in detail functions of node 3 and RNC also draw UTRAN logical architecture. **10**

3. A) What is UMTS? List important features &UMTS air interface. **10**
   B) Explain middleware architecture. **10**

4. A) Draw and explain CDMA 2000 evolution path. **10**
   B) Using traffic data per cell for a GSM/GPRS network, calculate **10**
   (a) data Erlangs, (b) time slot (TS) utilization, and (c) TS capacity.
   Use the following data :
   No of BTS: 40
   - Subscriber usage per month: 150 minutes
   - Days per month: 24
   - Busy hours per day: 6
   - Allocated spectrum: 4.8 MHz
   - Frequency reuse plan: 4/12
   - RF channel width: 200 kHz (full rate)
   - Present number of subscribers in a zone: 50,000
   - Subscriber growth per year: 5%
   - Network roll-over period: 4 years
   - Number of packet calls per session (NPCS): 5
   - Number of packets within a packet call (NPP): 25
   - Reading time between packet calls (*T*r): 120 s
   - Packet size (NBP): 480 bytes

TURN OVER

- Time interval between two packets inside a packet call (*T*int): 0.01 s
- Total packet service holding time during one hour (*T*tot): 3000 s
- Busy hour packet sessions per subscriber: 0.15
- Average call holding time during busy hour: 120 seconds
- No. of transceivers (TXs) per cell: 3
- No. of TSs per cell for signalling: 3
- Radio link control (RLC) efficiency: 80%
- Total numbers of transmitted radio blocks: 9000
- TSs allocated for data traffic c per cell: 3
- Data throughput per cell: 15.5 kbps
- Voice traffic per cell: 8.82 Erlangs

5. A) Describe the model of wireless sensor networks What are the factors influencing design of wireless sensor network. **10**
   B) Explain back off algorithm why is CSMA-CD not used in WLAN **10**

6. Write short note on **(any two)** : **20**
   A) IEEE 802.16
   B) UWB technology.
   C) ZigBee Technology.

Q. P. Code : 27207

[03 Hour] **[Total Marks: 80]**

N.B.
i) Question No.1 is compulsory.
ii) Attempt any three from the remaining questions.
iii) Assume suitable data if necessary stating it clearly.

Q.1.(a) Why do we need network management? **(5)**

Q.1.(b) SNMP v1 commands? **(5)**

Q.1.(c) What is CMIP? **(5)**

Q.1.(d) What is role of event correlation technique for root cause analysis? **(5)**

Q.2.(a) Describe Two-Tier and Three-Tier network management organization model. **(10)**

Q.2.(b) What is the difference between Accounting Management and Performance management? **(10)**

Q.3.(a) What is broadband network management? **(10)**

Q.3.(b) List and describe emerging Web-Based Enterprise management (WBEM) standards. **(10)**

Q.4.(a) What are the capabilities of RMON2 over RMON1? **(10)**

Q.4.(b) What is Scoping and Filtering in CMIP/CMIS network management standard? **(10)**

Q.5.(a)Describe SNMPv3 policy-based security management? **(10)**

Q.5.(b) What is Management Information Tree (MIT)? **(10)**

Q.6.(a) Draw a neat diagram of TMN layered architecture and explain in detail. **(10)**

Q.6.(b) What is fault management? Describe five steps process in fault management. **(10)**

Q. P. Code: 27249

(3 Hours) **Total Marks : 80**

N.B.: (1) Question No. 1 is compulsory.

(2)Attempt any three questions out of remaining five.

(3)Figures to the right indicate full marks.

(4)Assume suitable data if required and mention the same in answer sheet.

Q.1 Solve following **(20)**

(a) Explain how TCP use for flow control.
(b) Explain the concept of fragmentation in Internet communication.
(c) Commet on network space and host space used in interworking layer.
(d) List two functions of each layer of TCP/IP protocol suite.

Q.2 (a) Explain in detail FTP and TFTP. **(10)**

(b) Explain with neat diagram transition states of DHCP. **(10)**

Q.3 (a) Explain Karn's algorithm in detail. **(10)**

(b) Explain the connection establishment,data transfer and connection termination phases of TCP. **(10)**

Q.4 (a) Explain in detail the SIP. **(10)**
(b) Explain in detail RTP packet format. **(10)**

Q.5 (a) Explain the different error reporting messages in ICMP with message format. **(10)**

(b) Explain with neat diagram IP header format. **(10)**

Q.6 (a) What is the need of digitizing of Audio and Video in Internet communication? Explain Video Compression (MPEG) in detail. **(10)**

(b) Discuss the different techniques that can be used to improve the quality of service (QoS) . **(10)**

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Q. P. Code: 27442

(Time 3 Hours) **[Total marks: 80]**

NB: 1) Question number 1 is compulsory
2) Answer any three questions out of remaining questions
3) Answer the questions with suitable diagrams
4) Assume suitable data wherever necessary

1 Answer any **Four-** **20**
(a) What advantage random access has over fixed access?
(b) Is the velocity of satellite constant in an elliptic orbit? Justify your answer.
(c) Explain why some satellites employ cylindrical solar arrays, whereas others employ solar-sail arrays to power generations.
(d) What is the use of multi-tone tracking system?
(e) Why is it necessary to employ antenna tracking in large earth stations?

2 (a) What are the functions of thermal sub-systems in satellite? **06**
(b) Why the control system in satellite waits for an execute command after receiving the command table executed? **04**
(c) Discuss in detail Telemetry, tracking and command with necessary block diagram. **10**

3 (a) Draw and explain working of Transmit and receive type of earth station. **06**
(b) Why in satellite TV receiving system, a demodulation/ remodulation unit is needed? **04**
(c) A geostationary satellite transmits 5 W of power with an antenna having a gain of 28dB. The downlink is operated at 4Ghz and the receiver antenna is a dish with diameter of 3.6 m. Compute the EIRP transmitted and the power received by the receiving station. Assume the receive antenna efficiency to be 0.7 and all the other losses to be 2dB **10**

4 (a) Write short notes on **10**
1) Inter modulation distortion and back-off in satellite communication.
2) Combined uplink and downlink C/N ratio.
(b) Explain Initial Acquisition in technique in TDMA system. **10**

5 (a) Explain on board connectivity with Transparent processing. **10**
(b) Discuss OSI Model for satellites Network also discuss layering principle. **05**
(c) What are the different configurations of VSAT network? What are their advantages and dis advantages? **05**

6 Write short notes on **any Four-** **20**
(a) Optical satellite Transmitter and receiver
(b) Asynchronous Transfer Mode (ATM) switching
(c) Unique word detection
(d) Improvement of reliability of satellite communication system.
(e) GPS

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