Sem VIII (EXTC) CBGS 12/5/17
Wireless Network

Q.P.Code:16215

(3 Hours) [Total Marks: 80]

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

1. (a) What are the components of sensor nodes? 20
(b) Explain CSMA/CA technique
(c) Explain the concept of trusted device with reference to Bluetooth
(d) Discuss two evolution paths for the GSM to offer 3G services.

2. (a) Using the following data for a GSM network, estimate the voice and data traffic per subscriber. If there are 40 BTS sites, calculate voice and data traffic per cell. 10

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 (see Figure)
Number of packets within a packet call (NPP): 25
Reading time between packet calls (*Tr*): 120 s
Packet size (NBP): 480 bytes
Time interval between two packets inside a packet call (*Tint*): 0.01 s
Total packet service holding time during one hour (*Ttot*): 3000 s
Busy hour packet sessions per subscriber: 0.15
Penetration of data subscribers: 25%
Data rate of each subscriber: 48 kbps
Packet transmission time: 10 s

Turn Over

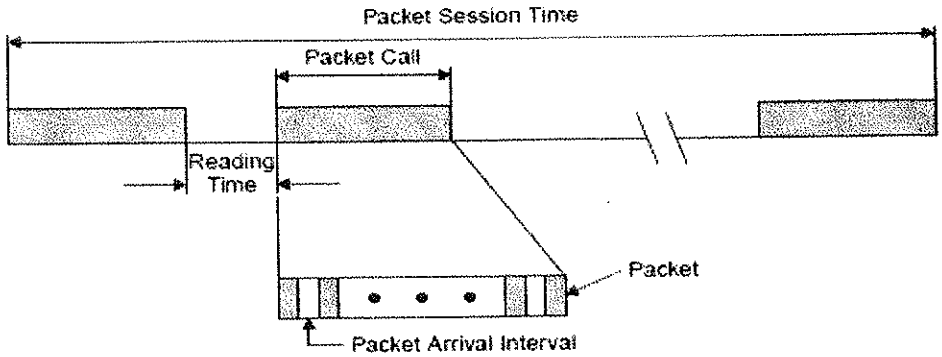

Fig: Packet session

(b) Explain the ZigBee technology. Discuss different network topologies that are supported in ZigBee. 10

3. (a) Discuss WiMAX in detail and compare its performance with Wi-fi 10

(b) Explain link budget analysis and requirements of wireless Network 10

4. (a) Explain transmit diversity present in forward link of Cdma 2000 10

(b) What are sensor network management design issues? Elaborate any one with example 10

5. (a) Explain Bluetooth security features and Give its protocol architecture 10

(b) Draw the neat block diagram of UMTS architecture Explain all interfaces. 10

6. Write short note on 20

(a) HSDPA

(b) RFID

Sem-VIII

24/05/17

T4928 / T1826 SATELLITE COMMUNICATION & NETWORKS

EXTC (CBGS)

Q.P. Code :16614

(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 **Five-** 20
(a) Why the 'Earth sensors' are not used for sensing the 'Yaw' axis in GEO satellites?
(b) Why a multi-beam antenna is used in satellite communication?
(c) For the same area of solar array which configuration, spin stabilization or body stabilization, generate more power. Justify.
(d) Differentiate between window & frame organization.
(e) Why LNA in a satellite receiving system is placed at the antenna end of the feeder cable?
(f) Explain with diagram what is "Umbra" and "penumbra"? How it is affecting satellite operation?

2 (a) What are the different antenna tracking techniques of geostationary satellite? 10
(b) Discuss in detail Telemetry, tracking and command with necessary block diagram. 10

3 (a) What are the main considerations in the design of an earth station? And how the earth stations are classified? 10
(b) Explain the need of placing LNA next to Antenna, Calculate over all C/N Ratio for satellite if [C/N], uplink = 25db & [C/N], downlink = 20db Intermodulation Noise =12db 10

4 (a) Discuss Design Consideration of Earth station, Draw the block diagram for Transmit and receive earth station and explain. 10
(b) Compare Pre- assigned FDMA and Demand assigned FDMA 05
(c) Explain TDMA frame structure. 05

5 (a) Explain on board connectivity with Transparent processing. 10
(b) Discuss OSI Model for satellites Network also discuss layering principle. 05
(c) Why TWT amplifier is Preferred for satellite communication? 05

6 Write short notes on **any Four-** 20
(a) Optical satellite Transmitter and receiver
(b) Comparison of DS-CDMA, FH-CDMA and TH-CDMA.
(c) Launching Mechanism
(d) Reliability and space qualification test
(e) VSAT

B.E. Sem VIII EXTC

30/5/17

Q. P. Code : 13298

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

N.B. :

(a) Question No.1 is compulsory.
(b) Total 4 questions need to be solved.
(c) Attempt any three questions from remaining five questions.
(d) Assume suitable data wherever necessary, justify the same.

1.a Explain any one method to improve QoS. [5]

1.b In the TCP state transition diagram, why do we have the TIME-WAIT state and why is its value equal to 2MSL? [5]

1.c Why SSH is preferred over TELNET? Explain. [5]

1.d Explain the fields that are related to fragmentation and reassembly of an IPv4 datagram. [5]

2.a Discuss how Hypertext Transfer Protocol (HTTP) is used to access data on the World Wide Web. [10]

2.b Explain FTP in detail. Mention its limitation and justify how these limitations are overcome in TFTP. [10]

3.a Explain how TCP controls the congestion in the network using different strategies. [10]

3.b An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows: [10]

- The first group has 200 medium-size businesses; each needs approximately 128 addresses.
- The second group has 400 small businesses; each needs approximately 16 addresses.
- The third group has 2000 households; each needs 4 addresses.

Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations.

4.a Explain in detail RTP packet format. [10]

4.b Explain the transition states of TCP with a neat diagram. [10]

5.a Explain how voice is transmitted over packet switched network using H.323. [10]

5.b Explain various characteristics of real-time audio/video communication. [10]

6 (a) Discuss the different types of addresses used in the TCP/IP protocol. [5]

(b) The transport layer is responsible for process-to-process delivery of the entire message. Justify your answer. [5]

(c) Discuss DHCP operation when the client and server are on the same network or on different networks. [5]

(d) Discuss the two message access agents in brief [5]

Dt: 18/05/17

B.E. Sem VIII (CBGS) EXTC

Q.P.Code:13983

Microwave Integrated Circuits

Max Marks: 80

Duration: 03 Hrs.

1. Question No. 1 is compulsory.
2. Out of remaining questions, attempt any three questions.
3. Assume suitable additional data if required.
4. Figures in brackets on the right hand side indicate full marks.

1. (A) Explain how MMICs are superior over HMICs. (05)
   (B) Compare microwave amplifier versus microwave oscillators. (05)
   (C) Explain Stability circles and its importance in amplifier design. (05)
   (D) How coupled line parameters vary with frequency? (05)

2. (A) Describe key processing techniques used in making HMICs. (10)
   (B) For two port oscillator at steady state oscillation, prove that if: $\Gamma_L\Gamma_{in} = 1$ then $\Gamma_T\Gamma_{out} = 1$. (10)

3. (A) Discuss various mixers topology. Compare performance of them. (10)
   A BJT has the following *S*-parameters as a function of four frequencies.
   (B) Determine in which of these cases, device is unconditionally stable, and of these, which has the greatest stability. (10)

Device	S_{11}	S_{12}	S_{21}	S_{22}
A	$0.34\angle -170^\circ$	$0.06\angle 70^\circ$	$4.3\angle 80^\circ$	$0.45\angle -25^\circ$
B	$0.75\angle -60^\circ$	$0.2\angle 70^\circ$	$5.0\angle 90^\circ$	$0.51\angle 60^\circ$
C	$0.65\angle -140^\circ$	$0.04\angle 60^\circ$	$2.4\angle 50^\circ$	$0.70\angle -65^\circ$

4. A MESFET is biased for large signal Class A operation with the following small signal *S*-parameters at 5 GHz: $S_{11} = 0.55\angle -150^\circ$, $S_{12} = 0.04\angle 20^\circ$, $S_{21} = 3.5\angle 170^\circ$, and $S_{22} = 0.45\angle -30^\circ$. The large signal forward transmission coefficient S_{21} is measured to be $S_{21} = 2.8\angle 180^\circ$. Design a large-signal Class A amplifier with maximum transducer gain in a 50 Ω system. Assume ±0.5 dB error in gain. What is the high-power amplifier gain? (20)

5. (A) Derive the dispersion relation for open microstrip line. (10)
   (B) Give limitations and criteria for the choice of substrate material in HMICS and MMICS. (10)

6. (A) Give design considerations of Coplanar wave guides. (10)
   (B) Explain green's function. (10)

VIII EXTC CBGS 18/05/17

Tel. Net. Mgmt

Q.P. Code :17001

[Time: Three Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Q.1 is compulsory
2. Solve any three questions out of remaining.
3. Assume suitable data if necessary stating it clearly

Q.1. a) What is OMAP in network management? 05
b) What is MIB? 05
c) Compare between SNMPv1 and SNMPv3? 05
d) Describe Code Book Reasoning based event correlation technique? 05

Q.2 a) You are administering the 24000 workstations in an organization. You are pinging each station periodically. The message size in both directions is 128 bytes long. The NMS you are using is on a 10-Mbps LAN, which functions with 30% efficiency. What would be the frequency of your ping if you were not to exceed 5% overhead? 10

b) List and describe SNMP various commands with command syntax. 10

Q.3 a) With respect to ISO/OSI network management: Describe following terms: 10
i. Scoping and Filtering
ii. Linked Replies
iii. GDMO
iv. ACSE and ROSE

b) Draw a neat diagram of TMN functional architecture with interfaces 10

..4 a) List and describe RMON2 MIB Groups and their functions. 10

b) What is SNMP proxy server? 10

Q.5 a) What is ASN.1? Explain in detail. 10

b) Draw and describe SNMP message and PDU formats. 10

Q.6 a) Explain the significance of Trap. Describe the different types of traps. 10

b) What is ATM Network management? 10

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