

BE- Sem VIII - EXTC - Rev / May June 2017
Subject = AME



12/5/17

O.P. Code: 13019

(3 Hours)

Total Marks: 100

- N.B. (1) Question No.1 is compulsory.
(2) Solve any four from remaining six questions.
(3) Assume suitable data wherever required and justify it.
(4) Figures to the right indicate full marks.

1. Answer the following
(a) Prove that scattering matrix is symmetrical and reciprocal.
(b) Explain 1-dB compression point.
(c) What are the characteristics of power amplifiers?
(d) Derive the expression of overall noise figure in three cascaded stages of amplifiers. 20
2. (a) Explain in detail stability criteria for microwave amplifier. 10
(b) Explain two methods of broadband amplifier design. 10
3. (a) Discuss amplifier linearization methods. 10
(b) Discuss various mixer topologies. Compare performance of them. 10
4. A GaAs FET has the following S-parameter and noise parameters at 1.0 GHz. ($Z_0 = 50 \Omega$), $S_{11} = 0.61 \angle -155^\circ$, $S_{12} = 0$, $S_{21} = 5.0 \angle 180^\circ$, $S_{22} = 0.51 \angle -20^\circ$, $F_{min} = 3\text{dB}$, $\Gamma_{opt} = 0.45 \angle 180^\circ$, $R_n = 4\Omega$. Design a Low noise amplifier for a noise figure of 3.5dB and power gain of 16dB. 20



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5. (a) Derive the transducer power gain as:

$$G_T = \frac{P_L}{P_{avg}} = \frac{|S_{21}|^2(1 - |\Gamma_s|^2)(1 - |\Gamma_L|^2)}{|1 - \Gamma_s \Gamma_{in}|^2 |1 - \Gamma_L S_{22}|^2}$$

- (b) Compare microwave amplifiers with microwave oscillators. 10
6. (a) Discuss the steps of Microwave oscillator design using GaAs FET. 10
 (b) Define and explain noise correlation matrix for general noise two port networks. What is congruence transformation? 10
7. Write short notes on (any two) 20
 (a) Power distributed amplifiers
 (b) Noise figure test equipment
 (c) Microwave resonators.



18/05/17

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
- Q.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



Q.P. Code : 13560

(Time: 03 Hours)

Total Marks: 100

Note:- 1) Question No 1 is compulsory

- 2) Attempt any four questions from question No 2 to 7
- 3) Assume suitable Data Wherever necessary and justify the same
- 4) Draw neat sketches/diagrams wherever Necessary.

Q.No.1. Answer the following (any four)

- (a) State and explain Keplerian Elements set? 5
- (b) What is meant by Station keeping? How it is different from "Attitude Control"? 5
- (c) Give classification of satellites based on their orbital positions? 5
- (d) Briefly explain Polarization techniques for satellite signals 5
- (e) What are the differences between Thin Route and Thick route FDMA method? 5

Q.No.2. (a) What Are Look angles and how they are determined? 10

(b) Draw block diagram of Double Conversion Transponders and explain each block? 10

Q.No.3. (a) Explain 1) VSAT 2) DBS systems 10

(b) What are various antenna used in satellite communication and its T, T and C subsystems. 10

Q.No.4. (a) What is space qualification and reliability of satellite subsystems? 10

(b) Compare

- i) Power requirements of TDMA and FDMA
- ii) Geosynchronous and geostationary earth orbits 10

Q.No.5. (a) Why LNA is kept just behind the satellite receivers? Also discuss various losses in satellite communication system 10

(b) Explain with the help of block diagram block diagram of transmit receive earth station 10

(P.T.O)



Q.P. Code : 13560

Q. No. 6. (a) Derive the overall $[C/N_0]$ equation of combined uplink and downlink and discuss the effect of Intermodulation products on this overall C/N_0 value. 10

(b) Discuss and draw channel arrangement and explain use of CSC for "SPADE" system. 10

Q.no. 7. Write short notes on any two: - 20

(a) Satellite launching methods

(b) Telemetry, tracking and command sub system

(c) Explain TWTA



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
- Why the 'Earth sensors' are not used for sensing the 'Yaw' axis in GEO satellites?
 - Why a multi-beam antenna is used in satellite communication?
 - For the same area of solar array which configuration, spin stabilization or body stabilization, generate more power. Justify.
 - Differentiate between window & frame organization.
 - Why LNA in a satellite receiving system is placed at the antenna end of the feeder cable?
 - Explain with diagram what is "Umbral" and "penumbral"? 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 $[C/N]_{\text{uplink}} = 25\text{db}$ & $[C/N]_{\text{downlink}} = 20\text{db}$ 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
- Optical satellite Transmitter and receiver
 - Comparison of DS-CDMA, FH-CDMA and TH-CDMA.
 - Launching Mechanism
 - Reliability and space qualification test
 - VSAT



[Time: 3 Hours]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. Attempt any four questions from remaining.
 3. Assume suitable data if required.

- Q. 1
- a) Explain various state in Bluetooth 05
 - b) Explain the term ESS & BSS in IEEE 802.11 05
 - c) What is CDMA 2000 05
 - d) Discuss the role of 3G system 05
- Q. 2
- a) Differentiate between frequency – hopping & direct sequence spread spectrum 10
 - b) Explain forward and Reverse link in CDMA – 2000 10
- Q. 3
- a) Explain Zigbee technology and also discuss the N/W topology used in Zigbee 10
 - b) What is UMTS? List important features & UMTS air interface. 10
- Q. 4
- a) Explain power control in CDMA 10
 - b) Explain in detail various terms used in Bluetooth 10
- Q. 5
- a) What is RFID? Discuss some of its application 10
 - b) What is Wi – MAX Differentiate between Wi – Fi & Wi – MAX 10
- Q. 6
- a) Write a note on Wireless sensor Network 10
 - b) With diagram Explain Link budget analysis for GSM 10
- Q. 7
- a) Explain hidden and exposed node problem in WN 10
 - b) Explain imode and what is different between WAP & imode. 10



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]