

**III B.Tech II Semester Supplementary Examinations,
November/December 2005
COMMUNICATION SYSTEMS
(Electronics & Communication Engineering)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. (a) Explain the operation of radio transmitter with a block diagram and draw the block diagram of radio receiver. [6+4]
(b) Explain the circuit arrangement for FM generation using IC566. [6]
2. (a) Discuss in detail the various tracking techniques used for receivers. [4]
(b) A Superhetrodyne receiver is to tune the range from 4-10 MHz, with an IF of 1.8 MHz. Calculate the range of oscillator frequencies, the range of image frequencies. [6]
(c) Write about image frequency. [2+4]
3. (a) Differentiate between simple, delayed and amplified AGC and explain their action with the help of simple circuits blocks.
(b) Discuss briefly similarities and differences between FM and AM receivers.
(c) Write in detail about the limiter used in FM receiver. [8+4+4]
4. (a) Write about the classification of switching systems?
(b) What is the need for telecommunication networks and explain about it? [8+8]
5. (a) Obtain blocking probability for a time space time switch?
(b) Draw the block diagram for memory controlled time division space Switch? [8+8]
6. Differentiate between Inchannel signaling and common channel signaling? [8+8]
7. (a) Discuss about the new services supported by ISDN?
(b) Write about the advantages and disadvantages of geosynchronous satellites? [10+6]
8. (a) Write about the modeling of propagation channel in mobile radio environment?
(b) Discuss about multiple accessing techniques? [8+8]

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1. (a) How will you avoid side bands of one station overlapping with other radio station?
(b) Write short notes on the following:-
 - i. Peak limiters
 - ii. Peak clippers
 - iii. Volume compressors in radio transmitters. [6+4+4+2]
2. Write short notes on:
 - (a) Image frequency and its reduction.
 - (b) Fading and diversity reception.
 - (c) Squelch circuit. [6+6+5]
3. (a) Differentiate between simple, delayed and amplified AGC and explain their action with the help of simple circuits blocks.
(b) Discuss briefly similarities and differences between FM and AM receivers.
(c) Write in detail about the limiter used in FM receiver. [8+4+4]
4. Derive the expressions for availability figures for single and dual processor? [16]
5. Describe about time division space switching and differentiate between analog time division and digital time division switching? [12+4]
6. (a) Write about numbering plan?
(b) Discuss about optical fibre transmission systems? [8+8]
7. (a) Discuss about the motivation for Integrated services digital network (ISDN)?
(b) Write about the advantages and disadvantages of geosynchronous satellites? [10+6]
8. Write about the following
 - (a) Conversational services
 - (b) Messaging services
 - (c) Retrieval services in B-ISDN
 - (d) Cell splitting [4+4+4+4]

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1. (a) Study the functions of peak clippers and peak limiters. [3+3]
(b) Explain SSB transmission with its merits and demerits. [4]
(c) What is the function of Master oscillator in RF section of a radio transmitter. [6]
2. (a) Distinguish between simple AGC and delayed AGC.
(b) Draw a block diagram of a superheterodyne receiver and explain the function of each stage.
(c) What is meant by the term "tracking error"? Explain. [6+6+4]
3. (a) Define the terms
 - i. sensitivity
 - ii. selectivity
 - iii. fidelity and
 - iv. noise figure of a radio receiver. [2++2+1+1]
(b) Explain with a diagram, the procedure for measurement of the above. [4]
(c) Write about variable selectivity and sensitivity [3+3]
4. (a) What are the different source specific telecommunication networks?
(b) Explain about the elements of switching systems? [8+8]
5. Write about the design parameters for time division space switch and compare with that of a space division switch? [12+4]
6. Explain about the architecture of the SS7? [16]
7. (a) Write the differences between the code - division multiple access and frequency division multiple access?
(b) Explain the protocol architecture of ISDN? [8+8]
8. Write about the following
 - (a) Point-to-Point connects
 - (b) Point-to-Multipoint connects
 - (c) Cell splitting

(d) Bursty traffic

[4+4+4+4]

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1. (a) Discuss about long wave, short wave & medium wave radio broadcast transmitter. [4+3+3]
(b) What is amplitude limiters? Where it is used? [2+4]
2. (a) Explain the necessity for AGC in a radio communication.
(b) Discuss the consideration that governs the choice of IF in a receiver.
(c) Explain the operation of superheterodyne receiver. [5+5+6]
3. (a) With reference to an AM superheterodyne receiver explain the need for AGC and indicate simple method of obtaining it. What is delayed AGC circuit and in what respects it differs from a simple AGC circuit. [6+2]
(b) Explain the measurement of sensitivity, selectivity and fidelity of receiver. [3+3+2]
4. (a) How the functions of control subsystem are divided into levels?
(b) Write about the design parameters of switching system? [8+8]
5. (a) Write about practical configurations of time multiplexed time switches?
(b) Differentiate between input controlled time division space switch and output controlled time division space switch? [8+8]
6. (a) Explain about the factors that limit subscriber loop length?
(b) Write about transmission loss budget? [8+8]
7. Write about the following:
(a) Basic rate access?
(b) Primary rate access? [8+8]
8. Explain about cell splitting in mobile radio communications? What are the requirements of cell splitting? Explain about its advantages? [6+6+4]
