

**III B.Tech. II Semester Regular Examinations, April/May -2005**  
**COMMUNICATION SYSTEMS**  
**(Electronics & Communication Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) What is variable capacitor diode modulator? Explain.  
(b) What is FET reactance modulator? Explain with circuit diagram.  
(c) If the output current of AM transmitter is 6A without modulation, what is the output current when the percentage modulation is 70.
2. (a) Explain in detail the alignment and tracking of a radio receiver.  
(b) Draw a practical diode detector and explain.  
(c) Explain why local oscillator frequency should be higher than signal frequency.
3. (a) Explain the function of each block in FM receiver.  
(b) Write a survey of the desirable features of communication receivers and briefly explaining the operation of each where necessary.
4. (a) Write about the three modes of operation in dual processor architecture?  
(b) How the functions of control subsystem are divided into levels?
5. (a) Obtain blocking probability for a two stage time space switch?  
(b) Draw the block diagram for memory controlled time division space Switch?
6. (a) What are the different classes of signaling techniques?  
(b) Write about the functions performed by subscriber loop interface?
7. (a) Write about the advantages and disadvantages of geosynchronous satellites?  
(b) Explain the protocol architecture of ISDN?
8. (a) Write about the modeling of propagation channel in mobile radio environment?  
(b) Discuss about multiple accessing techniques?

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1. (a) Explain the requirements of carrier frequency for a radio transmitter.  
(b) Explain the working of broadcast transmitter?
2. (a) Explain the following special features of communication receiver with circuits wherever necessary:-
  - i. Automatic Gain Control. (AGC)
  - ii. Need of RF section in Superheterodyne Receiver
  - iii. Double Spotting(b) Calculate the image frequency rejection of receiver having an RF amplifier and an IF of 450 KHz if the Qs of the relevant coils are 60 each at an incoming frequency of 1100 KHz.
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.
4. Derive the expressions for availability figures for single and dual processor?
5. (a) Obtain blocking probability for a two stage time space switch?  
(b) Draw the block diagram for memory controlled time division space Switch?
6. Define the following terms
  - (a) Party lines?
  - (b) Concentrators?
  - (c) Carrier System?
7. (a) Discuss about the new services supported by ISDN?  
(b) Write about the advantages and disadvantages of geosynchronous satellites?
8. What is meant by frequency reuse? What are its advantages and disadvantages in mobile radio communications?

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1. (a) Study the functions of peak clippers and peak limiters.  
(b) Explain SSB transmission with its merits and demerits.  
(c) What is the function of Master oscillator in RF section of a radio transmitter.
2. (a) Draw a block diagram of a typical AM receiver and describe briefly function of each block.  
(b) Explain the necessity for:
  - i. Tone and volume control
  - ii. Alignment and tracking in radio receiver What is meant by spurious response of a receiver?
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.
4. (a) What are the advantages with electronic switching?  
(b) Explain about the two approaches to organize stored program control?
5. Describe about time division space switching and differentiate between analog time division and digital time division switching?
6. Differentiate between Inchannel signaling and common channel signaling?
7. (a) Discuss about the motivation for Integrated services digital network (ISDN)?  
(b) Write about the advantages and disadvantages of geosynchronous satellites?
8. (a) Write about the modeling of propagation channel in mobile radio environment?  
(b) Discuss about multiple accessing techniques?

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1. (a) Explain the operation of SSB transmitter with block diagram.  
(b) What is the purpose of RF bypass capacitor in a transmitter  
(c) What is pre-distortor circuit? Explain its operation.
2. Write short notes on:  
(a) Image frequency and its reduction.  
(b) Fading and diversity reception.  
(c) Squelch circuit.
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.
4. (a) Explain about the concept of stored program control?  
(b) Explain about the two approaches to organize stored program control?
5. (a) Explain about various methods of time division switching?  
(b) Explain how time multiplexed space switches does not provide full availability?
6. Explain about the architecture of the SS7?
7. (a) Write the differences between the code - division multiple access and frequency division multiple access?  
(b) Explain the protocol architecture of ISDN?
8. Write about the following  
(a) Conversational services  
(b) Messaging services  
(c) Retrieval services in B-ISDN  
(d) Cell splitting

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