

**III B.Tech II Semester Supplementary Examinations, April/May 2005**  
**COMMUNICATION ENGINEERING**  
**(Electronics & Instrumentation Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) Explain the Costas loop with the block diagram.  
(b) Explain the ring modulator for generation of DSB-SC.
2. (a) Explain clearly envelope detector one method of demodulation of AM wave.  
(b) A certain transmitter radiates 9KW with the carrier unmodulated and 10.125 KW when the carrier is sinusoidally modulated. Calculate the modulation index and percent of modulation. If another sine wave, corresponding to 40
3. (a) Explain the operation of radio transmitter using lower level modulation system  
(b) What is master oscillator? What are the precautions to be taken in designing of master oscillator to reduce frequency drift.
4. (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. (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.
6. (a) Discuss the basic problems involved in the design of digital multiplexer.  
(b) Draw the functional model of pass band data transmission system and explain.
7. What is the main draw back of delta modulation and explain how it is eliminated in Adaptive delta modulation with the help of block diagram and waveforms.
8. (a) Find the expression for noise figure of cascaded amplifier stages.  
(b) An antenna with temperature of 300K is fed into a receiver with total gain of 80db.  $T_e = 1500$  K and a bandwidth of 3 MHz
  - i. Find the available noise power at the output of the receiver.
  - ii. Find the necessary signal at antenna terminus also such that SNR is 50 db.

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