Q.P. Code : **5705**

(3 Hours) [Total Marks : 80

N.B. :1) Question No. 1 is compulsory.
2) Attempt any **three** questions out of the remaining **five** questions.
3) Assume suitable data is necessary.

1 Solve any four :
   a) What is modulation ? Explain the need of modulation.
   b) Explain Pre - emphasis and De - emphasis in FM.
   c) Define sensitivity, selectivity, fidelity and image frequency in radio receiver.   20
   d) What are the causes of fold over distortion or aliasing ? How can it be prevented or removed.
   e) Explain companding in detail.

2 (a) Derive Friss formula for calculation of total noise figure, if two amplifiers are connected in cascade.

  (b) Draw the block diagram of phase cancellation SSB generator and explain how carrier and unwanted sidebands are suppressed ?

3 (a) With the help of a neat block diagram explain the principle and generation of indirect method of FM generation.   10

  (b) Draw and explain Adaptive delta modulation transmitter and receiver with its advantages.   10

4 (a) An AM transmitter radiates 5 MHZ carrier with 80KW power, carrier is   10
modulated by 600HZ and 2 KHZ signals.
   1.   What will be the total modulation index if each signal modulates at   10
60 % of modulation ?
   2.   Determine the transmitted power.
   3.   Draw the frequency spectrum of modulated signal.   10
   4.   What is % of power saving if one of the sideband and carrier is suppressed?

  (b) What is signal multiplexing ? Explain FDM in detail.   10

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5 (a) Explain the operation of Foster Seeley discriminator with the help of circuit   10
.diagram and phasor diagram.

(b) Explain with block diagram and waveform of AM Super - heterodyne radio   10
receiver.

6 Write a short notes on (solve any four) .   20
(a) Aliasing error and aperture effect.
(b) Applications of pulse communication.
(c) Practical diode detector.
(d) ISB receiver.
(e) Wide band FM and Narrow band FM.