

17316

14115

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Assume suitable data, if necessary.
- (4) Use of Non-programmable Electronic Pocket Calculator is permissible.
- (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any **SIX** of the following :

12

- (i) List any four types of microphones.
- (ii) Draw neat circuit diagram of stereo control.
- (iii) Define –
- (1) Frequency modulation
- (2) Modulation index for FM
- (iv) State operating principle of optical recording.
- (v) List two advantages and two disadvantages of compact disc (CD).
- (vi) State any four selection criteria of microphone.
- (vii) List different tone controls.
- (viii) List any two characteristic of audio amplifier.

P.T.O.

b) Attempt any TWO of the following :**8**

- (i) A broadcast AM transmitter radiates 50 KW of carrier power. What will be the radiated power at 85% modulation.
- (ii) Compare AM and FM on the basis of –
 - (1) Bandwidth
 - (2) No. of sidebands
 - (3) Modulation index
 - (4) Power in sideband.
- (iii) Compare pre-emphasis and de-emphasis process (any four point)

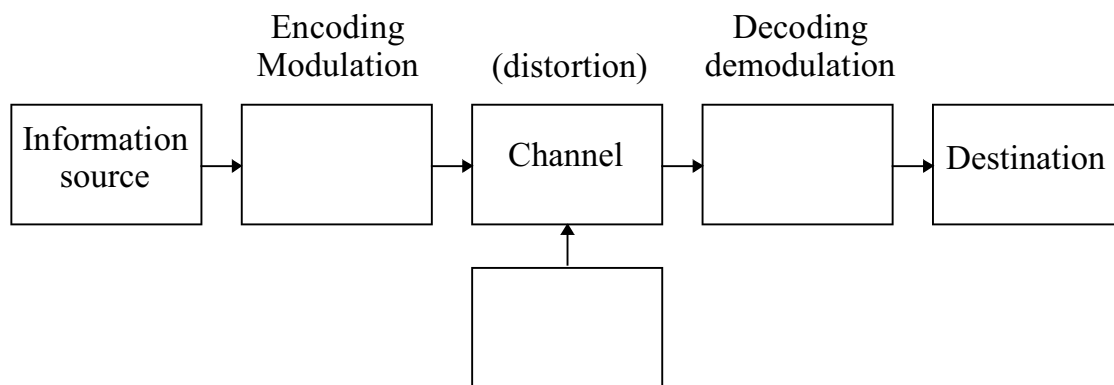
2. Attempt any FOUR of the following :**16**

- a) Draw neat circuit diagram of 3 way speaker system, describe its operation.
- b) Draw neat block diagram of detection circuit, state its operating principle.
- c) With the help of neat diagram, of PA system describe function of each block.
- d) What is the role of detection circuit in CD player. State its operating principle.
- e) Describe how DSBSC AM signal is generated by diode balance modulator, with neat dia.
- f) Define –
 - (i) Phase modulation
 - (2) Modulation index for PM

3. Attempt any **FOUR** of the following :

16

- Derive mathematical equation for total power in AM.
- Define modulation, why it is needed ?
- What is the bandwidth required for an FM signal in which the modulating frequency is 2 KHz and maximum deviation is 10 KHz ?
- Redraw the given diagram with proper nomenclature. Write function of channel. Refer Fig. No. 1.

**Fig. No. 1**

- Compare dolby A and dolby B system on the basis of –
 - Operating principle
 - SNR
 - Bands
 - Advantages
- Draw neat diagram of reactance modulator. Write operating principle of it.

- 4. Attempt any FOUR of the following :** **16**
- a) Draw neat block diagram of FM transmitter. Write function of each block.
 - b) Give detail classification of modulation.
 - c) List any four specifications of PA system.
 - d) Give constructional details of ribbon microphone with neat diagram.
 - e) Compare monophony and stereophony (any four points)
 - f) Why are pre-emphasis and de-emphasis circuits used for noise reduction ? (any 4 points)
- 5. Attempt any FOUR of the following :** **16**
- a) Draw frequency spectrum of FM wave. How are significant sidebands determined ?
 - b) Draw block diagram of AM transmitter, write function of antenna.
 - c) With the help of waveform show,
 - (i) 100% modulation
 - (ii) Undermodulation
 - (iii) Overmodulation
 - d) Write the causes which affect the fidelity ? How can they be minimized ?
 - e) Compare woofer and tweeter on the basis of –
 - (i) Operating frequency
 - (ii) Size
 - (iii) Connectivity with 'L' filter
 - (iv) Handling Bass or treble
 - f) With neat diagram, describe generation of SSB AM signal using the third method.

6. Attempt any FOUR of the following :**16**

- a) Draw neat diagram of moving coil cone type loudspeaker. Write its operating principle.
 - b) What is graphic equalizer ? Draw it.
 - c) Enlist the necessity of public address system.
 - d) Compare push-pull amplifier and complementary symmetry push-pull amplifier (any four point)
 - e) Draw block diagram of Hi-fi system. List any two application of it.
 - f) Draw block diagram of Armstrong frequency modulator state its operating principle.
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