



# 17316

**21718**

**3 Hours / 100 Marks**

Seat No.

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**Instructions :** (1) *All questions are compulsory.*  
(2) *Figures to the right indicate full marks.*

**Marks**

**1. A) Attempt any six :**

**12**

- Define overtone and timbre.
- List any four characteristics of loudspeaker.
- Draw neat circuit diagram of Bass and treble control.
- Define frequency modulation and modulation index of FM.
- State the principle of magnetic recording.
- List any four advantages of CD's.
- List the different controls of Audio amplifier.
- Draw a neat labeled circuit diagram of single stage power amplifier.

**B) Attempt any two :**

**8**

- A 500 watt carrier is modulated to depth of 80%.  
Calculate :
  - Total power in AM wave
  - Power in sidebands.
- In FM, if the maximum deviation is 75 KHz and max. modulating frequency is 10 KHz.  
Calculate modulation index of FM.
- Describe optical recording of sound on film with neat diagram.

**2. Attempt any four :**

**16**

- Draw and explain two way crossover network.
- Describe Dolby-A method of noise reduction.
- Draw and explain block diagram of PA system.
- Draw neat sketch and explain step by step procedure of preparation of CD's on large scale.
- Compare AM and FM (any 8 points).
- Draw the block diagram of high level AM transmitter and state the function of each block.

**P.T.O.**

**3. Attempt any four :****16**

- a) Derive the mathematical equation for total power in AM.
- b) Draw AM wave in frequency and time domain.
- c) Explain with neat diagram, the generation of FM wave using reactance modulator.
- d) Explain block diagram of communication system.
- e) Draw and explain the block diagram and operation of optical recording on CD.
- f) Explain the neat block diagram of Armstrong frequency modulator system.

**4. Attempt any four :****16**

- a) Define phase modulation and modulation index of PM.
- b) Define modulation and state the need of modulation.
- c) State the need of PA system. State any four applications of PA system.
- d) Draw and describe the working principle of moving coil microphone.
- e) Draw the block diagram of Hi-Fi system and explain the function of each block.
- f) Explain the block diagram of detection circuit used in CD player.

**5. Attempt any four :****16**

- a) Explain the effect of modulation index on bandwidth of FM with neat sketch.
- b) Explain with neat sketch, the generation of SSB-AM wave using phase shift method.
- c) Draw neat diagram of Ribbon microphone. State its two applications.
- d) Draw and explain the working of complementary symmetry push-pull amplifier.
- e) State the 1 application of each specified microphones :
  - i) Lavalier microphone
  - ii) Tie-clip microphone
  - iii) Shotguns type microphone
  - iv) Wireless microphone.
- f) Draw and explain generation of DSBSCAM signal using diode balanced modulator.

**6. Attempt any four :****16**

- a) Describe construction and working principle of horn type loudspeaker.
  - b) Draw and explain operation of stereo controls used in Hi-Fi system.
  - c) Explain how will you install PA system for public meeting.
  - d) Compare monophony and stereophony (any 4 points).
  - e) Write the causes which affect the fidelity. How it can be minimized ?
  - f) Explain with neat sketch, the generation of FM wave using varactor diode modulator.
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