



17316

21415

3 Hours/100 Marks

Seat No.

--	--	--	--	--	--	--	--	--	--

- Instructions :**
- (1) **All questions are compulsory.**
 - (2) Answer **each** next main question on a **new page**.
 - (3) Illustrate your answers with **neat sketches wherever necessary.**
 - (4) Figures to the **right** indicate **full marks.**
 - (5) **Assume** suitable data, if **necessary.**
 - (6) **Use of non-programmable electronic pocket calculator is permissible.**
 - (7) **Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.**

MARKS

1. A) Attempt **any six :** **(6×2=12)**
- i) State the audibility range.
 - ii) Draw neat circuit diagram of balance control circuit.
 - iii) Compare AM with FM (any 4 pts.).
 - iv) List any four advantages of CD's.
 - v) Draw neat diagram showing variable density method and optical recording.
 - vi) With neat sketch, define the term directivity of mic.
 - vii) What are the functions of BASS and treble controls in an amplifier ?
 - viii) List any four requirements of Hi-Fi amplifier.
- B) Attempt **any two :** **(2×4=8)**
- i) Draw neat sketch showing AM waveform for $m > 1$ and $m = 1$.
 - ii) When the modulating frequency in FM system is 400 Hz and modulating voltage is 2.4 V, the modulation index is 60. Calculate maximum deviation ?
 - iii) Draw neat sketch and explain reproduction of sound from films.
2. Attempt **any four :** **(4×4=16)**
- a) Draw neat circuit diagram of three way cross over network and explain its working.
 - b) Draw neat sketch and explain step by step procedure of preparation of CD's on large scale.
 - c) Draw neat block diagram PA system and give function of mixer.
 - d) Define and explain the terms : preemphasis and deemphasis.
 - e) Explain the need of modulation.
 - f) Explain generation of FM wave using varacter diode modulator.

P.T.O.

**MARKS**

3. Attempt **any four** : **(4×4=16)**
- a) A broadcast AM transmitter radiates 50 kW of carrier power. What will be the power radiated at 85% modulation ?
 - b) Derive the mathematical expression for power relation in AM.
 - c) Draw neat block diagram of Atmstrong frequency modulation technique.
 - d) Define amplitude modulation and modulation index.
 - e) Explain Dolby-A system of noise reduction.
 - f) Draw neat diagram of FM transmitter and explain any two block of it.
4. Attempt **any four** : **(4×4=16)**
- a) Compare AM with FM (any 4 points).
 - b) Draw time domain spectrum and frequency domain spectrum.
 - c) Draw neat sketch and explain installation of PA system in an auditorium.
 - d) Draw neat sketch showing constructional details of dynamic microphone and list its four characteristics.
 - e) Draw neat circuit diagram of class B push pull amplifier and explain its working.
 - f) Explain principles of magnetic recording.
5. Attempt **any four** : **(4×4=16)**
- a) Derive the formula for instantaneous value of FM voltage and modulation index.
 - b) Draw neat block diagram of AM transmitter and state function of each block.
 - c) Explain the concept of tie clip microphone and state its applications.
 - d) Draw neat circuit diagram and explain operation of complementary symmetry push-pull amplifier.
 - e) Define reverberation. State its necessity.
 - f) Explain the concept of vestigial sideband.
6. Attempt **any four** : **16**
- a) Draw neat sketch showing construction of condensermicrophone and explain its operation.
 - b) Explain operation of BASS control circuit with the help of neat circuit diagram.
 - c) What precautions will you take while installing PA system (explain any four).
 - d) Differentiate between monophonic and stereophonic system (any 4 points).
 - e) List various causes affecting fidelity of the system. What are their remedies ?
 - f) Explain the difference between frequency and phase modulation. (any 4 pts.)
-