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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**: **12**

a) Define the term Reverberation.

b) Draw neat circuit diagram of tone control circuit (Bass and treble).

c) List any four advantages of FM over AM.

d) Give the principle of optical recording.

e) List following basic specifications of CD technology :

i) Track width

ii) Track pitch

iii) Sampling frequency and

iv) Bit rate

f) Draw neat circuit diagram showing constructional details of ribbon microphones.

g) State functions of balance control and master gain control in an hi-fi audio amplifier.

h) List any four characteristics of a Hi-Fi system.

Marks

B) Attempt **any two** : **8**

a) Define amplitude modulation. Explain need for modulation.

b) What is the B.W. required for F.M. in which maximum deviation is 5KHz and modulation index is 3 ? Assume highest needed sidebands are 6.

c) Draw neat diagram of optical pickup unit used in CD player.

2. Attempt **any four** : **16**

a) Draw neat diagram and explain operation of 3 way crossover network.

b) Draw neat diagram of optical pickup unit used in CD player and label all components.

c) With neat sketch, explain installation of PA system for public meeting.

d) Describe Dolby's method of noise reduction.

e) Explain the concept of vestigial sideband.

f) With neat sketch, describe frequency spectrum of FM.

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

a) In AM signal with a carrier of 1kW has 200 watts in each sideband. What is the percentage of modulation ?

b) Give equation of AM wave in frequency Domain. Explain the concept of side hands in AM.

c) Draw neat circuit diagram of transistor reactance modulator.

d) Give power relation in AM. State its significance.

e) Explain method of manufacturing CD on large scale.

f) Draw neat circuit diagram and explain generation of FM using varactor diode modulator.

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

a) Draw block diagram of Armstrong Frequency Modulator.

b) Describe need for modulation in communication system.

c) Draw neat block diagram of a PA system. Why the system has tapped o/p transformer ?

Marks

d) Explain any four characteristics of mikes.

e) With neat circuit diagram, explain operation of class B push-pull amplifier.

f) Draw neat block diagram and explain optical recording process in CDS.

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

a) Define phase modulation and its modulation index.

b) Explain generation of DSBSCAM signal using balanced modulator.

c) Give applications of Tie clip Microphone radio Microphone shotguns type microphone and digital interface microphones.

d) Describe the concept of stereophony what is the difference between monophony and stereophony.

e) Give construction and working of horn type loudspeaker.

f) With neat circuit diagram, explain operation of high level collector modulator.

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

a) What are different types of baffles ?

b) Draw circuit diagram of graphic equalizer.

c) State any four requirements of a PA system.

d) Draw neat circuit diagram of class AB amplifier. How cross over distortion is removed here ?

e) Define :

i) Frequency deviation.

ii) Modulation index.

iii) Deviation ratio and

iv) Percentage modulation of FM wave.
