17437

15116

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(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) Define maximum usable frequency and critical frequency.

(ii) Compare ground wave propagation and sky wave propagation. (two points)

(iii) Draw the equivalent circuit for transmission line.

(iv) Define beam width and polarization of antenna. Give requirement of antenna.

(v) Draw the constructional sketch of Yagi Uda Antenna.

(vi) Define sensitivity and selectivity.

(vii) Define intermediate frequency in AM receiver.

(viii) Draw the circuit diagram of ratio detector.

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

(i) Explain with sketch sky wave propogation.

(ii) Describe the term reflection co - efficient and VSWR in standing wave.

(iii) Give the effect on FM receiver if AFC stage is not used.

P.T.O.

Marks

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

a) Describe the space wave propagation with the help of diagram.

b) Draw the equivalent circuit of transmission line. What are the losses in transmission line.

c) Compare resonant and nonresonant Antenna. (Any four points)

d) Draw the constructional sketch of folded dipole and loop Antenna.

e) Draw and explain block diagram of superheterodyne receiver.

f) Draw the block diagram FM detector using PLL with neat lable.

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

a) What is fading? List its major causes.

b) Explain half wave and quarter wave length line.

c) Draw radiation pattern for following resonant dipole.

(i) $l = \lambda$

(ii) $l = \lambda/2$

(iii) $l = 3\lambda/2$

(iv) $l = 3\lambda$

d) Write the working principle of Horn type Antenna with the help of diagram.

e) Draw and explain the working of practical diode detector circuit for AM Receiver.

f) Draw circuit of foster seeley discriminator and state it advantages.

Marks

4. Attempt any FOUR of the following: 16

a) Define the terms Attenuation and Absorption.

b) How the primary constant R, G, L and C effect distornless and minimum attenuation condition of transmission line.

c) Calculate the length of Half wave dipole antenna design to operate at a frequency of 100 MHZ.

d) Describe the method of rejecting the image signal frequency and also describe the effect of image signal on radio receiver.

e) State and explain different types of AGC. Describe the importance of AGC in AM receiver with help of simple AGC circuit.

f) Draw circuit diagram of amplitude limiter and describe it operation.

5. Attempt any FOUR of the following: 16

a) Describe the virtual and actual height in sky wave propagation.

b) Derive the relation between reflection co - efficient (k) and VSWR (s).

c) Compare focal feed and cassegrain feed parabolic reflector on the basis of diagram and feed mechanism.

d) Draw the block diagram of Tuned radio frequency receiver and state its drawbacks.

e) What is the effect on the output of AM radio receiver? If RF alignment in AM radio receiver is absent.

f) Draw the basic block diagram of FM receiver and explain the function of limiter.

Marks

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

a) Describe balanced and unbalanced lines with neat diagram.

b) Describe the term directive gain and directivity of the antenna with the help of Mathematical expression.

c) Draw the constructional sketch of parabolic antenna with cassegrain feed and draw its radiation pattern.

d) Describe the importance of frequency tracking in AM receiver.

e) Define the term fidelity and dynamic range of AM receiver.

f) Compare balanced slope detector and phase discriminator on the basis of

(i) Allignment

(ii) Output characteristatic

(iii) Linearty of output characteristics

(iv) Application