

17439

21415

3 Hours / 100 Marks

Seat No.

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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) Use of Non-Programmable Electronic Pocket Calculator is permissible.
- (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX of the following :

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- (a) Define transmission bandwidth and give its formula.
- (b) Define deviation ratio and state its formula for frequency modulation.
- (c) Define skip distance and maximum usable frequency with suitable sketch.
- (d) Define beamwidth and directivity for antenna.
- (e) Define selectivity and sensitivity for AM radio receiver.
- (f) What do you mean by aspect ratio ?
- (g) State working principle of camera tube.
- (h) Give the applications of CCTV.

(B) Attempt any TWO of the following :

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- (a) State the need of modulation.
- (b) Draw AM and FM in time domain and frequency domain.
- (c) Describe the concept of pre-emphasis and deemphasis with the help of neat diagram.

P.T.O.

2. Attempt any FOUR of the following : 16

- (a) A 10 kW carrier wave is amplitude modulated at 80% depth of modulation by a sinusoidal modulating signal. Calculate the sideband power, total power and transmission efficiency of the AM wave.
- (b) Draw a neat sketch and describe the working of reactance modulator for FM generation.
- (c) (i) Draw the waveforms of PAM, PWM and PPM.
(ii) State the bandwidth requirements for FM.
- (d) What is the importance of electronic communication ?
- (e) Describe Duct propagation.
- (f) Describe with neat diagram the concept of actual height and virtual height related to wave propagation.

3. Attempt any FOUR of the following : 16

- (a) Define PWM and describe generation of PWM by using IC 555.
- (b) What do you understand by transverse electromagnetic wave ? Draw electromagnetic spectrum.
- (c) Compare dish antenna and horn antenna for four points.
- (d) Define and describe folded dipole antenna with the help of its radiation pattern.
- (e) Define antenna. What do you mean by resonant and non-resonant antennas. State different types of antennas.
- (f) (i) Define : Half wave dipole antenna & draw its radiation pattern.
(ii) Draw Yagi – Uda antenna and its radiation pattern.

4. Attempt any FOUR of the following : 16

- (a) Describe simple AGC and delayed AGC with the help of graph.
- (b) Describe with neat diagram practical diode detector.
- (c) Describe with neat diagram balanced slope detector in detail.
- (d) Draw PLL as FM demodulator circuit and state its working principle.
- (e) Draw the block diagram of AM superheterodyne receiver and describe its working.
- (f) Describe the concept of interlaced scanning with neat sketch.

5. Attempt any FOUR of the following : 16

- (a) What do you mean by image frequency and its rejection ?
- (b) Describe the working of FM superheterodyne receiver with help of block diagram.
- (c) Draw and describe with proper diagram vestigial sideband transmission.
- (d) List any 8 CCIR-B standards for colour signal.
- (e) Define :
 - (i) Viewing distance
 - (ii) Luminance
 - (iii) Hue
 - (iv) Saturation
- (f) State necessity of equalizing pulses. Describe pre equalizing and post equalizing pulses.

6. Attempt any FOUR of the following : 16

- (a) Define :
 - (i) Pedestal height
 - (ii) Blanking pulse
 - (iii) Colour burst
 - (iv) Horizontal sync pulse
 - (b) Describe with neat diagram working of plumbicon camera tube.
 - (c) Draw and describe block diagram of colour TV transmitter.
 - (d) Draw the neat diagram of PAL-D receiver.
 - (e) Draw the diagram of colour picture tube. Describe its working principle.
 - (f) Compare CATV and CCTV with any four points.
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