

# 17438

**15116**

**3 Hours / 100 Marks**

Seat No.

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

- Instructions* – (1) All Questions are *Compulsory*.  
(2) Illustrate your answers with neat sketches wherever necessary.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data, if necessary.  
(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:** **12**
- (i) Define the term:
    - 1) noise voltage
    - 2) noise figure
  - (ii) Give details of geostationary satellites about, location of satellite, distance, viewing point.
  - (iii) State the meaning of:
    - 1) hub
    - 2) repeater in connection to network topology.
  - (iv) Draw waveform of:
    - 1) ASK
    - 2) FSKfor digital data - 10110.
  - (v) Draw block diagram of FDM system.
  - (vi) Draw a concept of cell pattern and cell.

P.T.O.

- (vii) State two advantages of:
- 1) TDM
  - 2) FDM
- (viii) Define up link and down link frequency and state their values.

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

- (i) Draw a block diagram for generation of ASK. Also state two advantages.
- (ii) Define the term:
- 1) Co-channel interference
  - 2) Adjacent channel interference
  - 3) Cell splitting
  - 4) Sectoring in connection to cellular telephone.
- (iii) Draw diagram of:
- 1) mesh
  - 2) star
  - 3) bus
  - 4) ring network topology.

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

- a) Differentiate between AM and FM on the basis of definition, waveform, bandwidth, modulation index.
- b) Draw a block diagram of natural sampling and flat top sampling. Also draw their i/p and o/p waveform.
- c) Draw waveform for polar RZ and NRZ for the digital data 10101011.
- d) With the help of block diagram explain the working principle of PCM.
- e) Draw AM diode detector circuit. State its working and draw waveform at various points such as i/p, o/p of diode, o/p of filter.
- f) State any four advantages of pulse modulation over amplitude modulation.

- 3. Attempt any FOUR of the following:** **16**
- a) Draw a block diagram for generation of PAM also state two advantages and disadvantages.
  - b) If the carrier has a peak amplitude of 4V modulated by sine wave of 3V. Calculate the modulation index of AM signal.
  - c) With the help of neat sketch explain the call processing from mobile to wire line phone.
  - d) Draw a block diagram of BPSK generation. State its working principle with the help of suitable waveform.
  - e) Draw the circuit and waveform for emitter modulator for AM generation.
  - f) State two advantages and disadvantages of tele medicine.
- 4. Attempt any FOUR of the following:** **16**
- a) Draw a block diagram and explain the working of mobile communication system.
  - b) With the help of suitable sketch explain the call processing from mobile to mobile cell.
  - c) Explain the concept of:
    - (i) message confidentiality
    - (ii) message integrity
  - d) Explain the operation of:
    - (i) bridges
    - (ii) routers
  - e) Draw a block diagram and state the working of tele radiology.
  - f) State the concept of tele psychiatry and tele dermatology.

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

- a) With the help of block diagram explain the working of:
  - (i) serial
  - (ii) parallel mode of data transmission.
- b) Explain architecture of OSI model.
- c) Write a short note on:
  - (i) LAN
  - (ii) WAN
- d) Define the term:
  - (i) satellite orbit
  - (ii) elevation angle
  - (iii) foot print
  - (iv) station keeping
- e) State the working of:
  - (i) bus
  - (ii) ring topology. Also state two advantages and disadvantages.
- f) Draw a block diagram of biotelemetry system and state the function of each block.

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

- a) Draw the waveform for manchester and differential manchester technique for the digital data 10011101.
  - b) With the help of block diagram explain the working of delta modulation.
  - c) Draw block diagram of DPSK and Draw suitable i/p and o/p waveforms.
  - d) Draw a block diagram and state working principle of TDMA system. State two advantages.
  - e) With the help of suitable diagram explain the working principle of Up link model and down link model.
  - f) State two advantages and disadvantages of CDMA over FDMA.
-