17472

11718

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**

i) Draw the block diagram of PAM. **2**

ii) Define orbit with reference to satellite. **2**

iii) Calculate the power in AM signal for modulation of (a) 100% and (b) 50%. **2**

iv) What is multiplexing ? State its signification in telecommunication. **2**

v) Draw sketch of mesh and ring topology. **2**

vi) Define :
1) Total internal reflection. 2) Numerical aperture. **2**

vii) Draw the waveform for binary data 10011011 using following encoding technique. **2**
1) AMI 2) Polar RZ.

viii) Define noise and noise figure. **2**

b) Attempt **any two** : **8**

i) Draw the block diagram of PCM transmitter. Write its working. **4**

ii) Draw the waveform for binary data 10110010 using following encoding technique : **4**
i) Polar NRZ-L ii) Differential Manchester. iii) Bipolar RZ iv) Pseudotenary

iii) Compare AM, FM and PM on basis of following parameter. **4**
1) Bandwidth 2) Modulation index 3) Waveform 4) Noise immunity

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

a) Draw generation block diagram of PWM and explain its working principle. **4**

b) Write the mathematical expression for FM wave and define modulation index of it. **4**

c) Describe working principle of TDM. State its two application. **4**

d) Draw block diagram of satellite system. State advantage, disadvantage of Geostationary satellite. **4**

e) Describe cell splitting technique with proper cell diagram used in mobile communication. **4**

f) The carrier amplitude of AM varies between 5 volts and 2 volts. Calculate modulation index of AM. **4**

P.T.O.

Marks

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

a) What are the advantages of pulse modulation over continuous wave modulation ? **4**

b) With the help of block diagram explain DPSK modulator. **4**

c) Compare LED and LASER with respect to : **4**

i) Spectral width ii) Information capacity

iii) Temperature dependence iv) Output power

d) State different frequency band used for satellite communication with their uplink and downlink frequency. **4**

e) Describe the working of mobile communication with the help of block diagram. **4**

f) State step by step call procedure from wireline (PSTN) to mobile call. **4**

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

a) Draw the circuit of diode detector. State its working with waveform. **4**

b) Draw the generation block diagram of BPSK. State its working with waveform. **4**

c) Explain the working principle of TDMA with diagram. **4**

d) State any four advantage of optical fiber cable. **4**

e) Write working principle of synchronous and asynchronous data transmission with schematic diagram. **4**

f) Define the term handoff. Give step involved in handoff process and state its type. **4**

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

a) Draw block diagram of delta modulator and state function of each block. **4**

b) What is slope overload distortion in DM ? How it is minimized in ADM show with waveform ? **4**

c) Define following terms related to satellite communication. **4**

a) Azimuth angle b) Station keeping

d) State the function of following device. **4**

i) HUB ii) Repeater iii) Router iv) Gateway

e) Draw the block diagram of modem. Explain the function of each block. **4**

f) Describe parallel mode of data transmission. **4**

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

a) Draw BPSK and QPSK waveform for bit sequency 10011001. **4**

b) Draw the block diagram of optical fiber communication system. Explain function of each block. **4**

c) Describe losses in optical fiber due to bending. **4**

d) Explain with example the concept of MAN. **4**

e) Draw architecture of OSI model, explain the function of any three layers. **4**

f) Compare LEO, MEO, GEO on the basis of **4**

1) Height from the earth 2) Revolution speed

3) Coverage area 4) Application.