17438

21314

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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any <u>SIX</u> of the following:** **12**

i) What is foot print and station keeping as applicable to satellite?

ii) What is co-channel and adjacent channel interference?

iii) What is the need of modulation.

iv) State the fundamentals of Networks such as WAN, LAN and MAN.

v) Draw the block diagram for generating of FSK

vi) Draw architecture of OSI layer Model.

vii) State the advantages of PCM techniques.

viii) Define TDM? Where it is used.

Marks

b) **Attempt any <u>TWO</u> of the following:** **08**

i) Compare TDM, FDM and WDM on following points. Definition, schematic diagram, advantage and disadvantage.

ii) Explain concept of cell pattern, frequency rinse and cell splitting.

iii) Explain synchronous and asynchronous modes of data transmission.

2. Attempt any <u>FOUR</u> of the following: **16**

a) State the meaning of the terms -

i) sectoring and

ii) segmentation and dualization

b) State two advantages of pulse amplitude modulation over pulse width modulation. Draw wave forms of PAM and PWM.

c) Draw block diagram and describe the working of mobile communication.

d) Explain following data encoding techniques unipolar NRZ, polar-NRZ and RZ.

e) Explain the following terminology related to noise -

i) source to noise

ii) signal to noise ratio (SNR)

f) Define of DAM, FM and PM and also give the band width, modulation index.

Marks

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

a) How PPM is obtained from PWM? State any two advantages of PPM?

b) Explain noise figure. What is ideal and practical values of noise figure? Why they are so, explain.

c) Write step by step procedure for cellular call processing from Mobile (cellular) to Mobile (cellular).

d) What is BPSK. State its principle. Draw the block diagram to generate BPSK.

e) Explain FM modulation ckt using varactor diode.

f) State the basic concept of the following -

i) tele surgery

ii) tele psychiatry

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

a) Explain the Manchester and differential Manchester data encoding techniques.

b) Draw the block diagram of delta modulation and describe its working principle.

c) State the meaning of terms.

i) Digital signature

ii) Message confidentiality

iii) Integrity

iv) Entity authentication

d) Describe the concept of routers and gateways.

e) Draw the block diagram and describe the working of single channel bioelemetry system for ECG.

f) Draw the block diagram and describe working of Tele radiology.

Marks

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

a) Explain the concept and operating of hubs repeaters.

b) Compare mesh and star topology with respect to

i) Arrangement of nodes

ii) Standards used

c) What are different types of data transmission compare parallel and serial transmission.

d) Explain the working principle of uplink model in satellite communication. Describe its operation with block diagram.

e) Write any four advantage and disadvantage of Bus and RINC topology.

f) Draw the block diagram of tele cardiology and describe its working.

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

a) What are different types of satellite orbits. What is geostationary satellite.

b) Draw block diagram of adaptive delta modulation and describe its working.

c) Draw the block diagram of satellite communication. State the frequency brands used in satellite communication.

d) A voice signal of telephone (0 to 4 khz) is to be digitized using PCM. cal -

i) Nyquist rate

ii) No. of quantization

levels to encode each sample into 7 bits ASCII code.

e) State 4 advantage and disadvantage of FDMA and CDMA.

f) State the working principle of ASK. State its advantages and disadvantages.

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