

17472

14115

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) 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 :

2 × 6 = 12

- State two advantages and disadvantages of PWM.
- Define footprint and station keeping in satellite communication.
- Calculate the power in AM signal for the modulation of (a) 100% and (b) 50%.
- State two advantages and two disadvantages of FDM.
- Draw sketches of mesh and ring network topology.
- Draw constructional diagram of fiber optic cable and label it properly.
- Define amplitude modulation and modulation index in AM.
- What is multiplexing ? State its types.

(B) Attempt any TWO :

2 × 4 = 8

- Define BPSK and ASK with waveform.
- Describe TDM with suitable block diagram.



P.T.O.

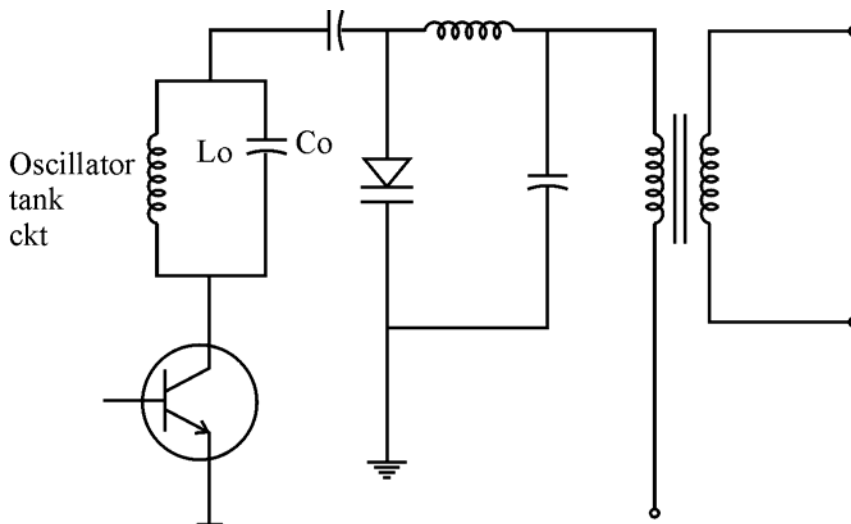
(c) Draw well labelled waveform of the following signals :

- (1) Modulating signal
- (2) Unmodulated carrier signal
- (3) 50% modulated wave
- (4) 100% modulated AM wave

2. Attempt any FOUR :

4 × 4 = 16

- (a) Draw the block diagram of generation of PPM and its working.
- (b) What is uplink and downlink frequency in satellite communication ? Explain with neat diagram.
- (c) Explain the concept of cell splitting.
- (d) Encode the binary data 10010010 into return to zero, non-return to zero (NRZ), NRZ, RZ, AMI Manchester code.
- (e) Compare AM, FM, PM on the basis of following parameters :
 - (1) Bandwidth
 - (2) Modulation Index
 - (3) Waveform
 - (4) Noise immunity
- (f) Identify the given ckt. and redraw it with properly labelled components and explain its working.



3. Attempt any FOUR :**4 × 4 = 16**

- (a) Draw block diagram of PCM transmitter. Write its working.
- (b) Define the term handoff. Give steps involved in handoff process and state its types.
- (c) Write difference between PCM, Delta Modulation, Adaptive Delta Modulation for four points.
- (d) Compare LED and LASER for two points.
- (e) Draw block diagram of satellite communication system.
- (f) Describe the working of mobile communication with the help of block diagram.

4. Attempt any FOUR :**4 × 4 = 16**

- (a) The carrier amplitude after AM varies between 4 volts and 1 volt. Calculate modulation of AM.
- (b) Draw block diagram of Delta modulation and state function of each block.
- (c) Draw the block diagram of optical fiber communication system. Explain function of each block.
- (d) Give the different frequency bands used in satellite communication.
- (e) State the sequential steps for wire line (PSTN) to mobile (cellular) call procedure.
- (f) Define synchronous and asynchronous data transmission give one example of each.

5. Attempt any FOUR :**4 × 4 = 16**

- (a) Draw block diagram of DPSK generation. State function of each block.
- (b) Compare ASK, FSK, PSK on the basis :
 - (1) Bandwidth
 - (2) Waveform
 - (3) Noise immunity
 - (4) Variable parameter

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- (c) Why uplink and downlink frequency are different in satellite communication ? Give reason.
- (d) Describe parallel data transmission with neat diagram.
- (e) State uses of hubs, repeaters bridges and routers.
- (f) Draw architecture of OSI model and describe its all layers.

6. Attempt any FOUR :

4 × 4 = 16

- (a) Draw the diagram of PIN photodiode. Write its working principle.
 - (b) Explain different losses in fiber optic communication.
 - (c) Which error is occurred in Delta Modulation ? How to reduce this error in any other system ? Explain.
 - (d) Differentiate between FDMA, TDMA, CDMA on the basis of following parameter :
 - (1) Multiplexing Techniques
 - (2) Power efficiency
 - (3) Synchronization
 - (4) Guard band
 - (e) Describe message confidentiality and entity authentication in network security.
 - (f) Write electrical characteristics of RS-232 standard.
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