22336

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Attempt all questions including Question No. 1 which is compulsory.

(3) Answer each next main Question on a new page.

(4) Illustrate your answers with neat sketches wherever necessary.

(5) Figures to the right indicate full marks.

(6) Assume suitable data, if necessary.

(7) Use of Non-programmable Electronic Pocket Calculator is permissible.

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

Marks

1. Attempt any FIVE of the following : **10**

(a) List any two types of twisted pair cable connectors.

(b) Draw a schematic of star topology.

(c) Define :

(i) Serial communication

(ii) Parallel communication

(d) Name any two light source devices and any two light detector devices.

(e) Sketch HART communication protocol.

(f) State any two advantages of client server model over peer-peer model.

(g) List different sources of noise.

2. Attempt any THREE of the following : **12**

(a) State the functions of Router and Gateway.

(b) Describe the block diagram of a basic communication system. State the function of each block.

(c) Construct mesh and star network for 6 node.

(d) Describe with sketch of foundation field bus protocol architecture.

3. Attempt any THREE of the following : **12**

(a) State the functions of the pins in RS232 Communication interface standard.

(b) Describe the various modes of propagation in a fiber optic cable with suitable diagram.

(c) Draw and describe MODBUS message frame.

(d) Compare PAM, PWM and PPM on the following parameters :

(i) Working principle (ii) Advantages

(iii) Applications (iv) Waveforms

4. Attempt any THREE of the following : **12**

(a) Describe with broad specifications the software and hardware requirement to setup HART system.

(b) Give the functions of data link layer and network layer of the OSI reference model.

(c) Compare : Half duplex and full duplex communications modes (any four points).

(d) Draw labelled diagram of coaxial cable. List its advantages and disadvantages.

(e) Draw block diagram of TDM to show multiplexing of three signals A, B and C.

5. Attempt any TWO of the following : **12**

(a) For a PCM transmitter :

(i) Draw the labelled block diagram.

(ii) Describe the function of each block by taking a suitable analog signal as the input.

(b) It is required to control an instrumentation system in a network with computer located over a long distance of 100 km.

(i) State the type of transmission medium that should be used.

(ii) Justify by describing its features.

(iii) State two merits of the transmission medium used.

(c) Draw the layered architecture of TCP/IP model and state the function of each layer.

6. Attempt any TWO of the following : **12**

(a) Explain physical, data link & application layers with respect to profibus.

(b) Define bandwidth with reference to analog signal and digital signal. State the bandwidth requirement for the following :

(i) ASK (ii) FSK

(iii) BPSK (iv) QPSK

(c) Compare LAN, MAN and WAN (any six points).
