22232

3 Hours / 70 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.   Attempt any FIVE of the following :   **5 × 2 = 10**

(a)   Define the terms modulation and demodulation.

(b)   Define Bandwidth with reference to analog transmission and digital transmission.

(c)   Classify computer networks on the basis of scale.

(d)   Define Acceptance angle and Numerical Aperture with reference to fibre optic cable.

(e)   State two features of HART.

(f)   State two applications of Broadcast communication.

(g)   State two features of Devicenet.

2. Attempt any THREE of the following : $3 \times 4 = 12$

(a) Explain Half duplex and Full Duplex communication modes with examples.

(b) For the data stream 10110110, draw FSK waveforms and explain.

(c) Explain the principle of working of WDM. State two applications.

(d) There are 6 computers. Draw a sketch to connect them in Mesh topology and Star topology. State the advantages of Star topology over Mesh topology.

3. Attempt any THREE of the following : $3 \times 4 = 12$

(a) Encode the bit stream 10011011 using Polar RZ, Unipolar NRZ, Manchester and AMT encoding schemes.

(b) Explain with ray diagram, the direction of the reflected ray, when

(1) angle of incidence < critical angle

(2) angle of incidence = critical angle

(3) angle of incidence > critical angle

Name the principle connected to this.

(c) Draw the TCP/IP Protocol architecture and state the function of Internet layer.

(d) Draw the Seven layered architecture of OSI reference model. State the function of Data link layer and transport layer.

4. Attempt any THREE of the following : $3 \times 4 = 12$

(a) With a sketch, describe the working of LASER diode.

(b) Describe foundation fieldbus architecture with a sketch.

(c) Describe with sketch protibus protocol architecture.

(d) State four selection criteria for foundation fieldbus.

    (e)   State the functions of

        (i)   Hub

        (ii)   Router

        (iii) Repeater

        (iv) Gateway

5.   **Attempt any TWO of the following :**   **2 × 6 = 12**

    (a)   Draw the block diagram of a PCM transmitter. Explain the function of each block.

    (b)   Compare Star topology and Ring topolocy on the basis of following parameters.

        (i)   Architecture

        (ii)   Routing methodology

    State the application of Star and Ring topology.

    (c)   Name any six connectorse. State the situations in which these connectors are used.

6.   **Attempt any TWO of the following :**   **2 × 6 = 12**

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

    (b)   Describe broad specifications for hardware and software requirement to setup HART network system.

    (c)   Develop the devicenet network for 6 nodes.

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