

# 22634

**12223**

**3 Hours / 70 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) 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) Define Bit rate and Baud rate.
  - b) Classify networks on the basis of transmission technology.
  - c) State the function of transport layer in TCP/IP protocol suite.
  - d) Name the layer of the OSI model that is responsible for moving of data in and out of physical link in network. State its functions.
  - e) State the application of infrared waves.
  - f) State the application of firewall.
  - g) State the need for IPV6.

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- 2. Attempt any THREE of the following :** **12**
- a) Name of components of a data communication system. State the function of each component.
  - b) Explain the terms Synchronous, and Asynchronous transmission of data with a neat diagram.
  - c) State the functions performed by the Network layer and application layer in a TCP/I protocol.
  - d) Explain checksum error detection mechanism with a suitable example.
- 3. Attempt any THREE of the following :** **12**
- a) Name the layers of the OSI model that perform the following functions
    - i) Bit rate control
    - ii) Framing
    - iii) Logical Addressing
    - iv) Encryption / Decryption
  - b) Calculate the CRC for the frame of data to be transmitted in 100100 and the generator polynomial is  $x^3 + x^2 + 1$ . Generate the Codeword for the transmitted frame.
  - c) On which layer of the O.S.I. model do the following devices work.
    - i) Bridge
    - ii) Routes
    - iii) gateway
    - iv) Hub
  - d) Compare classless and classful addressing. State the disadvantages of classful addressing.

- 4. Attempt any THREE of the following :** **12**
- a) Explain the principle of working of TDM with suitable diagram.
  - b) Explain stop and wait protocol used in flow control.
  - c) With neat diagram explain the concept of datagram approach of switching.
  - d) Explain the concept of FTP with neat diagram.
  - e) Compare coaxial cable and twisted pair cable on the basis of –
    - i) Bandwidth
    - ii) Electromagnetic interference
    - iii) Construction
    - iv) Applications
- 5. Attempt any TWO of the following :** **12**
- a) Draw a diagram and describe the following topologies stating their applications.
    - i) Hybrid
    - ii) Bus
  - b) Draw the Seven layered architecture of OSI model and explain.
  - c) Draw the labelled construction of Fibre optic cable. State four advantages compared to copper cables.
- 6. Attempt any TWO of the following :** **12**
- a) Draw and describe architecture for a network using star topology to establish a laboratory with 10 computers.
  - b) With suitable diagram explain selective repeat ARQ protocol.
  - c) Draw the block diagram of Symmetric Key Cryptography and state the function of various components. Compare symmetric and Asymmetric Key Cryptography.
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