

**Krishna Kanta Handiqui State Open University**

**MCA 4<sup>th</sup> Sem. Examination, 2014**

**Data Communication and Computer Network Paper - 15**

Time : 3 Hrs.

Full Marks : 80

1. Answer any five from the following questions 2×5 =10
  - (a) What are guided and unguided media? Give appropriate examples.
  - (b) What is the need for a repeater?
  - (c) Differentiate between star and ring topology.
  - (d) Define congestion control.
  - (e) Why is preamble used in MAC frame format?
  - (f) What is the significance of framing?
  - (g) Give the functions of file transfer protocol (FTP).
2. Answer any three from the following questions 4×3 =12
  - (a) What is the significance of the presentation layer in OSI reference model?
  - (b) What are data frames? Give the frame format for IEEE 802.3.
  - (c) What are the functions of ARP?
  - (d) Define bandwidth and throughput.
  - (e) What do you mean by connectionless and connection-oriented services?
3. Answer any three from the following questions 6×3 =18
  - (a) Write in brief the features of the following transmission media -
    - (i) Coaxial cable
    - (ii) Fiber optic cable
  - (b) What is peer-to-peer network? Discuss the advantages and disadvantages of peer-to-peer network.

- (c) Discuss the role of DNS in an Internet service with the help of an example.
  - (d) Discuss the role of Router and Gateway when data signals travel through the medium. Also write down the functions of bridge.
  - (e) Write down the concept of VLAN. What are its characteristics?
4. Answer any four from the following questions 10×4 =40
    - (a) What advantages does TCP have over UDP? What are the features which make TCP a reliable protocol? Discuss briefly the TCP three-way handshake.
    - (b) What is switching? List and discuss the different switching techniques and performs a comparative study among the different switching techniques.
    - (c) Why the Internet-Protocol (IP) is used in network layer? Describe the IPv4 header format with proper diagram. What is an IP address? What are its different classes and how are they classified?
    - (d) With a block diagram, explain the functions of different layer in ISO-OSI reference model.
    - (e) Why Hamming code is needed in error detection and correction? Explain the reasons why errors occur due to data processing and transmission systems.
    - (f) Write short notes on -
      - (i) Sliding window protocol
      - (ii) SMTP
      - (iii) Cyclic Redundancy Check (CRC).