

## CIT 723: OPERATING SYSTEM DESIGN AND PROGRAMMING

**Instruction:** Answer Question (1) (25 marks) and any other three questions each carrying 15 marks

**Credit Units: 2**

**Time: 2½ hours**

1. (a) Briefly explain what you understand by network architecture? (3 marks)
  - (b) What are protocols? (2 marks)
  - (c) Enumerate the three points to keep in mind when you think about protocols in a network environment (6 marks)
  - (d) State the benefits of networking. (5 marks)
  - e) What are network protocols? (2 marks)
  - f) State the file types that uses the following typical extensions: (3 marks)
    - i) .ps
    - ii) .mpg
    - iii) .dvi
    - iv) .jpg
    - v) .gif
    - vi) .pdf
  - g) State the advantages and disadvantages of Peer-to-peer network (4 marks)
- 2a) What do you understand by OSI reference model? Diagrammatically represent its layers. (5 marks)
  - b) Write short notes on the first three layers of the OSI layers (10 marks)
- 3a) Briefly describe how protocols work. (7 marks)
  - b) Enumerate the steps taken by the protocols at both the sending and receiving computer. (4 marks)
  - c) State any three advantages and one disadvantage of Linux operating system. (4 marks)
- 4a) Write short notes on the following:
    - i) User Datagram Protocol (UDP) (5 marks)
    - ii) Internetwork Packet Exchange and Sequenced Packet Exchange (IPX/SPX) (5 marks)
    - iii) Media Access Protocols (5 marks)
- 5) Describe the architecture of the Linux operating system enumerating its various components (15 marks)
- 6a) Explain CRC error checking (3 marks)
  - b) Write short notes on the following:
    - i) Protocol Stacks (2 marks)
    - ii) The Binding Process (4 marks)
  - c) Describe Network Load Balancing (6 marks)
7. (a) Write short notes on the following describing and stating their functions:
    - i) Internet Protocol (IP) (6 marks)
    - ii) Transmission control protocol (TCP). (6 marks)
  - b) State the advantages of Server-Based Network (3 marks)