



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCE**  
**DEPARTMENT OF COMPUTER SCIENCE**

**CIT 854: NETWORK PROGRAMMING AND DESIGN**

**Instruction:** Answer any five questions each question carries 14 marks      **Time:** 2½ hours

- 1a) With the aid of diagrams explain the different modes of data transmission you know. **(7½ marks)**  
b). Discuss the importance of nodes, links and modem in a network **(6½ mark)**
- 2a) Explain what you understand by network topology? **(3 marks)**  
b) With the aid of diagrams, describe Bus topology stating some of its advantages and disadvantages **(11 marks)**
- 3a) Define the term “IP Address” **(1½ marks)**  
b) Outline the audit trail activities that are monitored in a network **(3 marks)**  
c) State the tasks performed by the Internet Control Message Protocol (ICMP) **(3 marks)**  
d) Enumerate what you understand by “Network Management”. State its functional areas **(6½ marks)**
- 4a) Outline the logical steps to follow in order to investigate and isolate network problems? **(7 marks)**  
b) List and state the uses of any three network troubleshooting tools. **(7 marks)**
- 5a) Enumerate any three key network design valuables **(4½ marks)**  
b) With the aid of a good diagram, describe a simple client-server system **(4½ marks)**  
c) List three ways to get the options that affect a socket **(2 marks)**  
d) State three characteristics of bridges in a network? **(3 marks)**
- 6a) State the critical role the network operating system (NOS) play in a networking architecture? **(6 marks)**  
b) Discuss Hybrid Routing **(4 marks)**  
c) Describe Routers and Gateways **(4 marks)**
- 7a) Write short notes on User Datagram Protocol (UDP). **(8 marks)**  
b) Enumerate the features provided by the UDP datagram **(4 marks)**  
c) State four advantages of star topology. **(2 marks)**