**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, Plot 91, Cadastral Zone, NnamdiAzikiwe Express Way, Jabi, Abuja**

**Faculty of ScienceS**

**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 bynetwork 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 thebenefits of networking. ***(5 marks)***

e) What are network protocols? ***(2 marks)***

f) State the file types that uses the following typical extensions: ***(3 marks)***

1. .ps
2. .mpg
3. .dvi
4. .jpg
5. .gif
6. .pdf

g) State the advantages and disadvantages of Peer-to-peer network  ***(4marks)***

2a) What do you understand by OSI reference model? Diagrammatically represent itslayers.***(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.***(4marks)***

c) State any three advantages and one disadvantage of Linux operating system. ***(4marks)***

4a) Write short notes on the following:

1. User Datagram Protocol (UDP) ***(5 marks)***
2. Internetwork Packet Exchange and Sequenced Packet Exchange (IPX/SPX)***(5 marks)***
3. 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:

1. Protocol Stacks *(2 marks)*
2. The Binding Process *(4 marks)*

c) Describe Network Load Balancing***(6marks)***

7. (a) Write short notes on the following describing and stating their functions:

1. Internet Protocol (IP)***(6 marks)***
2. Transmission control protocol (TCP). ***(6 marks)***

b) State the advantages of Server-Based Network***(3 marks)***