

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, 91 Cadastral Zone, NnamdiAzikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**  
**2023\_1 POP EXAMINATION.**

**Course Code:** CIT852

**Course Title:** Data Communication and Networks

**Course Credit Unit:** 3

**Time:** 3 hours

**Instruction:** Answer question 1 and any other three (3) questions.

- 1a) Enumerate six of the basic goals that a Computer network should satisfy **(6 marks)**  
b) List the types of broadcast networks **(1½marks)**  
c) State four advantages of star topology **(4 marks)**  
d) Identify two disadvantages of tree topology **(2 marks)**  
e) Enumerate any three most widely known Application Layer protocols used for the exchange of user information and their respective uses **(4½ marks)**  
f) State two of the drawbacks of TCP/IP model. **(2 marks)**  
g) State two advantages and three disadvantages of Asynchronous communication. **(5 marks)**
- 2a) Write short notes on Cellular Topology (Use diagram where necessary). **(5 marks)**  
b) State one advantage and disadvantage of cellular topology **(2 marks)**  
c) What are the design goals of **Secure Sockets Layer (SSL) 3.0?** **(8 marks)**
- 3a) Briefly describe the core protocols of the Transport Layer of the Open System Interconnect (OSI) reference model **(6 marks)**  
b) Discuss Broadcast Networks **(6 marks)**
- 4a) Briefly discuss instant messaging and enumerate its vulnerabilities. **(8 marks)**  
b) In a tabular form, present, in order, the Layers of the OSI reference model and the corresponding data package for each layer. **(7 marks)**
- 5a) In a tabular form, Compare OSI and TCP/IP models. **(10 marks)**  
b) Write short notes on Virtual Private Network (VPN). **(5 marks)**
- 6a) Some challenges are usually encountered by the data transmission lines. List them. **(3 marks)**  
b) Briefly describe any two of the challenges listed in question (6a) above. **(8 marks)**  
c) Write short notes on token bucket traffic shaper. **(4 marks)**