



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**  
**2020\_1 EXAMINATIONS**

**CIT 852 – DATA COMMUNICATION AND NETWORK**

**Credit: 3 units**

**TIME ALLOWED:** 2½ Hours

**INSTRUCTION:** Answer Question 1 and any other FOUR (4) Questions

- 1a) Give a concise explanation of the computer network (*2 marks*)
  - b.) Describe the following network topologies: (**10 marks**)
    - (i) Bus topology
    - (ii) Star topology
    - (iii) Ring topology
    - (iv) Tree topology
    - (v) Mesh topology
  - c.) Describe the Wireless LAN Architecture (**2 marks**)
  - d.) In tabular form, differentiate between connection-oriented and connection-less services. (*8 marks*)
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2. a.) Write briefly on the following network characteristics (**3 marks**)
    - (i) Topology
    - (ii) Protocol
    - (iii) Architecture
  - b.) State five basic goals that a Computer network should satisfy. (*5 marks*)
  - c.) Create a short scenario describing the Leaky Bucket Algorithm analogy in congestion control. (**4 marks**)
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3. a.) List the parameters to be considered while selecting a physical topology (*2 mark*)
  - b.) Contrast and compare Tree topology and Star topology. (*4 mark*)
  - c.) Using an appropriate Table, differentiate between Congestion Control and Flow Control (*3marks*)
  - d.) In each of the following network layers, state in tabular form the congestion prevention mechanisms used at the different layers with solutions. (*3 marks*)
    - (i) Transport layer
    - (ii) Network layers
    - (iii) Data link layer
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4. a.) Describe the OSI reference model using appropriate diagram only. (*4 marks*)
  - b.) Differentiate between TCP and UDP. (*4 marks*)
  - c.) List four important features that distinguishes networks from each other and cite relevant examples. (*4 marks*)

5. a.) Write short notes on any two layer of the TCP/IP reference model. *(4 marks)*  
b.) Give two reasons for using layered protocols. *(2 marks)*
- 6.a.) What is Data Communication? *(2marks)*  
b.) Explain the term bandwidth. *(4 marks)*  
c.) Why is bandwidth useful? *(2 marks)*  
d.) Contrast between the switching at the data link layer and the routing at the network layer.  
*(4 marks)*