



UNIVERSITY EXAMINATIONS
SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE MATHEMATICS AND COMPUTING
SECOND SEMESTER 2022/2023
[JUNE - SEPTEMBER, 2022]

COMP207: DATA COMMUNICATION AND NETWORKING

STREAM: Y2 S2

TIME: 2 HOURS

DAY: FRIDAY, 9.00 AM – 11.00 AM

DATE: 09/09/2022

INSTRUCTIONS:

- 1. Do not write anything on this question paper.**
- 2. Answer Question ONE [Compulsory] and any other TWO Questions.**

QUESTION ONE [30 MARKS]

- (a) Define the following terms: [5 marks]
- (i) Attenuation
 - (ii) wavelength
 - (iii) Signal modulation
 - (iv) Distortion
 - (v) Demultiplexing
- (b) Using elaborate examples explain the difference between the following
- (i) Guided and unguided transmission media [2 marks]
 - (ii) Full duplex and simplex methods of data communication [2 marks]
 - (iii) Synchronous and un asynchronous transmission modes [2 marks]
- (c) Explain two limitations of microwave transmission media [4 marks]
- (d) Highlight four factors to be considered when selecting cabling media. [4 marks]
- (e) With a diagram Explain the role of each component of data communication system [4 marks]
- (f) Describe the roles of each layer in OSI models. [7 marks]

QUESTION TWO

- (a) Explain how a signal is transmitted in a token ring topology [6 marks]
- (b) Explain the roles of the following protocols
 - (i) TCP [2 marks]
 - (ii) DHCP [2 marks]
 - (iii) IP [2 marks]
- (c) Differentiate between filtering and sampling as applied in pulse code modulation [4 marks]
- (d) Differentiate between client – server and peer to peer models. [4 marks]

QUESTION THREE

- (a) Explain how data is transmitted along a fiber optic cable [6marks]
- (b) Identify 3 physical characteristics of fiber optic cables that make them suitable for high speed digital data transmission than copper cables. [6marks]
- (c) Describe what is meant by wavelength division multiplexing [WDM] and explain how it is used to deliver high rate of data transmission over a fiber optic cable. [6 marks]
- (d) Explain the purpose of a transponder in satellite transmission [2 marks]

QUESTION FIVE

- (a) Describe classifications of networks according to geographical coverage. [6marks]
- (b) With the aid of diagrams, describe the THREE common network topologies and state one advantage and one disadvantage of each. [6 marks]
- (c) Distinguish frequency modulation and Amplitude modulation. [2marks]
- (d) With the aid of a diagram, describe the construction of coaxial cable [3marks]
- (e) Describe the steps required to set up a network and connecting to the internet [3marks]