



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**

**DEPARTMENT OF INFORMATION SYSTEMS**

**UNIVERSITY EXAMINATION FOR THE DEGREE BACHELOR OF INFORMATION**

**COMMUNICATION AND TECHNOLOGY**

**YEAR THREE: SEMESTER ONE**

**2<sup>ND</sup> YEAR 2<sup>ND</sup> SEMESTER 2022 ACADEMIC YEAR**

**MAIN CAMPUS**

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**COURSE CODE: ITB 1204**

**COURSE TITLE: WIRELESS INTERNET APPLICATIONS**

**DATE:**

**TIME:**

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### **INSTRUCTIONS**

- 1. Answer Question 1 (Compulsory) and ANY other TWO questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

## Questions one

- a) Define wireless network applications. **(2 marks)**
  - b) What is a distinguishing attribute of a wireless network as compared to a general wireless communication system? **(4 marks)**
  - c) What types of information does wireless network support?? **(4 marks)**
  - d) Discuss the various types of a wireless networks. **(6 marks)**
  - e) What is the typical maximum range of a wireless PAN? **(2 marks)**
  - f) Differentiate between Client/Server Networks and Peer-to-Peer Networks **(4 marks)**
- a) What is meant by network topology? **(2 marks)**
  - b) With illustrations, describe at least three common topologies **(6 marks)**

## Questions Two

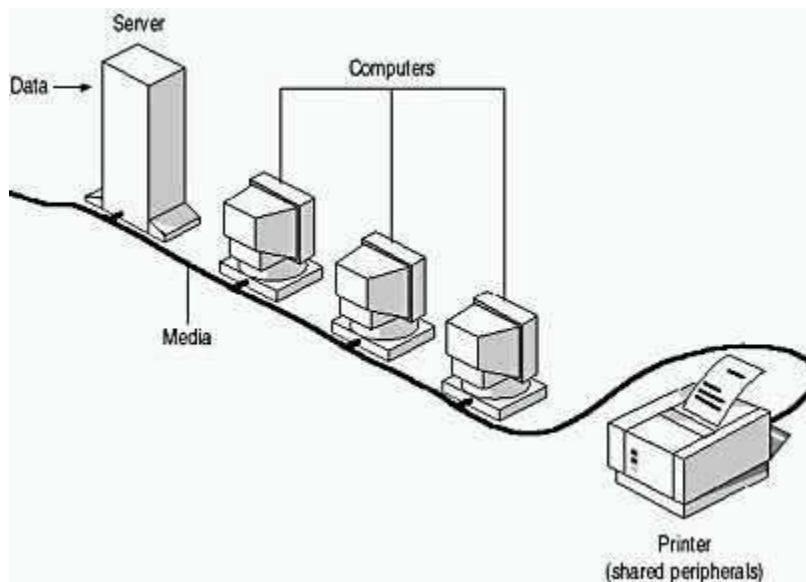
- a) In terms of Local Area Networks, explain the purpose of the following LAN basics
  - i. Server **(2 marks)**
  - ii. Hub **(2 marks)**
  - iii. Router **(2 marks)**
  - iv. Node **(2 marks)**
  - v. Switch **(2 marks)**
  - vi. Gateway **(2 marks)**
  - vii. DHCP **(2 marks)**
- b) Describe and illustrate the classification of networks Based on management method. **(4 marks)**
- c) Describe and illustrate the classification of networks Based on topology. **(2 marks)**

## Questions Three

- a) What is meant by the terms: **(4 marks)**
  - i) IP Address
  - ii) MAC Address
  - iii) Octet
- b) With the help of an example, explain the structure of an IP Address **(4 marks)**
- c). Explain the various classes of IP Addresses, giving the octet range for each class. **(4 marks)**
- d). Convert the following binary IP addresses to obtain a decimal equivalent of this IP addresses.
  - i. 01000101. 00101011. 00001011. 11101111 **(4 marks)**
  - ii. 10101100. 00000001. 00010000. 00100000 **(4 marks)**

## Questions Four

- a) Discuss the following three modes of data transmission listed below:
- i) Simple duplex **(2 marks)**
  - ii) Half duplex **(2 marks)**
  - iii) Full duplex **(2 marks)**
- b) In general, all networks have certain components, functions, and features in common: Explain each of the following Components as denoted in the figure below **(10 marks)**



- c) List three factors that can influence the choice of whether to implement a peer-to-peer or server-based network configuration. **(2 marks)**
- d) Describe the advantages of a peer-to-peer network **(2 marks)**

## Questions Five

- a) The OSI Model is a Layered framework for the design of network systems that allow communication between all types of computer systems. It consists of seven separate but related layers, each of which defines a part of the process of moving information across a network. Name and explain the structure of the seven layers mentioned above. **(10 marks)**
- b) Given that two computers are connected to each other with an Ethernet cable. How does the data move from computer **A** to computer **B**? Explain with the help of a diagram indicating the different layers in which the sent data will pass through. **(5 marks)**
- c) Make a discussion about the fourth layer of the OSI Model and explain the tasks performed by it. **(5 marks)**