BAIT1013 Introduction to Computer Networks

Tutorial 1: Introduction to Networks

Q1.

(a) Define the term network.

A network is a connection of two or more computers through a media in order to share resources.

(3 marks)

(b) Identify the **THREE (3)** categories of network components and give **TWO (2)** examples of each component.

(9 marks)

Component	Example
Devices	- End devices (web servers) - Intermediary devices (access points)
Media	- Cable (LAN cable, wireless connection, WAN cable)
Services	- Email services (Gmail) - Web hosting services (web hosting company)

(c) Network architects and administrators use network symbols to represent the different devices and connections in a network. Identify the network symbols below.

(10 marks)

Category	Network representation	Name of the network representation
(i) End devices (1m)		(iv) Personal Computer (1m)
		(v) Telepresence Endpoint (1m)
(ii) Intermediary devices (1m)		(vi) Wireless router (1m)
		(vii) Multilayer switch (1m)

		(viii) Firewall appliance (1m)
(iii) Network media (1m)		(ix) Wireless media connection (1m)
		(x) LAN cable / media (1m)

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(d) Identify the criteria for choosing a network media.

- The distance the media can successfully carry a signal.

- The environment in which the media is to be installed.

- The amount of data and the speed at which it must be transmitted.

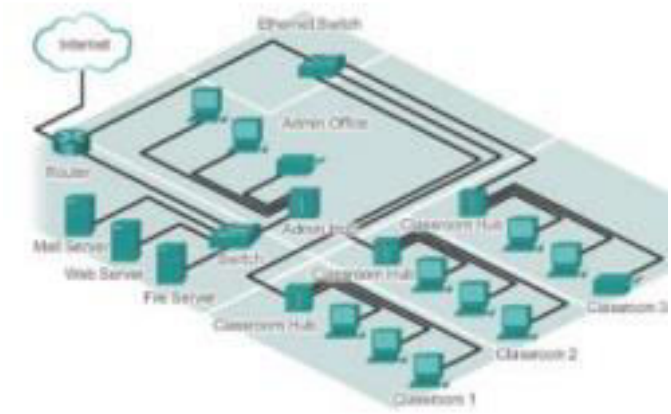
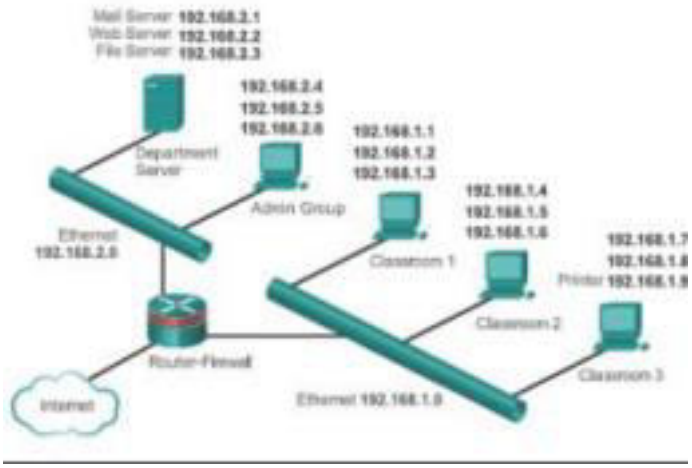
- The cost of the media and installation.

(4 marks)

Q2.

(a) Identify and explain the following topology diagram.

(6 Marks)

Topology Diagram	Type	Explanation
	Physical topology	Intermediary devices, configured parts and cable installation
	Logical topology	Devices, ports and IP addressing scheme

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(b) Networks are categorized according to size.

Explain the network types.

(10 marks)

Network	Explanation
LAN	A LAN is a network infrastructure that provides access to users and end devices in a small geographical area
WAN	A WAN is a network infrastructure that provides access to other networks over a wide geographical area, which is typically owned and managed by a larger corporation or a telecommunications service provider.
MAN	A network infrastructure that spans a physical area larger than a LAN but smaller than a WAN (e.g., a city).
WLAN	Similar to a LAN but wirelessly interconnects users and end points in a small geographical area.
SAN	A network infrastructure designed to support file servers and provide data storage, retrieval, and replication.

(c) Differentiate between Intranet and Extranet with example.

(6 marks)

Intranet	- A private connection of LANs and WANs that belongs to an organization, and is designed to be accessible only by the organization's members, employees, or others with authorization. E.g. TARUMT library system - Only accessible by employees - From within the company - From home or outside the company

Extranet	- To provide secure and safe access to individuals who work for different organizations but require company data. E.g. TARUMT websites - Allow third party to access

(d) The network environment continues to evolve, providing new experiences and opportunities for end users with new networking trends. Explain **TWO (2)** new networking trends.

▪ Bring Your Own Device (BYOD): Enables end users the freedom to use personal tools to access information and communicate across a business or campus network. Employees provide the devices to connect to the network such as laptops and tablets. It means any device, with any ownership, used anywhere.

▪ Cloud computing: Storage of data on the internet; Services or applications that are housed in the internet.
Benefits:

1. Organizational flexibility
2. Agility and rapid deployment
3. Reduced cost of infrastructure
4. Refocus of IT resources
5. Creation of new business models

(6 marks)

(e) Compare and contrast the following terms:

i) Intranet

A private connection of LANs and WANs that belongs to an organization and is designed to be accessible only by the organization's members, employees, or others with authorization. An internet which is usually only accessible from within the organization.

ii) Internet

A worldwide collection of interconnected networks (internetworks or internet for short), cooperating with each other through telephone wires, fiber optic cables, wireless transmissions, and satellite links to exchange information in a variety of forms.

(6 marks)