**REVIEW CONTENTS OF MIDDLE-TERM EXAMINATION**

Subject: Introduction to Computer Networks

Exam format: Multiple choice questions

Number of sentences: 30 questions (Questions in English)

Time: 45 minutes

**CONTENTS:**

**Chapter 1: Computer Networks and the Internet**

**-** What is the internet? – It’s the network of networks

- Router: routing system – routing the road to the destination

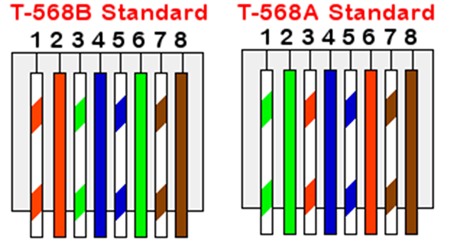
- Switch: connect end systems

- mordem: Bộ điều giải (điều giải tính hiệu cáp quan thành tín hiệu số khi nhận thông tin và ngược lại khi gửi)

- connection: wired/wire-less

- cáp chéo/ cáp thẳng ? khi nào dùng cáp chéo/thằng? cấu trúc?

+ 2 thiết bị giống nhau thì dùng cáp chéo, khác nhau thì cáp thẳng

+ Cấu trúc dây cáp:

- Concepts of end systems, end devices, hosts, network edge, network core, ....

+ hosts/end systems/end device: PC/laptop/server/phone/…

+ network edge:

+ network core: router

- Identify network devices, types of network cable

- Compare the differences between LAN and WAN

+ LAN: Local Area Network

+ WAN: Worldwide Area Network

- Operation functions and principles of the layers in the network OSI model, TCP/IP model, IP Stack;

+OSI, created by ISO, It’s reference model

Including 7 layers

|  |
| --- |
| Application |
| Presentation |
| Session |
| Transport |
| Network |
| Datalink |
| Physical |

+ IP Stack. It including 5 layers

|  |
| --- |
| Application |
| Transport |
| Internet |
| Datalink |
| Physical |

+ TCP/ IP, including 4 layers

|  |
| --- |
| Application |
| Transport |
| Internet |
| Network access |

* Application layer create mesagge (data) | PC/Server
* Transport add the header into the packets (segment) | TCP/UDP
* Network: routing the road and destination of the msg (packet) | router
* Datalink: \_\_\_ (frame) | switch
* Physical: \_\_\_ (bit) | cable

- Data encapsulation process.

//

- Protocol data units (PDUs) at the layers of the OSI model.

- Abbreviated terms

**Chapter 2: Application layer**

- Application layer applications and corresponding protocols?

- What is the protocol?

it rules

- Types of network protocols: HTTP, DHCP, FTP, IP, DNS, SMTP, .... and its working principles.

+ HTTP: Web

+ HTTPS: Web but it more secure than HTTP

+ DHCP: Dinamic ip

+ FTP: Transfer files

+ port number 20: send file

+ port number 21: control/ mangement. Create and close the connection

+ IP: address

+ DNS: domain name system

+ SMTP: Use to send mail, using port number 25

+ POP/POP3: post office protocol, use to get mail from the mail server, using port number 110

+ IMAP: internet message access protocol, //,using port number 143

- Email protocols Email (SMTP, POP, POP3, IMAP, HTTP)

+ SMTP: , send mail

+ POP/POP3/IMAP/HTTP: Recive mail

- Domain Name System (Domain Name System) and its functions.

Dùng để quản trị và phân nhánh

- File distribution time (File Distribution) between client-server; P2P

+ P2P (peer-to-peer)

+ client-server

**Chapter 3: Transport layer**

- Compare characteristics between OSI, TCP/IP model

//chapter 1

- What is the data unit at each layer? (eg: packet, segment, frame, bits, ...)

- What is the task of each layer in the OSI, TCP/IP model?

// chapter 1

- Functions, characteristics, operating principles, compare the basic differences of TCP and UDP?

+ TCP: Secured, not error, not drop packet/bits but slow | Message/chat

+ UDP: not secured, can drop bits but fast | video call, calling

- Packet switching and circuit switching

+ They are the way to send bits

- Port number on the machine running application services (FTP, DNS, SMTP, HTTP, ....)

| Port Number | Service name | Description |
| --- | --- | --- |
| 7 | Echo | Echo service |
| 20 | FTP-data | File Transfer Protocol data transfer |
| 21 | FTP | File Transfer Protocol (FTP) control connection |
| 22 | SSH-SCP | Secure Shell, secure logins, file transfers (scp, sftp), and port forwarding |
| 23 | Telnet | Telnet protocol—unencrypted text communications |
| 25 | SMTP | Simple Mail Transfer Protocol, used for email routing between mail servers |
| 53 | DNS | Domain Name System name resolver |
| 69 | TFTP | Trivial File Transfer Protocol |
| 80 | HTTP | Hypertext Transfer Protocol (HTTP) uses TCP in versions 1.x and 2.  HTTP/3 uses QUIC, a transport protocol on top of UDP |

- TCP/UDP packet structure (TCP/UDP segment format): length of fields in IPv6 and IPv4 packet structure (eg: Source port #, Destination port #, length, checksum, header, ...)

- Flags in the TCP header (ex: SYN, ACK, FIN, RST, …)

+ SYNC: Yêu cầu đồng bộ

+ ACK: Tín hiệu xác nhận

+ FIN: Tín hiệu thông báo đã kết thúc

+ RST: Tín hiệu yêu cầu reset lại kết nối