

## **REVIEW CONTENTS OF TERM-FINAL EXAMINATION**

Subject: Introduction to Computer Networks

Exam format: Multiple choice questions

Number of sentences: 45 questions (Questions in English)

Time: 60 minutes

### **CONTENTS:**

#### **Chapter: Transport layer**

- Compare characteristics between OSI, TCP/IP model
- What is the data unit at each layer? (eg: packet, segment, frame, bits, ...)
- Functions, characteristics, operating principles, compare the basic differences of TCP and UDP? (ex: Which protocol is used for real-time data transfer over the internet, such as voice and video chat?)
- Packet switching and circuit switching
- Port number on the machine running application services (FTP, DNS, SMTP, HTTP, ....)
- TCP/UDP packet structure (TCP/UDP segment format): length of fields in IPv6 and IPv4 packet structure (eg: Source port number, Destination port number, length, checksum, header, ...)
- Flags in the TCP header (ACK, SYN, FIN, RST, ...) (Ex: Which flag in the TCP header is used to indicate that the sender is acknowledging receipt of a segment?)
- What is latency/delay in a network? (Ex: what is the processing delay/propagation delay/transmission delay/ ...?)
- What is the RTT? A TCP connection between a client and a server requires a minimum of how many RTTs? ...
- Type of HTTP connection: persistent connections or Non-Persistent Connections

#### **Chapter: The Network Layer: Data Plane + Control Plane**

- What is the main function of the network layer data plane in computer networking?
- What is the primary function of the control plane in the network layer?
- Roles, functions, operating principles of the Router?
- Compare the difference between IPv4 and IPv6 (eg: how many bits is IPv4, IPv6?, .....)
- How to calculate IPv6 address from MAC address using EUI-64
- Format of IPv6 address; Types of IPv6 address;
- Characteristics, how to identify IPv4 class A, B, C, D
- Private IPv4 address, Public IPv4? What are the benefits of using Private IP addresses?
- Data unit at Network layer?
- Know how to **divide Subnet, VLSM**, how to **calculate SubnetMask**, ....
- Understand the characteristics, operating principles and functions of routing protocols (Static routing; OSPF, EIGRP, BGP, RIP)

- What is the benefit of using a link-state routing protocol over a distance vector routing protocol? What is a routing protocol that uses a link-state database to calculate the best path to a destination network?
- Abbreviated terms (NAT, ARP, RIP, DNS, IPS, ...)
- What is the purpose of NAT (Network Address Translation) in computer networking?
- In network layer routing, what does the term "metric" refer to?
- Which protocol is commonly used to monitor and manage devices in the network?

## **Chapter: The Link Layer and LANs**

- Data Unit (PDU) at the DataLink layer?
- Function and working principles of ARP, RARP protocols?
- Sublayers of the DataLink layer? What devices operate at the DataLink layer?
- Characteristics and functions of the physical MAC address; the length of the MAC address; ...
- What is the purpose of a switch in a LAN?
- Characteristics of a full-duplex and half-duplex transmission mode?
- What methods are used for error detection in network communication?
- Types of links (Optical cable, copper cable, twisted pair, ...), limit the maximum length, cost, speed of each type of cable, ...
- How to connect cables between devices, in which case use straight cable, in which case use crossover cable?
- Functions, roles and operating principles of the link layer in the OSI model?
- Features of wireless encryption standards WPA, WEP, ...