

**FINAL  
ALTERNATIVE ASSESSMENT**

(COVER PAGE)

Session : August 2021

Programme : Diploma in Information Technology (DITN)  
Diploma in Computer Science (DCS)

Course : ICT1105: Fundamentals of Networking

Date of Examination : 9 December 2021 (Thursday)

Time : 8.00am – 10.30am Reading Time : Nil

Duration : 2 Hours 30 Minutes

**Special Instructions :**

Section A: This section consists of **Twenty (20)** questions. Answer **ALL** questions.

Section B: This section consists of **THREE (3)** questions. Answer **ALL** questions.

Material permitted : Non-Programmable Scientific Calculator

Materials provided : Nil

Examiner(s) : Vasuky Mohanan, Thanesh Doraisamy

Chief Moderator : Victor Raj

*This paper consists of 6 printed pages, including the cover page*

DIPLOMA IN INFORMATION TECHNOLOGY PROGRAMME (DITN)  
DIPLOMA IN COMPUTER SCIENCE PROGRAMME (DCS)  
ICT1105: FUNDAMENTALS OF NETWORKING  
FINAL ALTERNATIVE ASSESSMENT: AUGUST 2021 SESSION

**Section A (40 marks)**

**Instructions:** This section consists of **Twenty (20)** questions. Answer **ALL** questions.

1. What is the reason that Wireless LANs perform Collision Avoidance rather than Collision Detection?
  - A. Collisions are much more costly at the high speeds of modern WLANs.
  - B. Collisions are much rarer, therefore they must be avoided at all cost
  - C. Collisions may be impossible to detect due to the Hidden Node problem
  - D. Collisions may be much less frequent due to the Hidden Node problem
  
2. Which of the following is **NOT** a task performed by the Transport Layer?
  - A. Controlling how quickly to send frames to the receiving device
  - B. Determining errors in the received frame using parity checking
  - C. Recombining packets in the correct order
  - D. None of the above
  
3. \_\_\_\_\_ is the weakening of a signal over distance is:
  - A. Turnaround time
  - B. Propagation delay
  - C. Dispersion
  - D. Attenuation
  
4. How does Frequency Division Multiplexing works?
  - A. operates by statistically time slicing the signal
  - B. operates by dividing the signal into different frequencies
  - C. uses a codec that divides signals into different channels
  - D. operates by light dividing the signal
  
5. Identify the bandwidth available for a circuit that has the highest frequency of 10KHz and the lowest frequency of 900Hz.
  - A. 890 Hz
  - B. 9Khz
  - C. 9100 Hz
  - D. 8900 Hz

6. In which type of modulation is a 1 distinguished from a 0 by shifting the location in which the wave begins?
- A. amplitude modulation
  - B. frequency modulation
  - C. codec modulation
  - D. phase modulation
7. Which of the following is a line-of-sight type of wireless media?
- A. coaxial cable
  - B. microwave
  - C. radio
  - D. fiber optic
8. \_\_\_\_\_ has the lowest error rates and the highest transmission speeds.
- A. Unshielded twisted pair
  - B. Shielded twisted pair
  - C. Fiber optic cable
  - D. Infrared
9. A bus topology has the following criteria.
- A. has all computers connected to each other in point-to-point connections
  - B. devices like a hub or repeater cannot be used with this type of topology
  - C. is always used by token ring protocol LANs
  - D. has a central control device, such as a mainframe
10. A(n) \_\_\_\_\_ is the software that controls the network.
- A. Network Operating System
  - B. Client Operating System
  - C. Network Control System
  - D. Network Software System
11. A switch uses this in order to choose the correct path to send packets.
- A. forwarding table
  - B. network server
  - C. reversing table
  - D. cable plan
12. \_\_\_\_\_ is when a network is broken into smaller parts.
- A. Fragmentation
  - B. Segmentation
  - C. Localization
  - D. Allocation

13. In order to solve an overloaded LAN server problem, which one of the following actions is **NOT** correct?
- A. adding one or more additional servers
  - B. upgrading the server's CPU with a faster CPU
  - C. increasing the number and speed of hard disks in the server
  - D. replacing the cable with fiber optic cable
14. Which of the following is a mode in which a switch operates?
- A. fast learning switching
  - B. routing switching
  - C. store switching
  - D. cut-through switching
15. Which of the following is **NOT** an advantage of using Cat5 unshielded twisted pair for cabling LANs?
- A. cost (relative to fiber)
  - B. thickness (relative to coax)
  - C. weight (relative to coax)
  - D. security (relative to fiber)
16. Which of the following is **NOT** true about CSMA/CD?
- A. It is a contention-based media access control technique
  - B. Computers on the circuit 'listen' before transmitting
  - C. It is used in token ring protocol LANs
  - D. When a collision has occurred, the computers that wish to transmit wait a random amount of time after a colliding message before attempting to retransmit
17. Which of the following type of media is most commonly used in backbone networks because of its high capacity?
- A. fiber
  - B. infrared frequencies
  - C. unshielded twisted pair
  - D. shielded twisted pair
18. On the WLAN, a computer that is currently transmitting cannot sense that another computer is also transmitting because of
- A. out of range problem
  - B. collision problem
  - C. hidden node problem
  - D. media access problem
19. Which of the following is a LAN standard?
- A. 802.5
  - B. 802.4
  - C. 802.3
  - D. 802.11

20. A(n) \_\_\_\_\_ is a set of rules that determine what a layer would do and provides a clearly defined set of messages that software at the layer needs to understand.
- A. agreement
  - B. standard
  - C. regulations
  - D. protocol

### Section B (60 marks)

**Instructions:** This section consists of **THREE (3)** questions. Answer **ALL** questions.

#### Question 1

- (a) Define Firewall (2 marks)
- (b) Explain why Firewalls are considered the first line of system defense against cyber attacks (6 marks)
- (c) Firewalls can be either hardware or software. Explain where software and hardware firewalls are usually installed (6 marks)
- (d) List **THREE (3)** differences between hub and switch. (3 marks)
- (e) List **THREE (3)** reasons for using VLANS (3 marks)

#### Question 2

- (a)
  - (i) Explain the purpose of Address Resolution protocol (ARP). (3 marks)
  - (ii) Define a situation where RARP is preferred over ARP. (2 marks)
  - (iii) List **THREE (3)** differences between IPv4 and IPv6. (3 marks)
  - (iv) Explain the purpose of port numbers in communication. (2 marks)
- (b) Answer the following questions based on IP address (*show your calculations steps*):
  - (i) Given the subnet address for 192.168.131.3/20. Are 192.168.131.3/20 and 192.168.143.42/20 in the same subnet?
  - (ii) Are 192.168.211.3/18 and 192.168.155.42/18 in the same subnet?
  - (iii) A classless address is given as 167.199.170.82/27. Find how many hosts can be addressed in this subnet?
  - (iv) Give the subnet address for 192.168.131.3/20
  - (v) How many bits can be used to allocate 60 host addresses. (10 marks)

**Question 3**

- (a) Describe **THREE (3)** types of backbone topologies. Draw a diagram for each topology. List **ONE (1)** disadvantage for each topology. (15 marks)
- (b) Explain half duplex and full duplex communication. Include an example for each. (5 marks)

**~THE END~**

*ICT1105 (F)/ August 2021 Session/ formatted*