University of Colombo, Sri Lanka

University of Colombo School of Computing

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2021— 2^{nd} Year Examination — Semester 4

IT4506 — Computer Networks

Part 1 - Multiple Choice Question Paper

(ONE HOUR)

Important Instructions

- The duration of the paper is **ONE HOUR**.
- The medium of instructions and questions is English.
- This paper has **25 questions** on **6 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- **Each question has 5 (five) choices with one correct answer.**
- All questions carry **equal** marks.
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper. If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**
- Non Programmable Calculators may be used.
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1). Which sentence among the following describes the purpose of a Virtual Private Network (VPN) most accurately?

(a) Secure communication over Internet
(b) **Private communication over Internet**
(c) Confidential communication over Internet
(d) Connecting organization to the Internet
(e) Connecting two Internet Service Providers over Internet

2). The Medium Access Control (MAC) sublayer is responsible for dealing with additional issues caused by broadcasting networks. What is the layer in the OSI reference model that contains the MAC sublayer?

(a) Transport Layer	(b) Network Layer	(c) **Datalink Layer**
(d) Physical Layer	(e) Application Layer	

3). What is the maximum number of bits that can be sent, within a second, over a channel with a data rate of 1kbps?

(a) **1000 bits**	(b) 8000 bits	(c) 1024 bits
(d) 8192 bits	(e) 125 bits	

4). What is the Hamming distance between the following two code words?

11001001
11110001

(a) 1	(b) 2	(c) **3**
(d) 4	(e) 5	

5). What is the relationship (if any) between flow control and congestions in networks?

(a) They refer to the same phenomenon
(b) Congestion occurs when flow control is applied
(c) **Flow control is a mechanism used to reduce the congestion**
(d) There is no relationship between flow control and congestion
(e) Congestion refers to utilizing the available bandwidth fully while flow control is a mechanism used by ISPs to divide the bandwidth between users

6). The **service** provided by layer k of a protocol stack is used by which if the following?

(a) Layer k of the peer
(b) Layer k-1 of the peer
(c) Layer k-1 of the same host
(d) **Layer k+1 of the same host**
(e) Layer k+2 of the peer

7). The bandwidth of a noiseless channel is 1000 KHz. A signal consisting of 8 discrete levels is used for data transmission. What is the maximum possible data rate on this channel?

(a) 1000 bps	(b) 1000 kbps	(c) 2000 kbps
(d) 500 kbps	(e) **6000 kbps**	

8). What is the reason to have twists in twisted pair cables?

(a) **To enable the cancellation of radiation from the wires to reduce the noise**
(b) To improve appearance
(c) To reduce the total length of the wires
(d) To reduce the material used for the wires
(e) To amplify the signal sent on the wire

9). It is given that an electromagnetic wave has a wavelength of 3 m. What is the maximum frequency that this wave can be expected to have?

(a) Infinite	(b) **100 MHz**	(c) 1 KHz
(d) 10000 Hz	(e) 3 KHz	

10). Sharing network bandwidth dynamically according to the short term needs of hosts is known as which of the following?

(a) Time Division Multiplexing
(b) Resource Division Multiplexing
(c) **Statistical Multiplexing**
(d) Scheduled Multiplexing
(e) Frequency Division Multiplexing

11). Which of the following represents the correct ordering of the price of media types?

(a) Coaxial cable < Twisted Pair < Fiber optic cable
(b) Coaxial cable < Fiber optic cable < Twisted Pair
(c) **Twisted Pair < Coaxial cable < Fiber optic cable**
(d) Coaxial cable < Fiber optic cable < Twisted Pair
(e) Twisted Pair < Fiber optic cable < Coaxial cable

12). What is cut through switching?

(a) Forwarding only part of a frame
(b) **Start forwarding as soon as the destination header field has come in, before the rest of the frame has arrived**
(c) Switching between multiple switches
(d) Switching based on the source address rather than the destination
(e) Discarding frames

13). What is the technique/algorithm used by bridges to create loop free forwarding paths between them?

(a) Wormhole routing (b) Cut through switching (c) CSMA/CD
(d) CSMA/CA (e) **Spanning tree algorithm**

14). What is the size of the checksum field in the Ethernet frame?

(a) 32 bytes (b) **32 bits** (c) 1 bit
(d) 1 byte (e) 4 bits

15). In p-persistent CSMA, which of the following is true?

(a) a station transmits with a probability of 1 if it finds the channel is free.
(b) a station transmits without checking whether the channel is free or not.
(c) **a station transmits with a probability of p if it finds the channel is free.**
(d) a station waits a random amount of time before transmitting if the channel is free.
(e) all stations wait for a fixed amount of time before transmitting if the channel is free.

16). Which of the following is **not** a field in the UDP header?

(a) **Source MAC address**	(b) Source port	(c) Destination port
(d) Length	(e) Checksum	

17). What is the library procedure in RPC which represents the server procedure in client's address space?

(a) Server stub	(b) Application stub	(c) Network stub
(d) Universal stub	(e) **Client stub**	

18). Which of the following is not a management functional area defined for network management by the International Organization for Standardization (ISO)?

(a) Fault management
(b) Security management
(c) Performance management
(d) **Infrastructure management**
(e) Configuration management

19). Which of the following is a limitation of Private Networks built up by connecting company computers and leased telephone lines?

(a) Confidentiality	(b) **Scalability**	(c) Security
(d) Bandwidth	(e) Throughput	

20). A machine in a network is configured with the IP address 192.248.16.139 and the netmask of 255.255.255.192. What is the broadcast address of this network?

(a) **192.248.16.191**	(b) 192.248.16.255	(c) 192.248.16.0
(d) 192.248.16.224	(e) 192.248.16.63	

21). A machine in a network is configured with the IP address 192.248.16.142 and a netmask of 255.255.255.240. What is the correct CIDR notation that illustrates the machine's IP address?

(a) 192.248.16.142/15	(b) 192.248.16.142/240	(c) **192.248.16.142/28**
(d) 192.248.16.142/4	(e) 192.248.16.142/24	

22). Which of the following statements is correct about Software Defined Networks (SDN) ?

(a) SDN is a network simulator.
(b) SDN refers to a collection of open routing protocols.
(c) **SDN architecture decouples network forwarding and controlling functions.**
(d) SDN refers to a set of tools used for network planning.
(e) SDN refers to an application level networking technology.

23). What is the purpose of the Southbound API in Software Defined Networks?

(a) It is the API that switches use to access other switches.
(b) **Southbound API is used by controllers to manipulate switches.**
(c) Applications use the Southbound API to control the controllers.
(d) It is the API exposed by controllers to other controllers.
(e) Application programmers use the Southbound API to deploy applications directly into switches.

24). Which of the following is an Application Layer protocol?

(a) TCP	(b) UDP	(c) ARP
(d) Ethernet	(e) **DNS**	

25). What is the record type used for the IPv4 address of a host in the domain resource record?

(a) SOA	(b) **A**	(c) AAAA
(d) MX	(e) CNAME	

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