



# CENTRAL UNIVERSITY

SCHOOL OF ENGINEERING AND TECHNOLOGY

END OF SECOND SEMESTER EXAMS – 2020/21

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

ITEC404

SYSTEMS AND NETWORK ADMINISTRATION  
INFORMATION TECHNOLOGY

LEVEL 400

2 HOURS

STUDENT INDEX No .....

## INSTRUCTIONS

- SECTION A: ANSWER ALL QUESTIONS (40 MARKS)
- SECTION B: ANSWER TWO (2) QUESTIONS FROM THIS SECTION (60 MARKS)

ANSWER SECTION A ON THE QUESTION PAPER AND SECTION B IN  
THE ANSWER BOOKLET PROVIDED AND SUBMIT BOTH PAPERS

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SO BY THE INVIGILATOR**

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## SECTION A [40 MARKS]

**ANSWER ALL QUESTIONS** (each question carries 2 marks)

1. A \_\_\_\_\_ is a set of rules that govern data communications.
  - A. Transmission
  - B. Protocol
  - C. Jitter
  - D. Model
2. A \_\_\_\_\_ is a hardware device which is used to connect a LAN with an internet connection.
  - A. Router
  - B. Switch
  - C. Hub
  - D. Repeater
3. Which of the following is not the possible ways of data exchange?
  - A. Simplex
  - B. Half-duplex
  - C. Full-duplex
  - D. Multiplex
4. Before data can be transmitted, they must be transformed to \_\_\_\_\_.
  - A. Electromagnetic signals
  - B. Periodic signals
  - C. Aperiodic signals
  - D. Low-frequency sine waves
5. Which of the devices determines the best path from the available paths for the transmission of the packet?
  - A. Router
  - B. Switch
  - C. Hub
  - D. MAC Address
6. A \_\_\_\_\_ is a hardware device that allows the computer to connect to the internet over the existing telephone line.
  - A. Repeater
  - B. Server
  - C. Modem
  - D. Router

7. A device that helps the computer to communicate with another device is called\_\_\_\_\_
- A. Server
  - B. TCP/IP
  - C. Modem
  - D. NIC
8. The process by which we can add new components on the network is term as\_\_\_\_\_
- A. Jitter
  - B. Scalability
  - C. Architecture
  - D. Colony
9. Which of the following is not a Networking Device?
- A. Gateway
  - B. Firewall
  - C. Router
  - D. Packet
10. A \_\_\_\_\_ is the physical path over which a message travels.
- A. Path
  - B. Medium
  - C. Protocol
  - D. Route
11. Two devices are in network if \_\_\_\_\_
- A. a process in one device is able to exchange information with a process in another device
  - B. a process is running on both devices
  - C. PIDs of the processes running of different devices are same
  - D. a process is active and another is inactive
12. In a \_\_\_\_\_ information is shared to all the machines on the network.
- A. broadcast network
  - B. unicast network
  - C. multicast network
  - D. anycast network



13. The information to be communicated in a data communications system is the \_\_\_\_\_
- A. Medium
  - B. Protocol
  - C. Transmission
  - D. Message
14. An unauthorized user is a network \_\_\_\_\_ issue.
- A. Performance
  - B. Reliability
  - C. Security
  - D. All of the above
15. Frequency of failure and network recovery time after a failure are measures of the \_\_\_\_\_ of a network.
- A. Performance
  - B. Security
  - C. Reliability
  - D. Feasibility
16. The physical layer is concerned with \_\_\_\_\_
- A. bit-by-bit delivery
  - B. process to process delivery
  - C. application to application delivery
  - D. port to port delivery
17. The network layer is concerned with \_\_\_\_\_ of data.
- A. Bits
  - B. Frames
  - C. Packets
  - D. Bytes
18. Which layer 1 devices can be used to enlarge the area covered by a single LAN segment?
- 1. Switch
  - 2. NIC
  - 3. Hub
  - 4. Repeater
  - 5. RJ-45 transceiver
- A. 3 and 4
  - B. 1 only
  - C. 1 and 3
  - D. 5 only

19. In the OSI Model, Layer-2 Switch is also called \_\_\_\_\_
- A. Multiport Hub
  - B. Multiport Switch
  - C. Multiport NIC
  - D. Multiport Bridge
20. Where does bridge operate in the OSI model?
- A. Application layer
  - B. Data link layer
  - C. Physical layer
  - D. Both a and b
21. Which of the following are transport layer protocols used in networking?
- A. TCP and FTP
  - B. UDP and HTTP
  - C. TCP and UDP
  - D. HTTP and FTP
22. User datagram protocol is called connectionless because \_\_\_\_\_
- A. all UDP packets are treated independently by transport layer
  - B. it sends data as a stream of related packets
  - C. it is received in the same order as sent order
  - D. it sends data very quickly
23. Transmission control protocol \_\_\_\_\_
- A. is a connection-oriented protocol
  - B. uses a three-way handshake to establish a connection
  - C. receives data from application as a single stream
  - D. all of the mentioned
24. Transport layer protocols deals with \_\_\_\_\_
- A. application to application communication
  - B. process to process communication
  - C. node to node communication
  - D. man to man communication
25. A list of protocols used by a system, one protocol per layer, is called \_\_\_\_\_
- A. protocol architecture
  - B. protocol stack
  - C. protocol suite
  - D. protocol system

26. Network congestion occurs \_\_\_\_\_
- A. in case of traffic overloading
  - B. when a system terminates
  - C. when connection between two nodes terminates
  - D. in case of transfer failure
27. Application layer is implemented in \_\_\_\_\_
- A. End system
  - B. NIC
  - C. Ethernet
  - D. Packet transport
28. \_\_\_\_\_ allows LAN users to share computer programs and data.
- A. Communication server
  - B. Print server
  - C. File server
  - D. Network
29. Which of the following is an application layer service?
- A. Remote log-in
  - B. File transfer and access
  - C. Mail service
  - D. All the above
30. Header of a frame generally contains \_\_\_\_\_.
- A. synchronization bytes
  - B. addresses
  - C. frame identifier
  - D. All of the above
31. CRC stands for \_\_\_\_\_.
- A. cyclic redundancy check
  - B. code repeat check
  - C. code redundancy check
  - D. cyclic repeat check
32. What is the use of subnetting?
- A. It divides one large network into several smaller ones
  - B. It divides network into network classes
  - C. It speeds up the speed of network
  - D. None of above



33. Controlling access to a network by analysing the incoming and outgoing packets is called \_\_\_\_\_

- A. Data Filtering
- B. IP Filtering
- C. Firewall Filtering
- D. Packet Filtering

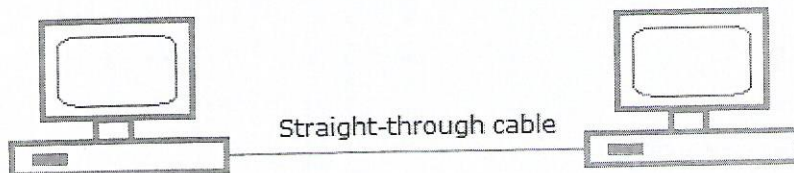
34. A proxy firewall filters at \_\_\_\_\_.

- A. Physical layer
- B. Data link layer
- C. Network layer
- D. Application layer

35. A 4 byte IP address consists of \_\_\_\_\_.

- A. only network address
- B. only host address
- C. network address & host address
- D. network address & MAC address

36. A network administrator is connecting hosts A and B directly through their Ethernet interfaces, as shown in the illustration. Ping attempts between the hosts are unsuccessful. What can be done to provide connectivity between the hosts?



IP Address: 192.168.1.20  
Mask : 255.255.255.240

IP Address : 192.168.1.201  
Mask : 255.255.255.240

1. A crossover cable should be used in place of the straight-through cable.
  2. A rollover cable should be used in place of the straight-through cable.
  3. The subnet masks should be set to 255.255.255.192.
  4. The subnet masks should be set to 255.255.255.0.
- A. 1 only
  - B. 2 only
  - C. 1 and 4 only
  - D. 2 and 4 only

37. The subnet mask of 255.255.255.240 is also denoted as \_\_\_\_\_
- A. /25
  - B. /26
  - C. /27
  - D. /28
38. This subnetwork address 204.17.5.160/27 can potentially support how many hosts on a network?
- A. 40
  - B. 30
  - C. 20
  - D. 10
39. If all binary bits are turned on in an octet, the decimal equivalent will be \_\_\_\_\_
- A. 253
  - B. 254
  - C. 255
  - D. 256
40. A device on a network with the address 172.16.17.30/20 belongs to which network?
- A. 172.16.17.30
  - B. 172.16.17.0
  - C. 172.16.16.0
  - D. 172.16.16.30



## SECTION B [60 MARKS]

ANSWER **TWO (2)** QUESTIONS FROM THIS SECTION

### QUESTIONS ONE [30 MARKS]

- 1A. As a System Administrator there are seven(7) steps you must follow in planning a computer network. List them. **(7 Marks)**
- 1B. Give **three (3)** important functions of the Presentation layer in the OSI Model **(6 Marks)**
- 1C. List three(3) protocols under the application layer of the OSI model. **(3Marks)**
- 1D. Give the functions of the following networking devices **(10 Marks)**
- i. Passive Hub (2marks)
  - ii. Active Hub (2marks)
  - iii. Proxy (2marks)
  - iv. Gateway (2marks)
  - v. Transceiver (2marks)
- 1E. Explain the term multicasting? **(4marks)**

### QUESTION TWO [30 MARKS]

- 2A. As a system administrator of a company, explain three(3) important characteristics you should consider in the implementation of a computer network. **(6 Marks)**
- 2B. Explain the terms unicast and broadcast in computer network. **(6 Marks)**
- 2C. The two main methods of expediting network connections are circuit switching and packet switching. These two models facilitate the sending and receiving of data packets. Explain packet switching? **(4 Marks)**
- 2D. State three(3) advantages of Packet switching over circuit switching **(6 Marks)**
- 2E. Give four (4) major benefits of using the OSI model. **(8 Marks)**

### QUESTION THREE [30 MARKS]

3A. What are Routing Protocols? **(2 Marks)**

3B. State two (2) advantages each, of static and dynamic routing protocols.

**(8 marks)**

3C. The data link layer is subdivided into two types of sublayers. They are the Media Access Control (MAC) layer and the Logical link control layer. What are their responsibilities in a network. **(4 Marks)**

3D. State two (2) functions of the Data Link Layer. **(4 Marks)**

3E. If the usable host needed is 50 and IP address is 172.58.0.0, what is the

Class Address	(1 mark)
Default subnet mask	(1 mark)
Custom subnet mask	(2 marks)
Total number of subnets	(2 marks)
Total number of host address	(2 marks)
Number of usable host address	(2 marks)
Number of bits borrowed	(2 marks)

**(12 Marks)**