



PRACTICE TEST

MODULE CODE: CNET226

TITLE OF PAPER: COMPUTER NETWORKS

TIME ALLOWED

2 HOURS

DATE

TIME

FACULTY

SCIENCE AND TECHNOLOGY

SCHOOL

COMPUTING AND MATHEMATICS

ACADEMIC YEAR

2010/2011

STAGE

TWO

INSTRUCTIONS TO CANDIDATES:

Write your answers in the spaces provided on THIS paper.

Section A: Answer **ALL** questions. This section is worth 75 marks in total, each question is worth 2.5 marks.

Section B: Answer **ALL** questions. This section is worth 24 marks in total, each question is worth 8 marks.

This test is worth 25% of the total module score.

Candidates are not to look at the paper until instructed to do so.

Section A: Answer all questions

Each question is worth the same number of points. Mark your answer on the separate answer sheet provided. There is no penalty for incorrect answers.

1. A message takes 10 ms to transmit when sent at 40 kbps. How many bits are there in the message?

- A 2500
- B 250
- C 400
- D 4000

2. Television transmission is an example of which type of transmission?

- A Half duplex
- B Automatic Repeat Request
- C Simplex
- D Full duplex

3. The following bit patterns consist of 7 data bits followed by a parity bit. Which one is error free even parity?

- A 01010001
- B 01010100
- C 01010111
- D 01010101

4. An Ethernet broadcast domain is

- A a part of the Ethernet LAN where only one station may transmit at a time
- B the same as an IP subnet
- C divided up by using a hub
- D none of the above

5. An Ethernet station broadcasts from the centre of a 100m segment. Assuming that the signal travels at 70% of the speed of light (a speed of 2.0×10^8 m/s), how long must it wait before it can be certain that there has not been a collision?

- A 0.5 μ s
- B 1.0 μ s
- C 2.0 μ s
- D 5.0 μ s

6. The Ethernet MTU (maximum transmission unit) is

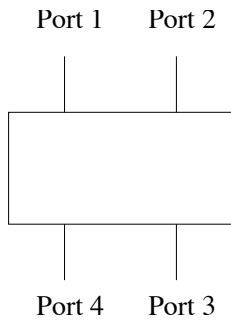
- A 53 bytes
- B 1462 bits
- C 1522 bits
- D 1522 bytes

7. Which one of the following statements about Ethernet is correct?

- A All types of Ethernet support full duplex operation
- B 100Base_T Ethernet runs at 100Mbytes/sec
- C Gigabit Ethernet can only use fibre
- D Modern versions of Ethernet are no longer based on CSMA/CD

8. The hidden terminal problem refers to the situation where there are three wireless stations X, Y and Z. Station X can communicate with station Y, and:

- A Station Z has lost communication, for example by entering a tunnel
- B Station X cannot communicate with station Z. Station Y cannot communicate with station Z
- C Station X can communicate with station Z. Station Y can communicate with station Z
- D Station Y can communicate with station Z. Station Z cannot communicate with station X



9. The diagram above shows an Ethernet switch with four ports. The forwarding table in the switch is initially empty. What happens when a frame arrives on port 2 with source address 12:34:45:78:9A:BC.

- A The frame is broadcast from all ports
- B The frame is dropped
- C The frame is transmitted from port 1
- D The frame is broadcast from ports 1, 3 and 4

10. Referring to the same switch, what are the contents of the forwarding table after the first frame has been processed?

- A Two entries: 12:34:45:78:9A:BC↔1, 12:34:45:78:9A:BC↔2
- B A single entry: 12:34:45:78:9A:BC↔2.
- C The table is still empty
- D A single entry: 12:34:45:78:9A:00↔0.

11. Wireless connections are

- A slower than cabled connections
- B less secure than cabled connections
- C more susceptible to interference than cabled connections
- D all the above

12. A Router forwards or filters a packet by comparing the information in its address and routing tables to the packets

- A Layer 2 source address
- B Layer 4 destination address
- C Layer 2 destination address
- D Layer 3 destination address

13. Each row of the ARP table of a host contains the following information:

- A DNS address, IP address, timeout
- B port number, IP address, timeout
- C port number, Ethernet address, timeout
- D IP address, Ethernet address, timeout

14. ICMP (Internet Control Message Protocol) is used to

- A Specify the expected behaviour of a host attached to the Internet
- B Control the behaviour of other protocols
- C Control all messages sent over the Internet
- D Send control messages over the Internet

15. The Time-To-Live (TTL) field in an IP packet is

- A incremented by 1 by each intermediate router the packet traverses
- B changed to the current time by intermediate routers
- C not changed by intermediate routers
- D decremented by 1 by each intermediate router the packet traverses

16. What is the dotted decimal network mask appropriate for the address 192.168.1.1/21

- A 255.255.252.0
- B 255.255.248.0
- C 255.255.192.0
- D 255.255.224.0

17. What is the network-prefix for the address 192.168.1.1/24

- A 192.168.0.0
- B 255.255.24.0
- C 255.255.0.0
- D 192.168.1.0

18. What is the slash notation for an address 192.168.1.1 with subnet mask 255.255.255.0?

- A 192.168.0.0/24
- B 192.168.1.1/18
- C 192.168.0.0/18
- D 192.168.1.1/24

19. How many addresses (including network and broadcast) are there in the subnet which includes the address 192.168.1.1/29

- A 4
- B 8
- C 16
- D 32

20. When connecting a new host to an Ethernet LAN, the gateway field

- A is determined automatically by ARP
- B must be set to the Ethernet address of the Ethernet switch
- C must be set to the local DNS server address
- D must be set to the IP address of the host connected to the internet

21. UDP

- A Does not require a header
- B Has a header that is smaller than the TCP header
- C Has a header that is larger than the TCP header
- D Has both a header and a trailer

22. One bit sequence numbers in the Stop-and-Wait protocol are needed in order to

- A synchronize transmitter and receiver
- B allow duplicate packets to be recognised
- C distinguish ACK from NAK packets
- D support flow and congestion control

23. If a pair of hosts wish to send application-level messages to each other using TCP

- A Only a single TCP connection is necessary irrespective of underlying link layer technology
- B A six way handshake is needed to set up this configuration
- C Two separate TCP connections must be initialized
- D Only one TCP connection is needed provided it is run over full duplex Ethernet

24. The 3 way handshake is designed to

- A encourage SYN flood attacks
- B prevent errors in case ACK segments are lost
- C set up virtual circuits between hosts
- D set up a TCP connection

25. A browser on your machine makes a TCP connection to a web server on a remote server. The source and destination port numbers in the TCP header of the packet sent by your machine are probably:

- A source port 80, destination port 80
- B source port 80, destination port 51283
- C source port 51283, destination port 80
- D source port 51283, destination port 51283

26. An authoritative DNS server

- A stores the addresses of all TLD (Top Level Domain) servers
- B is another way of describing a root DNS server
- C never has to forward requests to other DNS servers
- D stores the addresses of all machines in an organisation

27. At what layer does an Ethernet Hub work?

- A Layer 4
- B Layer 3
- C Layer 2
- D Layer 1

28. If a TCP/IP packet is not received at the expected destination

- A The Network layer will notify the sending application
- B The data may be resent when there is a timeout on the sender
- C The destination host will request the sending host to retransmit
- D The IP layer handshaking system will fail

29. A *scalable* solution

- A does not require significant design changes as the number of users grows.
- B involves components that fit into various size racks.
- C works both over a LAN and a WAN.
- D needs no additional hardware as the number of users grows.

30. A client sends an HTTP request message with the *If-modified-since:* line in the header. If the page on the server has not changed since the last time the client retrieved the object then the server will send a response message with the status code:

- A 200 OK
- B 304 Not Modified
- C 404 Not Found
- D None of the above

Section B: Answer all questions

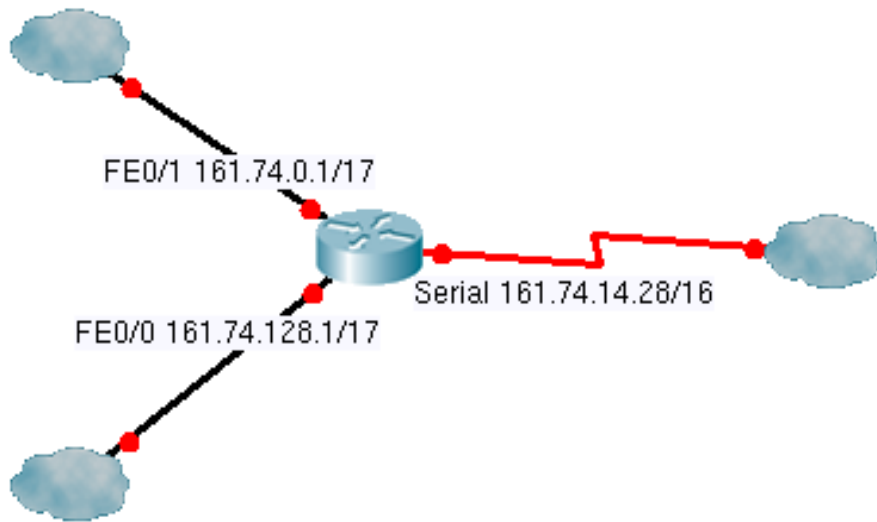
Each question is worth equal marks. Write your answers below the questions.

31.

Draw a diagram showing how the layers of the OSI model and the TCP/IP model match up. Make sure you label each layer of each model with its name.

Answer:





32. Fill out the entries in the forwarding table for the router shown in the network above.

Answer:

<i>Network</i>	<i>Subnet Mask</i>	<i>Port</i>
default		FE0/0
		FE0/1
		Serial

33. Explain how errors in an Ethernet frame are detected and what a Network Interface Card (NIC) does when it detects an error.

Answer:

