UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2011/ 2012

COURSE NAME	:	NETWORK AND DATA COMMUNICATION
COURSE CODE	:	BIT 2073 / BIT 20703
PROGRAMME	:	BACHELOR OF INFORMATION TECHNOLOGY
EXAMINATION DATE	:	JUNE 2012
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF NINE (9) PAGES

PART A

Instruction : Choose the **BEST** answer.

Q1   A network has been assigned the IP address of 156.16.0.0. A decision has been made to divide the network into 1024 subnets. Which of the following command is required to configure it with an address from the 25th subnet of this network?

A. Router(config-if)# ip address 156.16.5.0   255.255.255.224
B. Router(config-if)# ip address 156.16.5.0   255.255.255.192
C. Router(config-if)# ip address 156.16.6.65 255.255.255.192
D. Router(config-if)# ip address 156.16.4.193 255.255.255.192
E. Router(config-if)# ip address 156.16.3.192 255.255.255.0

Q2   Where will the changes be stored after several configuration changes are made to a router, the **copy run start** command is issued?

A. FLASH
B. ROM
C. NVRAM
D. RAM
E. the configuration register.

Q3   Which technology captures the speed of switching and the scalability of routing?

A. Layer 3 switching
B. Process routing
C. Fast switching
D. Layer 2 routing
E. Layer 2 and 3 routing

Q4   Which multicast address is reserved for the purpose of sending to all hosts on a subnet?

A. 224.0.0.1
B. 224.0.0.2
C. 224.0.0.3
D. 224.0.0.255
E. 239.0.0.255

Q5   How many bits from the host portion are to be taken to create eight subnets?

A. 2
B. 3
C. 4
D. 5
E. 6

Q6   What class of IP address is used for multicasting?

A. Class A
B. Class B
C. Class C
D. Class D
E. Class E

Q7   What is the IP address reserved for the loopback test?

A. 121.0.0.0
B. 191.0.0.0
C. 126.0.0.0
D. 127.0.0.0
E. 227.0.0.0

Q8   What is the class for 198.49.2.1 IP address?

A. Class A
B. Class B
C. Class C
D. Class D
E. Class E

Q9   Which error detection method uses one's complement arithmetic?

A. VRC
B. LRC
C. CRC
D. Checksum
E. DRC

Q10 How does the CRC checker knows that the received data unit is undamaged?

A. Polarity of the reminder equal to zero
B. All the reminder of CRC checksum is all non zero
C. The CRC checker divides the received data by the predetermined divisor and accepts the data if the reminder is zero
D. Value of r1 + r2 + r3 equal to zero
E. Bit stuffing in the data all equal to the predetermined value set in the CRC Box

Q11 The term 'single bit error' means that only one bit of a given data unit is changed from

_____.

A. 1 to 0 and 0 to 1
B. 11 to 10 and 00 to 01
C. 1110 to 0001 and 0001 to 1110
D. 1 to 1 and 0 to 0
E. 0 to 11 and 1 to 00

Q12 In cyclic redundancy checking, the divisor is _____ the CRC.

A. the same size as
B. one bit less than
C. one bit more than
D. two bits more than
E. three bits more than

Q13 Which error detection method can detect a single-bit error?

A. VRC
B. LRC
C. CRC
D. All of the above
E. A and B only

Q14 What kind of schemes are Manchester and NRZ?

A. Encoding
B. Decoding
C. Encrypting
D. Decrypting

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E. Modulation

Q15   What is one advantage of using fiber optic cabling in networks?

A. Cheap
B. Easy to install
C. Not susceptible to noise
D. It available either with or without an outer shield
E. Very small in diameter compare with UTP

Q16   Which of the following are examples of WAN services?

A. Ethernet and 802.3
B. ISDN and Frame Relay
C. Token Ring and FDDI
D. SDLC and HDLC
E. Token Ring and ISDN

Q17   Bandwidth is described in _____.

A. bytes per second
B. bits per second
C. megabits per millisecond
D. centimeter
E. kilobits per second

Q18   On wireless networks, commonly, encoding is done using _____.

A. Manchester and NRZI
B. 4B/5B
C. AM, FM and PM
D. Manchester only
E. All of the above

Q19   .com is the domain typically assigned to _____.

A. client machine
B. customers
C. network provider companies
D. corporation
E. None of the above

Q20 Structured Wiring usually consists of the following main components:
   i.   backbone
   ii. horizontal
   iii. server
   iv. work area
   v.   riser

   A. i, ii, iii and iv.
   B. i, iii and iv.
   C. i, ii and iv.
   D. i, ii, iii and v.
   E. all of the above

(20 marks)

PART B

Instruction : Answer **ALL** the questions.

Q21 Given:

Bit stream : 1010

Number of redundancy bits (r): $2^r >= m + r + 1$ (where m is the number of data bit).

Answers the following question (Show all your working).

(a) Calculate the value for r.

(2 marks)

(b) Determine the position of all the redundancy bits.

(6 marks)

(c) Calculate the values of these redundancy bits.

(3 marks)

(d) Calculate the final Hamming Code.

(2 marks)

Q22. Two principles of how Fiber Optic works are reflection and refraction.

(a) Explain about these two principles.

(2 marks)

(b) Can fiber optics work with only one principle?

(1 mark)

(c) Justify your answers in **Q22(b).**

(2 marks)

(d) State which component of fiber optic is more dense.

(1 mark)

(e) State a type of fiber optic cable that can be used to transmit data for a long distance transmission.

(2 marks)

(f) List **THREE (3)** advantages of fiber optic cable compare with UTP cable.

(3 marks)

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Q23 (a) Justify **TWO (2)** reasons for subnetting a LAN.

(2 marks)

(b) Calculate the subnets and hosts based on network address:
(i) 199.168.221.0/29

(4 marks)

(ii) 172.26.0.0/22

(4 marks)

(c) Calculate the first valid host on the subnetwork 172.31.91.133 with subnet mask 255.255.255.224.

(4 marks)

(d) Calculate the subnet mask of 172.30.0.0 when you need 1000 host on your network.

(4 marks)

Q24 (a) State the purpose of :
(i) repeater
(ii) hub
(iii) bridge
(iv) switch
(v) router

(10 marks)

(b) Clarify the important of collision domain.

(2 marks)

(c) Explain the four-repeater rule in designing a network.

(4 marks)

(d) Discuss **TWO (2)** advantages of using fiber optic as a backbone.

(2 marks)

PART C

Instruction : Answer **ALL** the questions.

Q25. Given the following information for an implementation of Local Area Network (LAN) (using structured cabling):

- Total Nodes – 1500
- Horizontal cabling – RM200.00 per node (inclusive of face plate, conduit, trunking and labor charge)
- Patch Panel and Ring Management (48 ports) – RM300.00 per unit
- Patch Panel and Ring Management (24 ports) – RM280.00 per unit
- 3 COM Switch (24 ports) – RM3000.00 per unit
- Patch Cord (1 meter) – RM10.00 per unit
- Patch Cord (3 meter) – RM20.00 per unit
- Cross Cable (1 meter) – RM10.00 per unit
- IT RACK – RM400.00 per unit

Prepare the following documentation as part of a quotation/tender report:

i) Sketch the structured cabling diagram.
ii) Prepare a costing table based on your answer in **Q23(i).**

(20 marks)