



FINAL  
Examination Paper

(COVER PAGE)

Session : AUGUST 2017

Programme : Diploma In Information And Communication Technology (DICTN)

Course : ICT2103: Network Design, Testing And Implementation

Date of Examination : 8 December, 2017 (Friday)

Time : 8:00 am – 10:00 am Reading Time : Nil

Duration : 2 Hours

**Special Instructions :**

**SECTION A:** Answer **ALL** multiple choice questions in OMR sheet.

**SECTION B:** Answer any **THREE (3)** essay questions.

**IMPORTANT NOTE : THIS PAPER SHOULD NOT BE TAKEN OUT OF THE EXAMINATION HALL**

Materials permitted : Non-programmable Calculators

Materials provided : OMR Sheets

Examiner(s) : Victor Raj Kolintiar and Karen Wong

Moderator : Professor Dr Abdullah Gani

*This paper consists of 8 printed pages, including the cover page*

DIPLOMA IN INFORMATION AND COMMUNICATIONS TECHNOLOGY  
PROGRAMME (DICTN)  
ICT2103: NETWORK DESIGN, TESTING & IMPLEMENTATION  
FINAL EXAMINATION: AUGUST 2017 SESSION

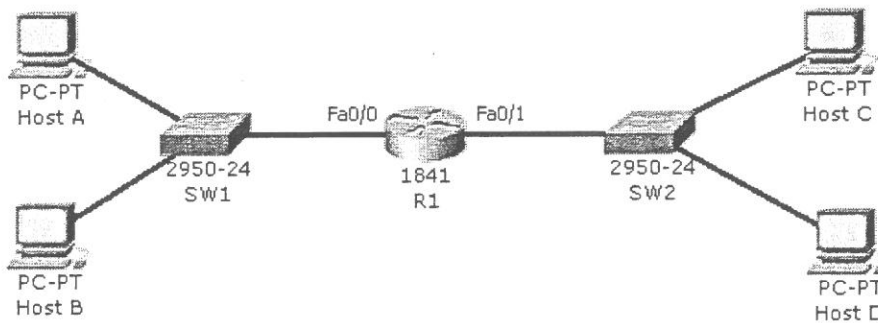
**Instruction:** This paper consists of **TWO (2)** SECTIONS. Answer **ALL** questions in SECTION A and any **THREE (3)** questions in SECTION B.

**Section A: (40 marks)**

Answer **ALL** questions in the OMR sheet provided.

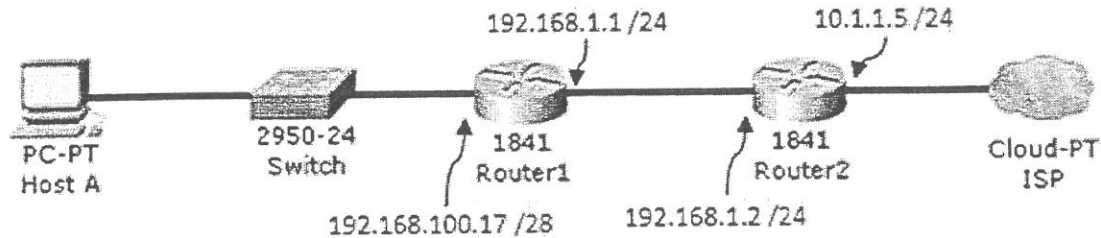
1. One of the most obvious places to put an IDS sensor is near the firewall. Where exactly in relation to the firewall is the most productive placement?
  - A. Inside the firewall
  - B. Outside the firewall
  - C. Both inside and outside the firewall
  - D. Neither inside the firewall nor outside the firewall
  
2. When a router cannot route a datagram or host cannot deliver a datagram, the datagram is discarded and the router or the host sends a \_\_\_\_\_ message back to the source host that initiated the datagram.
  - A. Destination unreachable
  - B. Source quench
  - C. Router error
  - D. Time exceeded
  
3. Which statement is true about the command `ip route 172.16.3.0 255.255.255.0 192.168.2.4`?
  - A. It establishes a static route to the 172.16.3.0 network.
  - B. It configures the router to send any traffic for an unknown destination to the 172.16.3.0 network.
  - C. It creates a static route to the 192.168.2.0 network.
  - D. It is a route that would be used last if other routes to the same destination exist.
  
4. On which of the following devices can you implement VLANs?
  - A. Repeater
  - B. Routers
  - C. Hubs
  - D. Switches

5. \_\_\_\_\_ routing protocols do not exchange routing table. Instead, routers running a routing protocol exchange information about the links to which a router is connected.
- Link-state
  - Distance vector
  - Static
  - Default
6. The TTL field has value 10. How many routers (max) can process this datagram?
- 11
  - 5
  - 10
  - 1
7. Which protocol should you select if the network diameter is more than 17 hops?
- RIPv1
  - RIPv2
  - EIGRP
  - All of the above
8. SW1 and SW2 have default configurations. Which of the following is true if Host A sends a broadcast? *Select the best answer.*



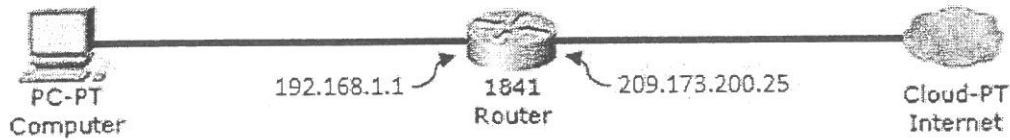
- Hosts A, B, C, and D will receive the broadcast.
- Hosts A, B and the Fa0/0 interface of R1 will receive the broadcast.
- Host C and D will not receive the broadcast.
- Hosts B, C, D and interface Fa0/0 and Fa0/1 of R1 will receive the broadcast.

9. A network technician is trying to determine the correct IP address configuration for Host A as shown in the diagram below. What is a valid configuration for Host A?



- A. IP address: 192.168.100.18; Subnet Mask: 255.255.255.248; Default Gateway: 192.168.100.17
- B. IP address: 192.168.100.16; Subnet Mask: 255.255.255.248; Default Gateway: 192.168.1.2
- C. IP address: 192.168.100.30; Subnet Mask: 255.255.255.240; Default Gateway: 192.168.1.1
- D. IP address: 192.168.100.22; Subnet Mask: 255.255.255.240; Default Gateway: 192.168.100.17
10. As network administrator, what is the subnet mask that allows 1022 IP addresses given the IP address 172.30.0.0?
- A. 255.255.248.0
- B. 255.255.252.0
- C. 255.255.254.0
- D. 255.255.255.128
11. Which of the following describe router functions?
- |                                   |
|-----------------------------------|
| I. Forward packet                 |
| II. Collision prevention          |
| III. Broadcast domain enlargement |
| IV. Broadcast forwarding          |
| V. Path selection                 |
- A. I, IV and V
- B. I and V
- C. II and III
- D. II, III and IV
12. FTP server listens for connection on port number \_\_\_\_\_.
- A. 20
- B. 21
- C. 22
- D. 23

13. A network engineer is troubleshooting an internet connectivity problem on a computer. Based on the figures given, find out what is causing the problem?



```
PC>ipconfig /all
```

```
Physical Address.....: 00D0.5885.5E10
IP Address.....: 192.168.11.2
Subnet Mask.....: 255.255.255.0
Default Gateway.....: 192.168.1.1
DNS Servers.....: 192.168.1.1
```

- A. wrong DNS server  
 B. wrong default gateway  
 C. incorrect IP address  
 D. incorrect physical address
14. Which field is **NOT** a field within an OSPF packet header?
- A. Packet length  
 B. Router ID  
 C. Authentication type  
 D. Maxage time
15. \_\_\_\_\_ is optimized for efficiency when applications and protocols are configured to send large amounts of data per frame.
- A. Frame size  
 B. Network performance  
 C. Bandwidth utilization  
 D. Routing protocol
16. If your routing table has a static and a RIP route to the same network, which route will be used to route packets by default?
- A. They will all load-balance  
 B. RIP route  
 C. Take turn (Round Robin)  
 D. static routes

17. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?
- A. CDMA
  - B. CSMA/CA
  - C. ALOHA
  - D. CSMA/CD
18. In EIGRP best path is known as the successor, where as backup path is known as \_\_\_\_\_.
- A. feasible successor
  - B. back-up route
  - C. default route
  - D. none of the above
19. A network has **MTBF (Mean Time Between Failure)** of 100,000 hours and **MTTR (Mean Time To Repair)** of 30 minutes. What is the average downtime of the network in one year?
- A. 2.6 minutes
  - B. 1.8 minutes
  - C. 18 minutes
  - D. 30 minutes
20. Some typical technical goals for organizations today are listed below, **EXCEPT**:
- A. Affordability
  - B. Availability
  - C. Security
  - D. Capacity

**Section B: (60 marks)**

Answer any THREE (3) questions in the answer booklet provided.

**Question 1**

- (a) With the aid of a diagram, explain each phase of the PDIOO network life cycle. (14 marks)
- (b) List **SIX (6)** typical business goals for organizations today. (6 marks)

**Question 2**

- (a) Explain Flat and Hierarchical network topology. (10 marks)
- (b) How do bandwidth and throughput differ? (4 marks)
- (c) State **SIX (6)** types of traffic flow. (6 marks)

**Question 3**

- (a) Given an IP address 200.189.67.88/26, answer the following questions by showing calculation steps for each.
- (i) What is the network address for this IP? (4 marks)
  - (ii) What is the broadcast address for this IP? (2 marks)
  - (iii) What is the 5th usable IP address for this network? (2 marks)
  - (iv) What is the third last usable IP address for this network? (2 marks)
  - (v) State the number of usable IP address for this network? (4 marks)
  - (vi) Which class does this IP address belong to? (1 mark)
- (b) List **FIVE (5)** possible contents of a Network Design Document. (5 marks)

**Question 4**

- (a) Figure 4(a) shows a network where the routing has not been configured between 2 routers. Write the CISCO CLI command to configure the route according to the routing method given below. Please indicate for which router the command is configured in the answer given.

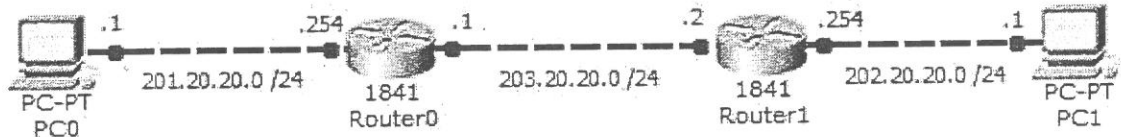


Figure 4(a)

- (i) Configure the network by using static route. (5 marks)
- (ii) Configure the network by using default route. (5 marks)
- (b) Define the following:
- (i) Static route (3 marks)
- (ii) Default route (3 marks)
- (iii) Dynamic route (4 marks)

~ The End ~

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