MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION
JANUARY 2016 SEMESTER

SUBJECT CODE	:	IFD20104
SUBJECT TITLE	:	ROUTER CONFIGURATION
LEVEL	:	DIPLOMA
TIME / DURATION	:	9.00 am – 11.30 am (2 1/2 HOURS)
DATE	:	28 May 2016

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.

2. This question paper is printed on both sides of the paper.

3. This question paper consists of TWO SECTIONS: SECTION A and SECTION B.

4. Answer ALL questions in SECTION A.

5. For SECTION B, answer ALL questions.

6. Please write your answers on the answer booklet given.

7. Answer all questions in English.

THERE ARE 15 PAGES OF QUESTIONS, INCLUDING COVER PAGE.

SECTION A (Total: 25 marks)

MULTIPLE CHOICE QUESTIONS

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

1. If a new LAN is added to an internetwork, which command would add the network to the routing table?

    A. Router (config)> ip route 2.0.0.0 255.0.0.0 via 1.0.0.2

    B. Router (config)# ip route 2.0.0.0 255.0.0.0 1.0.0.2

    C. Router (config)# ip route 2.0.0.0 via 1.0.0.2

    D. Router (config)# ip route 2.0.0.0 1.0.0.2 using 255.0.0.0

2. Why should the enable password be different from the enable secret password?

    A. The router asks that the passwords be changed monthly if they are the same.

    B. It provides an additional category of users.

    C. The enable password can be read directly from the configuration file.

    D. Cisco IOS Software behaves badly if the passwords are the same.

3. Which representations have the same meaning when representing the subnet mask?

    A. /10 and 255.224.0.0

    B. /15 and 255.255.0.0

    C. /21 and 255.255.248.0

    D. /24 and 255.255.0.0

4. Which of the following statement is **TRUE** about store-and-forward switching method?

   A. A store-and-forward switch receives the entire frame before it is being forwarded.

   B. A store-and-forward switch receives the frame partially before it is being forwarded.

   C. A store-and-forward does not perform CRC check before it is being forwarded.

   D. A store-and-forward performs CRC check after the frame is being forwarded.

5. Which one of the following characteristics is true regarding the use of hubs and switches?

   A. Hubs can have their ports be configured with VLAN

   B. Using hubs is costly with regard to bandwidth availability.

   C. Switches cannot forward broadcasts.

   D. Switches increase the number of collision domains in the network.
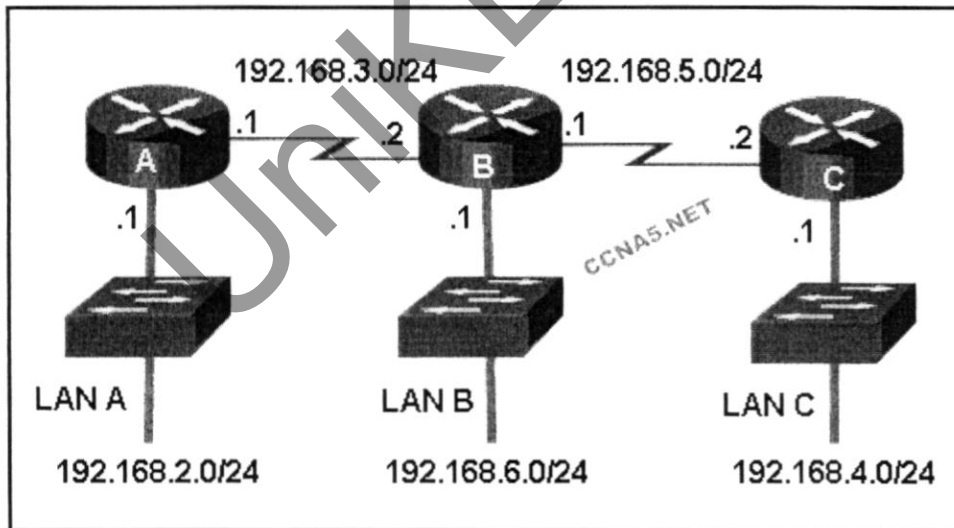
6.

Figure 1 : Network Topology

Refer to Figure 1. Which command would be used on router A to configure a static route to direct traffic from LAN A that is destined for LAN C?

A. A(config)# ip route 192.168.3.2 255.255.255.0 192.168.4.0

B. A(config)# ip route 192.168.5.0 255.255.255.0 192.168.3.2

C. A(config)# ip route 192.168.3.0 255.255.255.0 192.168.3.1

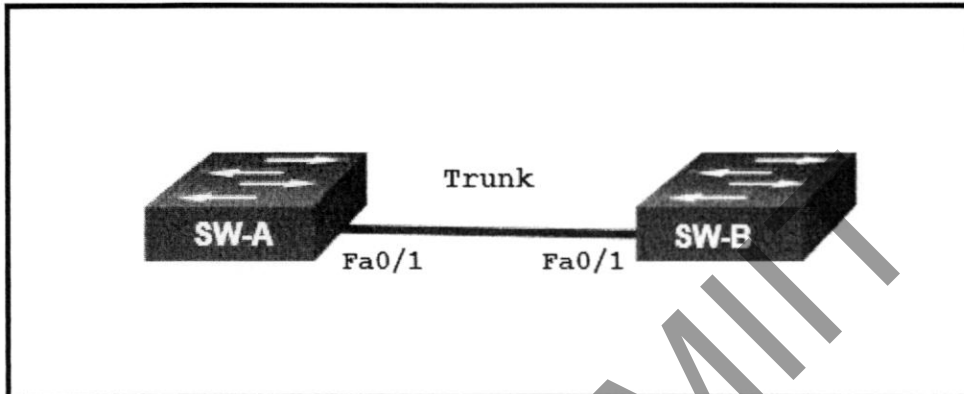D. A(config)# ip route 192.168.4.0 255.255.255.0 192.168.3.2

7.

Figure 2 : Switch Connectivity

Refer to Figure 2. Both of SW-A and SW-B are using Cisco Catalyst. Which type of cable should be used to connect between these two switches?

A. Straight Through Cable

B. Crossover cable

C. Console Cable

D. Fiber optic

8. Which of the following is the different between routers and switches?

A. Routers and switches operate exactly the same.

B. Routers make forwarding decisions using IP addresses, but switches use MAC addresses.

C. Routers forward broadcasts and switches do not.

D. Routers operate faster than switches.

9. A network administrator is asked to design a system to allow simultaneous access to the Internet for 250 users. The ISP for this network can only supply five public IPs. What can be used to accomplish this task?

    A. Routable translation

    B. Dynamic translation

    C. Static translation

    D. Port address translation

10. A network technician issues the following commands when configuring a router:

    R1(config)# router ospf 100

    R1(config-router)# network 10.10.10.0 0.0.0.255 area 0

    What does the number 100 represents?

    A. the autonomous system number to which R1 belongs

    B. the area number where R1 is located

    C. the cost of the link to R1

    D. the OSPF process ID on R1

11. A network administrator has examined the routing table of a router and noted that the entry for the destination network 172.16.3.0/24 begins with the letter C. What does this letter signify?

    A. The route to network 172.16.33.0/24 is directly connected.

    B. The route source was learned statically.

    C. That is the direct route for packets to that network.

    D. That is the default route to the neighbor router.

12. Using a systematic troubleshooting approach, a help desk technician suspects a problem at layer 3 of the OSI model. Which question could be asked to isolate the problem to layer 3 ?

    A. Can you browse to www.cisco.com

    B. Is your network cable plugged in?

    C. Is your PC configured for DHCP?

    D. Do you see a link light on your network card ?

13. A network administrator is determining the best placement of VLAN trunk links. Which type of point-to-point connection utilizes VLAN trunking?

    A. between two switches that share a common VLAN

    B. between a switch and a client PC

    C. between a switch and a network printer

    D. between two switches that utilize multiple VLANs

14. Given a host with the IP address 172.32.65.13 and a default subnet mask, to which network does the host belong?

    A. 172.32.65.0

    B. 172.32.65.32

    C. 172.32.0.0

    D. 172.32.32.0

15. When a router learns from the routing protocol that multiple paths are available to the destination network, which factor is considered by a router to choose the best path to forward a packet?

    A. the lowest metric

    B. the highest metric

    C. the fastest bandwidth of exiting interfaces

    D. the reliability value of the neighboring routers

16.

Gi0/1.5 192.168.5.254/24
Gi0/1.6 192.168.6.254/24
Gi0/1.7 172.16.7.254/24

VLAN 7
172.16.7.2/24

192.168.5.76/24   192.168.6.8/24
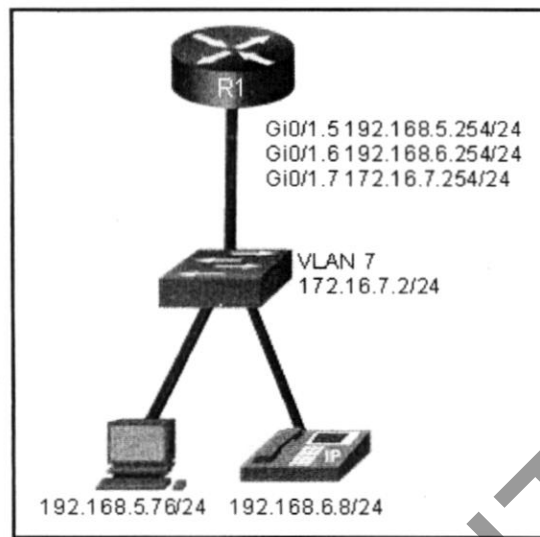
Figure 3

Refer to Figure 3, which implementation of inter-VLAN routing does this topology use?

  A. Interdomain

  B. router on a stick

  C. multiple physical interfaces

  D. routing via a multilayer switch

17. Which item best defines the ping command?

  A. Checks for connectivity at the application layer.

  B. Uses ICMP echo packets to verify connectivity and proper address configuration at the internet layer.

  C. Uses TTL values to generate messages from each router used along a path.

  D. Verifies the sliding window is set up properly.

18. Which statements are **TRUE** when configuring a router to operate with RIP?

    A. At the global configuration prompt issue the command "router rip." Then set up the IP address and subnet mask on each interface.

    B. At the global configuration prompt issue the command "router rip." Then issue the "network" command at the configuration router prompt for each directly connected network.

    C. At the global configuration prompt issue the command "rip." Then use the "network" command to indicate which network(s) to advertise.

    D. At the global configuration prompt issue the command "enable rip routing." Then set up the IP address and subnet mask on each interface.

19. Which dynamic routing protocol was developed as an exterior gateway protocol to interconnect different Internet providers?

    A. RIP

    B. OSPF

    C. EIGRP

    D. BGP

20. Which command will create a dynamic pool named Todd that will provide you with 30 global addresses?

    A. ip nat pool Todd 171.16.10.65 171.16.10.94 net 255.255.255.240

    B. ip nat pool Todd 171.16.10.65 171.16.10.94 net 255.255.255.224

    C. ip nat pool Todd 171.16.10.65 171.16.10.94 net 255.255.255.224

    D. ip nat pool Todd 171.16.10.1 171.16.10.254 net 255.255.255.0

21. Which command would you place on the interface of a private network?

    A. ip nat inside

    B. ip nat outside

    C. ip outside global

    D. ip inside local

22. You want to create an extended access list that denies the subnet of the following host: 172.16.50.172/20. Which of the following would you start your list with?

    A. access-list 110 deny ip 172.16.48.0 255.255.240.0 any

    B. access-list 110 udp deny 172.16.0.0 0.0.255.255 ip any

    C. access-list 110 deny tcp 172.16.64.0 0.0.31.255 any eq 80

    D. access-list 110 deny ip 172.16.48.0 0.0.15.255 any

23. Which of the following commands connects access list 110 inbound to interface Ethernet0?

    A. Router(config)#ip access-group 110 in

    B. Router(config)#ip access-list 110 in

    C. Router(config-if)#ip access-group 110 in

    D. Router(config-if)#ip access-list 110 in

24. What is the effect of this single-line access list?

    access-list 110 deny ip 172.16.10.0 0.0.0.255 host 1.1.1.1

    A. Denies only the computer at 172.16.10.1

    B. Denies all traffic

    C. Denies the subnet 172.16.10.0/26

    D. Denies the subnet 172.16.10.0/25

25. If you wanted to deny all Telnet connections to only network 192.168.10.0, which command could you use?

    A. access-list 100 deny tcp 192.168.10.0 255.255.255.0 eq telnet

    B. access-list 100 deny tcp 192.168.10.0 0.255.255.255 eq telnet

    C. access-list 100 deny tcp any 192.168.10.0 0.0.0.255 eq 23

    D. access-list 100 deny 192.168.10.0 0.0.0.255 any eq 23

SECTION B (Total: 75 marks)

INSTRUCTION: Students are required to answer ALL questions.

Please use the answer booklet provided.

Question 1:

a.   List **THREE (3)** network devices used in setting up a LAN.   (3 marks)

b.   Write an appropriate configuration commands that will configure interface F0/0 of the router with two subinterfaces to provide inter-VLAN routing using 802.1q encapsulation. Use 10.10.10.0/24 for VLAN 10 and 20.20.20.0/24 for VLAN 20.

                                                                                                (4 marks)

c.   i. State the type of link on a switch is a member of only one VLAN.

                                                                                                (2 marks)

ii. You want to change from the default of VLAN 1 to VLAN 4 for untagged traffic. State the command that you use.   (2 marks)

iii. Determine how Cisco Switch trunking provide for network connectivity.

                                                                                                (2 marks)
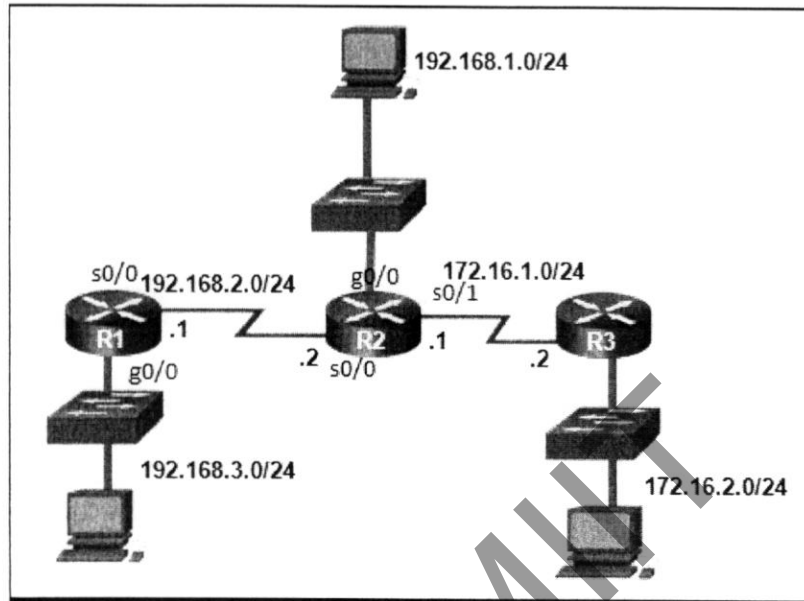
d.   For question d(i) to d(iv), refer to Figure 4.

Figure 4 : Network Topology

i.   Write the contents of the routing table for R1.   (5 marks)

ii.   List networks that is/are directly connected to the R2   (3 marks)

iii.   Determine command used to configure a static route to network
        172.16.2.0 by specifying the next-hop IP address on R1.   (2 marks)

iv.   State another name representing network 192.168.1.0/24   (2 marks)

[25 marks]

Question 2:

a. For question a(i) to a(iii) refer to Figure 5 which illustrates the routing between routers on the Internet using OSPF.
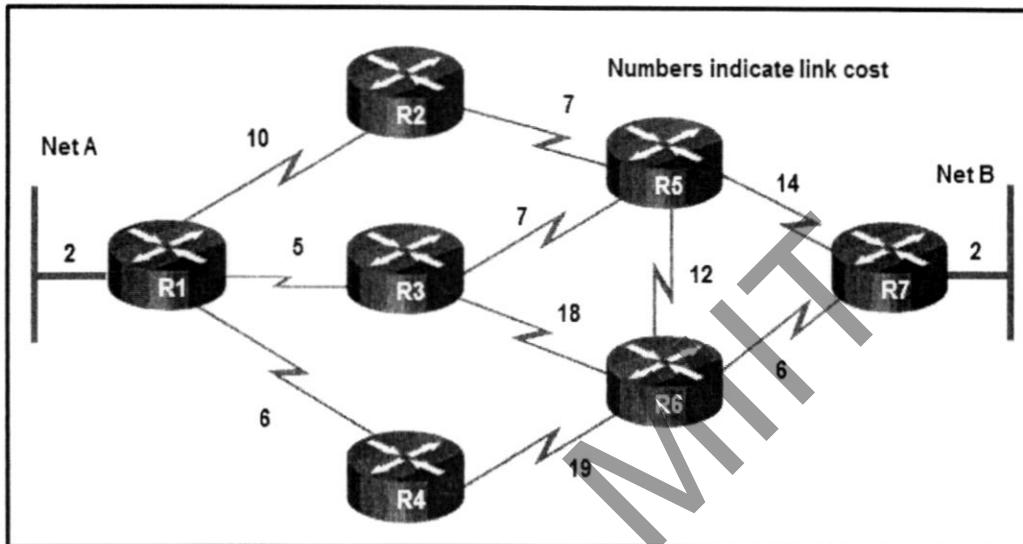

Figure 5 : Network Topology

i. State the advantage of using OSPF as the routing protocol. (2 marks)

ii. List the path will be chosen by OSPF to send data packets from Net A to Net B. (2 marks)

iii. In the event R5 down, which route OSPF will use to forward packet from Net A to Net B. (2 marks)

b. A router can learn about remote network in 2 ways which by dynamically and statically (manual).

i. List **TWO (2)** conditions which are advisable to use static route.

(4 marks)

ii. List **TWO (2)** advantages of configuring Static route in a network.

(4 marks)

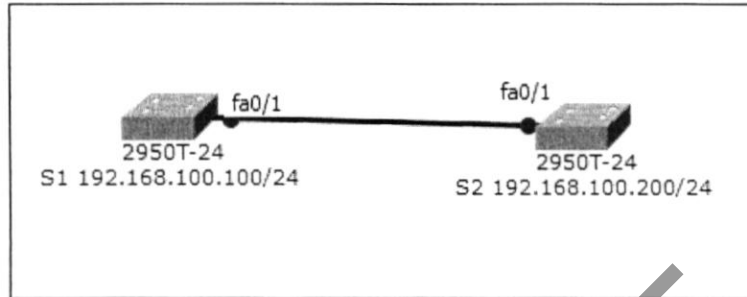c.   For question c(i) to c(iii) refer to Figure 6.

Figure 6 : Switch Connectivity

Azmi is configuring two old version switches (S1 and S2) connecting each other via FastEthernet0/1 interfaces using UTP straight cable. The IP address of S1 is 192.168.100.100/24 and the IP address of S2 is 192.168.100.200/24. When PING command is issued from S1 to S2, the result shows that S2 is unreachable.

   i.   Show a command to ping from S1 to S2.   (2 marks)

   ii.   Give **ONE (1)** possible factor that causes the S2 to be unreachable.

                                                                           (2 marks)

   iii. State the updated technology implemented by Cisco to solve possible problem mentioned in answer C (ii).   (2 marks)

d.   Differentiate between the function of switch and router.   (4 marks)

e.   List **ONE (1)** service that can be used to remotely access a switch using CLI.

                                                                           (1 mark)

                                                                        [25 marks]
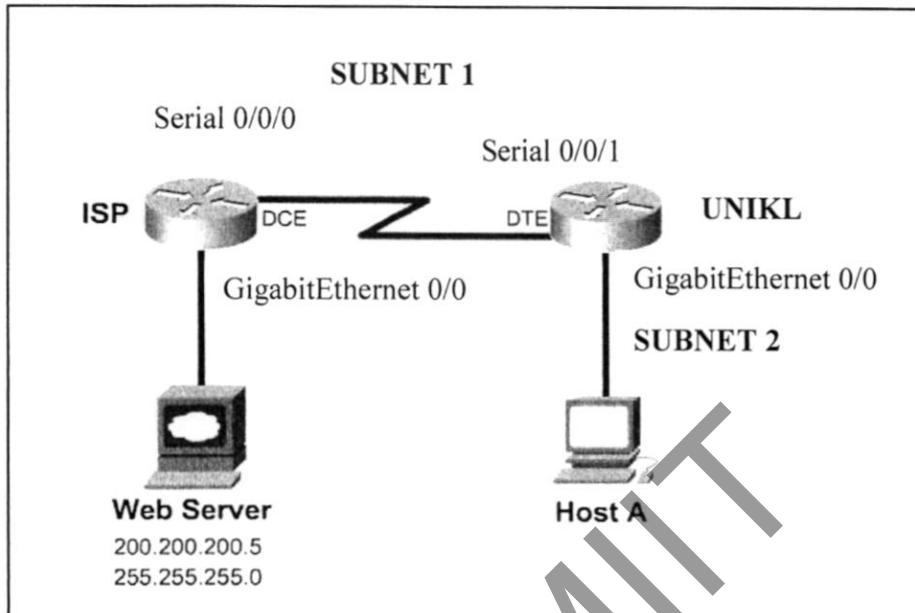
Question 3:

Figure 7: Network Topology

Referring to the figure 7 above, read very carefully the following statement.

Given a 100.100.100.0/24 address provide four subnets to support at least 20 hosts. The current network requires two of the networks and the other two will be used in the future. Use RIP and connect to a web server with the IP address of 200.200.200.5. The 200.200.200.0 network is not to be advertised by the ISP router. Use a static route to reach this network.

Configure all routers with a hostname and password for console, enables secret and telnet access. Security to the web server hosted by the ISP must be provided. Allow all users access to the HTTP service on the web server. Host A belongs to the web administrator and will need full access including the ability to ping the web server. Deny all users from other networks access to the web server.

By referring to network topology in Figure 7 and the scenario given, you are required to answer all the following questions below:

a. Named all the cables used to attach devices as shown in Figure 7. (2 Marks)

b. For router UNIKL, write the command to configure the following: (6 Marks)

   i. Hostname

   ii. Set enable secret passwords to "miit"

   iii. Enable telnet access to the routers and use the password "unikl"

c. The organization has been assigned a class C address, 100.100.100.0 and the network requires four subnets supporting 28 hosts per subnet. List all network address and subnet mask. Show your calculation steps. (6 Marks)

d. Assign the first usable subnet to the serial link between UNIKL and the ISP.

   (6 Marks)

   i. Write the configuration at interface Serial 0//0/0 on the ISP router with the first usable IP address.

   ii. Write the configuration at interface Serial 0/0/1 on UNIKL with the second usable IP address.

   iii. Assign the second usable subnet to the local network. Write the configurations of Host A with the fifth usable IP address and also the configuration at interface GigabitEthernet 0/0 on UNIKL with the first usable IP address.

e. Enable the routing protocol. (5 Marks)

   i.   Write the configuration to enable routing between UNIKL and the ISP using RIP as the routing protocol. Do not advertise the 200.200.200.0 network on the ISP router.

   ii. Write a static route configuration on router UNIKL for 200.200.200.0 network destination.

[25 marks]

END OF QUESTIONS