SULIT

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

PEPERIKSAAN AKHIR

SESI JUN 2015

AFN7125: IP ROUTING

TARIKH : 26 OKTOBER 2015
MASA : 8.30 AM – 10.30 AM (2 JAM)

Kertas ini mengandungi **DUA PULUH (20)** halaman bercetak.
Bahagian A: Objektif (10 soalan)
Bahagian B: Struktur (3 soalan)
Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION B : 85 MARKS
BAHAGIAN B : 85 MARKAH

INSTRUCTION:
This section consists of **THREE (3)** structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **TIGA(3)** soalan berstruktur. Jawab semua soalan.*

QUESTION 1 (36 marks)
SOALAN 1 (36 markah)

CLO2 C2 (a) Differentiate between passive route and active route.

Berikan perbezaan antara 'passive route' dan 'active route'.

[4 marks]
[*4 markah*]

CLO2 C2 (b) Refer to Figure 4. There are **THREE(3)** types of routers using OSPF as their routing protocol. Explain the function for all routers..

*Merujuk kepada Rajah 4. Terdapat **TIGA (3)** jenis router dalam Rajah 4 yang menggunakan OSPF sebagai routing protokol. Terangkan setiap jenis router tersebut.*

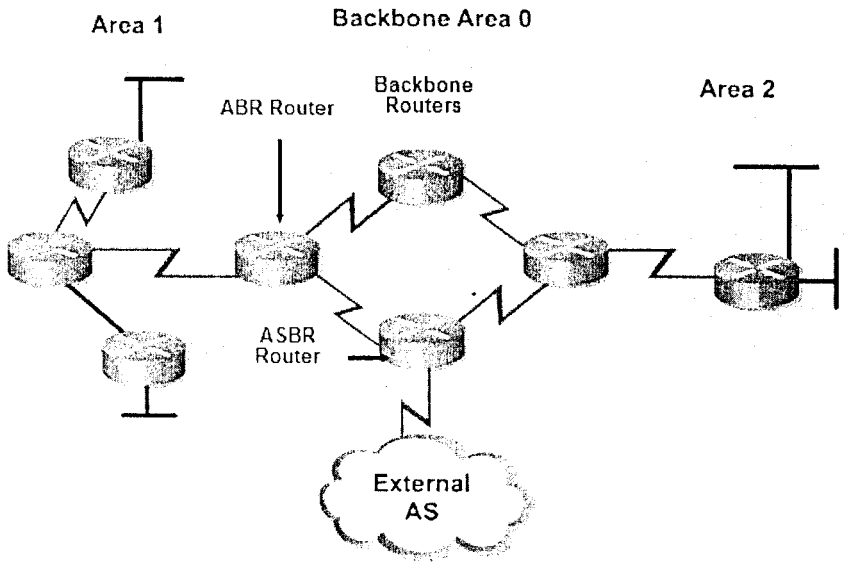


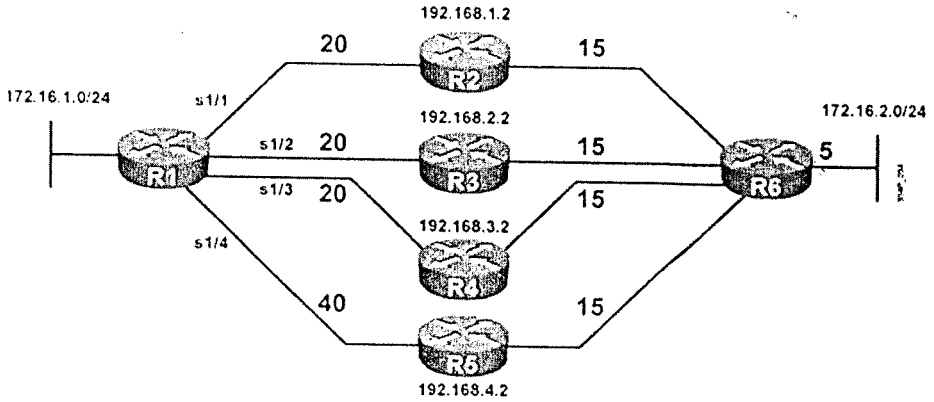
Figure 4 / *Rajah 4*

[6 marks]
[6 *markah*]

CLO2
C3

(c) Referring to Figure 5, if prefix length for all network is /27, summarize the network on router R2, R3, R4 and R5 into one supernet.

Merujuk kepada Rajah 5, jika 'prefix length' untuk semua rangkaian adalah /27, ringkaskan rangkaian pada penghala R2, R3, R4 dan R5 kepada satu supernet.




```
R1(config)# router eigrp 100
R1(config-router)# network 172.16.1.0 0.0.0.255
R1(config-router)# network 192.168.1.0
R1(config-router)# network 192.168.2.0
R1(config-router)# network 192.168.3.0
R1(config-router)# network 192.168.4.0
R1(config-router)# maximum-paths 3
R1(config-router)#
```

Figure 5 / *Rajah 5*

[5 marks]
[5 *markah*]

CLO2
C3

(d) Figure 6 shows the output of **show ip ospf neighbor detail** command. Based on the output, interpret this Ethernet network .

Rajah 6 menunjukkan output arahan ***'show ip ospf neighbor detail'****. Berdasrkan output, tafsirkan rangkaian Ethernet ini.*

```
R1# show ip ospf neighbor detail
 Neighbor 10.1.2.1, interface address 10.1.200.2
    In the area 0 via interface FastEthernet0/0
    Neighbor priority is 5, State is FULL, 12 state changes
    DR is 10.1.200.1 BDR is 10.1.200.2
    Options is 0x52
       [ output omited ]

 Neighbor 10.1.3.1, interface address 10.1.200.3
    In the area 0 via interface FastEthernet0/0
    Neighbor priority is 1, State is FULL, 12 state changes
    DR is 10.1.200.1 BDR is 10.1.200.2
    Options is 0x52
       [ output omited ]

 Neighbor 10.1.2.1, interface address 10.1.100.2
    In the area 0 via interface Serial0/0/0
    Neighbor priority is 0, State is FULL, 12 state changes
    DR is 0.0.0.0 BDR is 0.0.0.0
    Options is 0x52
       [ output omited ]
```

Figure 6 / *Rajah 6*

[4 marks]
[4 *markah*]

CLO2
C1

(e) Identify **TWO(2)** parameters that are used by the router to select the best route.

Kenalpasti ***DUA(2)*** *parameter yang digunakan oleh penghala untuk memilih laluan terbaik.*

[2 marks]
[2 *markah*]

CLO2 C1 (f) Identify **THREE(3)** tools that can be used in path control.
*Kenalpasti **TIGA(3)** alat yang boleh digunakan dalam kawalan laluan.*

[3 marks]
[3 *markah*]

CLO2 C2 (g) Figure 7 show the topology network between Company A and ISP. Based on the figure, answer the question below.

Rajah 7 menunjukkan topologi rangkaian antara Syarikat A dan ISP. Berdasarkan raja tersebut, jawab semua soalan.

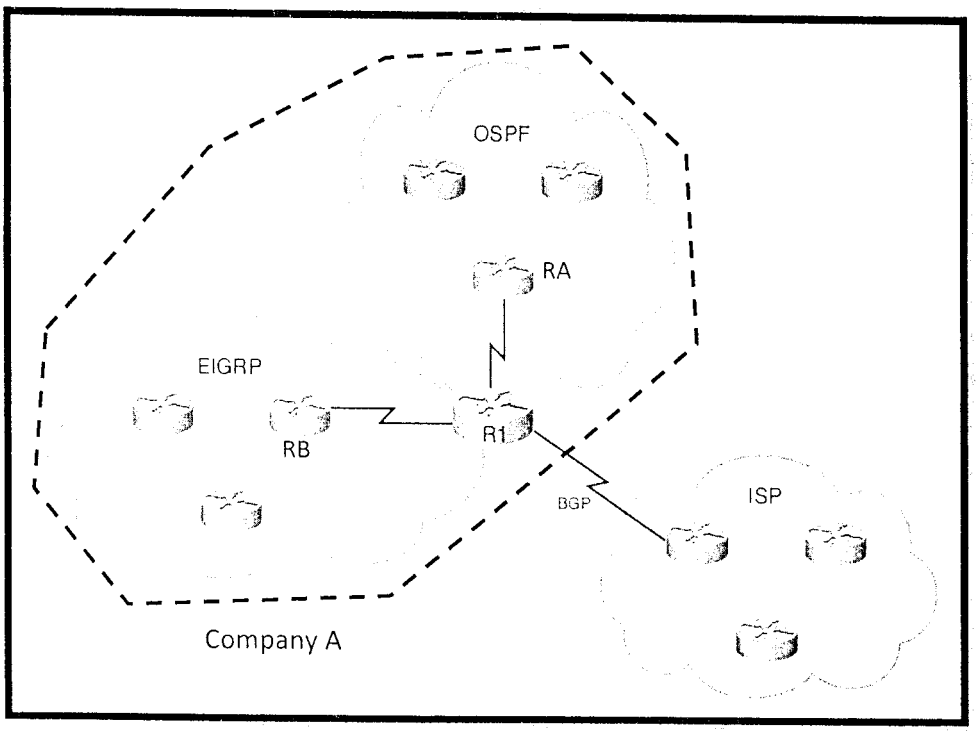


Figure 7 / *Rajah 7*

i. Give **TWO(2)** reasons why multi routing protocol happens?.
*Berikan **DUA(2)** alasan mengapa pelbagai protocol penghalaan boleh berlaku?*

[2 marks]
[2 *markah*]

ii. What will happen if RB sent an ICMP to RA?

Apa yang akan berlaku sikiranya bila RB menghantar ICMP ke RA?

[1 mark]
[1 *markah*]

iii. Explain your answer in question ii.

Jelaskan jawapan anda dalam soalan ii di atas.

[1 mark]
[1 *markah*]

iv. Based on your answer in question iii., explain what can be done to solve the problem?

Berdasarkan jawapan dalam soalan iii., apa yang perlu dilakukan untuk menyelesaikan masalah di atas?

[1 mark]
[1 *markah*]

CLO2
C4

(h) Figure 8 show the configuration for IP SLA probes. Interpret the all the commands.

Rajah 8 menunjukkan konfigurasi untuk prob IP SLA. Jelaskan semua command tersebut.

```
R1(config)# ip sla 11
R1(config-ip-sla)# icmp-echo 209.165.201.30
R1(config-ip-sla-echo)# frequency 10
R1(config-ip-sla-echo)# exit
R1(config)# ip sla schedule 11 life forever start-time now
```

Figure 8 / *Rajah 8*

[7 marks]

[7 *markah*]

QUESTION 2
SOALAN 2

CLO2
C2

(a) The connection between a customer and an ISP can be made in two ways. Illustrate both ways.

Hubungan antara pelanggan dan satu ISP boleh dilaksanakan dalam dua cara. Terangkan setiapnya dengan menggunakan rajah.

[7 marks]
[*7 markah*]

CLO2
C3

(b) Figure 9 show the output of **show ip bgp command**. Answer all questions below.

Rajah 9 menunjukkan output bagi arahan ***'show ip bgp command'****. Jawab semua soalan berikut.*

```
SanJose2# show ip bgp 198.0.0.0
BGP routing table entry for 198.0.0.0/8, version 9
Paths: (1 available, best #1, table Default-IP-Routing-Table)
Flag: 0x820
  Advertised to update-groups:
        1
  Local, (aggregated by 100 172.24.1.18), (Received from a RR-client)
    172.24.1.18 from 172.24.1.18 (172.24.1.18)
    Origin IGP, metric 0, localpref 100, valid, internal, atomic-aggregate,
best
```

Figure 9 / *Rajah 9*

i. According to the output of this command, which address aggregated this route?

Berdasarkan output arahan di atas, alamat manakah aggregat laluan ini?

[1 mark]
[*1 markah*]

ii. State the part of the output that indicates that route reflection is involved in the process.

Nyatakan bahagian output yang menandakan refleksi laluan terlibat dalam proses ini.

[2 marks]
[*2 markah*]

iii. State the part of the output that indicates ATOMIC_AGGREGATE attribute has been set?

Nyatakan bahagian output yang menandakan atribut 'ATOMIC_AGGREGATE' telah ditentukan?

[1 mark]
[*1 markah*]

CLO2
C3

(c) Figure 10 shows the output of **show ip bgp command**. Answer all questions.

Rajah 10 menunjukkan output arahan ***'show ip bgp command'***. Jawab semua soalan berikut.

```
ISP1# show ip bgp
BGP table version is 5, local router ID is 10.1.1.1
       [ output omitted ]

   Network          Next Hop            Metric LocPrf Weight Path
*> 10.1.1.0/24      0.0.0.0                  0         32768 i
*> 172.16.1.0/24    10.0.0.2                               0 100 300 i
*> 192.168.0.0      10.0.0.2                 0             0 100 i
*> 192.168.1.0      10.0.0.2                 0             0 100 i
```

Figure 10 / *Rajah 10*

i. Interpret the > symbol.

Terangkan maksud symbol >

[1 marks]

[*1 markah*]

ii. Interpret the * symbol.
*Terangkan maksud simbol **

[1 marks]
[*1 markah*]

iii. From ISP1, what is the path to network 172.16.1.0/24?
Daripada ISP1, laluan manakah yang diambil untuk ke rangkaian 172.16.1.0/24?

[2 marks]
[*2 markah*]

iv. After issuing a shutdown command on Loopback0 on ISP1, the table version changes to 6. Explain this change.
Selepas arahan 'shutdown' pada Loopback0 di ISP1, versi jadual berubah kepada 6. Terangkan perubahan ini.

[2 marks]
[*2 markah*]

CLO2
C1

(d) Identify **FIVE(5)** challenges when addressing branch network design.
*Kenalpasti **LIMA(5)** cabaran apabila merekabentuk rangkaian alamat cawangan.*

[5 marks]
[5 *markah*]

CLO2
C2

(e) An IPsec VPN can secure and protect all unicast IP traffic within it but it cannot support interior gateway protocols such as EIGRP and OSPF. Why is this happen?

IPsec VPN boleh memberi keselamatan semua IP trafik unicast di dalamnya tetapi tidak menyokong protocol dalaman 'gateway' seperti FIGRP dan OSPF. Mengapa ini terjadi?

[2 marks]

[2 *markah*]

CLO2
C2

(f) Figure 11 shows the configuration for an IPsec VPN between Branch and HQ sites. Identify the highlighted configuration components.

Rajah 11 menunjukkan konfigurasi IPsec VPN antara Branch dan HQ. Kenalpasti komponen konfigurasi yang diwarnakan.

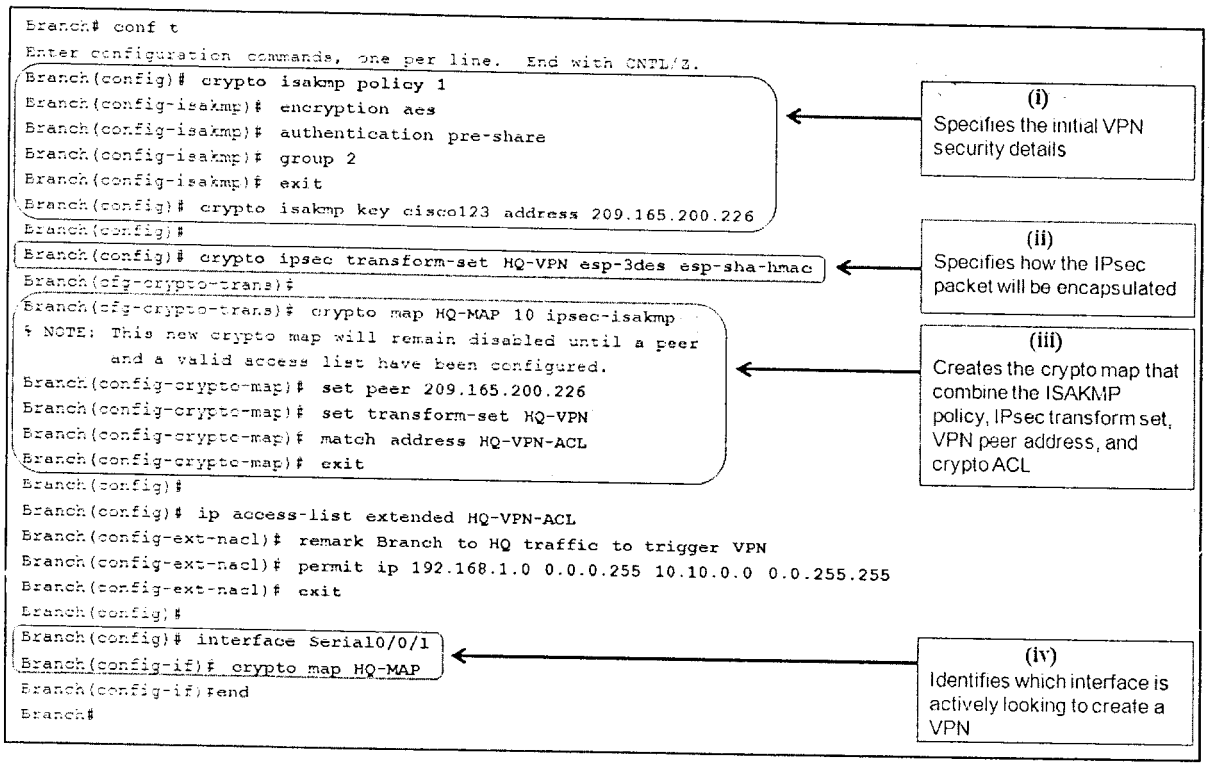


Figure 11 / *Rajah 11*

[4 marks]

[4 *markah*]

QUESTION 3 (21 marks)
SOALAN 3 (21 markah)

CLO1
C1

(a) Define Enterprise Network.

Berikan definasi 'Enterprise Network'.

[2 marks]
[*2 markah*]

CLO1
C1

(b) Name **TWO (2)** routing protocol used in the campus backbone.

*Namakan **DUA (2)** routing protokol yang digunakan dalam 'backbone' kampus*

[2 marks]
[*2 markah*]

CLO2
C1

(c) Name **THREE(3)** types of IPv6 address.

*Berikan **TIGA(3)** jenis alamat IPv6.*

[3 marks]
[*3 markah*]

CLO2
C1

(d) State types of static routes in IPv6.

Nyatakan jenis 'static route' dalam IPv6.

[4 marks]
[*4 markah*]

CLO2
C2

(e) Give **ONE(1)** characteristic for each type of static routes as in question (b).

*Berikan **SATU(1)** ciri bagi setiap jenis 'static route' yang diberikan dalam soalan (b).*

[4 marks]
[*4 markah*]

CLO2
C2

(f) For each of the following IPv6 addresses, determine whether or not it is valid. If the IPv6 address is valid, simplify the following address. Justify if the IPv6 address is not valid.

Tentukan sama ada alamat IPv6 yang berikut sah atau tidak sah. Jika alamat IPv6 adalah sah, ringkaskan alamat tersebut. Berikan justifikasi jika alamat IPv6 tidah sah.

i. FE80:0000:0000:0200:0000:0000:FE43:172F

[2 marks]
[2 *markah*]

ii. 2031:0000:130F:0000:0000:09C0:876A:130B

[2 marks]
[2 *markah*]

iii. CDFE:910A:5709:0075:1024:3900:0201:2356

[2 marks]
[2 *markah*]

SOALAN TAMAT