

SULIT



BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI

PEPERIKSAAN AKHIR
SESI JUN 2016

DFN4213 ADVANCED SWITCHING & ROUTING

TARIKH : 04 NOVEMBER 2016 (JUMAAT)
MASA : 8.30 AM – 10.30 AM (2 JAM)

Kertas ini mengandungi DUA PULUH DUA (22) halaman bercetak.

Bahagian A: Objektif (30 soalan)

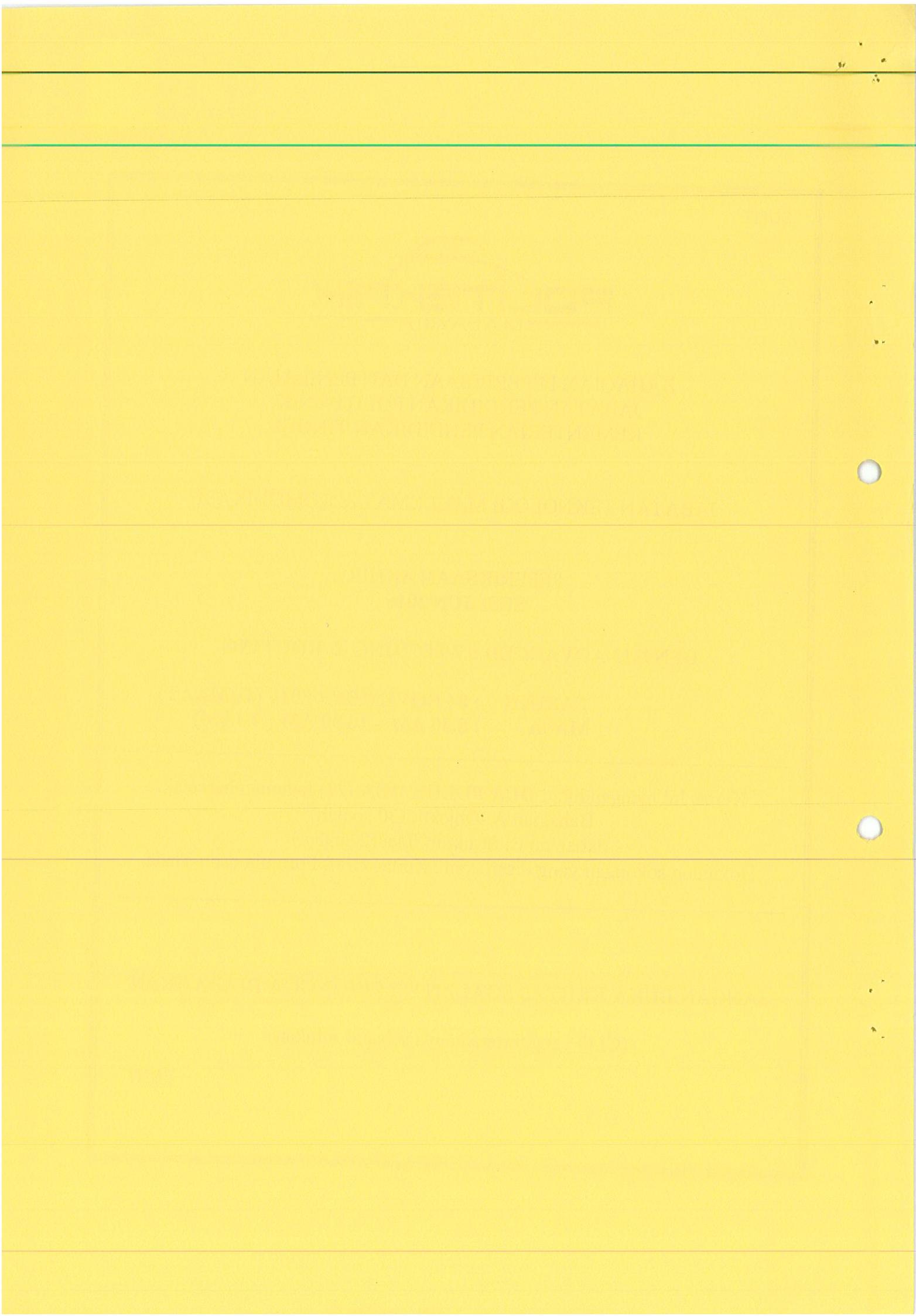
Bahagian B: Struktur/ Esei (2 soalan)

Dokumen sokongan yang disertakan : Kertas Graf, Formula dsb / Tiada

JANGAN BUKA KERTAS SOALANINI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT



SECTION A : 45 MARKS**BAHAGIAN A : 45 MARKAH****INSTRUCTION:**

This section consists of THIRTY (30) objective questions. Mark your answers in the OMR form provided.

ARAHAN :

Bahagian ini mengandungi TIGA PULUH (30) soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.

- CLO1 1. Identify the feature of enterprise class equipment to assist an enterprise network in maintaining 99% up-time.

C1 *Kenal pasti ciri-ciri peralatan kelas enterprise bagi membantu rangkaian enterprise kekalkan 99 % up- time.*

- A. Redundant power supply
Bekalan kuasa bertindan
- B. Failure domains
Domain yang gagal
- C. Collapsed core
Teras runtuh
- D. Service modules
Modul perkhidmatan

CLO1
C2

2. Identify the benefit of extending access layer connectivity to users through a wireless medium.

Kenalpasti manfaat meluaskan sambungan lapisan akses kepada pengguna melalui medium tanpa wayar.

- A. Wireless medium can increase network management options
Medium tanpa wayar boleh meningkatkan pilihan pengurusan rangkaian
- B. Wireless medium can reduce costs
Medium tanpa wayar boleh mengurangkan kos
- C. Wireless medium can increase bandwidth availability
Medium tanpa wayar boleh meningkatkan ketersediaan bandwidth
- D. Wireless medium can decrease the number of critical points of failure
Medium tanpa wayar boleh mengurangkan kadar kegagalan titik kritikal

CLO1
C1

3. Choose an advantage of Per VLAN Spanning Tree Plus (PVST+).
Pilih kelebihan Per VLAN Spanning Tree Plus (PVST+).

- A. PVST+ optimizes performance on the network through load sharing.
PVST+ mengoptimumkan prestasi dalam rangkaian melalui perkongsian beban.
- B. PVST+ requires fewer CPU cycles for all the switches in the network.
PVST+ memerlukan beberapa kitaran CPU untuk semua "switch" dalam rangkaian.
- C. PVST+ reduces bandwidth consumption compared to traditional implementations of STP that use CST.
PVST+ mengurangkan penggunaan jalur lebar berbanding pelaksanaan tradisional seperti STP yang menggunakan CST.
- D. PVST+ optimizes performance on the network through auto selection of the root bridge.
PVST+ mengoptimumkan prestasi rangkaian melalui pemilihan automatik bagi "root bridge".

CLO1 4. Choose the RSTP ports that are connected to end devices.

C2

Pilih sambungan bagi RSTP apabila dihubungkan dengan peranti.

- A. root ports
- B. designated ports
- C. trunk ports
- D. edge ports

CLO1 5. After the election of the root bridge has been completed, interpret will the switches find the best path to root bridge.

C3

Setelah selesai pemilihan root bridge, bagaimakah switch akan memilih laluan terbaik menuju ke root bridge.

- A. Each switch will analyze the port states of all neighbors and use the designated ports to forward traffic to the root.
Setiap switch akan menganalisis status port kesemua jiran dan akan menggunakan port designated untuk menghantar trafik kepada root.
- B. Each switch will analyze the BID of all neighbors to reach the root and use the path through the lowest BID neighbors.
Setiap switch akan menganalisis BID kesemua jiran untuk sampai ke root dan akan menggunakan laluan BID jiran yang paling rendah.
- C. Each switch will analyze the sum of all port costs to reach the root and use the path with the lowest cost.
Setiap switch akan menganalisis jumlah kos port untuk sampai ke root dan akan menggunakan laluan dengan kos yang paling rendah.
- D. Each switch will analyze the sum of the hops to reach the root and use the path with the fewest hops.
Setiap switch akan menganalisis jumlah hop untuk sampai ke root dan akan menggunakan laluan yang mempunyai hop yang paling rendah.

CLO1
C4

6.

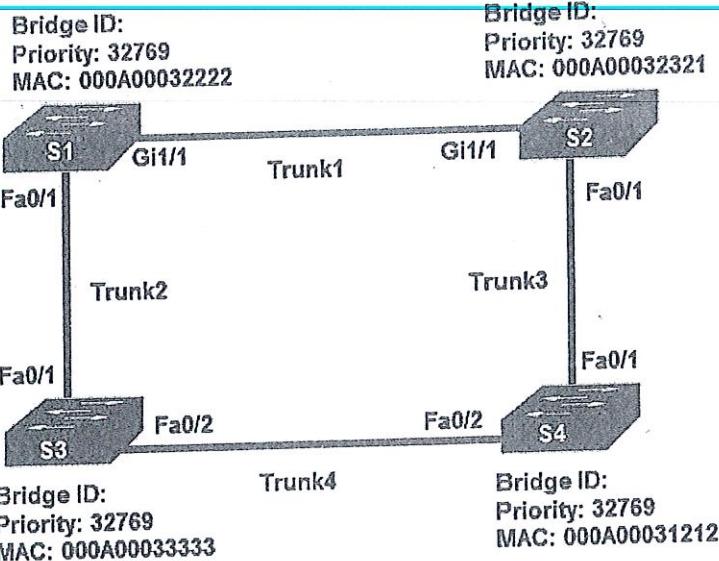


Figure A1 / Rajah A1

Refer to Figure A1. Determine the reason why Trunk 2 will not forward any traffic after the root bridge election process is complete.

Rujuk Rajah A1. Tentukan pautan trunk yang tidak akan menghantar sebarang trafik selepas proses pemilihan root bridge selesai.

- A. Trunk 2 connected to S3 that have the highest MAC address value.
- B. Trunk 2 have a high port cost.
- C. Trunk 2 have the same speed with Trunk 4.
- D. Trunk 2 have the same speed with Trunk 3.

CLO2
C1

7. Select the criteria to be considered when electing the root bridge, if there is no bridge priority is configured in PVST.

Pilih kriteria yang diambil kira apabila memilih "root bridge", jika tiada "bridge priority" dikonfigurasi dalam PVST.

- A. Highest IP Address / Alamat IP tertinggi
- B. Lowest IP Address / Alamat IP terendah
- C. Lowest MAC Address / Alamat MAC terendah
- D. Highest MAC Address / Alamat MAC tertinggi

CLO2 8. Identify the default STP operation mode on Cisco Catalyst switches.

C2

Kenal pasti operasi lalai STP pada switch Cisco Catalyst.

- A. RSTP
- B. PVST+
- C. MST
- D. MSTP

CLO2 9. Determine the command that will initiate EtherChannel interface configuration mode.

C2

Tentukan arahan manakah yang akan memulakan mod konfigurasi bagi antaramuka EtherChannel.

- A. Interface interface-identifier
- B. Interface range interface-identifier
- C. Channel-group group-identifier
- D. Interface port-channel interface-identifier

CLO2
C3

10. Apply a suitable solution for the Network Administrators to implement EtherChannel on the corporate network.

Laksanakan penyelesaian yang sesuai bagi Pentadbir rangkaian untuk melaksanakan EtherChannel dalam rangkaian korporat.

- A. Grouping multiple physical ports to increase bandwidth between two switches.
Mengumpulkan pelbagai port fizikal untuk meningkatkan "bandwidth" antara dua "switch".
- B. Grouping two devices to share a virtual IP address.
Mengumpulkan dua peranti untuk berkongsi "virtual IP address".
- C. Providing redundant devices to allow traffic to flow in the event of device failure.
Menyediakan peranti bertindan untuk membenarkan trafik mengalir sekiranya berlaku kegagalan peranti.
- D. Providing redundant links that dynamically block or forward traffic.
Menyediakan peranti bertindan yang menyekat secara dinamik atau trafik kehadapan.

CLO1
C1

11. Select the piece of information that is used by the OSPF MD5 algorithm to generate a signature.

Pilih maklumat yang digunakan oleh algoritma OSPF MD5 bagi menjana tandatangan.

- A. OSPF router ID
router ID OSPF
- B. router hostname
nama router
- C. interface IP address
alamat IP antaramuka
- D. OSPF message
pesan OSPF

CLO1

C1

12. When OSPFv2 neighbors are establishing adjacencies, select in which state they elect a DR and BDR router.

Apabila kejiranan OSPFv2 diwujudkan, pilih dalam keadaan manakah DR dan BDR router akan dipilih.

- A. Two-Way state
- B. Loading state
- C. Init state
- D. Exchange state

CLO1

C2

13. Identify where interarea route summarization are performed in an OSPF network.

Kenalpasti dimanakah ringkasan laluan antara kawasan akan dilaksanakan dalam rangkaian OSPF.

- A. ABR
- B. Any Router
- C. DR
- D. ASBR

CLO1

C2

14. Identify the reason OSPF serial interfaces usually require manual bandwidth configuration.

Kenalpasti sebab antaramuka bersiri OSPF biasanya memerlukan konfigurasi jalur lebar secara manual.

- A. OSPF uses the bandwidth value to compute routes for its routing table.
OSPF menggunakan nilai jalur lebar untuk mengira laluan untuk jadual penghalaan .
- B. Each side of an OSPF serial link should be configured with a unique value.
Setiap sisi pautan bersiri OSPF sepatutnya dikonfigurasi dengan nilai yang unik.
- C. All serial interfaces default to a value of 1.544 Mb/s.
Semua antara muka bersiri lalai kepada nilai 1,544 Mb / s.
- D. Bandwidth value affects the actual speed of the link.
Nilai jalur lebar memberi kesan kepada kelajuan sebenar pautan.

CLO1

C3

15. The OSPF router ID is used to uniquely identify the router in the OSPF routing domain. Choose the correct sequence to derive the router ID on OSPF routers.

Router ID OSPF digunakan untuk mengenalpasti keunikan router di dalam routing domain OSPF. Pilih susunan yang betul untuk memperoleh ID router pada router-router OSPF.

- I. IP address configured with OSPF router-id command, if present
Alamat IP dengan arahan OSPF router-id, jika ada
 - II. Highest active IP address on any of the router's physical interfaces
Alamat IP aktif tertinggi di mana-mana antara muka fizikal router
 - III. Highest IP address of any of the router's loopback addresses, if present
Alamat IP tertinggi mana-mana alamat gelung balik router, jika ada
- A. I, II, III
B. I, III, II
C. II, III, I
D. III, II, I

CLO2

C1

16. Select the command that will provide additional information about the state of router adjacencies, timer intervals, and the area ID.

Pilih arahan yang akan memberikan maklumat tambahan mengenai keadaan router adjacency, sela masa dan ID kawasan.

- A. show ip protocols
- B. show ip ospf interface
- C. show ip route ospf
- D. show running-configuration

- CLO2 C2 17. A network administrator has just changed the router ID on a router that is working in an OSPFv2 environment. Determine what should the administrator do to reset the adjacencies and use the new router ID.

Pentadbir rangkaian baru sahaja menukarkan "router ID" di dalam router yang berfungsi dengan OSPFv2. Tentukan apa yang perlu pentadbir lakukan untuk "reset" konfigurasi sedia ada dan menggunakan "router ID" yang baru.

- A. Issue the clear ip ospf process command.
Gunakan arahan "clear ip ospf process".
- B. Configure the network statements.
Konfigure penyataan rangkaian.
- C. Change the OSPFv2 process ID.
Tukar proses ID OSPFv2.
- D. Change the interface priority.
Tukar keutamaan antaramuka

- CLO2 C2 18. Identify which multicast address is used by DROTHER to send only its LSAs to DR and BDR routers.

Kenalpasti alamat multicast yang digunakan DROTHER untuk hanya menghantar LSA mereka sendiri kepada router DR dan BDR.

- A. 224.0.0.5
- B. 224.0.0.6
- C. 224.0.0.7
- D. 224.0.0.255

- CLO2 C3 19. Calculate the summary route of 192.168.32.0/22.

Kirakan summary route bagi 192.168.32.0/22.

- A. 192.168.33.0/24
- B. 192.168.31.0/24
- C. 192.168.37.0/24
- D. 192.168.38.0/24

- CLO2 C3 20. A network administrator has been asked to summarize the routes for a new OSPF area. The networks to be summarized are 172.16.8.0, 172.16.10.0, and 172.16.12.0 with subnet masks of 255.255.255.0 for each network. Choose which command should the administrator use to forward the summary route for area 15 into area 0.

Pentadbir rangkaian telah diminta untuk membuat ringkasan "routes" bagi rangkaian "OSPF area" yang baru. Rangkaian yang ingin diringkaskan adalah 172.16.8.0, 172.16.10.0 dan 172.16.12.0 bersama "subnet mask" 255.255.255.0 bagi setiap rangkaian. Pilih arahan yang manakah sepatutnya pentadbir guna untuk kehadapannya "summary routes" bagi "area" 15 ke "area" 0.

- A. area 15 range 172.16.8.0 255.255.255.248
- B. area 0 range 172.16.8.0 255.255.248.0
- C. area 0 range 172.16.8.0 255.255.255.248
- D. area 15 range 172.16.8.0 255.255.248.0

- CLO1 21. Identify the protocol used by EIGRP to send hello packets

C1 *Kenal pasti protokol digunakan oleh EIGRP untuk menghantar paket hello*

- A. TCP
- B. UDP
- C. RTP
- D. IP

- CLO1 22. Select the EIGRP packet types that are sent with unreliable delivery.

C1 *Pilih paket EIGRP yang dihantar dengan penghantaran yang tidak boleh dipercayai.*

- A. Update
- B. Query
- C. Hello
- D. Reply

- CLO1 C2 23. Identify the destination of MAC address that is used when a multicast EIGRP packet is encapsulated into an Ethernet frame.

Kenalpasti destinasi alamat MAC yang digunakan apabila paket multicast EIGRP terkandung ke dalam frame Ethernet?

- A. 01-00-5E-00-00-09
- B. 01-00-5E-00-00-10
- C. 01-00-5E-00-00-0A
- D. 01-00-5E-00-00-0B

- CLO1 24. Define the best concepts of Defusing Update Algorithm (DUAL) in EIGRP.

C2 *Takrifkan konsep terbaik Defusing Update Algoritma (DUAL) dalam EIGRP*

- A. Calculate the shortest path
Mengira laluan yang paling pendek
- B. Select efficient loop-free path
Memilih laluan bebas-gelung yang efisen
- C. Maintain neighbor adjacencies
Mengekalkan adjacencies kejiran
- D. Calculate loop-free paths with minimum bandwidth
Mengira laluan bebas-gelung dengan minimum jalur lebar

- CLO1 25. Determine the wildcard mask for subnet mask 255.255.255.224

C3 *Tentukan wildcard mask untuk subnet mask 255.255.255.224*

- A. 0.0.0.31
- B. 0.0.0.3
- C. 0.0.31.0
- D. 0.0.0.255

CLO2

C1

26. Identify the commands that must be entered on a serial interface of a Cisco router to restore the bandwidth to the default value of that specific router interface.

Kenal pasti arahan yang perlu dimasukkan pada antaramuka bersiri bagi Cisco router untuk mengembalikan bandwidth kepada keadaan asal bagi spesifik "router interface".

- A. Shutdown
- B. no shutdown
- C. bandwidth 1500
- D. no bandwidth

CLO2

C2

27. Two routers, R1 and R2, share a 64 kb/s link. An administrator wants to limit the bandwidth used by EIGRP between these two routers to 48 kb/s. Identify the command that is used on both routers to configure the new bandwidth setting.

Dua router, R1 dan R2, berkongsi link 64 kb/s. Pentadbir mahu menghadkan jalur lebar yang digunakan oleh EIGRP antara kedua-dua router untuk 48 kb / s. Kenal pasti arahan yang digunakan pada kedua-dua router untuk mengkonfigurasi tetapan lebar jalur yang baru.

- A. ip bandwidth-percent eigrp 100 48
- B. ip bandwidth-percent eigrp 64 48
- C. ip bandwidth-percent eigrp 100 64
- D. ip bandwidth-percent eigrp 100 75

CLO2

C2

28. Determine which configuration is necessary to ensure successful operation of EIGRP for IPv6.

Tentukan konfigurasi yang diperlukan untuk memastikan operasi EIGRP bagi IPv6 berjaya.

- A. The network command is required within the router configuration mode.
Arahan "network" diperlukan diantara mod konfigurasi "router".
- B. The eigrp router-id command requires an IPv6 address within the router configuration mode.
Arahan "EIGRP router-id" diperlukan bagi alamat IPv6 diantara mod konfigurasi "router".
- C. The router eigrp autonomous-system command is required within the router configuration mode.
Arahan "router eigrp autonomous-system" diperlukan diantara mod konfigurasi "router".
- D. The no shutdown command is required within the router configuration mode.
Arahan "no shutdown" diperlukan diantara mod konfigurasi "router".

CLO2

29.

C3

```
R2# show ip eigrp topology
IP-EIGRP Topology Table for AS(80)/ID(192.168.101.1)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 192.168.1.0/30, 1 successors, FD is 128256
Via Connected, Serial0/0/0
R2# 

R1# show ip eigrp topology
IP-EIGRP Topology Table for AS(50)/ID(192.168.100.5)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status

P 192.168.1.0/30, 1 successors, FD is 20512000
via Connected, Serial0/0/0
```

Figure A2 / Rajah A2

Refer to the Figure A4. Routers R1 and R2 are directly connected via their serial interfaces and are both running the EIGRP routing protocol. R1 and R2 can ping the directly connected serial interface of their neighbor, but they cannot form an EIGRP neighbor adjacency. Apply the correct action to solve this problem.

Merujuk kepada Rajah A4. Router R1 dan R2 adalah "directly connected" menggunakan "serial interface" masing-masing dan kedua-duanya berjalan menggunakan laluan protokol EIGRP. R1 dan R2 boleh "ping" melalui "directly connected serial interface" yang berjiran sesama sendiri, tetapi router tersebut tidak boleh membina EIGRP "neighbor adjacency". Laksanakan tindakan yang betul untuk menyelesaikan masalah ini.

- Configure the same hello interval between the routers.
Konfigur dengan menggunakan "hello interval" yang sama diantara router.
- Configure EIGRP to send periodic updates.
Konfigur EIGRP untuk menghantar kemaskini berkala.
- Enable the serial interfaces of both routers.
Menghidupkan "serial interface" di kedua-dua "router".
- Configure both routers with the same EIGRP process ID.
Konfigur kedua-dua "router" dengan "EIGRP process ID" yang sama.

CLO2

C4

30.

```
R1# show ip route eigrp
```

Gateway of last resort is not set

```
      10.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
      D        10.2.2.0/30 [90/2681856] via 10.3.3.2, 00:29:01,
      Serial0/0/1
      D        192.168.2.0/24 [90/2172416] via 10.1.1.2, 00:29:01,
      Serial0/0/0
      D        192.168.3.0/24 [90/2172416] via 10.3.3.2, 00:27:56,
      Serial0/0/1
```

Figure A3 / Rajah A3

Refer to Figure A3. Find the composite metric for R1 to reach 10.2.2.0/30 network.

Rujuk Rajah A3. Berdasarkan pada rajah, cari metrik gubahan bagi R1 untuk mencapai rangkaian 10.2.2.0/30.

- A. 90
- B. 2681856
- C. 2172416
- D. 90/2681856

SECTION B : 55 MARKS**BAHAGIAN B : 55 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **DUA (2)** soalan berstruktur. Jawab semua soalan.*

QUESTION 1**SOALAN 1**

- CLO1 (a) List **FIVE (5)** needs for network scalability design.

*Senaraikan **LIMA (5)** keperluan bagi reka bentuk rangkaian berskala.*

[5 marks]
[5 markah]

- CLO1 (b) Explain **FOUR (4)** advantages of EtherChannel.

*Terangkan **EMPAT (4)** kelebihan EtherChannel*

[4 marks]
[4 markah]

CLO2
C2

(c)

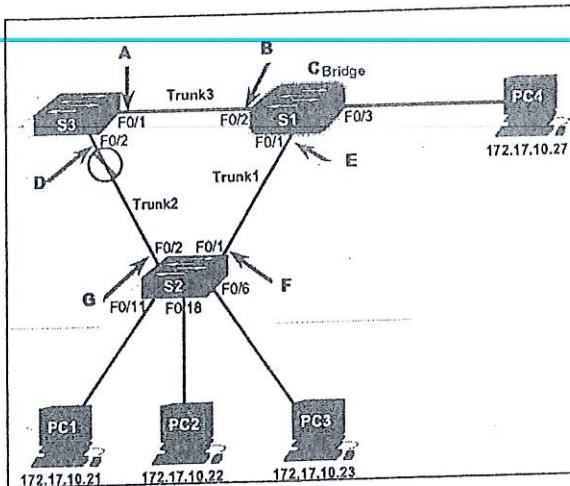


Figure B1 / Rajah B1

Referring to Figure B1 above, identify the port roles of every switches.

Merujuk pada Rajah B1 di atas, kenalpasti peranan port pada setiap switch.

[7 marks]
[7 markah]

CLO2
C3

(d)

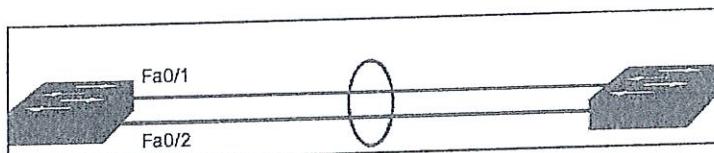


Figure B2 / Rajah B2

Referring to Figure B2 above, write a full command to configure EtherChannel.

Merujuk pada Rajah B2 di atas, tuliskan arahan penuh untuk mengkonfigurasi EtherChannel

[4 marks]
[4 markah]

QUESTION 2**SOALAN 2**

- CLO1 (a) OSPF or Open Shortest Path is mainly being used for the dynamic routing protocol. Identify **FOUR (4)** OSPF network types

*OSPF adalah terutamanya digunakan untuk protokol routing yang dinamik.
Kenal pasti **EMPAT (4)** jenis rangkaian OSPF*

[4 marks]
[4 markah]

- CLO1 (b) Calculate the summary route for the following addresses:

C3

Kirakan ringkasan laluan bagi alamat berikut:

10.1.1.0

10.1.2.0

10.1.3.0

[3 marks]
[3 markah]

- CLO2 (c) When OSPF in multi-access network, it will verify the Designated Router (DR) and Backup Designated Router (BDR). Identify **THREE (3)** states of neighbors in multi-access.

*Apabila OSPF dalam rangkaian pelbagai akses, ia akan mengesahkan Router yang ditetapkan (DR), dan Backup ditetapkan Router (BDR). Kenal pasti **TIGA (3)** keadaan jiran dalam pelbagai akses.*

[6 marks]
[6 markah]

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CLO2
C3

(d)

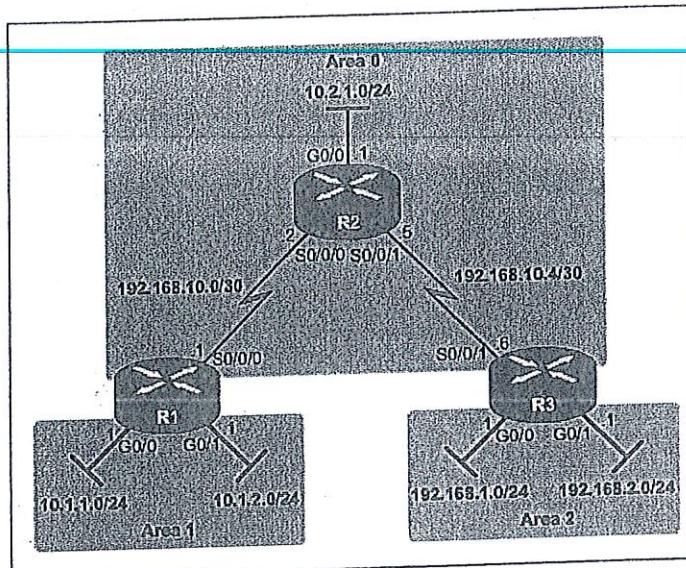


Figure B3 / Rajah B3

Write an appropriate command to configure multi area OSPF for the Figure B3 above.

Tuliskan arahan yang sesuai untuk konfiguri OSPF multi area bagi Rajah B3 di atas.

[3 marks]
[3 markah]

CLO1 (e) List THREE (3) types of EIGRP packets.

Senaraikan TIGA (3) jenis paket EIGRP.

[3 marks]
[3 markah]

CLO1 (f) One of EIGRP packet is Hello Packet. Describe briefly the packet and it uses.

Salah satu EIGRP paket is "Hello Packet". Terangkan secara ringkas paket tersebut dan kegunaannya.

[5 marks]
[5 markah]

CLO1

(g) Calculate the wildcard based on the IP address:

C3

Kirakan wildcard berdasarkan alamat IP:

- i. 192.168.4.0 / 26
- ii. 10.2.2.0 / 30

[4 marks]
[4 markah]

CLO1

(h)

C4

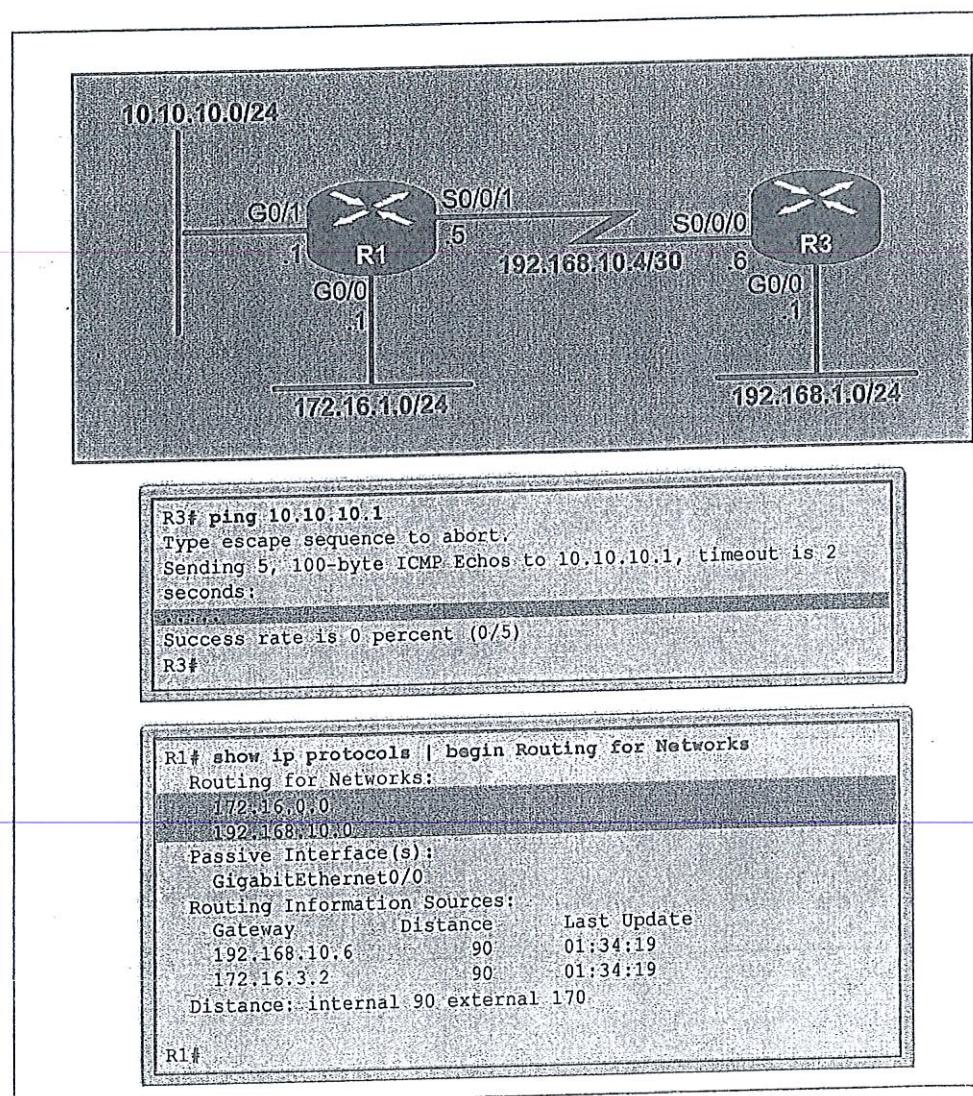


Figure B4 / Rajah B4

Figure B4 shows R1's GigabitEthernet 0/1 interface has now been configured with 10.10.10.1/24 address and is active with EIGRP. R1 and R3 still have their neighbour adjacency, but a ping test from the R3 router to a R1's G0/1 interface of 10.10.10.1 is unsuccessful.

Rajah B4 menunjukkan antaramuka GigabitEthernet 0/1 pada R1 telah dikonfigur dengan 10.10.10.1/24 dan sedang aktif EIGRP. R1 dan R3 masing-masing mempunyai neighbor adjacency, tetapi ujian ping dari router R3 ke antaramuka G0/1 R1, 10.10.10.1 tidak berjaya.

- i. Identify the problem that caused R3 failed to ping to R1 network.

Kenal pasti masalah yang menyebabkan R3 gagal untuk ping kepada rangkaian R1.

- ii. Determine the correct solution to overcome this situation.

Tentukan penyelesaian yang betul untuk mengatasi situasi ini.

[2 marks]

[2 markah]

- CLO2 (i) Describe TWO (2) features of EIGRP.

C2

Jelaskan TWO (2) ciri-ciri EIGRP.

[5 marks]

[5 markah]

SOALAN TAMAT

