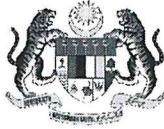


**SULIT**



**KEMENTERIAN PENDIDIKAN TINGGI  
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI**

**BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI  
KEMENTERIAN PENDIDIKAN TINGGI**

**JABATAN TEKNOLOGI MAKLUMAT & KOMUNIKASI**

**PEPERIKSAAN AKHIR**

**SESI II : 2022/2023**

**DFN30353: SWITCHING ESSENTIALS**

**TARIKH : 30 MEI 2023**

**MASA : 2.30 PTG - 4.30 PTG (2 JAM)**

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Kertas ini mengandungi **DUA PULUH TUJUH (27)** halaman bercetak.  
Bahagian A: Objektif (30 soalan)  
Bahagian B: Struktur (2 soalan)  
Dokumen sokongan yang disertakan : Tiada

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**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

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

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

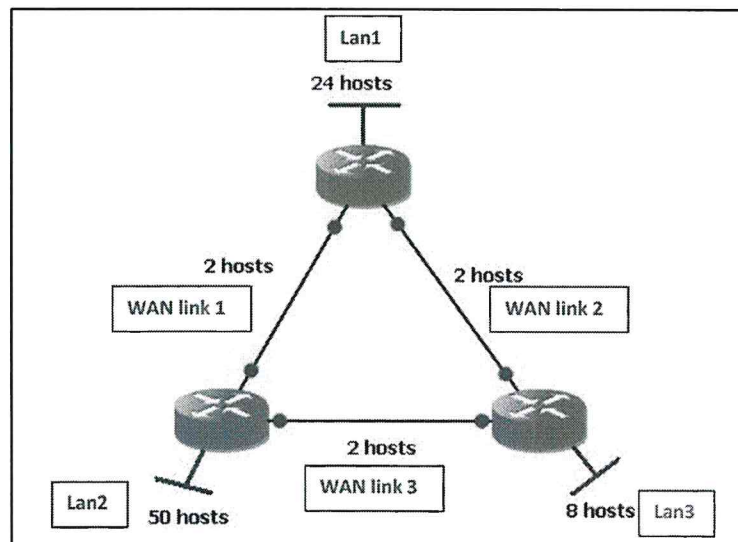
**ARAHAN:**

*Bahagian ini mengandungi DUA (2) soalan struktur. Jawab SEMUA soalan.*

**QUESTION 1****SOALAN 1**

- a) Refer to Figure B1(a). This is a network topology of a company called Lemonade Inc. Their network IP address is 192.168.2.0/24 which consists of 6 networks (LAN1, LAN2, LAN3, WAN link 1, WAN link 2 and WAN link 3). Use VLSM technique to solve the questions below.

*Rujuk Rajah B1(a). Ini merupakan topologi rangkaian sebuah syarikat yang dikenali sebagai Lemonade Inc. Alamat IP mereka adalah 192.168.2.0/24 yang terdiri dari 6 rangkaian (LAN1, LAN2, LAN3, WAN link 1, WAN link 2 dan WAN link 3). Guna teknik VLSM untuk menyelesaikan soalan di bawah.*



**Figure B1(a)/Rajah B1(a)**

SULIT

CLO1

- i. Identify the class of this network 192.168.2.0/24.  
*Kenalpasti kelas rangkaian ini 192.168.2.0/24.*

[2 marks]

[2 markah]

CLO1

- ii. State **THREE (3)** purposes of VLSM for this particular network topology.

*Nyatakan **TIGA (3)** tujuan VLSM untuk topologi rangkaian ini.*

[3 marks]

[3 markah]

CLO1

- b) i. Based on Figure B1 (b) (i), give the example of configuration command in creating all the VLANs and port assignment that showed in the output.

*Berdasarkan Rajah B1 (b)(i), berikan contoh arahan konfigurasi dalam mencipta semua VLANs dan port assignment yang ditunjukkan dalam pengeluaran tersebut.*

```

S1#sh vlan brief
-----
VLAN Name         Status      Ports
-----
1    default        active     Fa0/2, Fa0/3, Fa0/4, Fa0/5
                Fa0/6, Fa0/7, Fa0/8, Fa0/9
                Fa0/10, Fa0/11, Fa0/12, Fa0/13
                Fa0/14, Fa0/15, Fa0/16, Fa0/17
                Fa0/18, Fa0/19, Fa0/20, Fa0/21
                Fa0/22, Fa0/23, Gig0/1, Gig0/2
                Fa0/24
10   staff          active
1002 fddi-default   active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active

```

Figure B1 (b) (i) / Rajah B1 (b) (i)

[6 marks]  
[6 markah]

CLO1

- ii. Give examples of basic configuration command for the following situations.

*Nyatakan contoh arahan konfigurasi asas untuk situasi berikut.*

- a. Create VLAN 30

*Cipta VLAN 30*

- b. Assign Student as the VLAN 30 name

*Berikan nama VLAN 30 sebagai Student*

- c. Remove VLAN 30 from the VLAN database

*Buang VLAN 30 daripada pangkalan data VLAN*

- d. Display VLAN name, status and its ports one VLAN per line

*Paparkan nama, status dan port VLAN dalam satu baris*

[4 marks]

[4 markah]

- c) i. Based on Figure B1 (c) (i), determine which port is likely to be configured as a trunk and explain why.

*Berdasarkan Rajah B1(c) (i), tentukan port yang dikonfigurasi sebagai trunk dan jelaskan keperluannya.*

```
SW01#show mac address-table
Mac Address Table
-----
Vlan Mac Address Type Ports
-----
1 5254.0002.fcc8 DYNAMIC Gi0/1
1 5254.0007.7055 DYNAMIC Gi0/1
1 5254.0013.10e9 DYNAMIC Gi0/0
1 5254.0019.853c DYNAMIC Gi0/1
1 5254.001c.7a83 DYNAMIC Gi0/1
Total Mac Addresses for this criterion: 5
```

Figure B1 (c) (i) /Rajah B1(c) (i)

[4 marks]

[4 markah]

- ii. Refer to the figure B1 (c) (ii), explain the step of process frame is sent from PC-A forwarded to PC-C, if the MAC address table on switch SW1 is empty.

*Rujuk rajah B1(c)(ii), terangkan langkah proses bingkai dihantar daripada PC-A yang dimajukan kepada PC-C, jika jadual alamat MAC pada switch SW1 kosong.*

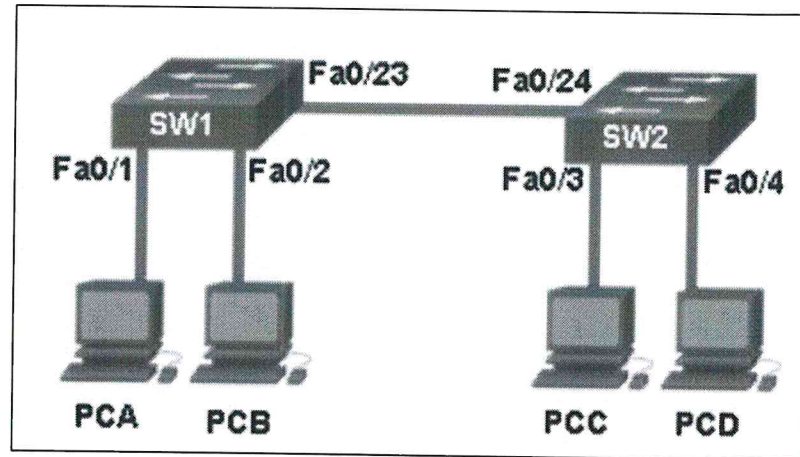


Figure B1 (c) (ii) / *Rajah B1 (c) (ii)*

[4 marks]

[4 markah]

CLO1

- iii. State **TWO (2)** types of inter-VLAN routing.  
*Nyatakan **DUA (2)** jenis inter-VLAN routing.*

[2 marks]

[2 markah]

**QUESTION 2****SOALAN 2**

CLO1

- a) i. A small college uses VLAN 10 for the classroom network and VLAN 20 for the office network. Determine the device and method needed to enable communication between these two VLANs using Legacy inter-VLAN routing.

*Sebuah kolej kecil menggunakan VLAN 10 untuk rangkaian bilik darjah dan VLAN 20 untuk rangkaian pejabat. Tentukan peranti dan kaedah yang diperlukan untuk membolehkan komunikasi antara kedua-dua VLAN ini menggunakan Legacy inter-VLAN routing.*

[4 marks]

[4 markah]

CLO1

- ii. Refer to Figure B2 (a) (ii). A network administrator is verifying the configuration of inter-VLAN routing. Users complain that PCs on different VLANs are not able to communicate. Based on the output, analyze **TWO (2)** configuration errors on switch interface Gi1/1?

*Rujuk Rajah B2 (a) (ii). Seorang pentadbir rangkaian sedang memeriksa konfigurasi pada inter-VLAN routing. Pengguna mengadu yang PCs yang berada dalam VLAN berbeza tidak dapat berkomunikasi. Berdasarkan output, analisa **DUA (2)** kesalahan konfigurasi pada antaramuka switch Gi1/1.*

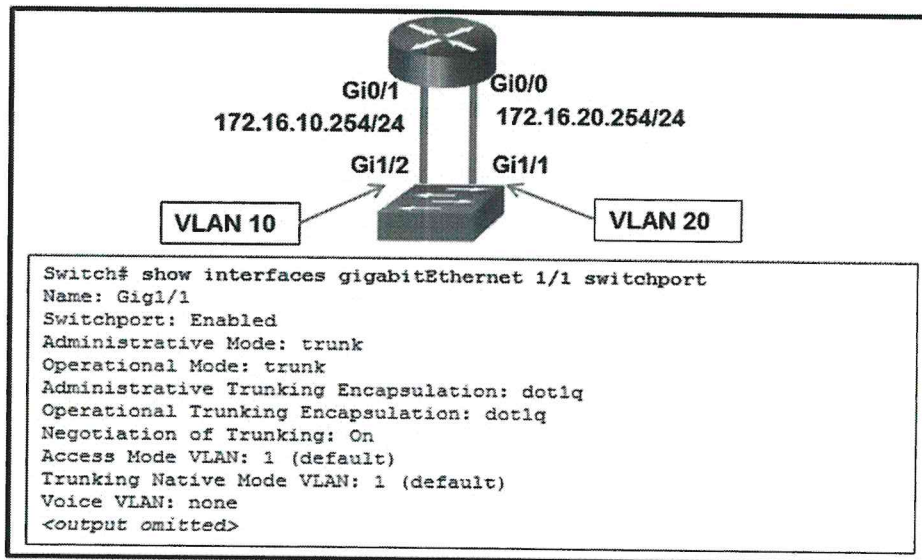


Figure B2 (a) (ii) /Rajah B2 (a) (ii)

[4 marks]

[4 markah]

CLO1

- b) i. Refer to Figure B2 (b) (i). Determine why this switch has not been elected as the root bridge for VLAN1 and explain the reason.

Rujuk Rajah B2 (b) (i). Tentukan kenapa switch ini tidak dipilih sebagai root bridge untuk VLAN1 dan terangkan sebabnya.

```

Switch# show spanning-tree vlan 1
VLAN0001
  Spanning tree enabled protocol rstp
  Root ID    Priority    20481
             Address      0008.217a.5800
             Cost        38
             Port        1 (FastEthernet0/1)
             Hello Time  2 sec Max Age 20 sec Forward Delay 15 sec

  Bridge ID  Priority    32769 (priority 32768 sys-id-ext 1)
             Address      0008.205e.6600
             Hello Time  2 sec Max Age 20 sec Forward Delay 15 sec
             Aging Time  300

Interface    Role    Sts  Cost    Prio.Nbr  Type
-----
Fa0/1        Root   FWD  19      128.1     P2p
Fa0/4        Desg   FWD  38      128.1     P2p
Fa0/11       Altn   BLK  57      128.1     P2p
Fa0/13       Desg   FWD  38      128.1     P2p

```

Figure B2 (b) (i) /Rajah B2 (b) (i)

[3 marks]

[3 markah]

CLO1

- ii. Refer to Figure B2 (b) (ii). State the configuration command for the switch S1 to apply the EtherChannel with non-negotiate LACP packet.

*Rujuk Rajah B2 (b) (i). Nyatakan arahan konfigurasi bagi switch S1 untuk mengaplikasikan EtherChannel dengan non-negotiate LACP packet.*

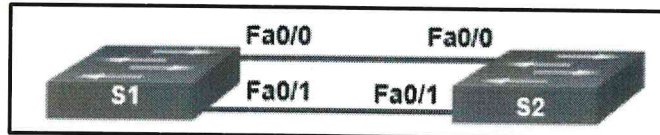


Figure B2 (b) (ii) / Rajah B2 (b) (ii)

[4 marks]

[4 markah]

CLO1

- iii. Refer to Figure B2 (b) (iii). Analyze **TWO (2)** ports that will be elected as the STP root ports if all the links are operating at similar number.

*Rujuk Rajah B2 (b) (iii). Analisis **DUA (2)** ports manakah yang akan menjadi STP root ports jika semua laluan beroperasi mengikut nombor yang sama*

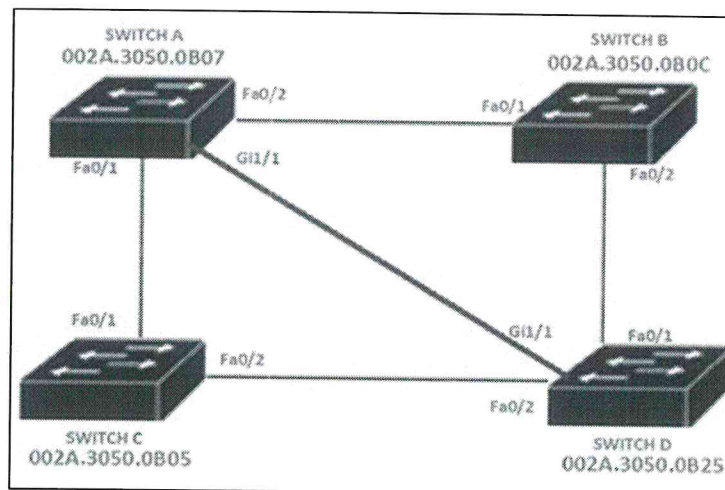


Figure B2 (b) (iii) / Rajah B2 (b) (iii)

[4 marks]

[4 markah]



- CLO1 c) i. State **TWO (2)** port security violation modes at switch.  
Nyatakan **DUA (2)** mod perlanggaran keselamatan port pada switch.
- [2 marks]  
[2 markah]

- CLO1 ii. Explain **TWO (2)** methods that can be used to mitigate STP attacks.  
Terangkan **DUA (2)** kaedah yang boleh digunakan untuk mengatasi serangan STP.
- [4 marks]  
[4 markah]

- CLO1 iii. Refer to Figure B2 (c) (iii). There is a rouge DHCP Server trying to connect to our network through a man-in-a-middle attack. Show the commands used in this situation:

Rujuk Rajah B2 (c) (iii). Terdapat rouge DHCP Server cuba untuk berhubung dengan rangkaian kita melalui man-in-a-middle attack. Pamerkan arahan yang digunakan dalam situasi ini.

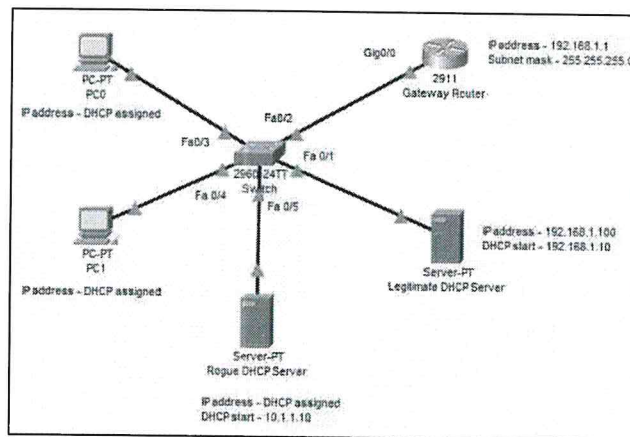


Figure B2 (c) (iii) / Rajah B2 (c) (iii)

- a) Enable DHCP snooping on the switch:  
*Membenarkan DHCP snooping pada switch:*
- b) After enabling DHCP snooping, configure FastEthernet 0/1 and FastEthernet 0/2 as a trusted port:  
*Selepas membenarkan DHCP snooping, tetapkan FastEthernet 0/1 dan FastEthernet 0/2 sebagai trusted port:*
- c) Assign IP DHCP Snooping to the VLAN:  
*Menetapkan IP DHCP Snooping kepada VLAN:*
- d) Assign an IP address to the gateway routers interface gigabitEthernet 0/0:  
*Menetapkan alamat IP pada antaramuka router gigabitEthernet 0/0:*
- e) Verify DHCP snooping:  
*Mengesahkan DHCP snooping:*

[5 marks]

[5 markah]

**END OF QUESTIONS**

**SOALAN TAMAT**