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 DAN KOMUNIKASI

PEPERIKSAAN AKHIR

SESI II : 2024/2025

DFN30373: SWITCHING ESSENTIALS

TARIKH : 15 MEI 2025
MASA : 8.30 PAGI – 10.30 PAGI (2 JAM)

Kertas ini mengandungi **DUA PULUH ENAM (26)** halaman bercetak.
Bahagian A: Objektif (30 soalan)
Bahagian B: Struktur (2 soalan)
Dokumen sokongan yang disertakan :Tiada

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 berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1 (a) i. State the main purpose of subnetting IP address using Variable Length Subnet Mask (VLSM) method.

Nyatakan tujuan utama subnet *alamat* IP *menggunakan kaedah* Variable Length Subnet Mask (VLSM).

[2 marks]
[*2 markah*]

CLO1 ii. Identify the 32-bit address and subnet mask of given IP address 192.168.77.1 with prefix length of /25.

Kenal pasti alamat 32 bit dan subnet mask *bagi alamat* IP *yang diberikan 192.168.77.1 dengan* prefix length */25*

[4 marks]
[*4 markah*]

CLO1

iii. Refer to Figure B1(a)(iii). The new Network Administrator at ABCD SDN BHD needs to divide IP addresses into smaller subunits with the given IP address of 172.17.77.0 /24 using Variable Length Subnet Mask (VLSM) method. Calculate the IP address range for LAN1 and LAN2.

Rujuk kepada Rajah B1(a)(iii). Pentadbir Rangkaian baharu di ABCD SDN BHD perlu membahagikan alamat IP *kepada subunit yang lebih kecil dengan alamat* IP *yang diberikan 172.17.77.0 /24 menggunakan kaedah* Variable Length Subnet Mask (VLSM). *Kira julat alamat* IP *untuk LAN1 dan LAN2.*

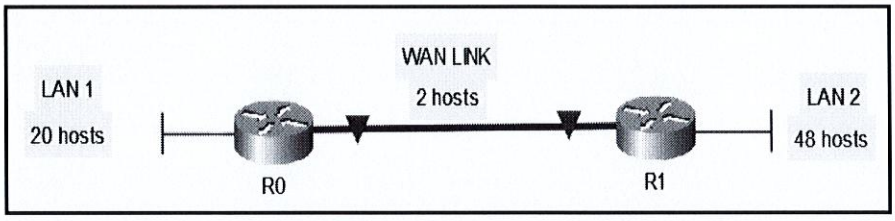

Figure B1(a)(iii)/ *Rajah B1(a)(iii)*

[4 marks]
[*4* markah]

CLO1

(b) i. Identify **TWO (2)** primary characteristics of Store-and-Forward.
Kenal pasti ***DUA (2)*** *ciri utama* Store-and-Forward.

[2 marks]
[*2 markah*]

CLO1

ii. Explain **FIVE (5)** benefits of implementing VLAN.
Terangkan ***LIMA (5)*** *faedah melaksanakan VLAN.*

[5 marks]
[*5 markah*]

CLO1

iii. Write a complete configuration line to ensure a link connected to the switches was a trunk link.

Tulis baris konfigurasi lengkap untuk memastikan satu pautan yang bersambung switch *menjadi pautan* trunk.

[2 marks]

[*2* markah]

CLO1

iv. A network administrator is verifying the configuration in S1. Illustrate the **CORRECT** configuration line to achieve the result shown at Figure B2 (b)(iv).

Merujuk kepada Rajah B2 (b)(iv). Pentadbir rangkaian sedang mengesahkan konfigurasi dalam S1. Gambarkan baris konfigurasi yang ***BETUL*** *untuk mencapai seperti hasil yang ditunjukkan pada Rajah B2 (b)(iv).*

```
S1# show vlan brief
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                 Fa0/10, Gi0/1, Gi0/2
10   Operations                        active
20   Parking_Lot                       active
99   Management                        active    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, Fa0/24
1000 Native                            active
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

Figure B1(b)(iv)/ *Rajah B1(b)(iv)*

[4 marks]

[*4* markah]

QUESTION 2

SOALAN 2

CLO1 (a) i. Show **TWO (2)** types of inter-VLAN routing.

*Tunjukkan **DUA (2)** jenis* inter-VLAN routing.

[2 marks]

[*2 markah*]

CLO1 ii. Refer to Figure B2(a)(ii). Given addressing table of configured router with Router-on-a-Stick inter-VLAN routing. Construct the configuration line for sub-interface using 802.1Q encapsulation connected to the router R1.

Rujuk kepada Rajah B2(a)(ii). Diberi jadual pengalamatan router *yang dikonfigurasikan dengan penghalaan antara-*VLAN Router-on-a-Stick. *Bina baris konfigurasi untuk sub-antara muka menggunakan enkapsulasi 802.1Q yang disambungkan ke* router *R1.*

Device	Interface	IPv4 Address	Subnet Mask	Default Gateway
R1	G0/0.10	172.17.10.1	255.255.255.0	N/A

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

[3 marks]

[*3 markah*]

CLO1

iii. Analyze the configuration that need to be used to get the expected results as shown in Figure B2(a)(iii).

Analisi konfigurasi yang perlu digunakan bagi mendapatkan hasil yang dijangkakan seperti yang ditunjukkan dalam Rajah B2(a)(iii).

```
Name: Fa0/7
Switchport: Enabled
Administrative Mode: static access
Operational Mode: static access
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: native
Negotiation of Trunking: Off
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1(default)
Administrative Native VLAN tagging enabled
Voice VLAN: none
```

Figure B2(a)(iii)/ *Rajah B2(a)(iii)*

[2 marks]

[*2* markah]

CLO1

(b) i. Decribe the purpose of Spanning Tree Protocol.

Terangkan tujuan bagi Spanning Tree Protocol.

[2 marks]

[*2 markah*]

CLO1

i. Refer to Figure B2(b)(ii). Identify the root bridge and port roles for ports P, Q, R and S in the STP-enabled network.

Rujuk Rajah B2(b)(ii). Kenal pasti root bridge *dan peranan port untuk* port *P, Q, R dan S dalam rangkaian yang didayakan* STP.

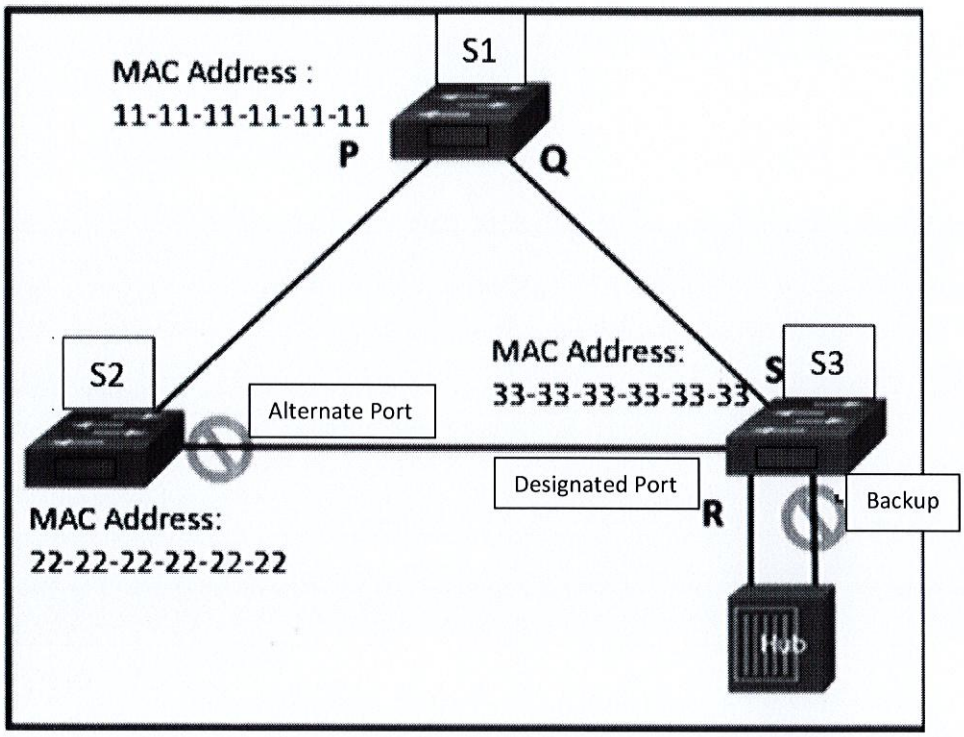

Figure B2(b)(ii) / *Rajah* B2(b)(ii)

[6 marks]

[*6 markah*]

CLO1

ii. Refer to Figure B2b(iii). Construct a configuration for EtherChannel with a valid PAgP mode on switch S2, if switch S1 is configured using auto mode.

Rujuk Rajah B2b(iii). Bina konfigurasi untuk EtherChannel *dengan mod* PAgP *yang sah pada* switch *S2, jika* switch *S1 dikonfigurasikan menggunakan mod auto.*

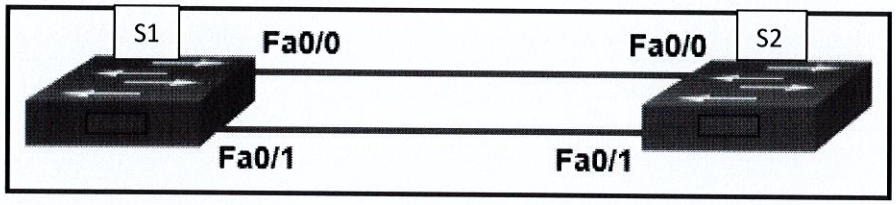

Figure B2b(iii)/ *Rajah B2b(iii)*

[2 marks]

[*2 markah*]

CLO1

iii. Refer to Figure B2(b)(iv). 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)(iv). Analisis ***DUA (2)*** port *manakah yang akan menjadi STP* root ports *jika semua laluan beroperasi mengikut nombor yang sama.*

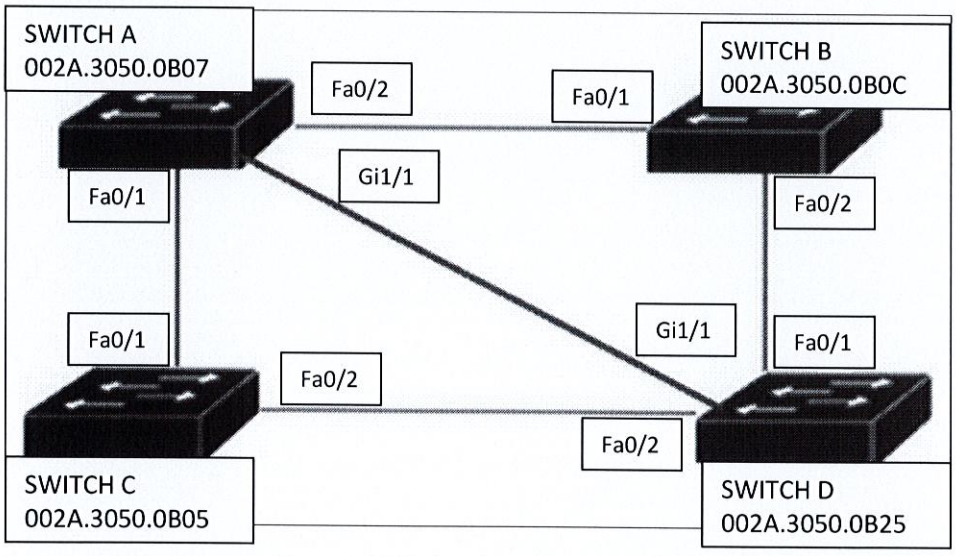

Figure B2(b)(iv) / *Rajah* B2(b)(iv)

[2 marks]

[*2 markah*]

CLO1 (c) i. State **TWO (2)** switch attack mitigation techniques.
*Nyatakan **DUA (2)** teknik pengurangan serangan ke atas* switch.

[2 marks]
[*2 markah*]

CLO1 ii. Refer to Figure B2(c)(ii). Explain **TWO (2)** types of DHCP attacks.
*Rujuk Rajah B2(c)(ii). Terangkan **DUA (2)** jenis* DHCP attacks.

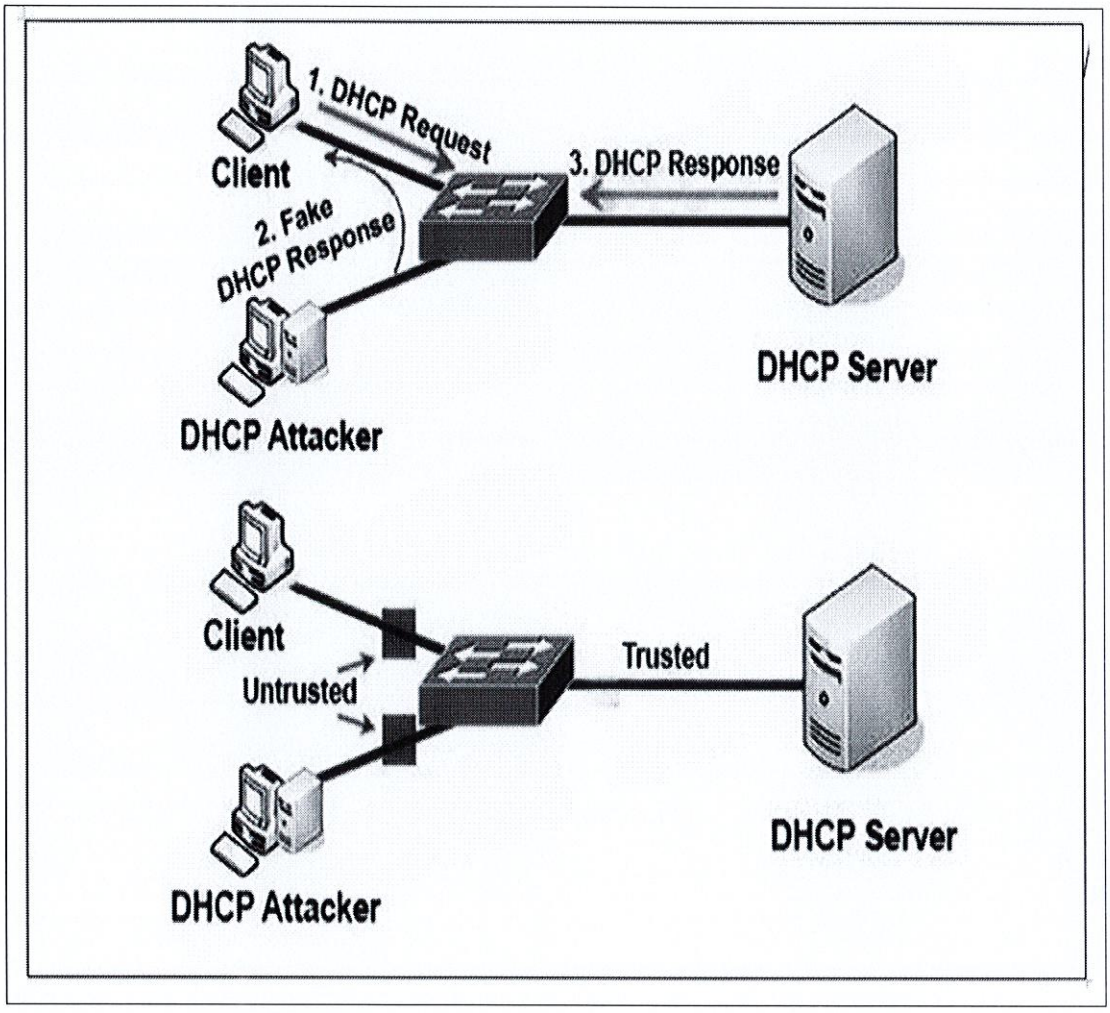

Figure B2(c)(ii) / *Rajah B2(c)(ii)*

[4 marks]
[*4 markah*]

CLO1

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

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

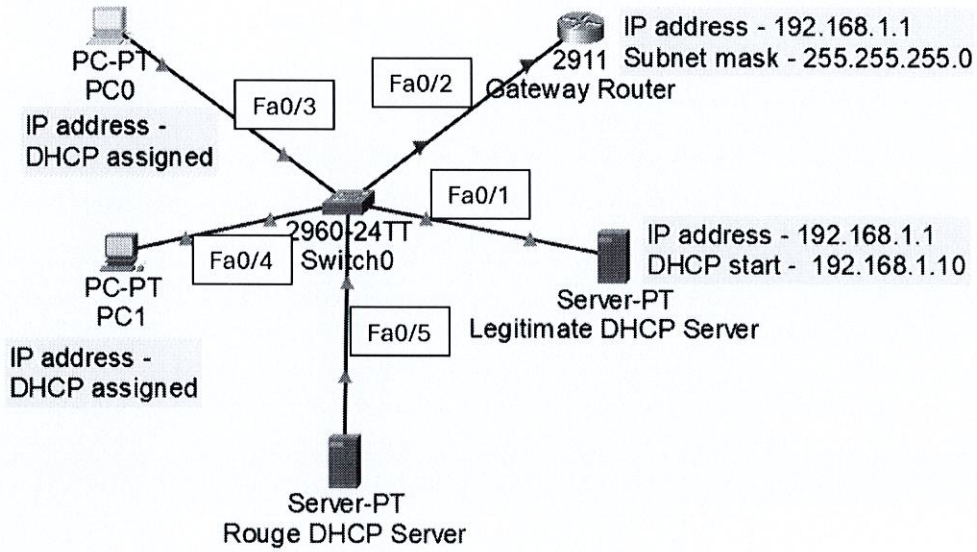

Figure B2(c)(iii) / *Rajah B2(c)(iii)*

Enable DHCP snooping on the switch, configured FastEthernet 0/1 and FastEthernet 0/2 as a trusted port, assign IP DHCP Snooping to the VLAN, assign an IP address to the gateway routers interface GigabitEthernet 0/0 and verify DHCP Snooping.

Membenarkan DHCP snooping *pada* switch, *tetapkan* FastEthernet *0/1 dan* FastEthernet *0/2 sebagai* trusted port, *menetapkan* IP DHCP Snooping *kepada* VLAN, *menetapkan alamat* IP *pada antaramuka* router GigabitEthernet *0/0 dan mengesahkan* DHCP snooping.

[7 marks]

[*7 markah*]

SOALAN TAMAT