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 I : 2025/2026**

# DFN30373: SWITCHING ESSENTIALS

**TARIKH : 30 NOVEMBER 2025**
**MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)**

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Kertas soalan ini mengandungi **DUA PULUH DUA (22)** 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 **TWO (2)** soalan berstruktur. Jawab SEMUA soalan.*

**QUESTION 1**

***SOALAN 1***

CLO1 (a) i. State **TWO (2)** migration techniques to help network administrator to migrate the network to use IPv6 in IPv4 and IPv6 coexistence.

*Nyatakan **DUA (2)** teknik migrasi untuk membantu pentadbir rangkaian memindahkan rangkaian untuk menggunakan IPv6 dalam kewujudan bersama IPv4 dan IPv6.*

[2 marks]
[2 *markah*]

CLO1 ii. Given IPv6 address 2001:acad:c0d3:05:d030:c0f3:babe:52ea. Identify its Network portion, Host portion, prefix, subnet and interface ID.

*Diberi alamat IPv6 2001:acad:c0d3:c105:d030:c0f3:babe:52ea. Kenalpasti* Network portion, Host portion, prefix, subnet *dan* interface ID.

[4 marks]
[4 *markah*]

CLO1

iii. Given a network address 10.17.0.0/23. Determine:

*Diberi alamat rangkaian 10.17.0.0/23. Tentukan:*

- Total available host IP address

  *Jumlah alamat* IP *hos tersedia*
- The first available host IP address

  *Alamat* IP *hos tersedia yang pertama*
- The last available host IP address

  *Alamat* IP *hos tersedia yang terakhir*
- Subnet mask

  Subnet mask

[4 marks]

[4 *markah*]

CLO1

(b) i. Define the term switching in computer networks.

*Takrifkan istilah* switching *dalam rangkaian komputer.*

[2 marks]

[2 *markah*]

CLO1

ii. Refer to Figure B1(b)(ii). If IP address already configured on both PCs, describe the next **FIVE (5)** steps needed to configure Router-on-a-Stick Inter-VLAN routing.

*Rujuk Rajah B1(b)(ii). Jika alamat* IP *telah dikonfigurasi pada kedua-dua* PC, *terangkan* ***LIMA (5)*** *langkah seterusnya yang diperlukan untuk mengkonfigurasi* Router-on-a-stick Inter-VLAN Routing.

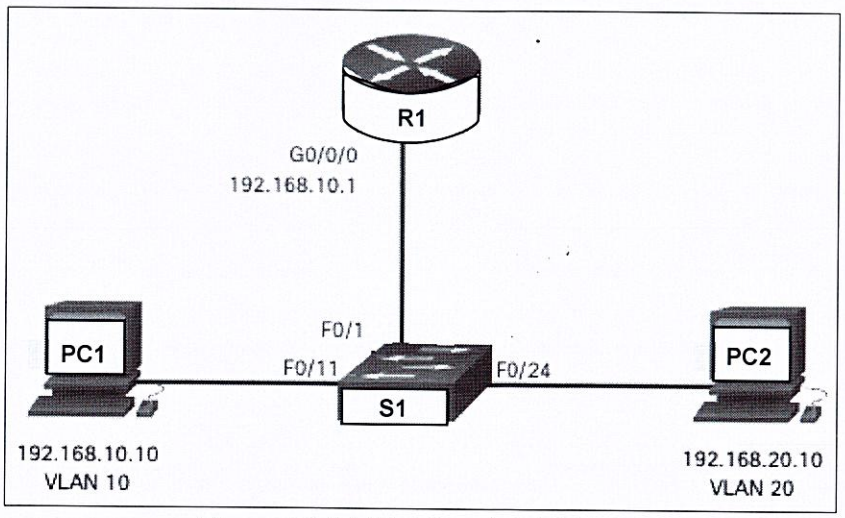


Figure B1(b)(ii) / *Rajah B1(b)(ii)*

[5 marks]
[5 *markah*]

CLO1

iii. Construct configurations to create a VLAN named "JPPKK-Staff" with its VLAN ID 42.

*Bina konfigurasi untuk menciptakan* VLAN *bernama "JPPKK-Staff" dengan* VLAN ID 42.

[2 marks]
[2 *markah*]

CLO1

iv. Figure B1(b)(iv) shows the current MAC Address Table in a switch and an incoming frame from port Fa0/9. Analyze the actions the switch will do when it receives that frame.

*Rajah B1(b)(iv) menunjukkan* MAC Address Table *semasa dalam* switch *dan satu bingkai masuk dari port Fa0/9. Analisis tindakan yang akan dilakukan oleh* switch *apabila ia menerima bingkai tersebut.*

| **Current MAC Address Table** | | | | |
|---|---|---|---|---|
| **Ports** | | **MAC Address** | | |
| Fa0/11 | | d0-d0-10-c0-fe-3e | | |
| Fa0/24 | | 2c-47-1e-da-33-f3 | | |
| **Incoming Frame from Fa0/9** | | | | |
| Preamble | d0-d0-10-c0-fe-3e | 20-d0-ac-de-fa-1a | IP Packet Data | FCS |

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

[4 marks]

[4 *markah*]

**QUESTION 2**

***SOALAN 2***

CLO1 (a) i. List **TWO (2)** ways to implement Inter-VLAN routing.

*Senaraikan **DUA (2)** cara untuk melaksanakan* Inter-VLAN routing.

[2 marks]

[2 *markah*]

CLO1 ii. Illustrate a suitable topology to show a correct Legacy Inter-VLAN routing for **THREE (3)** VLAN.

*Lukiskan topologi yang sesuai untuk menunjukkan* Legacy Inter-VLAN routing *bagi **TIGA (3)*** VLAN.

[3 marks]

[3 *markah*]

CLO1 iii. Based on the information table in Figure A2(a)(iii), it shows that users in VLAN 10 cannot communicate with users in VLAN 20. Analyze the reason for this situation.

*Berdasarkan jadual maklumat dalam Rajah A2(a)(iii), ditunjukkan pengguna dalam* VLAN *10 tidak dapat berkomunikasi dengan pengguna dalam* VLAN *20. Analisis sebab bagi situasi ini.*

| Device | Interface | VLAN | IP Address | Subnet Mask |
|---|---|---|---|---|
| PC1 | Fa0/1 | 10 | 192.168.10.10 | 255.255.255.0 |
| PC2 | Fa0/2 | 20 | 192.168.20.10 | 255.255.255.0 |
| SW1 | VLAN 10 | 10 | 192.168.10.1 | 255.255.255.0 |
| SW2 | VLAN 20 | 20 | 192.168.20.1 | 255.255.255.0 |

Figure A2(a)(iii) / *Rajah A2(a)(iii)*

[2 marks]

[2 *markah*]

CLO1 (b) i. Define Spanning Tree Protocol (STP).

*Takrifkan* Spanning Tree Protocol (STP).

[2 marks]

[2 *markah*]

CLO1 ii. Figure B2(b)(ii) shows a topology of three switches along with its BID and interface ID. Identify the Root Bridge, any two root ports and any two designated ports.

*Rajah B2(b)(ii) menunjukkan topologi tiga* switch *bersama dengan* BID *dan* ID *antara muka. Kenal pasti* Root Bridge, *dua* root port *dan dua* designated port.

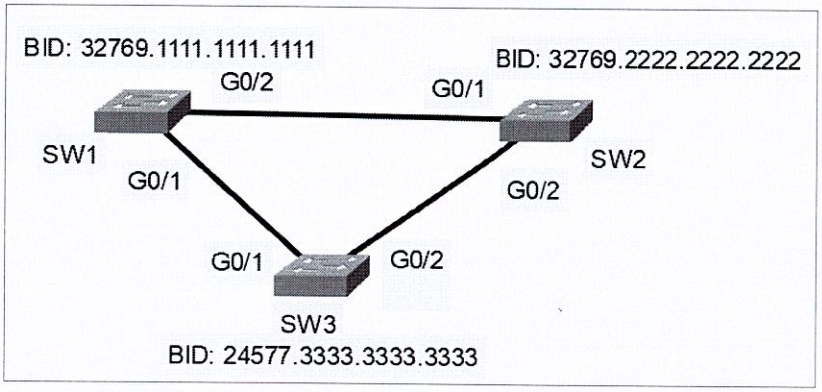


Figure B2(b)(ii) / *Rajah B2(b)(ii)*

[6 marks]

[6 *markah*]