

Penyelesaian Lengkap

PRAKTIS 5

Praktis Formatif

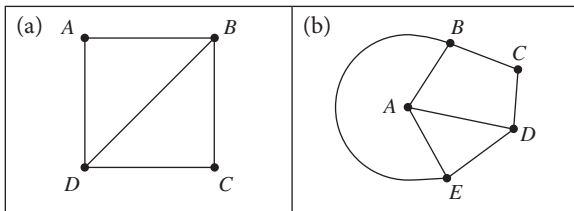
5.1 Rangkaian Network

- 1 (a) $V = \{A, B, C, D, E\}$
 $n(V) = 5$
 (b) $E = \{(A, B), (A, D), (A, E), (B, C), (B, D), (C, D), (D, E)\}$
 $n(E) = 7$
 (c) Jumlah darjah/Sum of degrees = $2(7) = 14$
 (d) Ya, sebab ia tidak mempunyai gelung dan berbilang tepi.
 Yes, because it does not have loop and multiple edges.

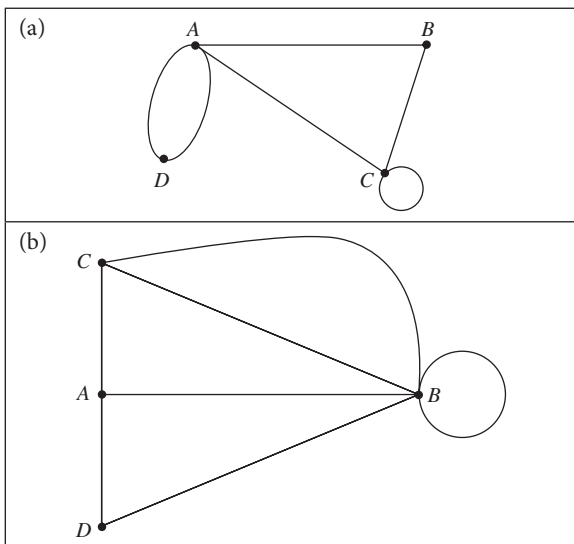
2

Graf Graphs	Bilangan bucu Number of vertices	Bilangan tepi Number of edges	Jumlah darjah Sum of degrees
(a)	4	6	12
(b)	4	4	8
(c)	6	9	18

3

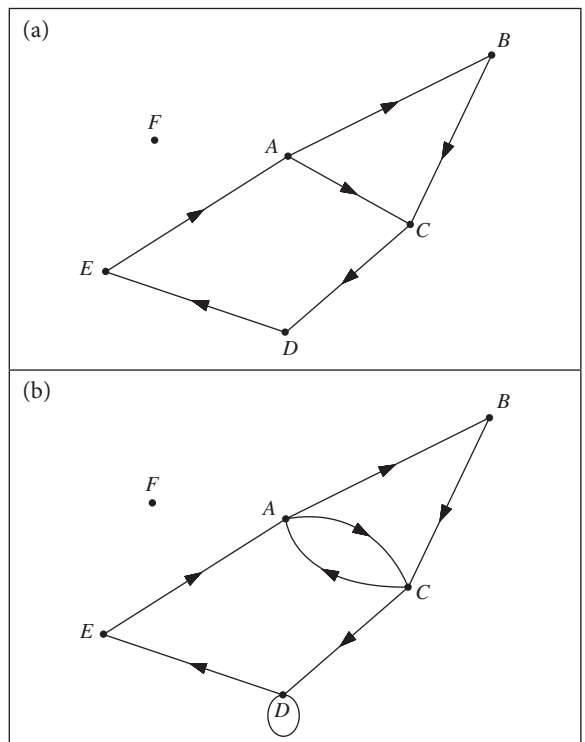


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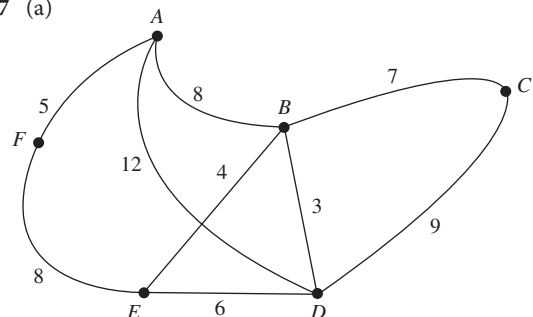


- 5 (a) Jumlah darjah = $2 + 3 + 2 + 1 + 2 + 2 + 2$
 Sum of degrees = 14
 Graf boleh dilukis kerana jumlah darjah adalah genap.
 The graph can be drawn because the sum of degrees is even.
- (b) Jumlah darjah = $2 + 1 + 1 + 1 + 3 + 2 + 2 + 2$
 Sum of degrees = 13
 Graf tidak boleh dilukis kerana jumlah darjah adalah ganjil.
 The graph cannot be drawn because the sum of degrees is odd.

6

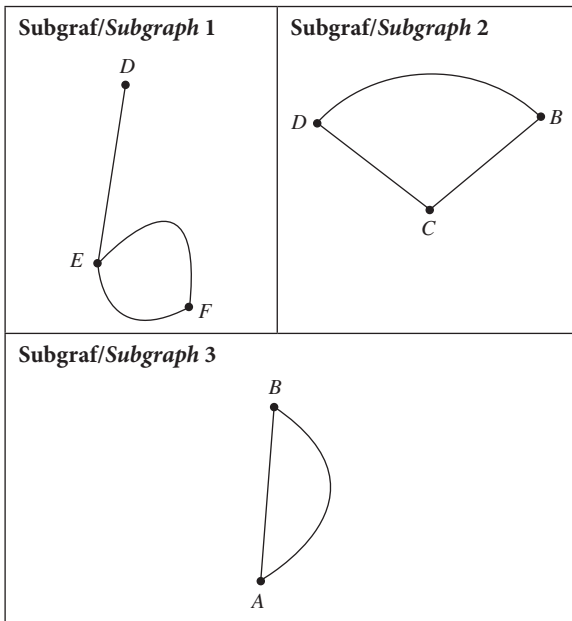


7 (a)



- (b) (i) Jarak terpendek ialah $C \rightarrow B \rightarrow E \rightarrow F = 19$ km
The shortest distance is $C \rightarrow B \rightarrow E \rightarrow F = 19$ km
- (ii) Jarak terpanjang ialah $F \rightarrow A \rightarrow B \rightarrow E \rightarrow D \rightarrow C = 32$ km
The longest distance is $F \rightarrow A \rightarrow B \rightarrow E \rightarrow D \rightarrow C = 32$ km
- Ah Kow: Masa/Time
 $= \frac{19}{60}$
 $= 0.3167$ jam/hour
- Muthu: Masa/Time
 $= \frac{32}{60}$
 $= 0.5333$ jam/hour
- Perbezaan masa/Difference in time
 $= 0.5333$ jam/hour $- 0.3167$ jam/hour
 $= 0.2166$ jam/hour
 $= (0.2166 \times 60)$ minit/minutes
 $= 13$ minit/minutes

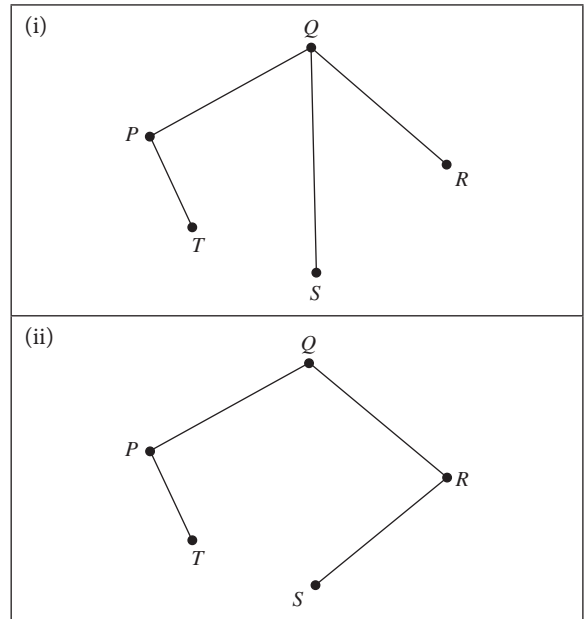
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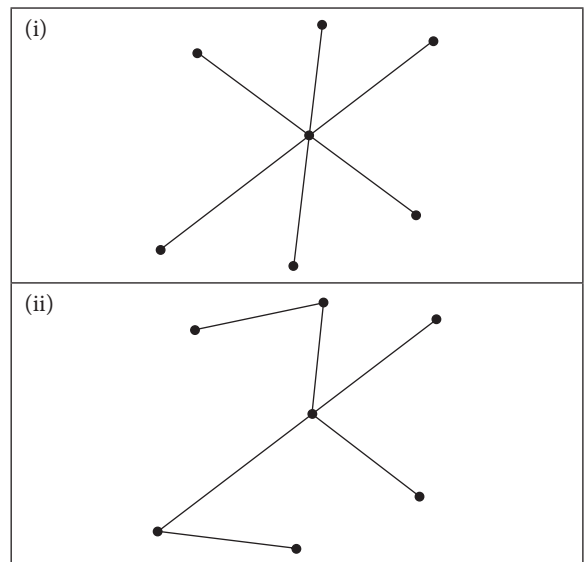
- 9 (a) Bukan pokok. Bucu = 8, tepi = 8. Bucu A dan C boleh dikaitkan dengan dua cara.
- (i) $A \rightarrow C$
- (ii) $A \rightarrow B \rightarrow C$
- Not a tree. 8 vertices, 8 edges. Vertex A and vertex C can be connected in two ways.*
- (i) $A \rightarrow C$
- (ii) $A \rightarrow B \rightarrow C$
- (b) Pokok. Bucu = 5, tepi = 4. Setiap pasangan bucu hanya dikaitkan dengan satu tepi.
A tree. 5 vertices, 4 edges. Each pair of vertices is connected by one edge.
- (c) Pokok. Bucu = 7, tepi = 6. Setiap pasangan bucu hanya dikaitkan dengan satu tepi.
A tree. 7 vertices, 6 edges. Each pair of vertices is connected by one edge.

- (d) Bukan pokok. Bucu = 6, tepi = 6. Bucu F mempunyai satu gelung.
Not a tree. 6 vertices, 6 edges. There is a loop at vertex F.

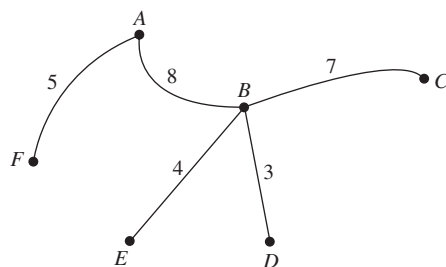
10 (a)



(b)



11



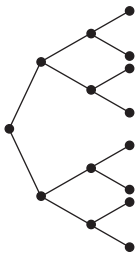
Jumlah pemberat minimum pokok

Minimum weightage of tree

$$= 3 + 4 + 5 + 7 + 8$$

$$= 27$$

12 (a)

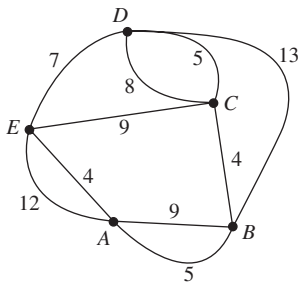


(b)

n	Bilangan murid pada peringkat ke- n Number of students at the n^{th} level	Jumlah murid terlibat sehingga n peringkat Total number of students up to n levels
1	$1 = 2^0$	$1 = 2^1 - 1$
2	$2 = 2^1$	$3 = 2^2 - 1$
3	$4 = 2^2$	$7 = 2^3 - 1$
4	$8 = 2^3$	$15 = 2^4 - 1$

(c) $T_n = 2^{n-1}$, $S_n = 2^n - 1$

13



(a) 7 (D ke/to E) + 4 (E ke/to A) = 11 minit/minutes

(b) 5 (B ke/to A) + 4 (A ke/to E) = 9 minit/minutes

(c) 4 (C ke/to B) + 5 (B ke/to A) = 9 minit/minutes

14 (a) $120 + 100 + 110 + 70 + 60 + 130 = 590$ m

(b) Boleh/Can

Laluan pegawai: Pejabat \rightarrow E \rightarrow H \rightarrow G \rightarrow F \rightarrow E \rightarrow D \rightarrow C \rightarrow B \rightarrow A \rightarrow Pejabat

The route of the officer: Office \rightarrow E \rightarrow H \rightarrow G \rightarrow F \rightarrow E \rightarrow D \rightarrow C \rightarrow B \rightarrow A \rightarrow Office

15 Cadangan jawapan/Suggested answers:

Perjalanan pilihan Travelling option	Masa perjalanan Travelling time	Perbelanjaan Expenses (RM)
(A) + (E) + (F)	5 jam 3 minit 5 hours 3 minutes	465.90
(C) + (F)	5 jam 50 minit 5 hours 50 minutes	282.90
(D) + (F)	4 jam 34 minit 4 hours 34 minutes	305.50

Pilihan perjalanan yang paling optimum (jimat) ialah (C) + (F), iaitu menaiki bas terus ke KLIA lalu menaiki kapal terbang 1 ke Kuching. Dari segi masa, (D) + (F), iaitu memandu ke KLIA lalu menaiki kapal terbang 1 memakan masa yang paling singkat. Akan tetapi, bayaran untuk parkir di KLIA akan meningkatkan perbelanjaan.

The most optimum travelling option (most economical) is (C) + (F) using bus from Ipoh to KLIA then use flight 1 to Kuching. In term of travelling time, (D) + (F) that is drive to KLIA then use flight 1 to Kuching is the shortest, but the parking fee will increase the expenses which is not taken into consideration in the calculation of expenses above.

Praktis Sumatif

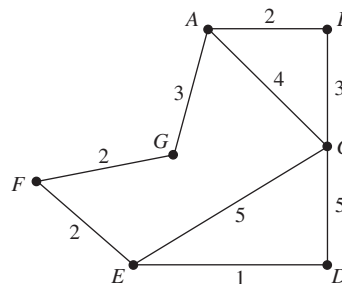
Kertas 1

- 1 A 2 D 3 C 4 A 5 D
6 D

Kertas 2

Bahagian/Section B

1



(a) (i) A \rightarrow B \rightarrow C \rightarrow D

(ii) A \rightarrow C \rightarrow E \rightarrow D

(b) A \rightarrow G \rightarrow F \rightarrow E \rightarrow D

8 minit/minutes

2 (a) 1. Pejabat/Office \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \rightarrow Pejabat/Office

2. Pejabat/Office \rightarrow E \rightarrow D \rightarrow C \rightarrow B \rightarrow A \rightarrow Pejabat/Office

3. Pejabat/Office \rightarrow A \rightarrow B \rightarrow E \rightarrow D \rightarrow C \rightarrow Pejabat/Office

4. Pejabat/Office \rightarrow C \rightarrow D \rightarrow E \rightarrow B \rightarrow A \rightarrow Pejabat/Office

(b) (i) 1. E \rightarrow D \rightarrow C \rightarrow B \rightarrow A \rightarrow Pejabat/Office \rightarrow E

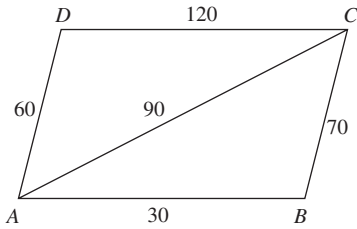
2. E \rightarrow Pejabat/Office \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow E

3. E \rightarrow Pejabat/Office \rightarrow B \rightarrow D \rightarrow C \rightarrow Pejabat/Office \rightarrow A \rightarrow B \rightarrow E

(ii) Laluan Puan Aini bukan sebuah pokok kerana bucu-bucu boleh dikaitkan dengan lebih daripada satu cara.

Puan Aini's route is not a tree because the vertices are connected in more than one way.

3 (a)



(b) Rumah Ahmad (A), Bob (B), Chan (C) dan Daniel (D).

Houses of Ahmad (A), Bob (B), Chan (C) and Daniel (D).

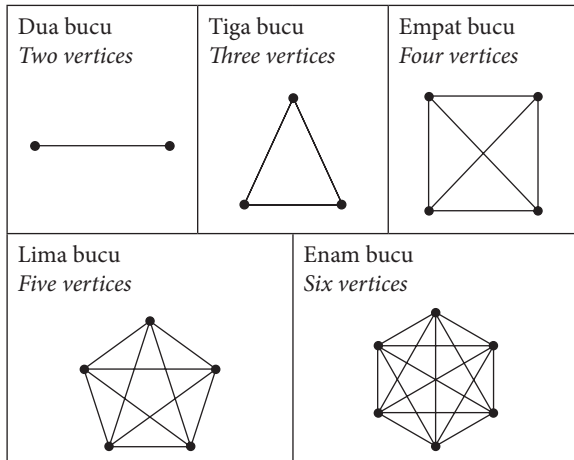
(c) Jarak, dalam m, di antara rumah Ahmad, Bob, Chan dan Daniel.

Distance, in m, between the houses of Ahmad, Bob, Chan and Daniel.

(d) Bob dan/and Daniel

Bahagian/Section C

4 (a)



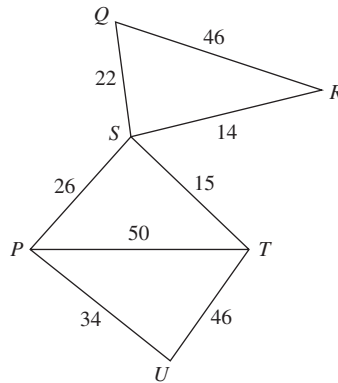
(b)

Bilangan bucu Number of vertices	Bilangan tepi untuk graf lengkap yang dilukis Number of edges for complete graph drawn
2	$1 = \frac{2(2-1)}{2}$
3	$3 = \frac{3(3-1)}{2}$
4	$6 = \frac{4(4-1)}{2}$
5	$10 = \frac{5(5-1)}{2}$
6	$15 = \frac{6(6-1)}{2}$

$$\frac{(n)(n-1)}{2}, n = 2, 3, 4, \dots$$

(c) $n = 7$, bilangan tepi/number of edges = $\frac{7(7-1)}{2} = 21$

5 (a)



(b) Bandar-bandar P, Q, R, S, T dan U.

Towns P, Q, R, S, T and U.

(c) Jarak, dalam km, di antara bandar.

Distance, in km, between towns.

(d) Q dan/and R

(e) (i) $U \rightarrow T \rightarrow S$ atau/ or $U \rightarrow P \rightarrow S$ atau/ or $U \rightarrow T \rightarrow P \rightarrow S$ atau/ or $U \rightarrow P \rightarrow T \rightarrow S$

(ii) $U \rightarrow P \rightarrow S$, 60 km