

Jawapan

Praktis 5

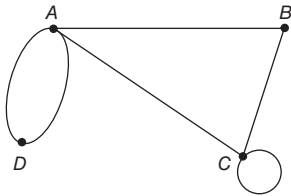
Praktis Formatif

5.1 Rangkaian Network

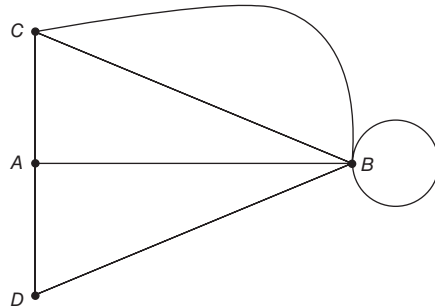
- 1 (a) $V = \{A, B, C, D, E\}$
 $n(V) = 5$
 (b) $E = \{(A, B), (A, D), (A, E), (B, C), (B, D), (C, D), (D, E)\}$
 $n(E) = 7$
 (c) Jumlah darjah/Sum of degrees = $2(7)$
 $= 14$
 (d) Ya, sebab ia tidak mempunyai gelung dan berbilang tepi.
Yes, because it does not have loop and multiple edges.

4

(a)



(b)

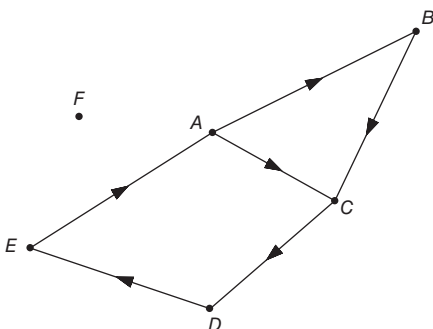


- 5 (a) Jumlah darjah = $2 + 3 + 2 + 1 + 2 + 2 + 2$
 Sum of degrees = 14
 Graf boleh dilukis kerana jumlah darjah adalah genap.
The graph can be drawn because the sum of degrees is even.

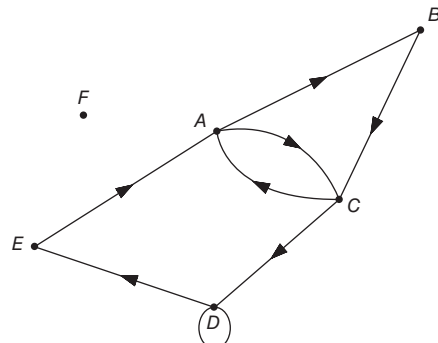
- (b) Jumlah darjah = $2 + 1 + 1 + 3 + 2 + 2 + 2$
 Sum of degrees = 13
 Graf tidak boleh dilukis kerana jumlah darjah adalah ganjil.
The graph cannot be drawn because the sum of degrees is odd.

6

(a)



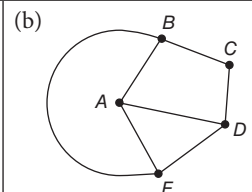
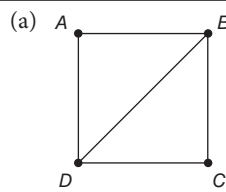
(b)



2

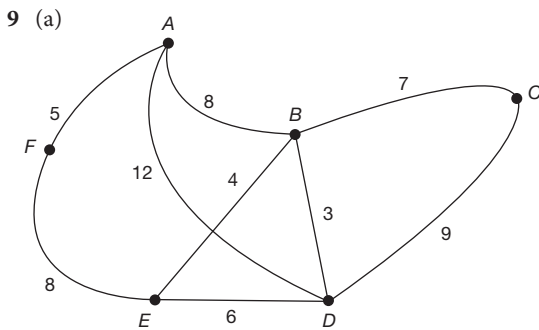
Graf Graphs	Bilangan bucu Number of vertices	Bilangan tepi Number of edges	Jumlah darjah Sum of degrees
(a)	4	6	12
(b)	4	4	8
(c)	6	9	18

3



- 7 $V = \{A, B, C\}$
 $E = \{(A, B), (A, C), (B, C), (C, A)\}$
- 8 (a) Graf berpemberat/Weighted graph
 (b)

Pasangan bucu Vertex pair	Pemberat(minit) Weightage (minutes)
(A, B)	5
(A, D)	6
(B, C)	2
(B, E)	9
(C, D)	3
(D, E)	7



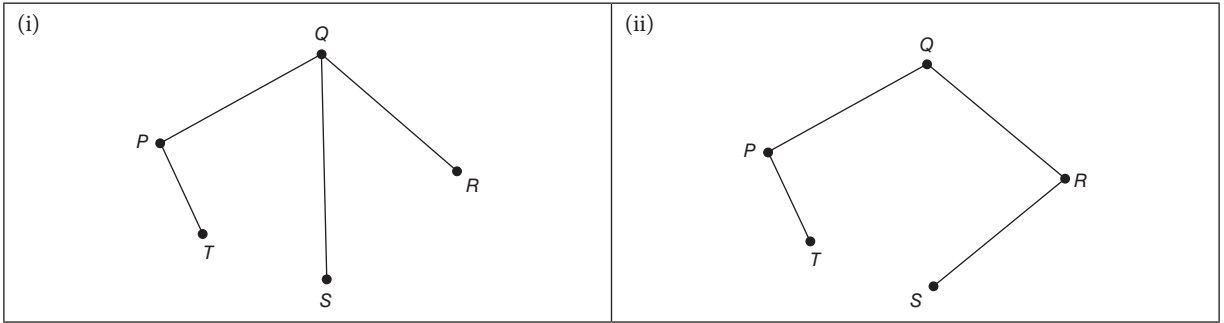
10

Subgraf/Subgraph 1	Subgraf/Subgraph 2	Subgraf/Subgraph 3

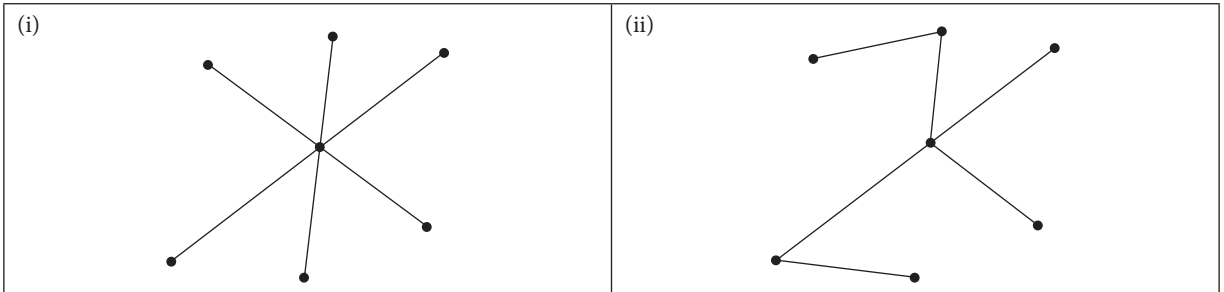
- 11 (a) Bukan pokok. Bucu = 8, tepi = 8. Bucu A dan C boleh dikaitkan dengan dua cara.
 (i) $A \rightarrow C$
 (ii) $A \rightarrow B \rightarrow C$
Not a tree. 8 vertices, 8 edges. Vertex A and vertex C can be connected in two ways.
 (i) $A \rightarrow C$
 (ii) $A \rightarrow B \rightarrow C$
- (b) 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.

- (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

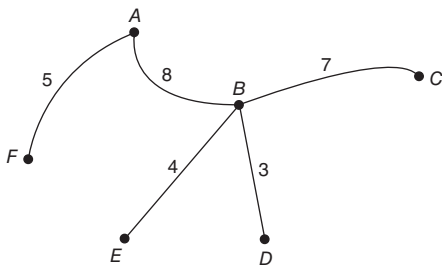
12 (a)



(b)



13



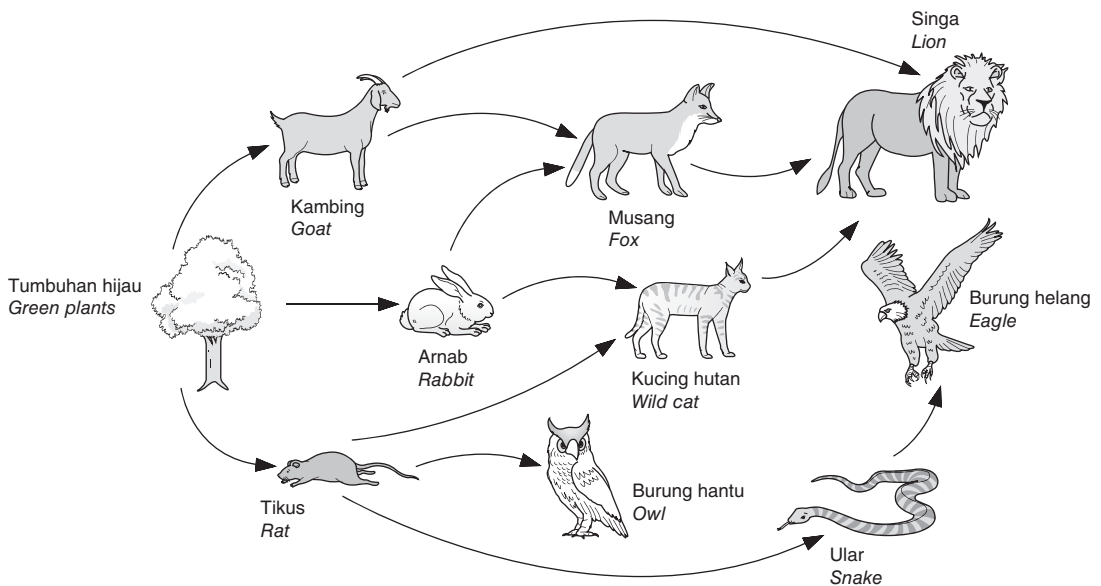
Jumlah pemberat minimum pokok

Minimum weightage of tree

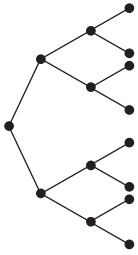
$$= 3 + 4 + 5 + 7 + 8$$

$$= 27$$

14 Graf terarah/Directed graph



15 (a)

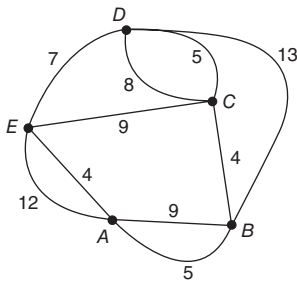


(b)

n	Bilangan murid pada peringkat ke- n Number of students at the n^{th} term	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) $T_n = 2^{n-1}$, $S_n = 2^n - 1$

16



- (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

17

- (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

18 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

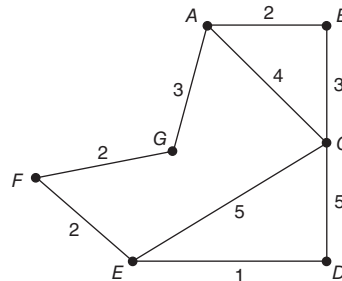
Kertas 1

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

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

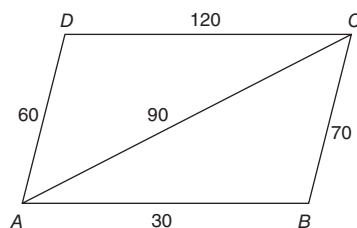
- (a) 1. Pejabat/Office \rightarrow A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \rightarrow Pejabat/Office
 2. Pejabat/Office \rightarrow E \rightarrow D \rightarrow C \rightarrow B \rightarrow A \rightarrow Pejabat/Office
 3. Pejabat/Office \rightarrow A \rightarrow B \rightarrow E \rightarrow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

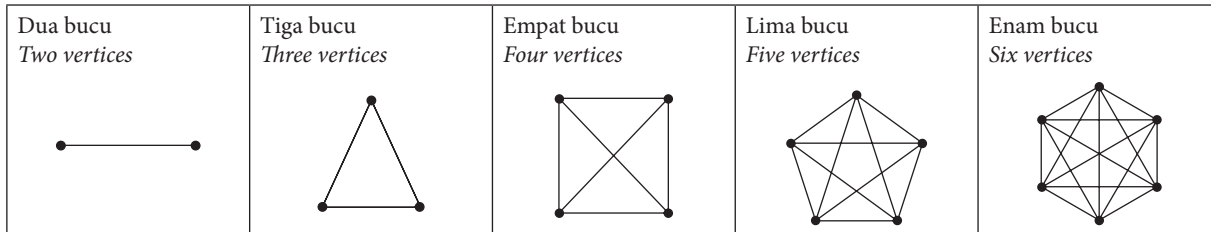


- (b) Rumah Ahmad (A), Bob (B), Chan (C) dan Daniel (D).
Houses of Ahmad (A), Bob (B), Chan (C) and Daniel (D).

- (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)



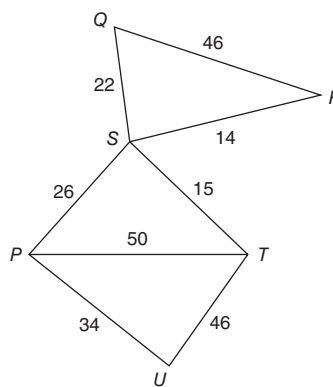
(b)

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