



**UOW**  
**MALAYSIA**

PART OF THE UNIVERSITY  
OF WOLLONGONG AUSTRALIA  
GLOBAL NETWORK

# **DISCRETE MATHEMATICS ASSIGNMENT**

**SUBJECT CODE: XBCS1103N**

**SUBJECT NAME: Discrete Mathematics**

**COURSE: Bachelor of Computer Science (Hons)**

**LECTURER NAME: HEMAVATHI.R**



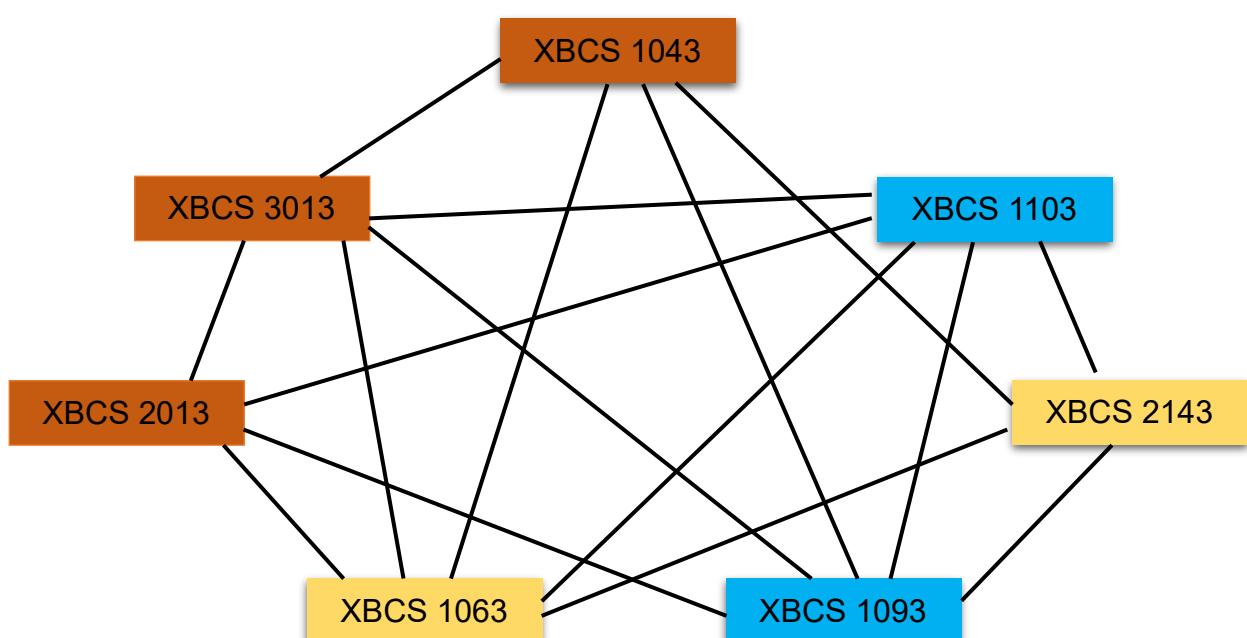
**Submitted By  
Akshay Krishna (0137246)  
Antony Poly (0137155)**

### Question 1

1. XBCS1043 = A
2. XBCS1103 = B
3. XBCS2143 = C
4. XBCS1093 = D
5. XBCS1063 = E
6. XBCS2013 = F
7. XBCS3013 = G

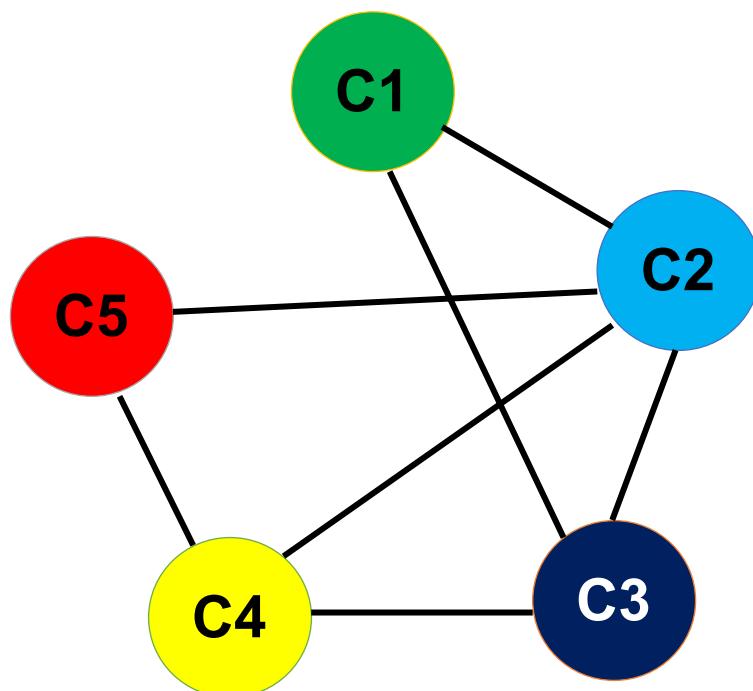
	A	B	C	D	E	F	G
A	X	X				X	
B	X	X					
C			X			X	X
D				X	X		
E				X	X		
F	X		X			X	
G			X				X

Time Slot	Courses		
1	XBCS 1043	XBCS 2013	XBCS 3013
2	XBCS 2143	XBCS 1063	
3	XBCS 1103	XBCS 1093	



## Question 2

	Ali	Balan	Lee	John	Zakir	Brand	Rosen
C1							
C2							
C3							
C4							
C5							



Conclusion:

Meeting Times	Committees	
1	C1	C4
2	C3	C5
3	C2	

### Question 3

S0 = initial state

S5 = on receiving 5¢

S10 = on receiving 10¢

S15 = on receiving 15¢

S20 = on receiving 20¢

S25 = on receiving 25¢

S30 = on receiving 30¢

S35 = on receiving 35¢

S40 = on receiving 40¢

S45 = on receiving 45¢

S50 = on receiving 50¢

100B = 100plus button press

AB = apple juice button press

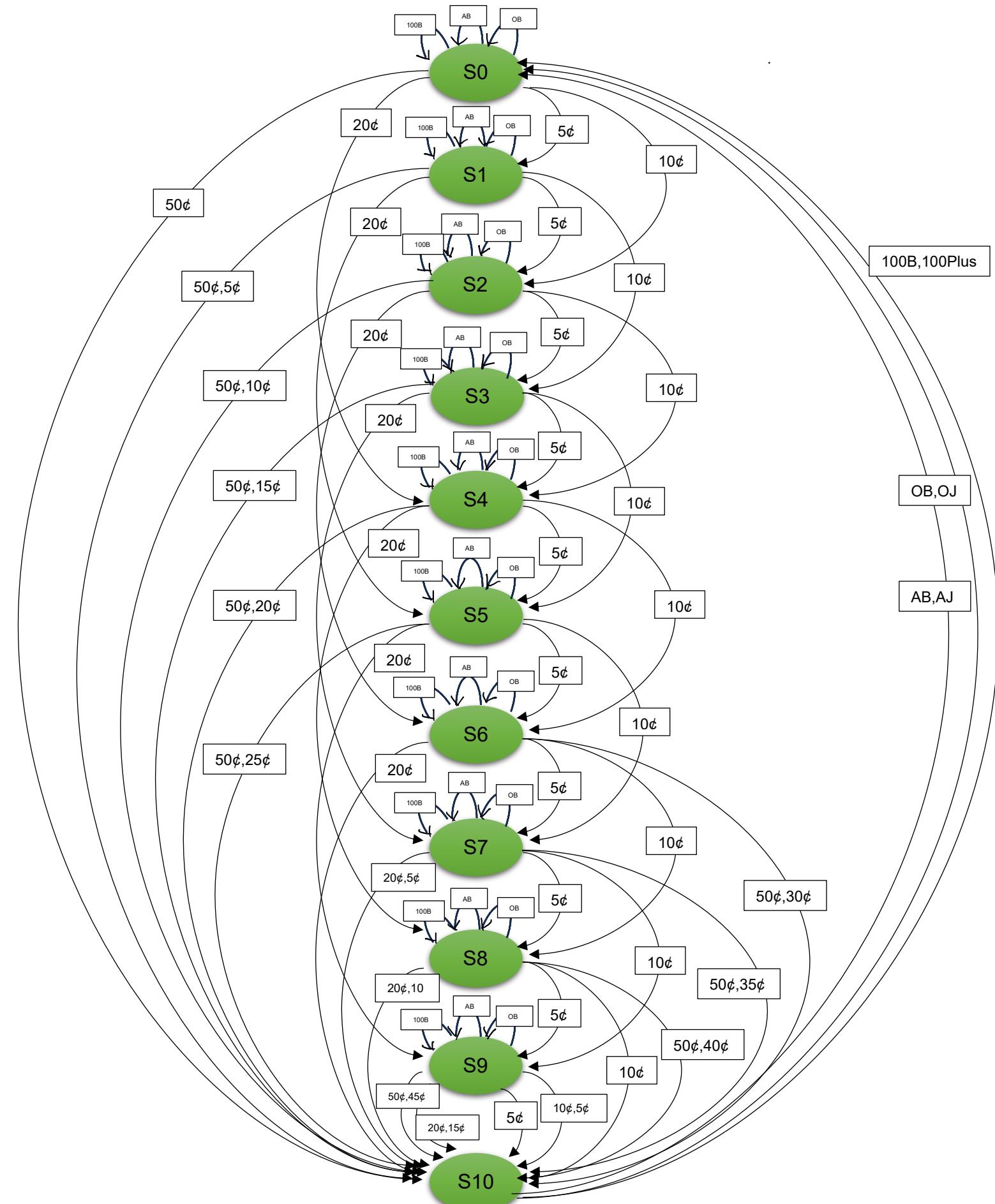
OB = orange juice button press

100 = 100Plus

AJ = apple juice

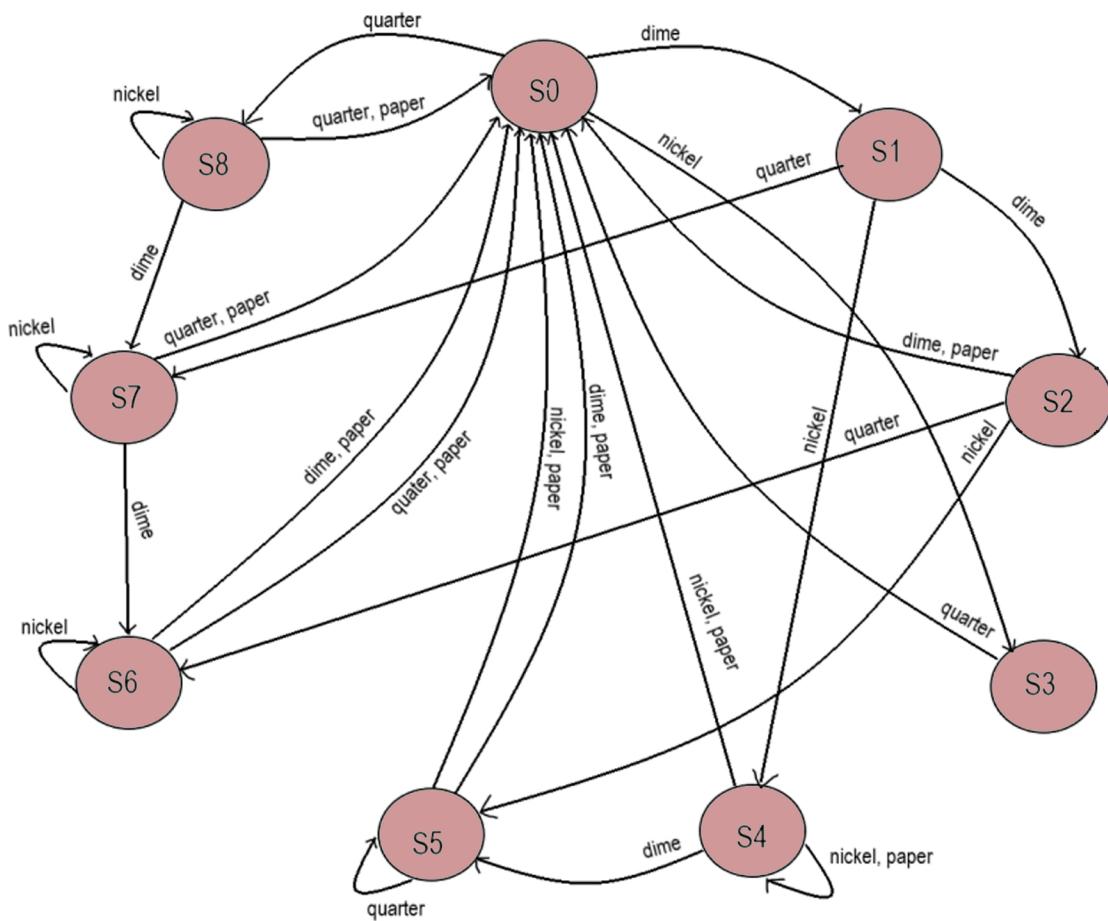
OJ = orange juice

State	Inputs							Inputs						
	5¢	10¢	20¢	50¢	100B	AB	OB	5¢	10¢	20¢	50¢	100B	AB	OB
S0	S1	S2	S4	S10	S0	S0	S0	-	-	-	-	-	-	-
S1	S2	S3	S5	S10	S1	S1	S1	-	-	-	5¢	-	-	-
S2	S3	S4	S6	S10	S2	S2	S2	-	-	-	10¢	-	-	-
S3	S4	S5	S7	S10	S3	S3	S3	-	-	-	15¢	-	-	-
S4	S5	S6	S8	S10	S4	S4	S4	-	-	-	20¢	-	-	-
S5	S6	S7	S9	S10	S5	S5	S5	-	-	-	25¢	-	-	-
S6	S7	S8	S10	S10	S6	S6	S6	-	-	-	30¢	-	-	-
S7	S8	S9	S10	S10	S7	S7	S7	-	-	5¢	35¢	-	-	-
S8	S9	S10	S10	S10	S8	S8	S8	-	-	10¢	40¢	-	-	-
S9	S10	S10	S10	S10	S9	S9	S9	-	5¢	15¢	45¢	-	-	-
S10	S10	S10	S10	S10	S0	S0	S0	5¢	10¢	20¢	50¢	100Plus	AJ	OJ



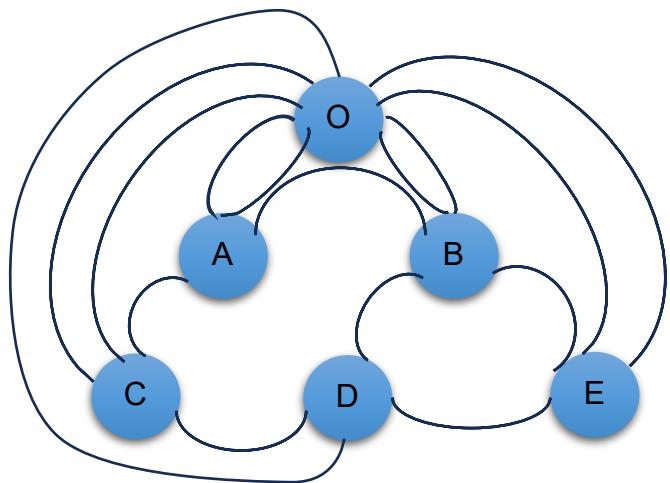
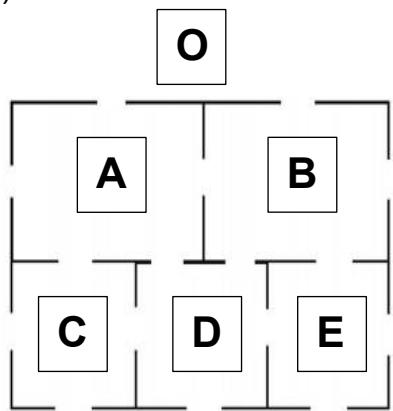
## Question 4

States	Nickel (5¢)	Dime (10¢)	Quarter (25¢)	Nickel (5¢)	Dime (10¢)	Quarter (25¢)
S0	S3	S1	S8	-	-	-
S1	S4	S2	S7	-	-	-
S2	S5	S0	S6	-	Newspaper	-
S3	S3	S4	S0	Newspaper	-	-
S4	S0	S5	S4	Newspaper	-	-
S5	S0	S0	S5	Newspaper	Newspaper	-
S6	S6	S0	S0	-	Newspaper	Newspaper
S7	S7	S6	S0	-	-	Newspaper
S8	S8	S7	S0	-	-	Newspaper



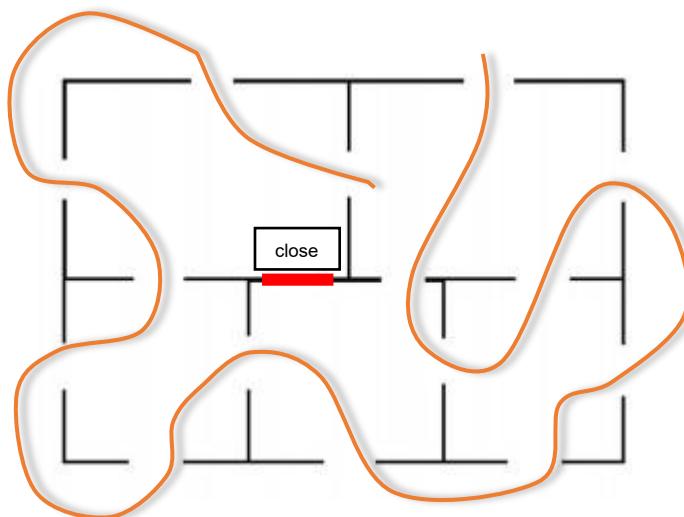
## Question 5

(a)



(b) No, a finite graph has a Euler path if and only if it is connected and exactly two vertices. Thus, it cannot form a Euler path in this graph since there are four vertices contain odd edges.

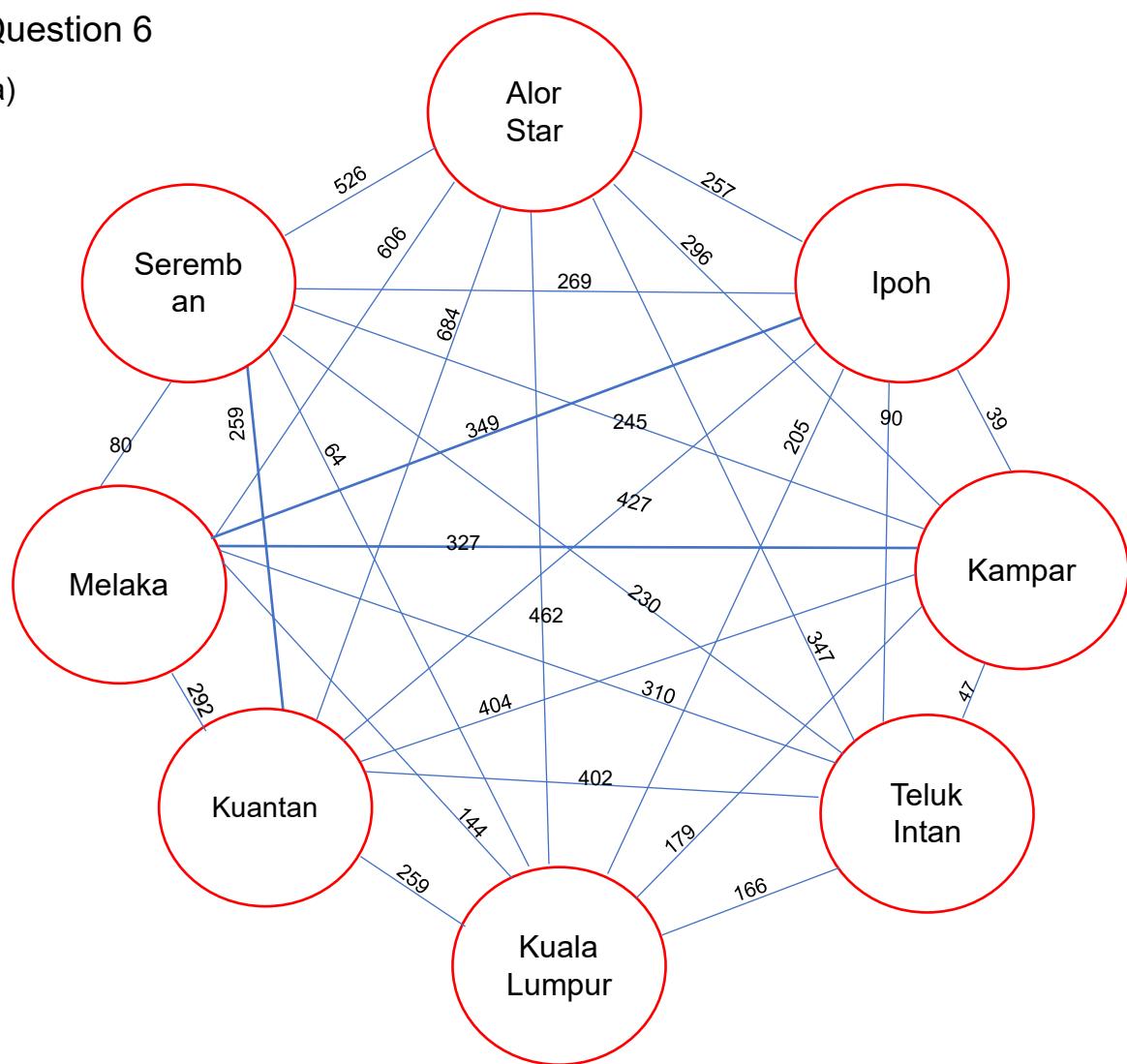
(c)



Answer: only **one door** needs to close to find a continues line that passes through each door exactly once.

**Question 6**

(a)



(b) Kruskal's Algorithm

Edge	$d_v$
(Ipoh, Kampar)	39
(Kampar, Teluk Intan)	47
(Kuala Lumpur, Seremban)	64
(Seremban, Melaka)	80
(Teluk Intan, Kuala Lumpur)	166
(Alor Star, Ipoh)	257
(Seremban, Kuantan)	259
Total:	912

### (c) Prim's Algorithm

Edge	$d_v$
(Alor Star, Ipoh)	257
(Ipoh, Kampar)	39
(Kampar, Teluk Intan)	47
(Teluk Intan, Kuala Lumpur)	166
(Kuala Lumpur, Seremban)	64
(Seremban, Melaka)	80
(Seremban, Kuantan)	259
Total:	912

(B&C)

