

17 Given :-

ROM

Required Size = 16KB

Available Size = 8KB

Crystal frequency = $3 \times 9 = 19 \text{ mHz}$

No. of chips required = $\frac{\text{Required}}{\text{Available}} = 2$

No. of sets = $\frac{\text{No. of chips}}{\text{Banks}} = 1$

$$\begin{aligned}\text{Set Size} &= \text{Available Size} \times 2 \\ &= 8 \times 2 \text{ KB} \\ &= 16 \text{ KB} \\ &= 2^4 \times 2^{10} \\ &= 2^{14}\end{aligned}$$

\therefore 14 Address bits will be set to 1 and rest will be zero.

$A_0 - A_{13} \rightarrow 1, A_{14} - A_{19} \Rightarrow 0$

$A_{19}A_{18}A_{17}A_{16}$	$A_{15}A_{14}A_{13}A_{12}$	$A_9A_8A_7A_6$	$A_5A_4A_3A_2$	A_1A_0
0 0 0 0	0 1 1 1	1 1 1 1	1 1 1 1	1 1

$A_{19}A_{18}A_{17}A_{16}$	$A_{15}A_{14}A_{13}A_{12}$	$A_{11}A_{10}A_9A_8$	$A_7A_6A_5A_4$	$A_3A_2A_1A_0$
0 0 0 0	0 0 1 1	1 1 1 1	1 1 1 1	1 1 1 1
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
0	3	f	f	f

~~E~~

Ending Address = FFFFFH

Starting Address = FC000H

	Even bank	Oddbank
Starting Address	FC000 H	FC001 H
Ending Address	FFFFE H	FFFFF H
No. of address lines required = 8KB = 13 Address lines		

Memory Chips	Memory Address	Address bit					
		A ₁₉ A ₁₈ A ₁₇ A ₁₆	A ₁₅ A ₁₄ A ₁₃ A ₁₂	A ₁₁ A ₁₀ A ₉ A ₈	A ₇ A ₆ A ₅ A ₄	A ₃ A ₂ A ₁ A ₀	
ROM Set 1	FC000H	1111	1100	0000	0000	0000	
Even bank							
Rom Set 1	FFFFEH	1111	1111	1111	1111	1110	
Even bank							
Rom Set 1	FC001H	1111	1100	0000	0000	0001	
Odd bank							
Rom Set 1	FFFFFH	1111	1111	1111	1111	1111	
Odd bank							

A₀ bit will be used for banking
 A₁ - A₁₃ will be used in interfacing
~~A₁₄, A₁₅, A₁₆~~ A₁₈ - A₁₆ will be used for decoding
 A₁₅, A₁₄, A₁₃ are chips free lines for
 ROM chip

