



Physics of Induction Cooking - Answer Sheet

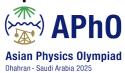
c. i. Characterisation of the madelion con (4.5 pt.	(4.5 pts)	2.1. Characterisation of	risation of the induction coil (cterisation of the induction coil (4.5 pt
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1.1 (0.4 pt)	the muuction con (4.5 pts)
$R_{cable} =$	
1.2 (1.2 pt)	

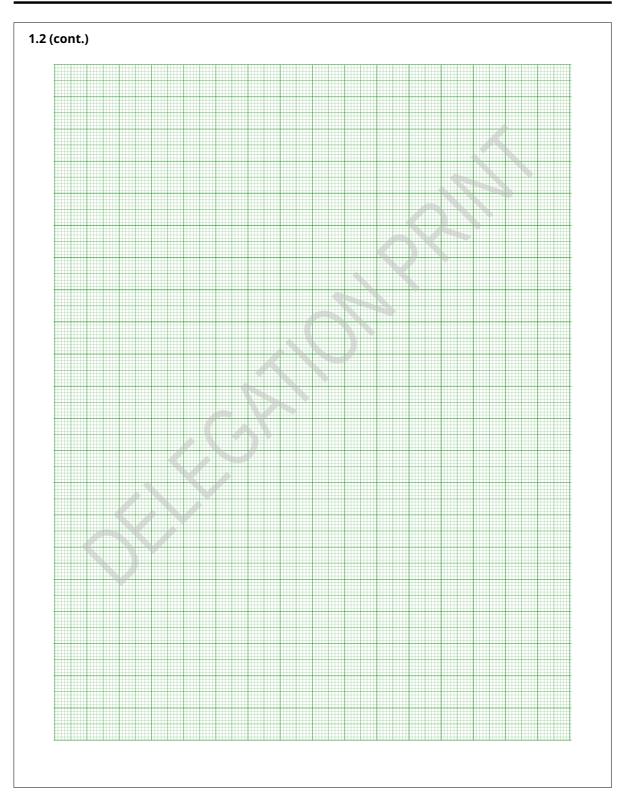


A1-2
Singapore English (Singapore)

	7		

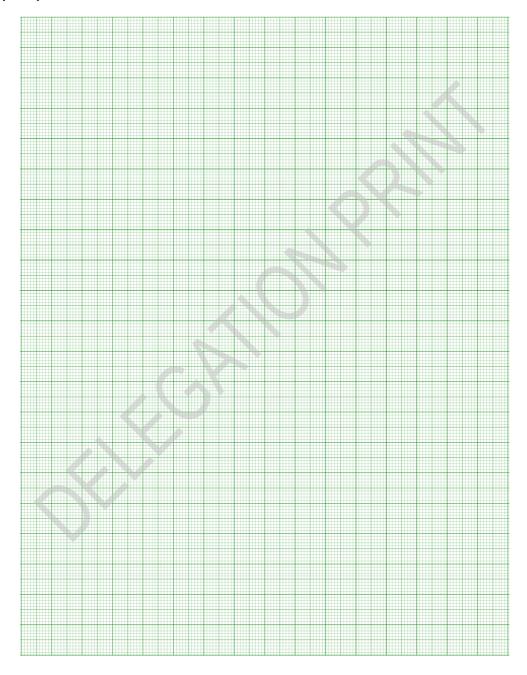


A1-3
Singapore English (Singapore)



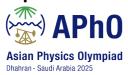


1.2 (cont.)



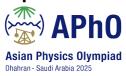
$$(C = 470 \, {\sf nF}), \, L =$$

$$(C=2200\,\mu\mathrm{F}), L=$$



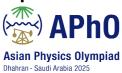


1.3 (0.5 pt)	

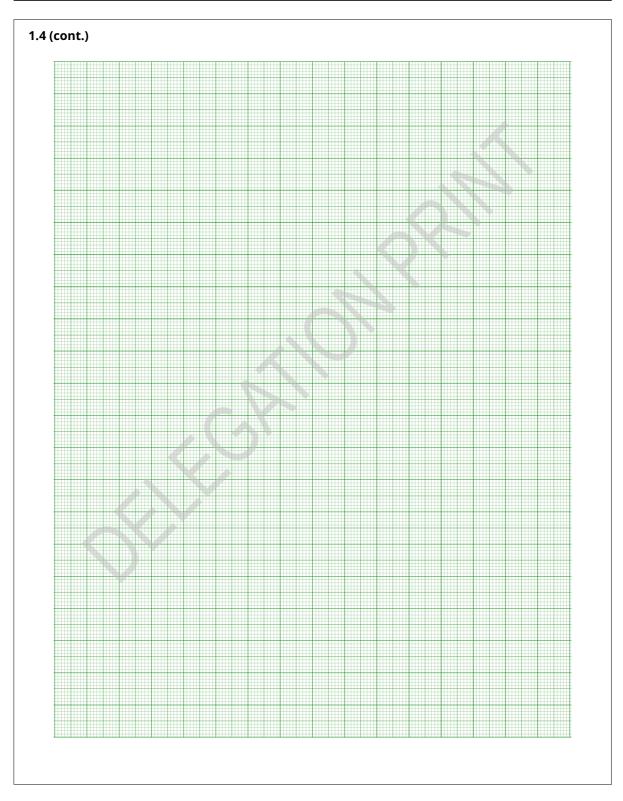


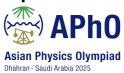
A1-6
Singapore English (Singapore)

4 (1.4 pt)			

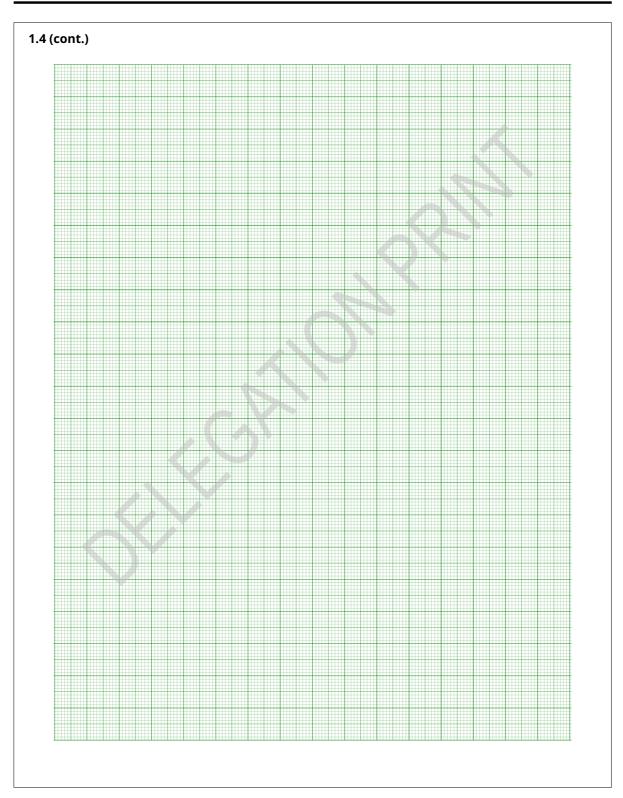


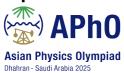




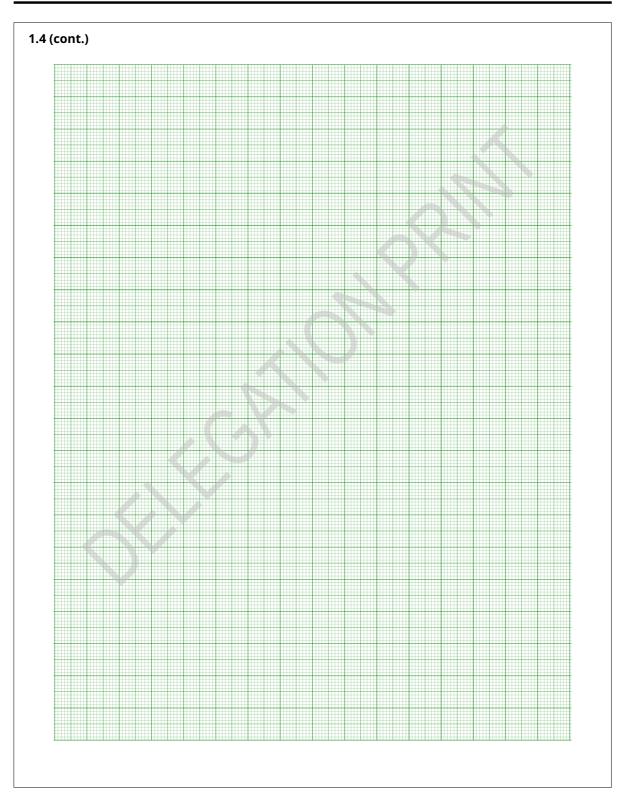


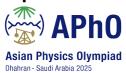
A1-8
Singapore English (Singapore)



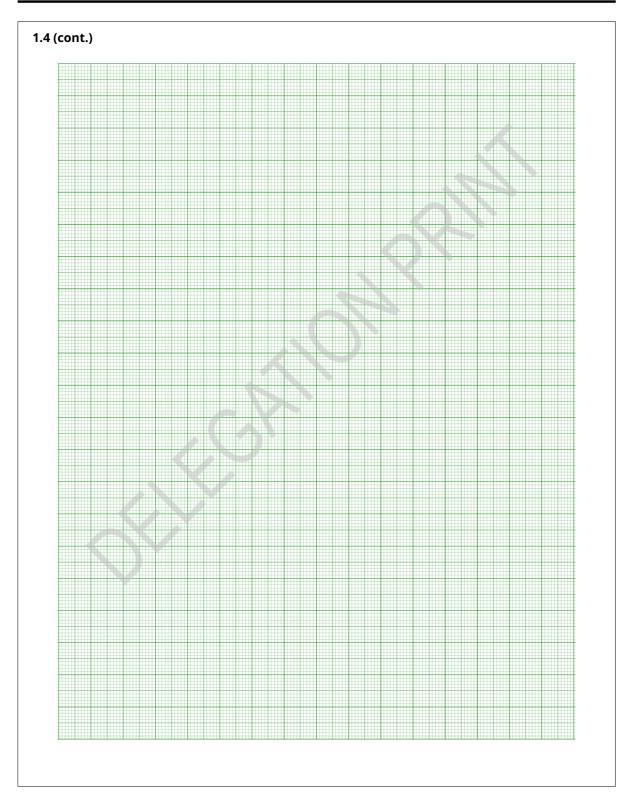


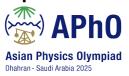
A1-9
Singapore English (Singapore)





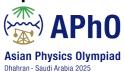
A1-10
Singapore English (Singapore)



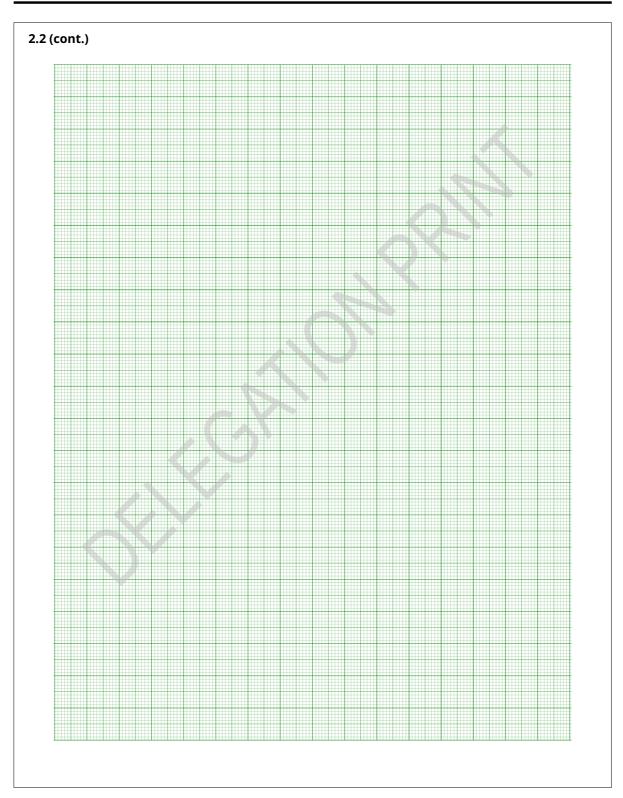


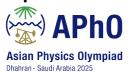


1.5 (1 pt)					
L(average) =					
$R_L(average) =$					
				OK	
C.2. Mutual Induction a	and Skin Dep	oth (8.1 pt	s)		
2.1 (0.4 pt)					
2.2 (1 pt)					
2.2 (1 μt)					

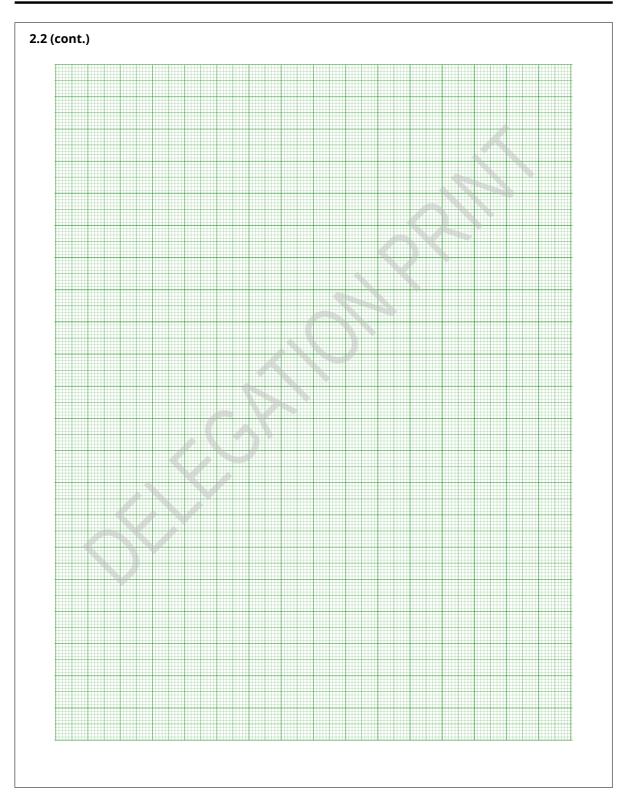


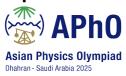
A1-12
Singapore English (Singapore)





A1-13
Singapore English (Singapore)



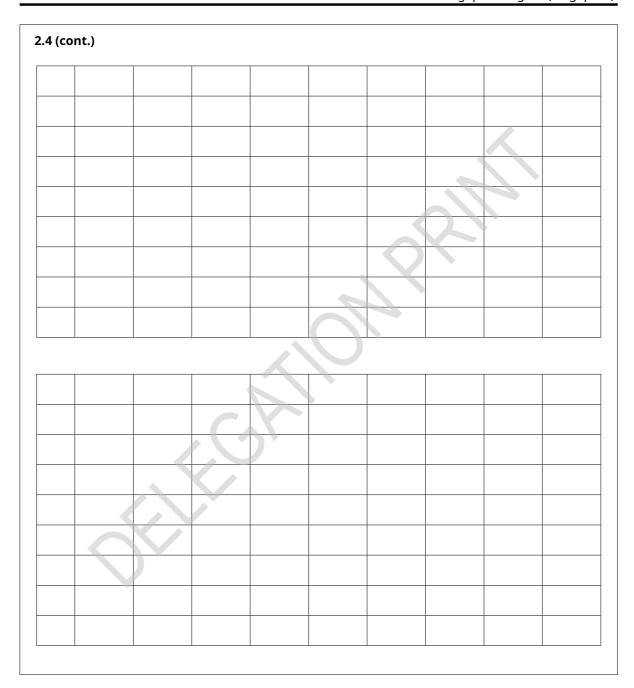


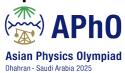
A1-14
Singapore English (Singapore)

2.3 (0.4 pt)		
M =	 M =	
2.4 (5.5 pt)		

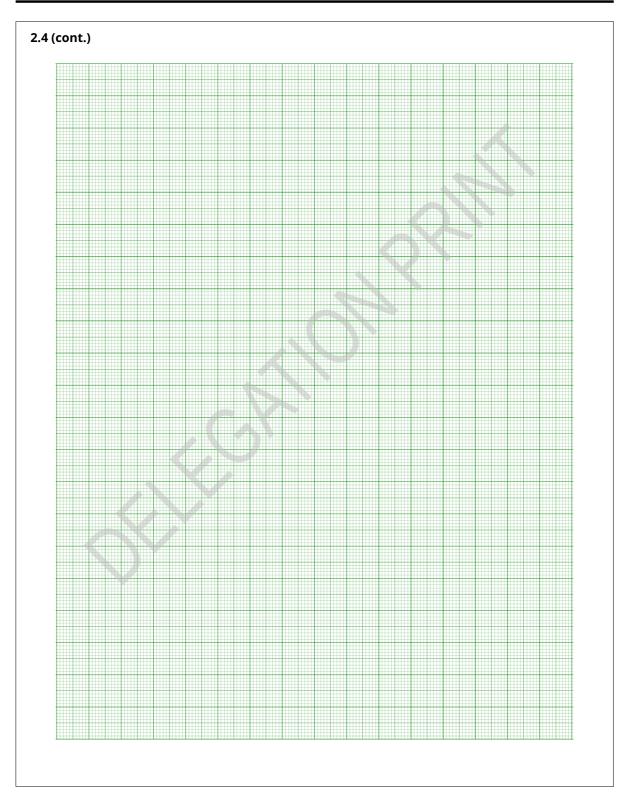


A1-15
Singapore English (Singapore)



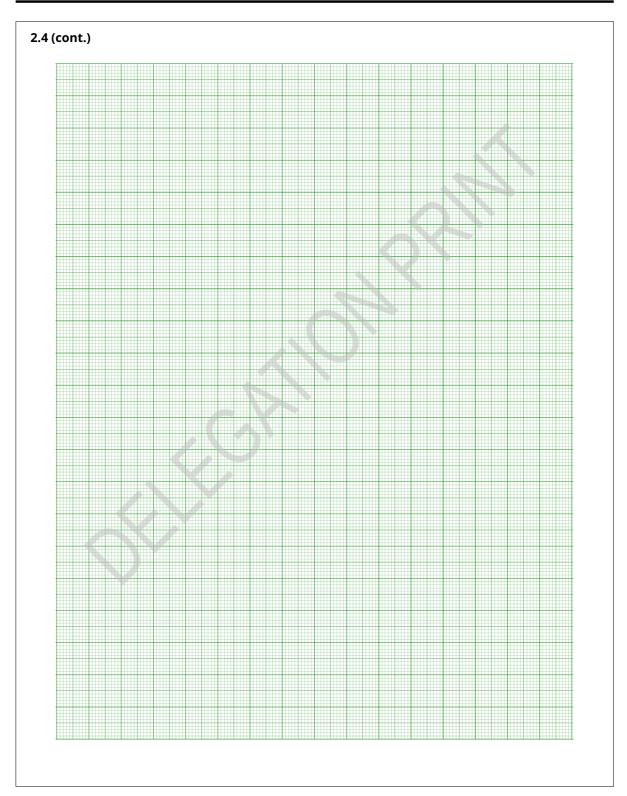


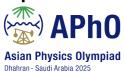
A1-16
Singapore English (Singapore)



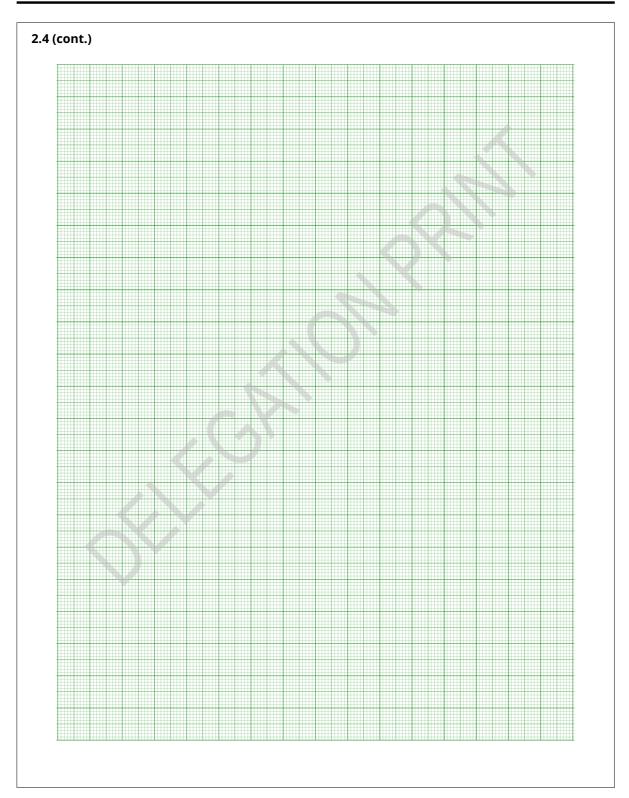


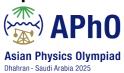
A1-17
Singapore English (Singapore)



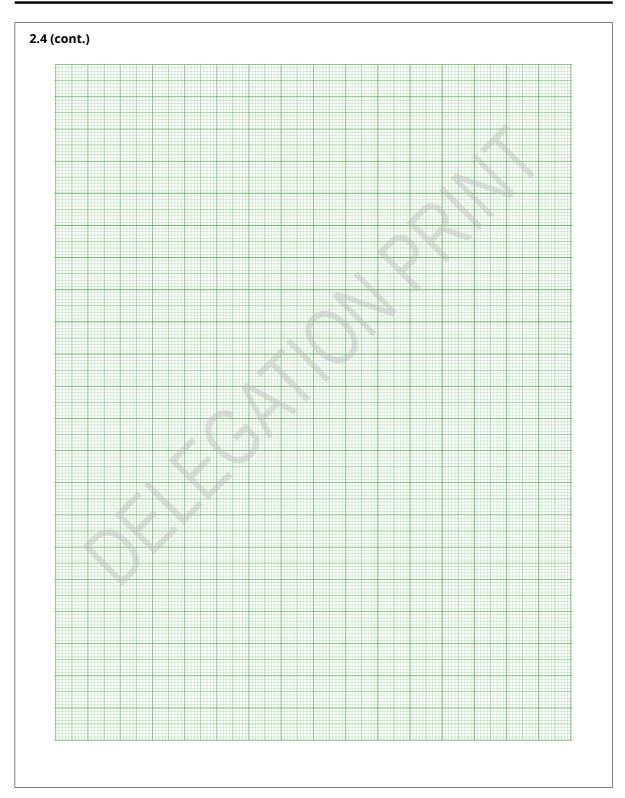


A1-18
Singapore English (Singapore)





A1-19
Singapore English (Singapore)





A1-20
Singapore English (Singapore)

2.4 (cont.)
In the boxes below, tick one metal that does not yield good data due to extreme value of skin depth. \Box SS304 \Box Cu \Box Al
For the other three metals, state their n values below, with appropriate subscripts.
n = n = n =
2.5 (0.2 pt)
m =
2.6 (0.6 pt)
State the values of σ of the three metals that do yield good data, with appropriate subscripts.
$\sigma = \sigma = \sigma =$
C.3. : Specific heat capacity and the effective load resistance (7.4 pts)
3.1 (0.2 pt)



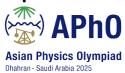
A1-21
Singapore English (Singapore)

3.2 (0.5 pt)	

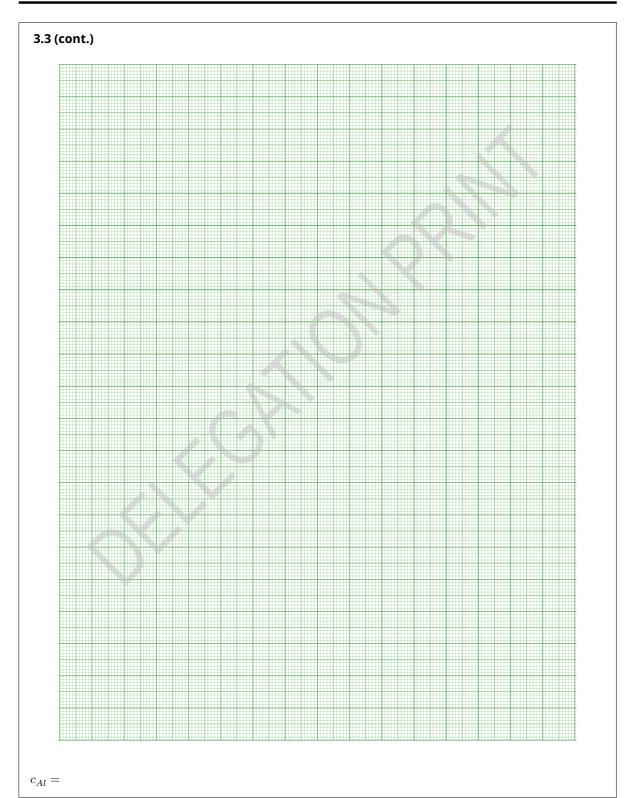


A1-22
Singapore English (Singapore)

	0/	
10		



A1-23
Singapore English (Singapore)



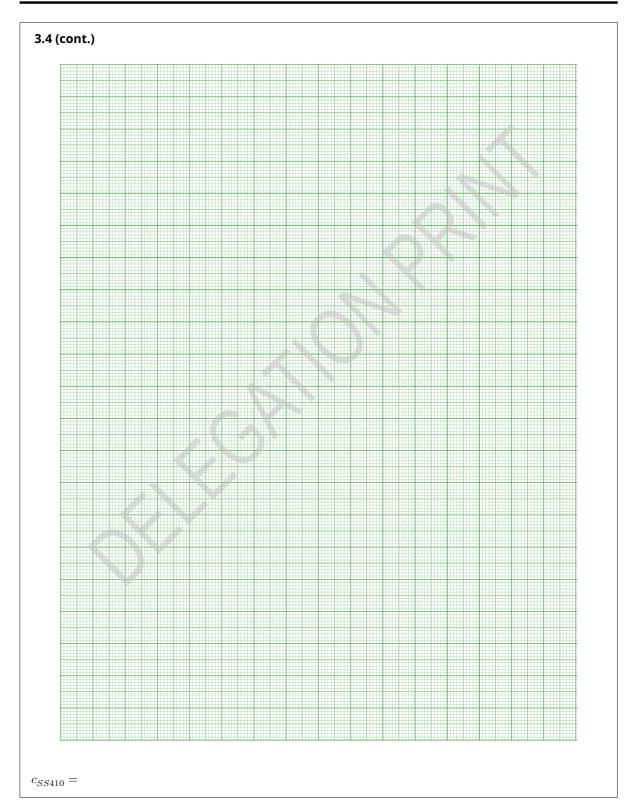


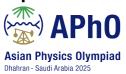
A1-24
Singapore English (Singapore)

.5 pt)			
	/()		



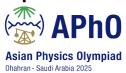
A1-25
Singapore English (Singapore)





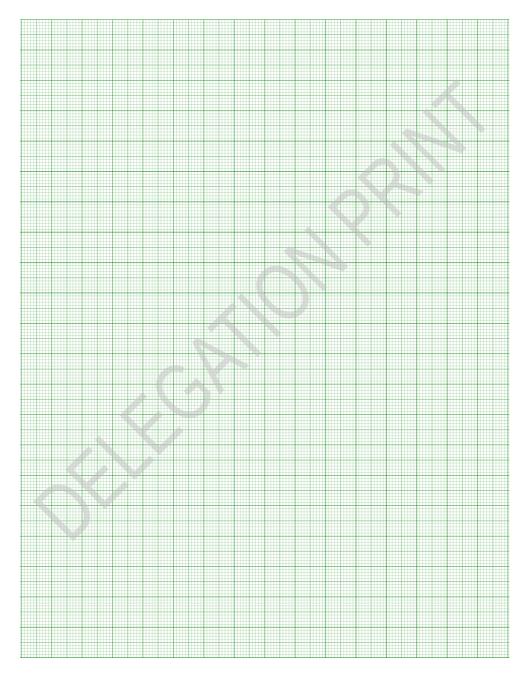
A1-26
Singapore English (Singapore)

3.5 (1.6 pt)				
			-	
		18		

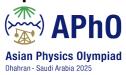


A1-27
Singapore English (Singapore)

3.5 (cont.)

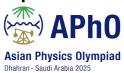


 $R_{LOAD} =$



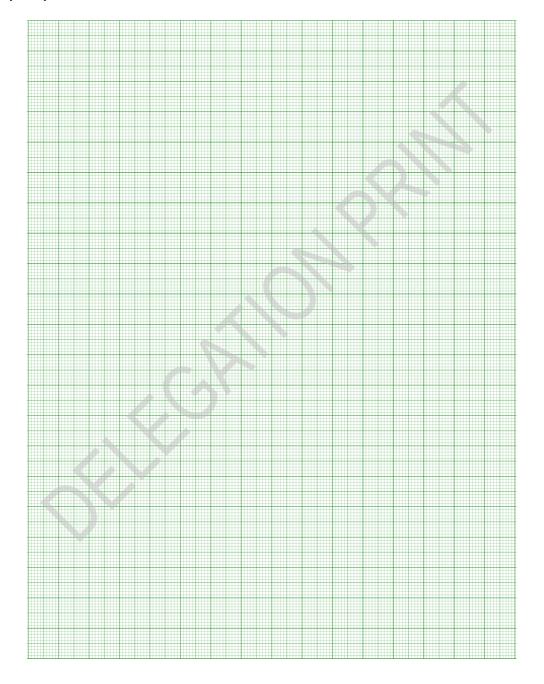
A1-28
Singapore English (Singapore)

		 2	
	. (
	7		



A1-29
Singapore English (Singapore)

3.6 (cont.)



 $R_{LOAD} =$



A1-30
Singapore English (Singapore)

3.7 (0.1 pt) □ (a)			□ (b)		
3.8 (0.1 pt) □ (a)	□(b)	□(c)	□(d)	□ (e)	
3.9 (0.4 pt) $\eta_{AI} =$			$\eta_{\sf SS410} =$	OS/IN	