

13th INTERNATIONAL JUNIOR SCIENCE OLYMPIAD



THEORY COMPETITION

--- *ANSWER SHEET* ---

DECEMBER, 6th 2016

FILL IN THE FOLLOWING INFORMATION

FIRST NAME	
MIDDLE NAME	
LAST NAME	
COUNTRY	
CODE	
SIGNATURE	

PROBLEM I

I.1 The pH of the solution is...

Points: 1.5	Answer :
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I.2 Calculate the content (in grams) of hydrogen and carbon in the sample.

Points: 0.5	Answer : Hydrogen = Carbon =
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I.3 Determine the mass of the reaction flask with its contents after the reaction.

Points: 0.5	Answer : Mass of the reaction flask with its contents after the reaction
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PROBLEM II

II.1 Find the total pressure at the depth of 20.0 meter under the sea surface.

Points: 1.0	Answer:
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II.2 Calculate the maximum time (in minutes) of his/her diving.

Points: 2.0	Answer:
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II.3a. [0.5] Choose the correct international unit for **R**-value.

No	Some international units
1	$\frac{J m^2 K}{s}$
2	$\frac{m^2 K s}{J}$
3	$\frac{s}{J m^2 K}$
4	$\frac{J}{m^2 K s}$

II.3b. [1.0] Choose the best material for SCUBA suit.

No	Name of material (abbreviated)	R-value
1	A	1.0
2	C	3.7
3	G	4.5
4	N	5.5

II.4 What is the depth at which this pressure difference occurs?

Points: 1.0	Answer:
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II.5 Calculate his/her volume of the lungs at the depth of 30.0 m.

Points: 1.0	Answer:
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II.6 Find the value of b .

Points: 2.0	Answer :
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II.7 What is the maximum angle between the refracted sunlight and the normal that the diver sees?

Points: 1.5	Answer :
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Total points for Problem II	
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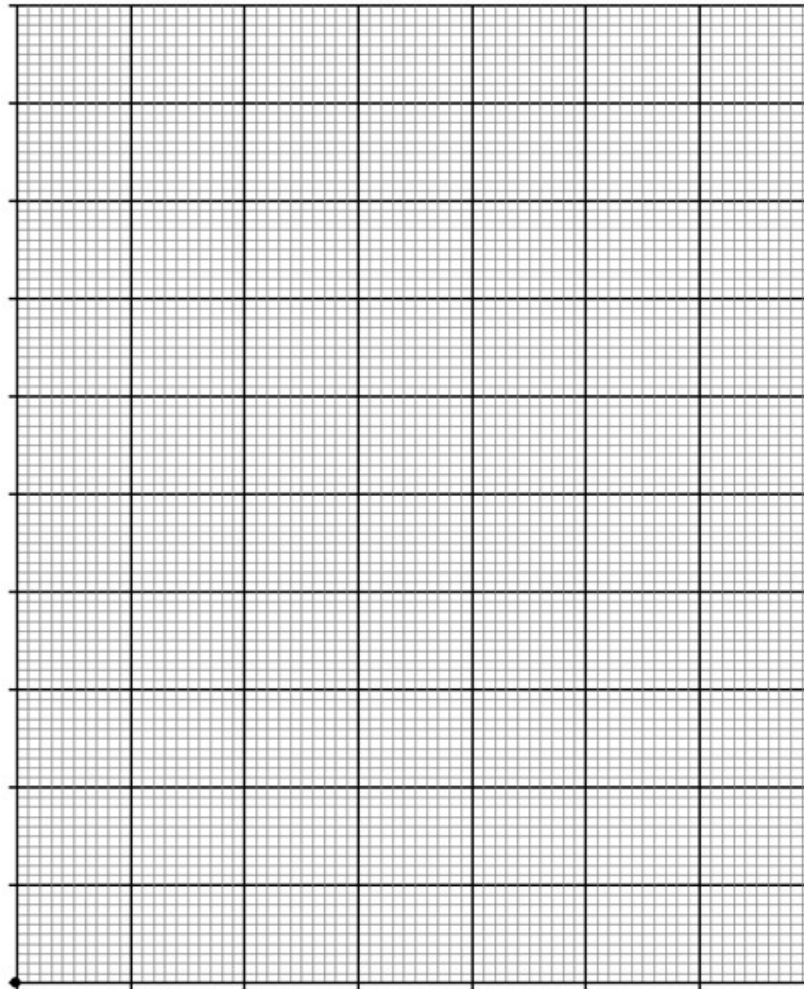
PROBLEM III

Cross the correct answer on the box provided. Look for the letter that you think is the correct answer to the questions and then provide a cross on that letter below the number. *Example:* if you think that the correct answer for problem III.1 is V, then you cross the letter V below III.1.

		Question:				
		III.1	III.2	III.3	III.5	III.6
ANSWERS	A	A	A	A	A	A
	B	B	B	B	B	B
	C	C	C	C	C	C
	D	D	D	D	D	D
	E	E	E	E	E	E
	F	F	F	F	F	F
	G	G	G	G	G	G
	H	H	H	H	H	H
	I	I	I	I	I	I
	J	J	J	J	J	J
	K	K	K	K	K	K
	L	L	L	L	L	L
	N	N	N	N	N	N
	O	O	O	O	O	O
	P	P	P	P	P	P
	Q	Q	Q	Q	Q	Q
	R	R	R	R	R	R
	S	S	S	S	S	S
	T	T	T	T	T	T
	U	U	U	U	U	U
V	V	V	V	V	V	
W	W	W	W	W	W	
		1.0	1.0	1.0	1.0	2.0

III.4 Point: 2.0

Calculate the percentage population in 2014 and 2015 relative to 2013, and construct a histogram using the calculated data.



III.7 [2.0 points] Determine the set of sex chromosomes of the Komodo dragon and mark the one correct genotype with a cross in the following table

Individual dragon	$Z^N Z^N$	$Z^N Z^n$	$Z^n Z^n$	$Z^N W$	$Z^n W$
1.1					
1.2					
2.1					
2.2					
2.3					
3.1					
3.3					

----- DO NOT WRITE BELOW -----

Total points for Problem III	
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