

Code:	Name:
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37 IChO Theoretical Examination Answer Sheets

Problem 1: Chemistry of Amides and Phenols

	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	Σ
Total Points	4	4	4	4	6	4	8	4	38
Received									

Problem 2: Organic Synthesis and Stereochemistry

	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	Σ
Total Points	4	8	6	6	6	8	6	4	48
Received									

Problem 3: Organic Photochemistry and Photophysics

	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	Σ
Total Points	8	4	4	4	4	4	4	4	36
Received									

Problem 4: Gold Capital of Asia

	4A-1	4A-2	4A-3	4A-4	4A-5	4A-6	4B-1	4B-2	4B-3	4B-4	4B-5	Σ
Total Points	2	4	4	2	6	2	2	2	2	8	8	42
Received												

Problem 5: Lewis Structure

	5-1	5-2	5-3	5-4	5-5	Σ
Total Points	2	4	4	6	5	21
Received						

Problem 6: Alkalinity of Water and Solubility of CO₂

	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	Σ
Total Points	4	4	6	6	4	6	6	4	40
Received									

Problem 7: Kinetic Behavior of Ozone

	7-1	7-2	7-3	7-4	7-5	Σ
Total Points	6	6	6	4	6	28
Received						

Problem 8: Protein Folding

	8-1	8-2	8-3	8-4	8-5	8-6	8-7	Σ
Total Points	2	2	6	4	4	2	6	26
Received								

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Problem 1: Chemistry of Amides and Phenols

	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	Σ
Total Points	4	4	4	4	6	4	8	4	38
Received									

1-1

Express your answer from high to low melting point as follows:

_____ > _____ > _____ (Insert compound codes A, B, C)

1-2 *Answer for multiple choice question:*

1-3 *Draw the structural formula of tripeptide Gly-Gly-Gly*

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1-4

The number of all possible linear tripeptides is: _____

1-5

The number of optically active linear tripeptides is: _____

1-6

Express your answer from high to low binding affinity as follows:

_____ > _____ > _____ (Insert compound codes D, E, and F)

1-7 Draw the structural formula of compound H:

1-8 Answer for multiple choice question:

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Problem 2: Organic Synthesis and Stereochemistry

	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	Σ
Total Points	4	8	6	6	6	8	6	4	48
Received									

2-1 Draw the structural formula of compound A.

2-2 T or F

_____ (a) OsO_4 is an oxidizing agent in the reaction of A to B.

_____ (b) MeOH is generated as a by-product in the reaction of B to C.

_____ (c) Protons act as the catalyst in the transformation of B to C.

_____ (d) C will still be formed albeit in lower yields in the absence of $\text{Me}_2\text{C}(\text{OMe})_2$.

2-3 D/E ratio before recrystallization: _____

Show your work here

Code:

Name:

2-4

T or F

_____ (a) *The reaction was to oxidize compound E.*

_____ (b) *The oxygen atom inserted originated from MCPBA.*

_____ (c) *The R/S notation of C-1 remained unchanged before and after the reaction.*

2-5 *Draw the configurational formula of compound H.*

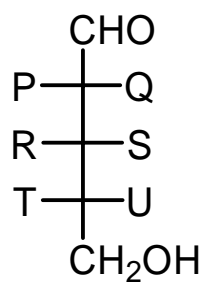
2-6 *Give your answers as follows*

C-1: _____; C-2: _____; C-3: _____; C-4: _____.

Code:

Name:

2-7



P:

Q:

R:

S:

T:

U:

2-8 The number of diastereoisomers of pentasaccharide is:

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Problem 3: Organic Photochemistry and Photophysics

	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	Σ
Total Points	8	4	4	4	4	4	4	4	36
Received									

3-1 Draw the structural formula of C and D

3-2 Answer for multiple choice question:

3-3 Answer for multiple choice question:

3-4 Answer for multiple choice question:

Code:

Name:

3-5 Draw the structural formula of compound H

3-6 (*cis or trans*)

3-7 Answer for multiple choice question:

3-8 Answer for multiple choice question:

Code:	Name:
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Problem 4: Gold Capital of Asia

	4A-1	4A-2	4A-3	4A-4	4A-5	4A-6	4B-1	4B-2	4B-3	4B-4	4B-5	Σ
Total Points	2	4	4	2	6	2	2	2	2	8	8	42
Received												

4A-1 Draw a structure for $\text{Au}(\text{CN})_2^-$

4A-2 Weight for KCN: _____g

Show your work here

4A-3

Code:

Name:

4A-4 *oxidizing agent:*

reducing agent:

4A-5 *Formation constant K:*

Show your calculations here

4A-6 *Answer for multiple choice question:*

Code:

Name:

4B-1 *Answer for multiple choice question:*

4B-2 *Answer for multiple choice question:*

4B-3 *Answer for multiple choice question:*

4B-4 *Answer for multiple choice question:*

Show your work here

Code:

Name:

4B-5 *Answer for multiple choice question:*

Show your work here

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Problem 5: Lewis Structure

	5-1	5-2	5-3	5-4	5-5	Σ
Total Points	2	4	4	6	5	21
Received						

5-1

5-2

5-3

Code:

Name:

5-4

Answer for multiple choice question 5-4a:

Answer for multiple choice question 5-4b:

Answer for multiple choice question 5-4c:

5-5

Code:

Name:

6-3

6-4

Code:

Name:

6-5

6-6

Code:

Name:

6-7

6-8

Code:	Name:
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Problem 7: Kinetic Behavior of Ozone

	<i>7-1</i>	<i>7-2</i>	<i>7-3</i>	<i>7-4</i>	<i>7-5</i>	Σ
Total Points	6	6	6	4	6	28
Received						

7-1

7-2

Code:

Name:

7-3

7-4

7-5

Code:	Name:
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Problem 8: Protein Folding

	8-1	8-2	8-3	8-4	8-5	8-6	8-7	Σ
Total Points	2	2	6	4	4	2	6	26
Received								

8-1

8-2

Code:

Name:

8-3

8-4 *Answer for multiple choice question:*

8-5 *Answer for multiple choice question:*

8-6

Code:

Name:

8-7

Code:

Name:

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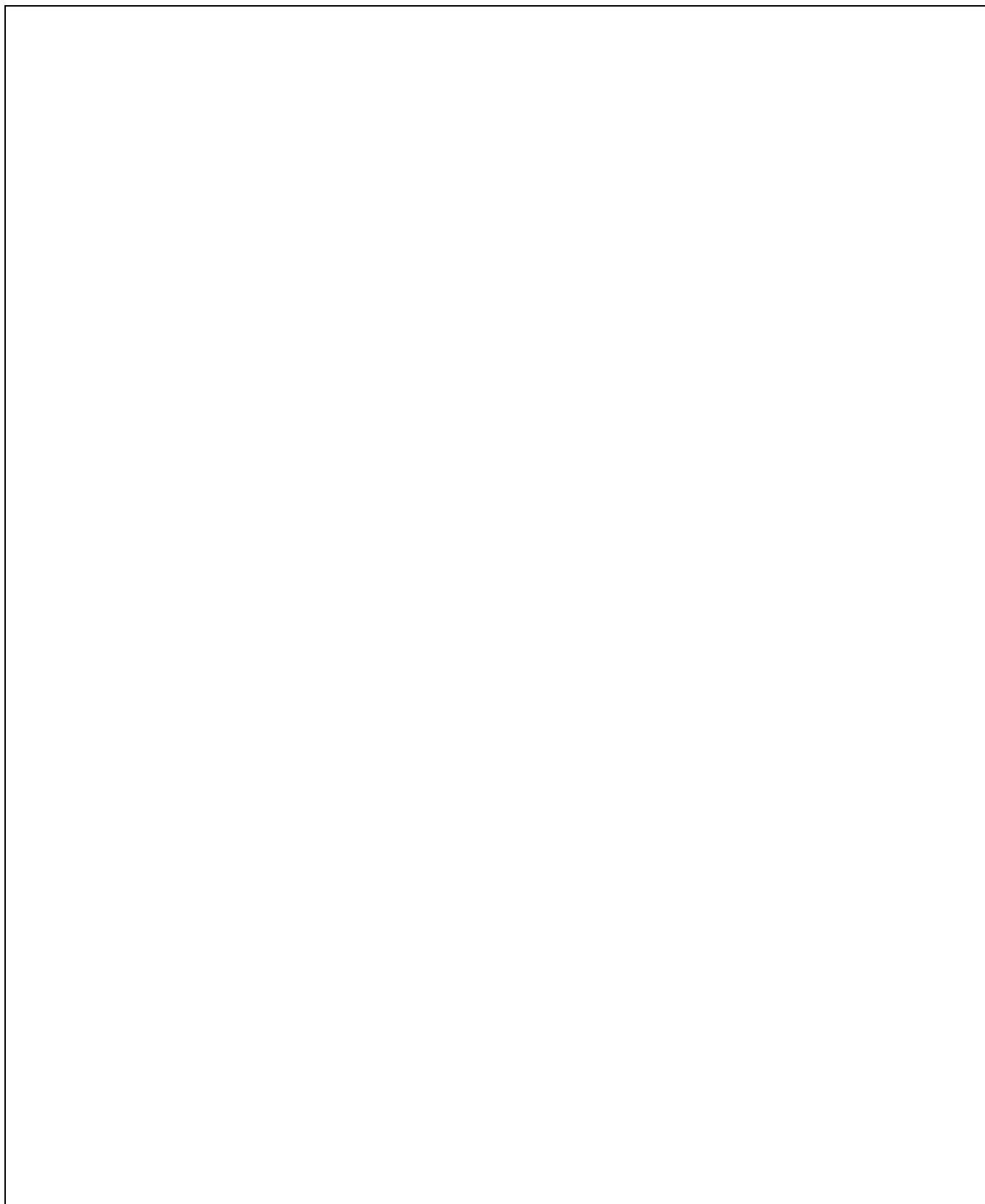
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Name:

A large empty rectangular box with a black border, intended for writing or drawing.

Code:

Name:



Code:

Name:

A large empty rectangular box with a black border, intended for writing or drawing.

Code:

Name:

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