

Theory



54th IChO 2022
International Chemistry Olympiad
TAIPEI, CHINA

KOR-1 T-1 A-1

A1-1

Korea (Korea (Republic of Korea))

COVID-19 신속 색변환 핵산 검출법

총점의 9%						
문제	1.1	1.2	1.3	1.4	1.5	합계
배점	1	1	4	4	4	14
점수						

1.1 (1.0 pt)

[] (a) [] (b) [] (c) [] (d) [] (e) [] (f)

1.2 (1.0 pt)

[] (a) [] (b) [] (c)

1.3 (4.0 pt)

$N =$ _____

Theory



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International Chemistry Olympiad
TAIJIEN, CHINA

KOR-1 T-1 A-2

A1-2

Korea (Korea (Republic of Korea))

1.4 (4.0 pt)

$\epsilon =$ _____ $\text{L mol}^{-1} \text{cm}^{-1}$

1.5 (4.0 pt)

$C_X =$ _____ $\mu\text{g mL}^{-1}$

Theory



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KOR-1 T-2 A-1

A2-1

Korea (Korea (Republic of Korea))

고대와 현대의 크로뮴

총점의 11%										
문제	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	합계
배점	2	1	6	1	2	1	1	5	2	21
점수										

2.1 (2.0 pt)

A : _____ B : _____

2.2 (1.0 pt)

2.3 (6.0 pt)

Theory



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KOR-1 T-2 A-2

A2-2

Korea (Korea (Republic of Korea))

2.4 (1.0 pt)

2.5 (2.0 pt)

2.6 (1.0 pt)

(A) (B) (C) (D)

2.7 (1.0 pt)

(A) (B) (C) (D)

Theory



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TAININ, CHINA

KOR-1 T-2 A-3

A2-3

Korea (Korea (Republic of Korea))

2.8 (5.0 pt)

CFSE = _____ cm^{-1}

2.9 (2.0 pt)

$\mu =$ _____ μ_{B}

Theory



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KOR-1 T-3 A-1

A3-1

Korea (Korea (Republic of Korea))

이산화탄소 포집과 변환

총점의 14%													
문제	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.10	3.11	3.12	합계
배점	2	5	2	3	2	8	2	2	5	7	2	2	42
점수													

3.1 (2.0 pt)

A: _____ B: _____

3.2 (5.0 pt)

1 단계:

2 단계:

3 단계:

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KOR-1 T-3 A-2

A3-2

Korea (Korea (Republic of Korea))

3.3 (2.0 pt)

A:

C:

3.4 (3.0 pt)

반응 1:

반응 2:

반응 3:

3.5 (2.0 pt)

[] (a)

[] (b)

[] (c)

[] (d)

[] (e)



3.6 (8.0 pt)

$r(\text{CO}_2) = \text{-----} \text{ mmol min}^{-1}$

3.7 (2.0 pt)

3.8 (2.0 pt)

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KOR-1 T-3 A-4

A3-4

Korea (Korea (Republic of Korea))

3.9 (5.0 pt)

$$S = \text{-----} \text{ m}^2$$

3.10 (7.0 pt)

$$R = \text{-----}; V_p = \text{-----} \text{ cm}^3$$

3.11 (2.0 pt)

I: [] (a) [] (b) [] (c) [] (d)
II: [] (a) [] (b) [] (c) [] (d)

3.12 (2.0 pt)

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KOR-1 T-4 A-1

A4-1

Korea (Korea (Republic of Korea))

황에 대한 새로운 여행

총점의 16%													
문제	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11	4.12	합계
배점	2	4	4	3	1	5	2	4	5	4	6	5	45
점수													

4.1 (2.0 pt)

4.2 (4.0 pt)

4.3 (4.0 pt)

_____ %

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KOR-1 T-4 A-2

A4-2

Korea (Korea (Republic of Korea))

4.4 (3.0 pt)

(a)

(b)

4.5 (1.0 pt)

질량비: _____

4.6 (5.0 pt)

_____ h

Theory



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KOR-1 T-4 A-3

A4-3

Korea (Korea (Republic of Korea))

4.7 (2.0 pt)

4.8 (4.0 pt)



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KOR-1 T-4 A-4

A4-4

Korea (Korea (Republic of Korea))

4.9 (5.0 pt)

$K_{d1}^{\ominus} =$ _____

4.10 (4.0 pt)

(1) _____ > (2) _____ > (3) _____ > (4) _____

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KOR-1 T-4 A-5

A4-5

Korea (Korea (Republic of Korea))

4.11 (6.0 pt)

$$E^{\ominus}(\text{Li}^+(\text{DME})/\text{Li}) = \text{-----} \text{V}$$

4.12 (5.0 pt)

$$m(\text{Li}_2\text{S}) = \text{-----} \text{mg}$$

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KOR-1 T-5 A-1

A5-1

Korea (Korea (Republic of Korea))

질소산화물 간의 상호변환

총점의 15%											
문제	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	5.10	합계
배점	4	4	2	4	3	8	4	6	4	6	45
점수											

5.1 (4.0 pt)

r_+ = _____

5.2 (4.0 pt)

A_+ = _____, E_{a^+} = _____

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KOR-1 T-5 A-2

A5-2

Korea (Korea (Republic of Korea))

5.3 (2.0 pt)

$$k_+(700\text{ K}) = \text{_____} \text{L}^2 \text{mol}^{-2} \text{min}^{-1}$$

5.4 (4.0 pt)

$$K_p^\ominus(600\text{ K}) = \text{_____}$$

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KOR-1 T-5 A-3

A5-3

Korea (Korea (Republic of Korea))

5.5 (3.0 pt)

$$\Delta_r U_m^\ominus = \text{_____} \text{ kJ mol}^{-1}$$

5.6 (8.0 pt)

$$r_- = \text{_____}, k_-(600 \text{ K}) = \text{_____}$$

Theory



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KOR-1 T-5 A-4

A5-4

Korea (Korea (Republic of Korea))

5.7 (4.0 pt)

$p_{\text{total}} =$ _____ kPa

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KOR-1 T-5 A-5

A5-5

Korea (Korea (Republic of Korea))

5.8 (6.0 pt)

$\theta_v =$ _____

5.9 (4.0 pt)

(A) (B) (C) (D)

5.10 (6.0 pt)

(A) (B) (C)

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KOR-1 T-6 A-1

A6-1

Korea (Korea (Republic of Korea))

포스핀(phosphines)의 활용

총점의 7%								
문제	6.1	6.2	6.3	6.4	6.5	6.6	6.7	합계
배점	3	6	8	5	6	3	5	36
점수								

6.1 (3.0 pt)

6.2 (6.0 pt)

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KOR-1 T-6 A-2

A6-2

Korea (Korea (Republic of Korea))

6.3 (8.0 pt)

B' (4.0 pt)

C' (4.0 pt)

6.4 (5.0 pt)

6

Theory



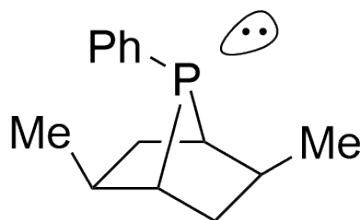
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KOR-1 T-6 A-3

A6-3

Korea (Korea (Republic of Korea))

6.5 (6.0 pt)



P2

6.6 (3.0 pt)

6.7 (5.0 pt)

(a) (b) (c) (d)

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TAIPEI, CHINA

KOR-1 T-7 A-1

A7-1

Korea (Korea (Republic of Korea))

생명 속의 유기 분자들

총점의 9%				
문제	7.1	7.2	7.3	합계
배점	12	8	12	32
점수				

7.1 (12.0 pt)

7 (4.0 pt)

9 (4.0 pt)

12 (4.0 pt)

7.2 (8.0 pt)

15 (4.0 pt)

16 (4.0 pt)

Theory



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KOR-1 T-7 A-2

A7-2

Korea (Korea (Republic of Korea))

7.3 (12.0 pt)

21 (4.0 pt)

24 (4.0 pt)

25 (4.0 pt)

Theory



KOR-1 T-8 A-1

A8-1

Korea (Korea (Republic of Korea))

놀라운 카이랄 스파이로 촉매

총점의 10%									
문제	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	합계
배점	16	2	2	2	2	8	2	2	36
점수									

파트 A

8.1 (16.0 pt)

1(4.0 pt)

2(4.0 pt)

4(4.0 pt)

5(4.0 pt)

8.2 (2.0 pt)

(a)

(b)

(c)

(d)

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KOR-1 T-8 A-2

A8-2

Korea (Korea (Republic of Korea))

8.3 (2.0 pt)

(a) (b) (c) (d)

파트 B

8.4 (2.0 pt)

8.5 (2.0 pt)

8.6 (8.0 pt)

15(4.0 pt)

16(4.0 pt)

8.7 (2.0 pt)

(a) (b) (c) (d)

8.8 (2.0 pt)

(a) (b) (c) (d)

**카피튜락톤(Capitulactone)의 전합성**

총점의 9%					
문제	9.1	9.2	9.3	9.4	합계
배점	24	2	16	2	44
점수					

9.1 (24.0 pt)**3 (4.0 pt)****4 (4.0 pt)****5 (4.0 pt)****8 (4.0 pt)**

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KOR-1 T-9 A-2

A9-2

Korea (Korea (Republic of Korea))

9.1 (cont.)

9 (4.0 pt)

11(4.0 pt)

9.2 (2.0 pt)

(a)

(b)

(c)

(d)

Theory



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KOR-1 T-9 A-3

A9-3

Korea (Korea (Republic of Korea))

9.3 (16.0 pt)

15 (4.0 pt)

16 (4.0 pt)

18 (4.0 pt)

19 (4.0 pt)

9.4 (2.0 pt)

[] (a)

[] (b)

[] (c)

[] (d)