

ChemiCo 2018 – Answers & Marking Scheme

PART A

1.5 p for each correct answer. Deduct 0.5 p for each wrong answer.

1. C

2. A

3. B

4. C

5. D

6. C

7. B

8. B

9. C

10. A

11. B

12. D

13. B

14. B

15. D

16. A

17. A

18. D

19. C

20. A

PART B

1. [4] 1 p each

- a. A4
- b. A1
- c. A2
- d. P

2. [3] 0.75 p each

- a. True
- b. False
- c. False
- d. False

3. [3] 0.75 p each

- a. 6
- b. 5
- c. 6
- d. 26

4. [2] 0.5 p each

- a. Neutralization
- b. Redox
- c. Decomposition
- d. Redox

5. [3] 0.5 p each

X: Fe; **A:** Fe(OH)₂; **B:** Fe(OH)₃; **C:** FeO; **D:** H₂O; **E:** Fe₂O₃

6. [1.5]

a. 0.25 p each

i. 2

ii. 1

iii. 4

iv. 3

b. 0.5 p

Acetone – Hydrogen peroxide

7. [2] 0.5 p each

a. Exothermic

b. II

c. III

d. I and II only

8. [1.5] 0.25 p each

Tube: 2

Separating funnel: 5

Condenser: 1

Flask: 3

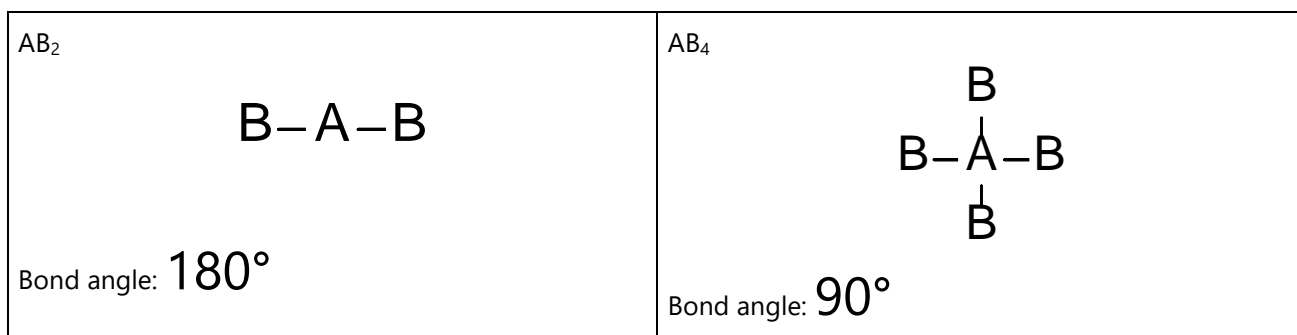
Mortar and pestle: 6

Retort stand: 4

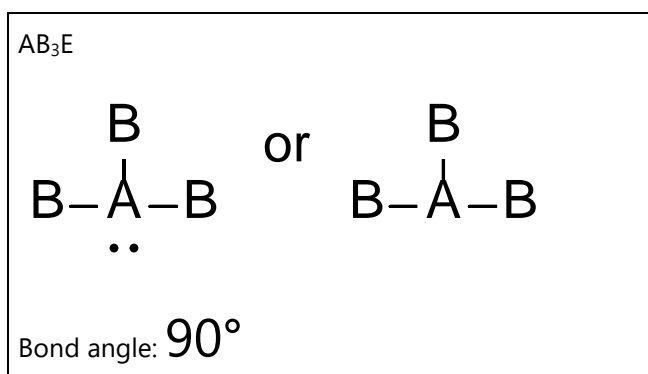
PART C

1. [5]

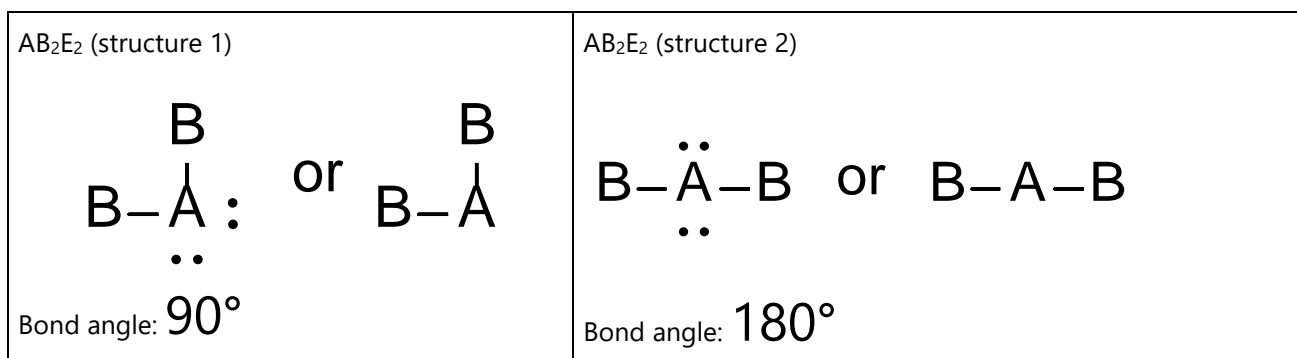
- a. [0.5] 0.25 p for each structure and bond pair. Give marks only for complete structure-bond angle combinations.



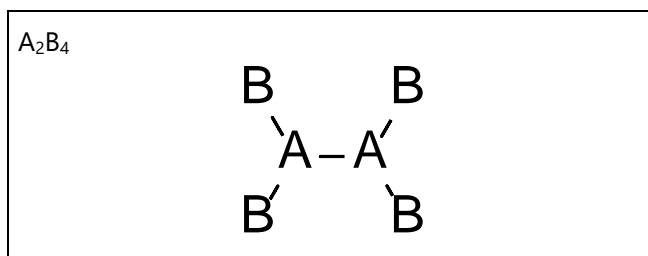
- b. [0.5] 0.25 p for a T-shape structure in any orientation, 0.25 p for the bond angle.



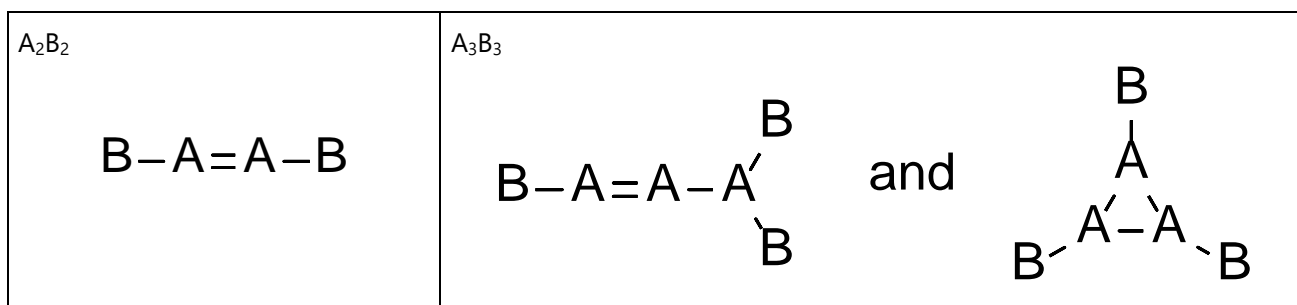
- c. [1] 0.25 p for each structure in any order, 0.25 p for each bond angle (must be matching the structure).



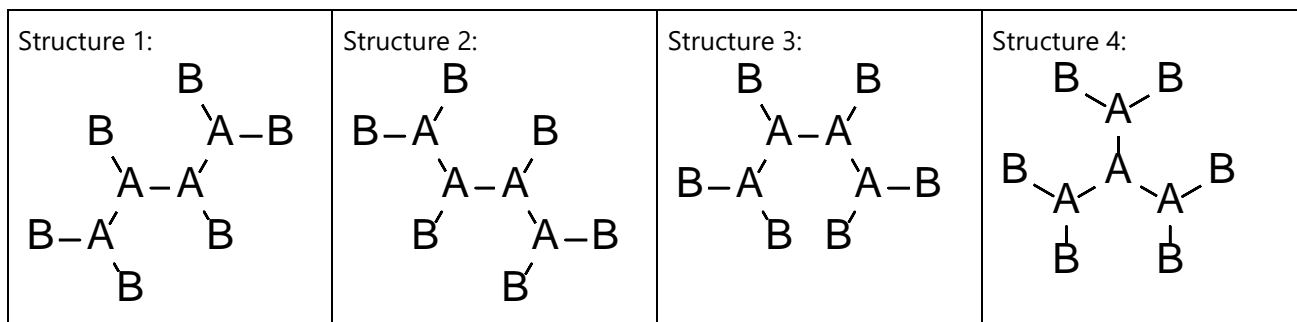
- d. [0.25] 0.25 p for the correct connectivity between atoms.



- e. [0.75] 0.25 p for each structure. Atom connectivity must be correct.

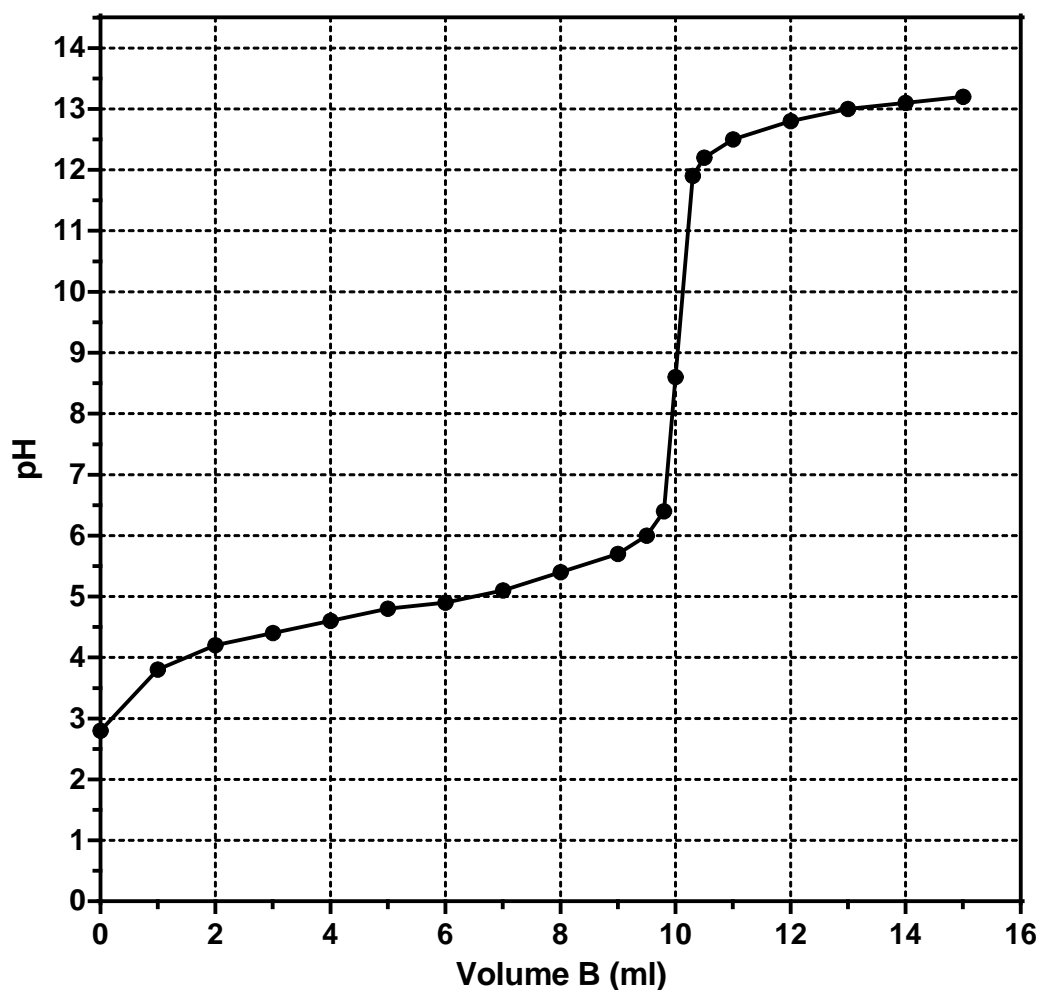


- f. [2] 0.5 p for each structure in any order. Atom connectivity must be correct.



2. [5]

Volume B (ml)	pH
0.0	2.8
1.0	3.8
2.0	4.2
3.0	4.4
4.0	4.6
5.0	4.8
6.0	4.9
7.0	5.1
8.0	5.4
9.0	5.7
9.5	6.0
9.8	6.4
10.0	8.6
10.3	11.9
10.5	12.2
11.0	12.5
12.0	12.8
13.0	13.0
14.0	13.1
15.0	13.2



- a. [1] For the plot.
- b. [1] 0.5 p each
- Weak acid
 - Strong base
- c. [1] 0.5 p each
- 10 ml. Accept 9.8-10.2 ml range.
 - pH 8.6. Accept 8.0-10.0 range
- d. [1] Phenolphthalein
- e. [1] 0.05 mol/L. Accept 0.049-0.051 mol/L depending on the answer in part c, i.