

Team Number _____

Team Name _____

1. B
2. C
3. B
4. B
5. A
6. E
7. D
8. D
9. E
10. B
11. C
12. E
13. C
14. D
15. D
16. D
17. C
18. B
19. E
20. B
21. C
22. C
23. D
24. A
25. B
26. B
27. A
28. E

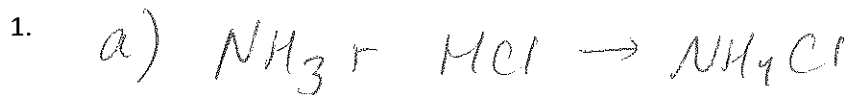
29. E
30. B
31. A

Team Number _____

Team Name _____

Chemistry Scenarios

Show all work – circle answers



ammonium chloride

b) Graham's Law of Effusion (diffusion)

$$c) \frac{V_{\text{NH}_3}}{V_{\text{HCl}}} = \sqrt{\frac{M_{\text{HCl}}}{M_{\text{NH}_3}}} = \sqrt{\frac{36.45}{17.04}} = \sqrt{2.13} = 1.46$$

$$\frac{V_{\text{NH}_3}}{V_{\text{HCl}}} = \frac{d/t}{d/t} = \frac{6.5}{3.8} = 1.71$$



b. Catalyst

c. $P_T = \frac{758.0}{760} = .9974 \text{ atm} - .032 \text{ atm} = .9654 \text{ atm}$

$$3.2 \text{ kPa} \times \frac{1 \text{ atm}}{101.3 \text{ kPa}} = .032 \text{ atm}$$

$$\eta = \frac{(0.965)(.5257)}{(.0821)(298)}$$

$$= .0207 \text{ mol O}_2 \times \frac{2 \text{ KClO}_3}{3 \text{ O}_2} \times \frac{122.55 \text{ g}}{1 \text{ mol}}$$

$$= \frac{1.69 \text{ g KClO}_3}{5.257 \text{ g}} \times 100$$

$$= 32.2\%$$

$$3. a) q = -m\Delta T C_p = -(104)(21.3)(4.184)$$

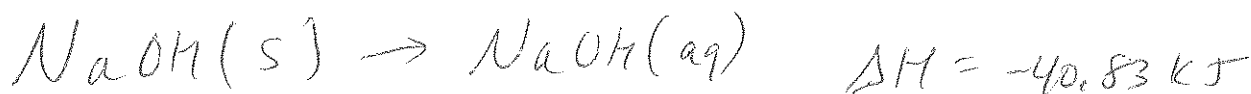
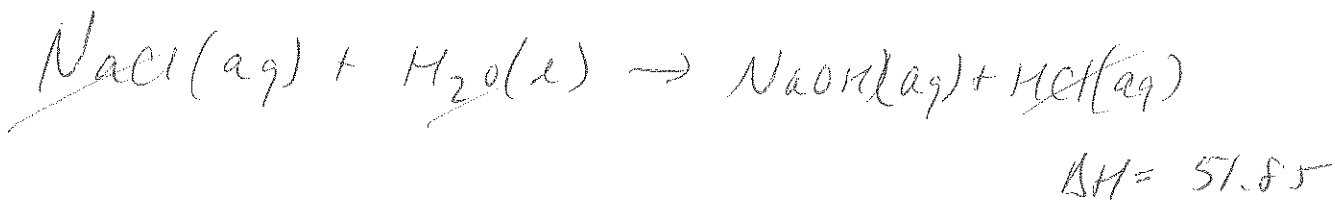
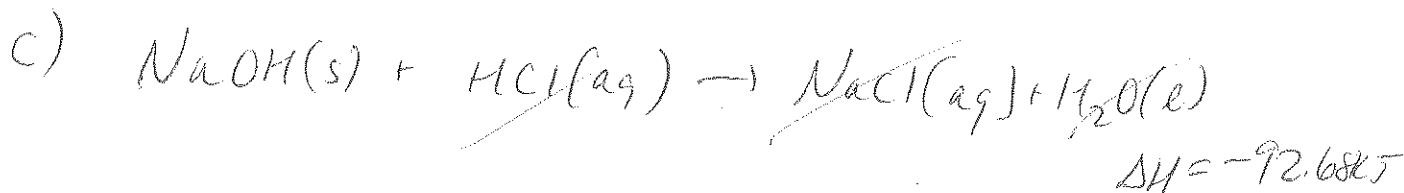
$$= \frac{-9.268 \text{ kJ}}{.100 \text{ ml}} = -92.68 \text{ kJ/ml}$$

$$\frac{400 \text{ g} \times 1 \text{ ml}}{400.01 \text{ g}} = .100 \text{ ml}$$

$$b) q = -m\Delta T C_p = -(200.0)(6.2)(4.184)$$

$$= \frac{-5.188 \text{ kJ}}{.100 \text{ ml}} = -51.85 \text{ kJ/ml}$$

$$1.0 \text{ M} \times .100 \text{ L} = .100 \text{ mol}$$



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Chemistry Lab Hands on

Show all work – circle answers

1.

$$q = -mAT C_p$$

$$q / \text{gram} =$$



2.

Collect CO_2

$$n = \frac{PV}{RT} =$$