

50 (40) pts

Name: Sydney Hammond
Date: 2/18/15



Thermochemistry Test

(1pt): Outside of class, how much did you study? Be F

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1) A substance spontaneously reacts raising its temperature.
Is the reaction Exothermic or endothermic? Circle one.

2) A test tube is cold after a reaction occurs.
Does the reaction absorb or release energy?

3) A particular reaction absorbs energy from the surroundings.
Is the ΔH of the reaction positive or negative?

4) A piece of gallium melts in your hand.
Does gallium absorb or release energy?

5) A piece of dry ice sublimates.
Is the sublimation exothermic or endothermic? Circle one.

6) An ionic compound is added to water and the temperature drops 10 degrees.
Is the ΔH positive or negative? Circle one.

7) Two solutions are mixed and the test tube feels warm.
Is the ΔH positive or negative? Circle one.

8) Gaseous water condenses in the sky to make a cloud.
Is the condensation exothermic or endothermic? Circle one.

9) An exothermic reaction occurs inside of a Erlenmeyer flask.
Does the reaction absorb or release energy? Circle one.

10) (3pt) A 1.55 g piece of stainless steel absorbs 141 J of heat when its temperature increases by 178 degrees Celsius. What is the specific heat of the steel?
Show work.



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2013 - 30/40
2014 - 25/40 (Mon Test) 63%
2016
A: 80
H: 46

Unit 9

$$141 J = (1.55 g) C (178^\circ C)$$

$$141 J = (275.9) C$$

$$\frac{141 J}{275.9} = \frac{275.9 C}{275.9}$$

.511 Joules / gram $^\circ C$ Unit: J/g $^\circ C$

x.2c
(.5)

Convert the following temperatures. Show work. F-C-K

$$^{\circ}\text{C} = \frac{5}{9} (^{\circ}\text{F} - 32) \quad ^{\circ}\text{F} = \frac{9}{5} ^{\circ}\text{C} + 32$$

$$\text{K} = 273.15 + \text{C}$$

(2) 11) $81.0\text{ }^{\circ}\text{C} = \underline{178}\text{ }^{\circ}\text{F}$ (2pt)

$$\frac{9}{5} (81.0) + 32$$

(1) 12) $65\text{ }^{\circ}\text{C} = \underline{340}\text{ K}$ (1pt)

(2) 13) $95.00\text{ }^{\circ}\text{F} = \underline{35.00}\text{ }^{\circ}\text{C}$ (2pt) $\frac{5}{9} (95 - 32)$

(3) 14) $81.00\text{ }^{\circ}\text{F} = \underline{300.4}\text{ K}$ (3pt) $\frac{5}{9} (81 - 32) + 273.15$

Calculate the following (3pt each). Show work. Specific heat of water is $4.184\text{ J/g}^{\circ}\text{C}$

15) How much heat is required to raise 12.0 g of water from $20.0\text{ }^{\circ}\text{C}$ to $50.0\text{ }^{\circ}\text{C}$?

$$q = (12.0)(4.184)(30)$$

$$q = \underline{1510\text{ Joules}}$$

sign not important

16) Calculate the number of joules absorbed by 55.0 grams of water if the temperature changes from 100.0°C to 27.5°C .

$$q = (55.0)(4.184)(72.5)$$

$$q = \underline{16700\text{ Joules}}$$

check sign

nile

17) If I burn hexane (C_6H_{14}) in a bomb calorimeter containing 465 milliliters of water, what's the heat released by the combustion of hexane if the water temperature rises $55.4^\circ C$?

3 pt

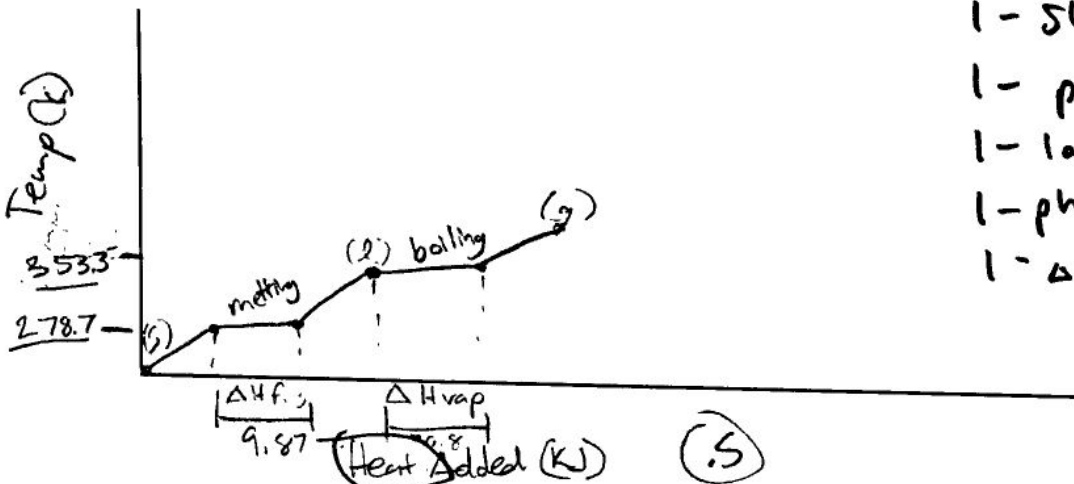
$$q = (465 \text{ mL}) (4.184) (55.4^\circ C)$$

-108000 Joules

don't check sign

18) Using p308, draw the heating curve for benzene. LABEL all phase changes and what state is present at each place on the graph. (solid, liquid, gas). Label Axis too.

5 pt



- 1 - shape
- 1 - phases
- 1 - label axis
- 1 - phase changes
- 1 - ΔH_{vap} , ΔH_{fus} and temp values

19) Using pg. 308, calculate how many grams of methanol can be melted with 12.18 kJ of heat? (3pt) CH_3OH

$$\frac{12.18 \text{ kJ}}{3.16 \text{ kJ}} \times \frac{1 \text{ mol}}{1 \text{ mol}} = 32.042$$

123.5 g of CH_3OH

20) What is the most abundant greenhouse gas in the atmosphere? H_2O

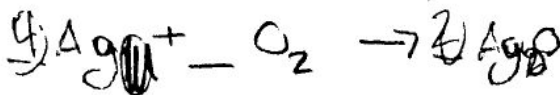
21) According to secular environmentalists, what would be the IDEAL environment?

An environment untouched by humans.

22) What is the most likely cause for fluctuations in global warming or global cooling?

~~Less cloud cover because the sun is hotter compared to the clouds because of sun spot cycle or solar warming.~~

EC. 124 g silver metal reacts with 124 g oxygen to produce a single ionic compound. Write the chemical rxn.



+0
Make out of 50 pts
(10 pts extra r know)