Section 4B Review

Name:

1) Draw a wave that is 4 wavelengths long and label the wavelength, crest, trough, and amplitude



2) A wave has a wavelength of 9.6 x 10^{-5} m. What is the frequency of the wave? How much energy is in the wave?

V=lf E=hf E = 6.63×10-34 (3.03×102) 3×108m/5= 9.9×10-5 (F) F= 3.03×1012 HZ F. = 2.01×10-21 J

3) Draw a diagram of the electromagnetic spectrum from radiation of shortest to longest wavelength and label the order of radiation types.

gamma - Krays - UVrays - visible - IR - s microwaves - radio Shartest À > longest 1

4) For each of the seven forms of radiation, list an application or use of the type of radiation.

Visible - seeing things gamma - killing cancer cells IR - heaters X-rays - checking For broken bones micro - cell phone communication microwave ovens UV - converting vitamin D Kitten sterilizing equipment radio - communication (TV, radio)

5) A calorimeter containing 78 g of water at an initial temperature of 26.0 °C has 16.5 g of RbOH added to it. The temperature of the water raises to 40.2 °C. How much heat was gained by the water?

9= 78(4.184) 4 14.2 = 4634 J Q= ? M = 789c ~ 4.184 5/gc AT = 40.2°C = 26. = 14.2°C

6) What is the specific heat of a 27.6 g metal sample increases temperature from 34.6 $^{\circ}$ C to 42.7 $^{\circ}$ C when 157.7 J of heat are added?

9= 157.7J m= 27.69 C=7 AT- 42.7-34.6= 8.1°C

EE 15772 157.7 = 27.6 (() 8.1 C2 0.71 5/gc

Adv Chem

7) How much heat is absorbed by ice when 19.0 g of ice is heated from -15 °C to water at 83 °C?

9= m·HP (3) 9= mCAT = 19(334) = 19(4.184)83 D g=mcDT 100 =19(2.09)15 1.5985 63465 2 5965 9+0+al= 596+6436+6598 = 13,6305

8) The following data was collected in the lab for an experiment to determine the specific heat of a metal:

Mass of empty calorimeter	4.2 g	
Mass of calorimeter and cold water	131.6g	
Temperature of cold water	22.2 °C	
Mass of piece of metal	121.9 g	
Temperature of piece of metal	89 °C	
Final temperature of water after metal was placed in water	24.5 °C	

metal

627

AT= 89-24.5= 64.5

What is the specific heat of the metal?

Water 131.6-4.2= 127.4 g=m q=124.4 (4.184)2.3 4,1845/5'2 C 12265 24.5-222:23c= AT

9) What causes the greenhouse effect? Why is the greenhouse effect necessary for human life?

greenhouse effect is the trapping of IR (heat) energy by the san by greenhouse gases (Coz, H2O, CH4) to keep the darth warm. who the green house effect, too much heat would be lost at night, causing the Emperature to go below Freezing each night, freezing the plasts

1226= 121.9(0)64.5

10) When sodium hydroxide is placed in water, an exothermic reaction occurs that heats the water. In lab experimentation, 14.6 grams of sodium hydroxide is placed in 123 g of water at 19.1 °C and the water heats up to 50.7 °C. How much heat per gram is released by the sodium hydroxide?

g = ? 9= 123(4.184) 31.6 J/g= 162625 [11135/g m= 1239 162625 C= 4.184 J/g°C DT = 50.7 - 19.1 = 31.6°C

11) A 10.0 g piece of ice is placed in a styrofoam cup of warm water containing 95 g of water. After the ice cube is dropped in the water, the ice cube melts and the water cools to 27 OC. What was the initial temperature of the warm water?

3340 + 1130 9= 4470J 27 + 11.2= 4470J M= 959 C= 4.184 J/g:c log (339 J/g)= 33405 (22?) q=? me It ice n= 10.05 C= 4.1847/cc DT= ? AT= 27°C 9=10(4.184)272 1129.75 4470 = 95(4.184) DT = DT= 11.2°C