Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Study Guide: Semester 1 Final Exam**

**Unit 1: Matter**Define Significant figures:

Write the number of significant figures

1. 85.83 5) Round 98.22 to 2 sig figs
2. 5000 6) round 5012 to 1 sig fig
3. 30.0 7) round 30.0825 to 3 sig figs
4. 321.22 8) round 325 to 2 sig figs

Calculate the correct number of significant figures for the following multiplication and division problems

9) 35.8 \* 12.45 = 10) 100. / 32.751=   
11) 13.75 \* 500 = 12) 25/75.50 =

States of matter and phase changes

1. Draw motion of the atoms for the three states of matter and describe characteristics of each.

Gas

Liquid

Solid

1. Write the phase changes between solid liquids and gases

Solids

Gas

Liquid

**Unit 2: Energy and Heat**Define Specific heat:

1. Rank the following substances that will heat of the fastest to the slowest

|  |  |  |
| --- | --- | --- |
| **Table 2: Specific Heat Capacity of Building Materials** | |  |
| **Material** | **J/(g°C)** | **Rank** |
| Asphalt | 0.920 |  |
| Brick | 0.840 |  |
| Concrete | 0.880 |  |
| Glass | 0.840 |  |
| Granite | 0.790 |  |
| Gypsum | 1.090 |  |
| Wood | 1.700 |  |
| Water | 4.180 |  |

1. A 22.5 g sample of brick was heated from 75.0 oC to 95.0 oC how much energy was required to heat the sample. Is this reaction endothermic or exothermic? Explain your reasoning.

1. A sample of asphalt is cooled from 25 oC to 0 oC releasing 950 J of energy what is the mass of the sample? Is this reaction endothermic or exothermic? Explain your reasoning.

1. A 15g sample of glass was cooled from 56 oC to an unknown temperature releasing 75 J of energy what was the final temperature of the glass.

Enter phase change diagram or heating curve

**Unit 3: atomic structure**Structure of the atom

|  |  |  |  |
| --- | --- | --- | --- |
| Part of the atom | Location | Charge | Mass |
| Proton |  |  |  |
| Neutron |  |  |  |
| electron |  |  |  |

1. Define Nucleus
2. Define Electron cloud

Reading the Periodic table and determining isotopes