PHYS 321 Study Guide for Final

a.. Materials and problems similar to Test #1.

b.. Materials and problems similar to Test #2.

c. Chapters 19 & 20

d. 19.D1 *Railroad tracks made of 1025 steel are to be laid during the time of year when the temperature averages 10°C (50°F). If a joint space of 4.6 mm (0.180 in.) is allowed between the standard 11.9-m (39-ft) long rails, what is the hottest possible temperature that can be tolerated without the introduction of thermal stresses?*

[*l* for the 1025 steel [12.0 × 10-6 (C)-1]

19.11 When a metal is heated its density decreases. There are two sources that give rise to this diminishment of ρ: (1) the thermal expansion of the solid, and (2) the formation of vacancies (Section 4.2). Consider a specimen of copper at room temperature (20°C) that has a density of 8.940 g/cm3. (a)Determine its density upon heating to 1000°C when only thermal expansion is considered. (b) Repeat the calculation when the introduction of vacancies is taken into account. Assume that the energy of vacancy formation is 0.90 eV/atom, and that the volume coefficient of thermal expansion, αv is equal to 3αl.

h. Types of Magnetism and examples.i. Magnetic storage media and solid-state drives.

Problem 20.21

<https://www.youtube.com/watch?v=viac3j6MeII>

<https://www.youtube.com/watch?v=AB-JUyQYxIw>

j. Questions from student presentations.