Fayoum university
Faculty of science
Physics department

first term 2011-2012
first year students
biology and chem. &
geo and chem. Departments

Fayoum University

Time allowed: 2 hours

Final examination properties of matter & heat

Answer the following questions

1. A steel wheel bearing is 1 mm smaller in diameter than an axle. How can the bearing be fit onto the axle without removing any material from the axle?   (2 marks)

2. Define: Newton's third law – Weight - Pressure – Pascal principle – Archimedes principle.   (10 marks)

3. Ethyl alcohol has about one-half the specific heat of water. If equal masses of alcohol and water in separate beakers are supplied with the same amount of heat, compare the temperature increases of the two liquids.   (2 marks)

4. White clothing is more comfortable to wear in the summer than black clothing. Why?   (2 marks)

5. Which is hotter 100 °C or 100 °F?   (2 marks)

6. Explain the terms: stress, strain, Young's modulus.   (3 marks)

7. Describe the difference between solids, liquids and gases in terms of: (6 marks)
- The shape and the volume.
- The separation of the molecules.
- The forces between the molecules.

8. Choose the correct answer:
Force per unit mass is equivalent to: (2 marks)
- (A) Thrust
- (B) density
- (C) Pressure
- (D) acceleration

9. Choose the correct answer:
The density of a material: (2 marks)
- (A) increase as its volume increase .
- (B) constant value .
- (C) decrease as its volume increase .
- (D) increase as its mass increase.

10. Choose the correct answer:

100 g of water (c = 4186 J/kg °C for water) is heated to change its temperature from 15 degree Celsius to 20 degree Celsius. Energy has been transferred to the water: (4 marks)

- (A) 50418.6 joules.
- (B) 500 joules.
- (C) 2093 joules.
- (D) 5.04 joules.

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