

Academic year: 1 <sup>st</sup> year	 جامعة الفيوم Fayoum University كلية العلوم	Depart.: Physics
Section: Natural Sciences		Subject: Heat
Date: Jan/ 2012		Time allowed: 3 hour
		No. Of Pages: 1

### Heat exam for first year students

*Answer the following questions:*

1- a- Explain the zeroth law of thermodynamics.

b- A gas expands to double its original volume in a relation with the following form:

$$P = aV^2$$

Where  $a = 5 \text{ atm/m}^6$ .

2- a- Explain the following processes:

The isothermal process- the adiabatic process- the isobaric process.

b- Calculate the temperature change if helium gas is expanded adiabatically to triple its original volume at temperature  $20^\circ\text{C}$ .

3- a- Write down the assumptions of the ideal gas.

b- Two moles of ideal gas at  $300^\circ\text{C}$  and 4 atm are compressed to half its original pressure, calculate:

- The final volume.

- The work done.

-The heat transfer during this process,

4- a- Find the constants a, b for van der Waals equation.

b- Drive the reduced equation of state.