إسم الطالب (باللغة العربية):

(1) Calculate (ΔE)

(a) When a gas absorbs 18 J of heat and has 13 J of work done on it.

(b) For a gas that releases 38 J of heat and has 102 J of work done on it. .

(c) For a system releases 125 kJ of heat while 104 kJ of work is done on it. .

(d) A gas absorbs 45 kJ of heat and does 29 kJ of work.

(2) Calculate the amount of heat q for an endothermic process in which the system receives 12 J of work from its surrounding and the change of internal energy is 77 J. .

(3) Calculate ΔE for each of the following.

(a) $q = -47$ kJ, $w = +88$ kJ

(b) $q = +82$ kJ, $w = -47$ kJ

(c) $q = +47$ kJ, $w = 0$

(d) In which of these cases do the surroundings do work on the system?

(4) Calculate the work in joule being done due to an expansion of the gas from 250.0 mL to 750.0 mL. at a constant external pressure of 1 atm. (Answer -50.7 J)