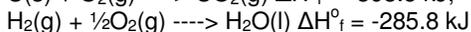
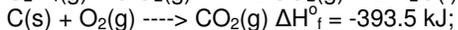
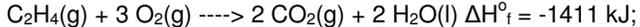


### Question 8

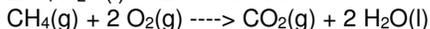
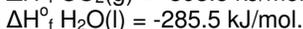
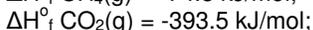
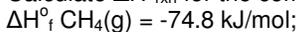
Find the standard enthalpy of formation of ethylene,  $C_2H_4(g)$ , given the following data:



- A) 731 kJ
- B)  $2.77 \times 10^3$  kJ
- C)  $1.41 \times 10^3$  kJ
- D) 87 kJ
- E) 52 kJ

### Question 9

Calculate  $\Delta H_{rxn}^\circ$  for the combustion reaction of  $CH_4$  shown below given the following:



- A) -604.2 kJ
- B) 889.7 kJ
- C) -997.7 kJ
- D) -889.7 kJ
- E) None of the above

### Question 10

A 1.300 g sample of benzoic acid ( $C_7H_6O_2$ ) was burned in a bomb calorimeter. The heat capacity of the entire apparatus, including the bomb, pail, thermometer, and water, was found to be 11,145 J/K. As a result of the reaction, the temperature of the calorimeter and water increased 4.627 K. What is the molar heat of combustion of benzoic acid?

- A)  $4.84 \times 10^6$  kJ/mol
- B) -2.96 kJ/mol
- C) -4844 kJ/mol
- D) 549.1 kJ/mol
- E) 51.57 kJ/mol

### Question 11

Which of the following is incorrectly matched?

- A) Radiant energy; solar energy able to influence global climate patterns
- B) Thermal energy; related to temperature irrespective of the volume
- C) Energy; capacity to do work
- D) Chemical energy; potential energy

### Question 12

Energy is the ability to do work and can be:

- A) converted to one form to another
- B) can be created and destroyed
- C) used within a system without consequences
- D) none of the above

### Question 13

Standard enthalpy of reactions can be calculated from standard enthalpies of formation of reactants.

- A) True
- B) False

### Question 14

In the equation  $\Delta E$  is equal to  $q+w$ , which sign is correctly associated?

- A)  $q$ ; - exothermic
- B)  $q$ ; + endothermic
- C)  $w$ ; + by system on surrounding
- D)  $w$ ; + on system by surroundings