

Name: _____

Date: _____



Question: 1 of 12

QID: 331

Marks: 1

Which does not increase rate by affecting the number or nature of collisions?

- A. adding a catalyst
- B. increasing the pressure
- C. increasing the surface area
- D. increasing the temperature

Question: 2 of 12

QID: 329

Marks: 1

At a constant temperature, an ideal gas is compressed from 6.0 liters to 4.0 liters by a constant external pressure of 5.0 atm. How much work is done on the gas?

- A. $w = +10$ liter atm
- B. $w = -10$ liter atm
- C. $w = +30$ liter atm
- D. $w = -30$ liter atm
- E. The answer cannot be calculated.

Question: 3 of 12

QID: 328

Marks: 1

What will be the work done by 3 moles of an ideal gas when it expands spontaneously in a vacuum?

- A. zero
- B. infinite
- C. 3 joules
- D. 9 joules

Question: 4 of 12

QID: 327

Marks: 1

What is the function of a catalyst in a chemical reaction?

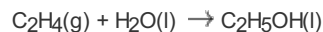
- A. decrease rate constant of reaction
- B. increases activation energy of reaction
- C. reduces enthalpy of reaction
- D. does not affect the equilibrium constant of reaction

Question: 5 of 12

QID: 326

Marks: 1

Which reaction is not used to make a Hess cycle for the following reaction?



- A. $\Delta_f H$ ethanol
- B. $\Delta_c H$ ethene
- C. $\Delta_c H$ hydrogen
- D. $\Delta_f H$ ethene

Question: 6 of 12

QID: 325

Marks: 1

Use the bond enthalpies to determine the $\Delta_c H$ for methane

Bond	Bond enthalpy (kJ mol ⁻¹)
C–C	350
C=C	611
C=O	732
C–O	350
C–H	410
O–H	460
O=O	498

- A. $-1664 \text{ kJ mol}^{-1}$
- B. -744 kJ mol^{-1}
- C. -668 kJ mol^{-1}
- D. $+252 \text{ kJ mol}^{-1}$

Question: 7 of 12

QID: 324

Marks: 1

15 g of octane is burned and used to heat 50 cm³ of water by 15°C. What is the amount of energy transferred to the water? Assume a water density of 1 g cm⁻³ and a specific heat capacity of 4.18 J g⁻¹ K⁻¹.

- A. 940.5 J
- B. 3135 J
- C. 940.5 kJ
- D. 3135 kJ

Question: 8 of 12

QID: 323

Marks: 1

15 g of octane is burned and used to heat 50 cm³ of water by 15°C. What is the amount of energy transferred to the water? Assume a water density of 1 g cm⁻³ and a specific heat capacity of 4.18 J g⁻¹ K⁻¹.

- A. 940.5 J
- B. 3135 J
- C. 940.5 kJ
- D. 3135 kJ

Which is the equivalent to the formation of carbon dioxide?

- A. combustion of hydrogen(g) B. complete combustion of carbon(s)
- C. complete combustion of propane(l) D. incomplete combustion of propane(g)

Which of the following is not a standard condition?

- A. 298 K B. 100 kPa
- C. 100 atm D. 1 mol dm⁻³ solutions

The temperature of a given gas is -10°C . What are the equivalent Fahrenheit and absolute Kelvin scales? **(4 marks)**

The most common ingredient in window cleaner is ammonia, often in high concentrations. For dilute ammonia samples, the amount of ammonia in a given window cleaner can be determined using a titration of the ammonia weak base with a strong acid. Suppose you have a 10.000 g sample of window cleaner containing ammonia which you first dilute with 90.012 g of water. You then take 5.000 g of solution and titrate it with 42.11 mL of 0.05042 M HCl to reach a bromocresol green end point.

Find the weight percent of NH_3 in the cleaner.

--- END OF QUESTION PAPER ---