New English Private School (NEPS)

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Name _____3ʳᵈQuarter   Date 2020   Subject: Chemistry
 Review Worksheet   Grade-11__   Teacher's Name Mr. Lijalem

I. Choose the correct answer from the given alternatives

1. For the reaction A + 3B $\longrightarrow$ 2C, how does the rate of disappearance of B compare to the
   rate of production of C?
   a. the rate of disappearance of B is 1/2 the rate of appearance of C
   b. the rate of disappearance of B is 3/2 the rate of appearance of C
   c. the rate of disappearance of B is 2/3 the rate of appearance of C
   d. the rate of disappearance of B is 1/3 the rate of appearance of C

2. For the reaction 2A + 3B $\longrightarrow$ 4C + 5D, the rate of the reaction in terms of ΔA would be
   written as:
   a. $-A/t$.   d. $+1/2$ A/t.
   b. $-1/2$ A/t.   e. -2 A/t.
   c. $+$A/t.

3. For the reaction 2A + 3B $\longrightarrow$ 4C + 5D, the rate of the reaction in terms of ΔB would
   be written as
   a. $-\Delta$B/t d. $+\Delta1/3$ B/t
   b. $+\Delta$B/t e. $-\Delta3$ B/t
   c. $-1/3$ B/t

4. For the reaction 2A + 3B $\longrightarrow$ 4C + 5D, the rate of the reaction in terms of ΔC would
   be   written as
   a. $+\Delta$C/Δt d. -4Δ C/Δt
   b. $+4$ ΔC/Δt e. $-1/4\Delta$ CΔ/t
   c. $+1/4\Delta$ C/Δt

5. In the combustion of methane, $CH_4(g)$ + 2 $O_2(g)$ $\longrightarrow$ $CO_2(g)$ + 2 H_2O (g), which
   reactant has the greatest rate of disappearance?
   a. CH_4 b. O_2c. CO_2
   d. H_2O e. CH_4 and O_2 have the same rate of disappearance.
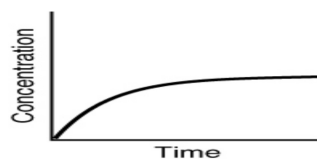
The look of concentration/time graphs

6. Which of the following is not a possible graph of concentration versus time for a **reactant**?
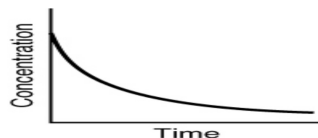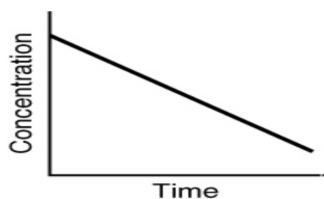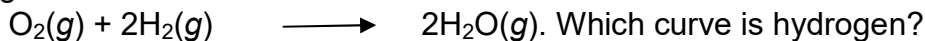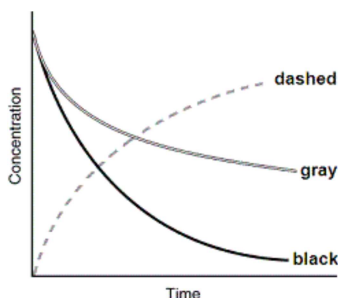
a.

c.

b.
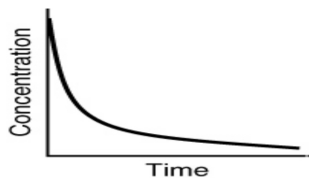
d.

7. The following graph shows the kinetics curves for the reaction of oxygen with hydrogen to form water:

$O_2(g) + 2H_2(g) \longrightarrow 2H_2O(g)$. Which curve is hydrogen?
   a. the dashed curve
   b. the gray curve

c. the black curve
d. either the gray or the black curve
e. Any of these curves could be hydrogen

8. A scientist conducts an experiment to determine the rate of the following reaction:

$N2(g) + O2(g) \longrightarrow 2NO(g)$

If the initial concentration of N2 was 0.500 M and the concentration of N2 was 0.450 M after 0.100 s, what is the rate of the reaction?
   a. 0.500 M/s   d. 10.0 M/s
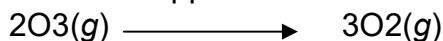   b. 1.00 M/s   e. 0.250 M/s
   c. 5.00 M/s

9. A scientist conducts an experiment to determine the rate of NO formation in the reaction:

$N2(g) + O2(g) \longrightarrow 2NO(g)$ If the initial concentration of N2 was 0.500 M and the concentration of N2 was 0.450 M after 0.100 s, what is the rate of NO formation?
   a. 0.500 M/s   d. 10.0 M/s
   b. 1.00 M/s   e. 0.250 M/s
   c. 5.00 M/s

10. If the rate of appearance of O2 in the reaction:

$2O3(g) \longrightarrow 3O2(g)$

is 0.250 M/s over the first 5.50 s, how much oxygen will form during this time?
   a. 1.38 M d. 0.25 M
   b. 4.13 M e. 0.46 M
   c. 0.69 M

11. HI dissociates to form I_2 and H_2:

$2HI(g) \qquad\qquad H_2(g) + I_2(g)$

If the concentration of HI changes at a rate of –0.45 M/s, what is the rate of appearance of I2(g)?

a. 0.90 M/s d. 1.00 M/s

b. 0.45 M/s e. 0.13 M/s

c. 0.23 M/s

12. If the rate of formation of ammonia is 0.345 M/s, what is the rate of disappearance of N2? $N_2(g) + 3 H_2(g) \longrightarrow 2 NH_3(g)$

a. 0.173 M/s d. 245 M/s

b. 0.345 M/s e. 0.518 M/s

c. 0.690 M/s

13. If the rate of formation of ammonia is 0.345 M/s, what is the rate of disappearance of H2? $N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$

a. 0.173 M/s d. 245 M/s

b. 0.345 M/s e. 0.518 M/s

c. 0.522 M/s

14. For the reaction $2A + B + 2C \longrightarrow D + 2E$, the rate law is: rate $=k[A]^2[B]^1[C]^1$
Which of the following statements is false:

a. the reaction is second order in [A]

b. the reaction is first order in [B]

c. the reaction is second order in [C]

d. the reaction is 4th order overall

15. For the reaction $1A + 2B + 1C \longrightarrow 2D + 1E$, the rate law is: rate $=k [B]^2[C]^1$
Which of the following statements is false:

a. the reaction is first order in [A]

b. the reaction is second order in [B]

c. the reaction is first order in [C]

d. the reaction is third order overall

16. For the rate law Rate = $k[A]^{1/2}[B]$, the partial order with respect to A is _____, the partial order with respect to B is _____, and the total order is _____.

a. 1/2; 0; 1/2

b. 1/2; 1; 1

c. 1/2; 1; 3/2

d. 1/2

e. The orders cannot be determined without a chemical reaction.

17. For the rate law Rate = $k[A][B]3/2$, the order with respect to A is _____, the order with respect to B is _____, and the overall reaction order is _____.

a. 0; 3/2; 3/2

b. 1; 3/2 ; 1

c. 1; 3/2 ; 5/2

d. 1; 3/2; 7/2

e. The orders cannot be determined without a chemical reaction.

18. The reaction A + 2B   C
is first order in B and A. The overall order of the reaction is _____

a. first.   d. zero.

b. second.   e. fourth.

c. third.

19. The reaction $CHCl_3(g) + Cl_2(g) \longrightarrow CCl_4(g) + HCl(g)$ has the following rate law: Rate = $k[CHCl3][Cl2]$. If the concentration of CHCl3 is increased by a factor of five while the concentration of

Cl2 is kept the same, the rate will

a. double.   d. increase by a factor of five.

b. triple.   e. decrease by a factor of one-fifth.

c. stay the same.

20. The reaction $2NO(g) + O_2(g) \longrightarrow 2NO_2(g)$ has the following rate law:
Rate = $k[O_2][NO]^2$. If the concentration of NO is
reduced by a factor of two, the rate will _____

a. double.   d. be reduced by one-half.

b. quadruple.   e. remain the same.

c. be reduced by one-quarter.

21. The rate of a reaction is found to double when the concentration of one reactant is
quadrupled. The order of the reaction with respect to this reactant is _____

a. first.   d. one-half.

b. second.   e. third.

c. one-quarter.

22..Collision theory assumes that the rate of a reaction depends on _____

a. the energy of collisions.

b. the orientation of colliding molecules.

c. the energy of collisions and the orientation of colliding molecules.

d. the change in energy between the products and the reactants.

e. the change in free energy between the reactants and products.

23.The energy needed for a reaction to proceed from reactants to products is called
_____

a. collision energy.   d. potential energy.

b. kinetic energy.   e. thermodynamic energy.

c. activation energy.

24. Which of the following statements about catalysts is false:

a. catalysts do not appear in the balanced equation

b. catalysts reduce the activation energy for a reaction

c. biological catalysts are called enzymes

d. catalysts do not alter the mechanism of the reaction and never appear in the rate law

e. since catalysts are recycled, even a small amount of catalyst can accelerate a
reaction

25. Which of the following statements is false:

a. Changing the temperature does not change the activation energy for a reaction

b. At higher temperature a higher percentage of reactants have enough energy to get
over the transition state

c. The mechanism, rate law, and activation energy will all change when a catalyst is
added.

d. The general rate law for a reaction does not changes with temperature, but the rate
constant does change

e. The rate constant "k" for a reaction does not change when the temperature increases.

Parent/Guardian's signature_____