

## Term 1 Final Revision

### Chapter 1 Final Questions

#### Multiple Choice

1. The Celsius temperature at absolute zero is equal to \_\_\_\_\_.  
A-  $-100^{\circ}\text{C}$   
B-  $100^{\circ}\text{C}$   
C-  $273^{\circ}\text{C}$   
D-  $-273^{\circ}\text{C}$
2. In general, when a solid is heated, it \_\_\_\_\_.  
A- expands with increasing temperature  
B- contracts with increasing temperature  
C- expands with decreasing temperature  
D- contracts with decreasing temperature
3. Which of the following statement(s) is/are true?  
I. Every substance contains heat.  
II. For heat to flow between two substances, they must be at different temperatures.  
III. The internal energy of a substance is equal to the kinetic energy of the molecules in the substance.  
A- I and II only  
B- II and III only  
C- II only
4. A value of  $25^{\circ}\text{C}$  is a measurement of \_\_\_\_\_.  
A- density.  
B- distance.  
C- mass.  
D- Temperature.

5. Potential energy is sometimes called \_\_\_\_ energy.
- A- stored
  - B- moving
  - C- still
6. Heat transfer in a swimming pool is \_\_\_\_\_.
- A- Conduction
  - B- Convection
  - C- Radiation
  - D- expansion
7. This can travel through a vacuum.
- A- Sound
  - B- Light
8. Which of the following is a measure of the average kinetic energy of the particles in a sample of matter?
- A- chemical kinetics
  - B- thermochemistry
  - C- reaction rate
  - D- temperature
9. Why do hot air balloons rise?
- A- Thermal contraction
  - B- Thermal conduction
  - C- Thermal radiation
  - D- Thermal expansion
10. A heating appliance \_\_\_\_\_.
- A- Converts heat energy into electrical energy
  - B- Converts electrical energy into heat energy
  - C- Converts electrical energy into mechanical energy
  - D- Converts mechanical energy into electrical energy

**11.** A thermostat is used for \_\_\_\_\_.

- A-** Produce heat
- B-** Conduct heat
- C-** Regulate temperature
- D-** Relocate temperature

**12.** A bimetallic coil is made from how many types of coils?

- A-** 1
- B-** 2
- C-** 3
- D-** 4

**13.** Heat transfer through space is \_\_\_\_\_.

- A-** Conduction
- B-** Convection
- C-** Radiation
- D-** expansion

**14.** Cool air flows \_\_\_\_\_.

- A-** Upwards
- B-** Downwards
- C-** Sideways

**15.** What turns thermal energy into mechanical energy?

- A-** Refrigerator
- B-** Heater
- C-** Heat engine
- D-** Air conditioning

**16.** Approximately how much of an automobile engine is converted to wasted energy?

- A-** 20%
- B-** 40%
- C-** 60%
- D-** 80%

- 17.** Thermal energy is the sum of \_\_\_\_\_.
- A-** Kinetic energy and gravitational energy
  - B-** Kinetic energy and potential energy
  - C-** Kinetic energy and light energy
  - D-** Kinetic energy and electrical energy
- 18.** Which is the highest temperature?
- A-** 0 °C
  - B-** 53 °F
  - C-** 200 K
  - D-** 100 °C
- 19.** A balloon is placed in a cold room. What process takes place inside the balloon?
- A-** Thermal contraction
  - B-** Thermal conduction
  - C-** Thermal radiation
  - D-** Thermal expansion
- 20.** Heat transfer between 2 solids touching each other is \_\_\_\_\_.
- A-** Conduction
  - B-** Convection
  - C-** Radiation
  - D-** expansion

### **Short Answer questions**

- 21.** What are the 3 units for temperature?
- 22.** Temperature measure what type of energy in particles?
- 23.** Thermal energy moves from a cooler region to a warmer region. IS this statement true?
- 24.** What 2 types energy is thermal energy the sum of?
- 25.** State the ways thermal energy can be transferred.
- 26.** What type of thermal energy transfers involves electromagnetic waves?
- 27.** A device which converts electric energy into thermal energy is \_\_\_\_\_
- 28.** What's the name of the metal inside a thermostat?
- 29.** What types of energy is gasoline?
- 30.** Name a Thermal Conductor and Thermal Insulator

### **Long Answer questions**

- 31.** What is the difference between kinetic and potential energy?
- 32.** Explain the difference between thermal expansion and thermal contraction?
- 33.** Convert 57°F into °C.
- 34.** Give an example of convection current.
- 35.** Are heat engines efficient? Why or why not?
- 36.** A football is kicked up in the air. Describe the different types of energy acting the football.
- 37.** Convert 0°C into Kelvins.
- 38.** What is the difference between Thermal energy and heat?
- 39.** Prove that radiation is not in need of particles to be transfer heat.
- 40.** Give the definition of specific heat.

# Term 1 Final Revision

## Chapter 2 Final Questions

### Multiple Choice

1. The smallest particle into which an element can be divided and still be the same substance is a(n) \_\_\_\_\_.
  - A- electron
  - B- proton
  - C- atom
  - D- molecule
  
2. Electrons are particles that \_\_\_\_\_.
  - A- help make up the nucleus and have no charge
  - B- help make up the nucleus and are positively charged
  - C- are located outside of the nucleus and are negatively charged
  - D- are located outside of the nucleus and have no charge
  
3. If you found a Carbon 13 atom, you would know that \_\_\_\_\_.
  - A- it has 13 protons
  - B- it has 13 electrons
  - C- it has 13 neutrons
  - D- it has 7 neutrons
  
4. What particles make up the nucleus?
  - A- electrons and neutrons
  - B- protons and neutrons
  - C- electrons and protons
  - D- electrons, protons, and neutrons
  
5. Neutrons are particles that \_\_\_\_\_.
  - A- help make up the nucleus and have no charge
  - B- help make up the nucleus and are positively charged
  - C- are located outside of the nucleus and are negatively charged
  - D- are located outside of the nucleus and have no charge

6. The mass number minus the atomic number is equal to the number of \_\_\_\_\_.
- A- protons and neutrons
  - B- protons
  - C- protons and electrons
  - D- neutrons
7. Which of the following is NOT found on the periodic table?
- A- the atomic number of each element
  - B- the symbol of each element
  - C- the density of each element
  - D- the atomic mass of each element
8. An atom of gold with 79 protons, 79 electrons, and 118 neutrons would have a mass number of \_\_\_\_\_.
- A- 39
  - B- 158
  - C- 197
  - D- 276
9. Most metals are good conductors of \_\_\_\_\_.
- A- thermal energy
  - B- electric current
  - C- light energy
  - D- both (a) and (b)
10. One property of most nonmetals is that they are \_\_\_\_\_.
- A- poor conductors of electric current
  - B- shiny
  - C- flattened when hit with a hammer
  - D- solid at room temperature



**11.** The first shell in an atomic drawing can hold a maximum of \_\_\_\_ electrons.

**A-** 2

**B-** 4

**C-** 6

**D-** 8

**12.** Argon has \_\_\_\_ valence electrons.

**A-** 8

**B-** 12

**C-** 14

**D-** 18

**13.** Selenium is found in group \_\_\_\_.

**A-** 1

**B-** 2

**C-** 15

**D-** 16

**14.** Potassium has \_\_\_\_ neutrons.

**A-** 2

**B-** 38

**C-** 21

**D-** 58

**15.** The symbol for calcium is \_\_\_\_.

**A-** aCm

**B-** C

**C-** Ca

**D-** Cam

- 16.** When an atom loses an electron, it becomes a \_\_\_\_\_.
- A-** positive ion
  - B-** negative ion
  - C-** neutral ion
  - D-** neutral atom
- 17.** An ionic bond is the attraction between \_\_\_\_\_.
- A-** similarly charged ions
  - B-** oppositely charged ions
  - C-** neutral ions
  - D-** neutral atoms
- 18.** A chemical bond formed when two atoms share electrons is called a(n) \_\_\_\_\_.
- A-** ionic bond
  - B-** covalent bond
  - C-** polyatomic bond
  - D-** crystal bond
- 19.** What is a double bond?
- A-** a bond between two atoms
  - B-** one pair of electrons shared between two atoms
  - C-** two pairs of electrons shared between two atoms
  - D-** two pairs of electrons shared between four atoms
- 20.** Most metals are good conductors of \_\_\_\_\_.
- A-** thermal energy
  - B-** electric current
  - C-** light energy
  - D-** both (a) and (b)

### **Short Answer questions**

- 21.** What is the name given to the outer electron shell of an atom?
  
- 22.** How many electrons can the 2nd shell of an atom hold?
  
- 23.** Which electron shell of an atom has the least energy?
  
- 24.** Draw the electron dot diagram for Nitrogen.
  
- 25.** In which type of chemical bonding does sharing of electrons take place?
  
- 26.** Outline the Electronic configuration of Neon.
  
- 27.** How many electrons are involved in the bonding pair in a Double Bond?
  
- 28.** Is the bond stronger in  $F_2$  or  $O_2$ ?
  
- 29.** How are electrons distributed in a metallic bond?
  
- 30.** What charge does an atom have after gaining electrons?

### **Long Answer questions**

- 31.** Why Water is considered a Polar molecule?
  
- 32.** Relate the energy of an electron shell to its distance from the nucleus.
  
- 33.** Compare the reactivity of Chlorine and Argon.
  
- 34.** Display clearly the electrons in a N<sub>2</sub> chemical bond.
  
- 35.** State 3 different properties of a covalent compound.
  
- 36.** State 3 different properties of an ionic compound.
  
- 37.** State 3 different properties of a metallic compound.
  
- 38.** Explain how metals are able to conduct heat and electricity.
  
- 39.** State the number of electrons in the valence shell of phosphorus and which element can be used to stabilize it.
  
- 40.** Explain the reactivity of Noble Gases.

# Term 1 Final Revision

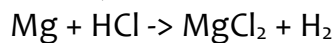
## Chapter 3 Final Questions

### Multiple Choice

1. What is the standard form for a single-replacement reaction?  
**A-**  $AX + BY \rightarrow AY + BX$   
**B-**  $A + B \rightarrow AB$   
**C-**  $AB \rightarrow A + B$   
**D-**  $A + BX \rightarrow AX + B$
2. According to collision theory, \_\_\_\_\_.  
**A-** all collisions result in some sort of chemical reaction  
**B-** a chemical reaction can occur without collisions  
**C-** the amount of energy of the particles determines whether a reaction occurs
3. What is the general relationship between temperature and reaction rate?  
**A-** the higher the temperature, the higher the reaction rate  
**B-** the higher the temperature, the lower the reaction rate  
**C-** temperature and rate vary inversely  
**D-** there is no relationship between the two
4. What factor accounts for the fact that powdered sugar dissolves more quickly than granulated sugar under the same conditions?  
**A-** temperature  
**B-** concentration  
**C-** nature of reactants  
**D-** surface area
5. How does increasing gas pressure increase the rate of reaction?  
**A-** gas particles move faster  
**B-** new gas particles are made  
**C-** gas particles are in a smaller space  
**D-** gas particles are in a larger space

6. A substance that increases the rate of a reaction without itself being used up is called a(n)
- A- intermediate product
  - B- catalyst
  - C- inhibitor
  - D- activated complex
7. In an exothermic reaction: \_\_\_\_\_.
- A- the heat of the products is equal to the heat of the reactants
  - B- the heat of the products is greater than the heat of the reactants
  - C- the heat of the products is less than the heat of the reactants
  - D- it varies depending on the reaction
8. Which of the following statements about bonds and energy is correct?
- A- bond breaking and bond formation both require energy
  - B- bond breaking and bond formation both release energy
  - C- bond breaking requires energy and bond formation releases energy
  - D- bond breaking releases energy and bond formation requires energy
9. Endothermic reactions are reactions that: \_\_\_\_\_.
- A- absorb heat
  - B- release heat
  - C- do not involve heat
  - D- take place instantaneously
10. When the equation,  $\text{Fe} + \text{Cl}_2 \rightarrow \text{FeCl}_3$ , is balanced, what is the coefficient for  $\text{Cl}_2$ ?
- \_\_\_\_\_
- A- 1
  - B- 2
  - C- 3
  - D- 4

11. When the following equation is balanced, what is the coefficient for HCl?



- A- 6
- B- 3
- C- 1
- D- 2

12. Chemical reactions \_\_\_\_\_.

- A- the ways in which atoms are joined together are changed.
- B- new atoms are formed as products.
- C- the starting materials are named reactants.
- D- the bonds of the reactants are broken and new bonds of the products are formed

13. Chemical equations must be balanced to satisfy the \_\_\_\_\_.

- A- law of definite proportions
- B- law of multiple proportions
- C- law of conservation of mass
- D- principle of Avogadro

14. In the chemical equation,  $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$ ,

The  $\text{H}_2\text{O}_2$  is a \_\_\_\_\_.

- A- product
- B- reactant
- C- catalyst
- D- solid

15. A catalyst is \_\_\_\_\_.

- A- the product of a reaction
- B- is a reactant
- C- one of the reactants in single-replacement reactions
- D- a chemical that speeds up the reaction

**16.** In every balanced chemical equation, each side of the equation has the same number of \_\_\_\_\_.

- A-** atoms
- B-** molecules
- C-** moles
- D-** Coefficients

**17.** In a combustion reaction, one of the reactants is \_\_\_\_\_.

- A-** hydrogen
- B-** nitrogen
- C-** oxygen
- D-** a metal

**18.** The products of a combustion reaction do NOT include \_\_\_\_\_.

- A-** water
- B-** carbon dioxide
- C-** carbon monoxide

**19.** Which of these does NOT increase the rate of a reaction?

- A-** a bond between two atoms
- B-** one pair of electrons shared between two atoms
- C-** two pairs of electrons shared between two atoms
- D-** two pairs of electrons shared between four atoms

**20.** Most metals are good conductors of \_\_\_\_\_.

- A-** increasing the surface Area
- B-** adding a Catalyst
- C-** mixing the chemicals vigorously
- D-** increasing the Concentrations

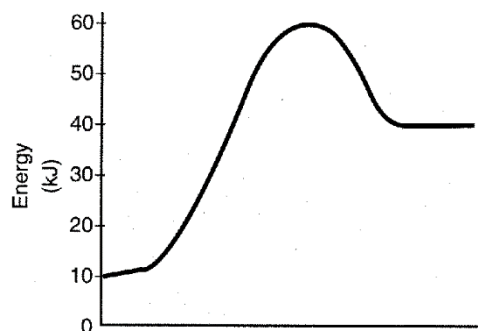


## Short Answer questions

### Reaction Progress

21. Given the diagram shown, determine the:

- a. Heat of the products:      \_\_\_ KJ
- b. Heat of the reactants:      \_\_\_ KJ
- c. Activation energy:      \_\_\_ KJ



22. Give examples of a chemical properties change.

23. Give examples of chemical Energy changes.

24. State the number of atoms in C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>.

25. Which side of a chemical equation do you find the reactants?

26. How many products are formed during a synthesis reaction?

27. Oxygen is always a reactant in which type of reaction?

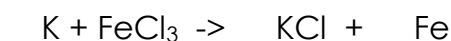
28. Balance the equations

29. And label the type of reaction on the line to the left.

Reaction types include:

single displacement - double displacement – synthesis – decomposition - combustion.

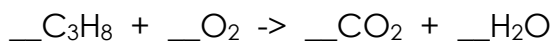
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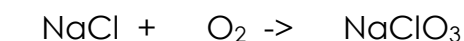
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\_\_\_\_\_



\_\_\_\_\_



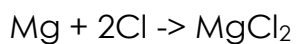
30. In an exothermic reaction is energy absorbed or released?

### **Long Answer questions**

**31.** Explain what happens in terms of chemical bonds during a reaction.

**32.** State what the law of conservation of mass states.

**33.** Write a balanced equation for the following reaction:



**34.** Compare a synthesis and decomposition reaction.

**35.** Compare Endothermic and exothermic reactions.

**36.** What is the activation energy of any reaction?

**37.** Explain how a rate of reaction can be increased if the reactant(s) are solids?

**38.** State how adding a catalyst can increase the rate of a reaction?

**39.** Compare enzymes and inhibitors.

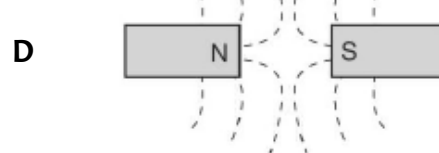
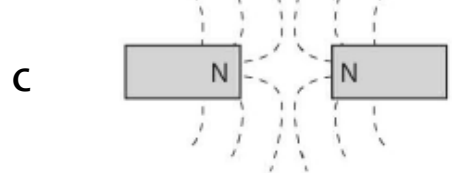
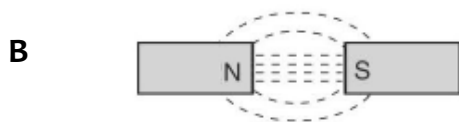
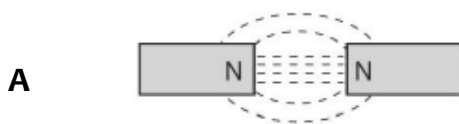
**40.** Give an example of where inhibitors can be useful.

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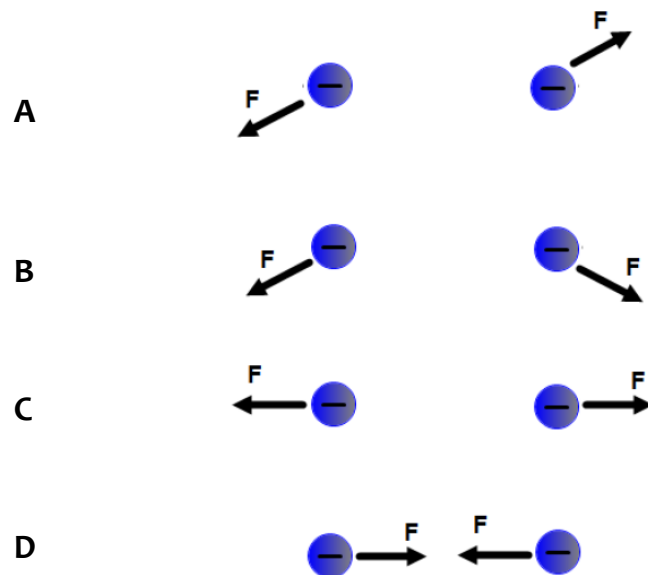
## Chapter 4 Final Questions

### Multiple Choice

- Which answer contains metals that are all magnetic?  
**A-** aluminium  
**B-** cobalt, nickel, iron  
**C-** copper, lead, brass, zinc  
**D-** iron, aluminium, zinc, lead
- When two pieces of iron are pushed together they push away from each other. The force that does this is \_\_\_\_\_.  
**A-** elastic force  
**B-** gravity force  
**C-** electrostatic force  
**D-** magnetic force
- A compass has a small balanced pointer that always points North-South. This is because \_\_\_\_\_.  
**A-** gravity makes the needle point this way  
**B-** the compass needle points to cold places  
**C-** the earth has a magnetic field and the pointer is magnetic  
**D-** the stars exert a force on the needle
- Which combination of magnetic field lines and poles shows two magnets repelling each other?



5. Which of the following is the correct force between two negative charges?



6. True or False: Electricity is a form of energy.

- A- True
- B- False

7. How is electricity formed?

- A- Transfer of protons
- B- Transfer of atoms
- C- Transfer of electrons
- D- Transfer of neutrons

8. What are the two types of current?

- A- Fast and slow current
- B- Alternating and Direct current
- C- Proton and electron current

9. True or False: A magnet has four poles: a north, south, east and west pole.

- A- True
- B- False

- 10.** Electrical current can easily travel through materials like metals.  
What are these types of materials called?
- A-** Insulators
  - B-** Resistors
  - C-** Batteries
  - D-** Conductors
- 11.** The purpose of an electric switch is to \_\_\_\_\_.
- A-** measure amounts of electricity
  - B-** redirect the flow of electricity
  - C-** turn electricity on and off
- 12.** True or False: The unit used to measure current is the volt.
- A-** True
  - B-** False
- 13.** The location of the strongest magnetic forces is the \_\_\_\_\_.
- A-** Electromagnets
  - B-** magnetic domains
  - C-** magnetic fields
  - D-** magnetic poles
- 14.** The region around a magnet where the magnetic forces act is the \_\_\_\_\_.
- A-** electromagnetic pole
  - B-** magnetic domain
  - C-** magnetic field
  - D-** magnetic pole
- 15.** Objects that keep their magnetic properties for a long time are called \_\_\_\_\_.
- A-** electromagnets
  - B-** magnetic domains
  - C-** permanent magnets
  - D-** temporary magnets

- 16.** The function of an electric motor is to change \_\_\_\_.
- A-** chemical energy to electrical energy
  - B-** electrical energy to chemical energy
  - C-** electrical energy to mechanical energy
  - D-** mechanical energy to electrical energy
- 17.** The function of a generator is to change \_\_\_\_.
- A-** chemical energy to electrical energy
  - B-** electrical energy to chemical energy
  - C-** electrical energy to mechanical energy
  - D-** mechanical energy to electrical energy
- 18.** The current that flows in an electric circuit carries \_\_\_\_.
- A-** chemical energy
  - B-** mechanical energy
  - C-** thermal energy
  - D-** electrical energy
- 19.** There is a repulsive force between two charged objects when \_\_\_\_.
- A-** charges are of unlike sign.
  - B-** they have the same number of protons.
  - C-** charges are of like sign.
  - D-** they have the same number of electrons.
- 20.** There is an attractive force between two charged objects when \_\_\_\_.
- A-** charges are of unlike sign.
  - B-** they have the same number of protons.
  - C-** charges are of like sign.
  - D-** they have the same number of electrons

### **Short Answer questions**

- 21.** How can an object become electrically charged?
- 22.** Give an example of static electricity on a large scale in nature.
- 23.** In a series circuit, with two light bulbs, if one of the bulbs burns out, what will to the other bulb?
- 24.** What three things do you need to produce an electrical circuit?
- 25.** A wire wrapped around a nail in a closed circuit is an example of what?
- 26.** The force that two electrically charged objects apply to each other is \_\_\_\_\_
- 27.** What will two negatively charged objects do in close vicinity?
- 28.** What is used to turn sunlight energy into electrical energy?
- 29.** Give an example for a gas that is used by Fuel cells.
- 30.** What happens to the brightness of the bulbs as more and more bulbs are added to a series circuit?

### **Long Answer questions**

- 31.** What are electrical circuit in a house made from and why?
- 32.** Why do we wrap electrical wires in plastic?
- 33.** What would happen to a balloon after rubbing it on a cloth and taking it close to a wall?
- 34.** Explain how a light bulb turns electrical energy into light energy?
- 35.** Why are Series circuits unreliable and inefficient?
- 36.** What does Voltage measure?
- 37.** What's the function of a safety cut off switch in an electrically powered device?
- 38.** Why does a compass point north?
- 39.** How can magnetic material be turned into temporary magnet?
- 40.** What is an electromagnet?



## Term 1 Final Revision

### Chapter 1 Final Questions

#### Multiple Choice

1	D
2	A
3	C
4	D
5	A
6	B
7	B
8	D
9	D
10	B
11	C
12	B
13	C
14	B
15	C
16	D
17	B
18	D
19	A
20	D

### Short Answer questions

21. What are the 3 units for temperature?  
**°C (Celsius), K (Kelvin), °F (Fahrenheit)**
22. Temperature measure what type of energy in particles?  
**Kinetic energy**
23. Thermal energy moves from a cooler region to a warmer region. IS this statement true?  
**No.**
24. What 2 types energy is thermal energy the sum of?  
**Kinetic and potential energy.**
25. State the ways thermal energy can be transferred.  
**Conduction, convection and radiation.**
26. What type of thermal energy transfers involves electromagnetic waves?  
**Radiation**
27. A device which converts electric energy into thermal energy is....  
**A heating appliance.**
28. What's the name of the metal inside a thermostat?  
**Bimetallic coil.**
29. What types of energy is gasoline?  
**Chemical energy**
30. Name a Thermal Conductor and Thermal Insulator.  
**Thermal conductor – Steel, aluminium etc. Thermal insulator – Glass, plastic, rubber etc.**

### Long answer questions

31. What is the difference between kinetic and potential energy?

**Kinetic energy is the energy of a moving object. Potential energy is the stored energy of an object.**

32. Explain the difference between thermal expansion and thermal contraction?

**Thermal expansion is when a particles are heated up and move faster causing the gas to expand.**

**Thermal contraction is when gas a particles are cooled down and particles move slowly causing the gas to contract.**

33. Convert 57oF into °C.

$$57-32/1.8 = 13.9^{\circ}\text{C}$$

34. Give an example of convection current.

**Magma in the earth or movement of gas in the atmosphere or movement of water in the oceans.**

35. Are heat engines efficient? Why or why not?

**No, because only 20% of the gasoline into mechanical energy the rest is lost to the environment.**

36. A football is kicked up in the air. Describe the different types of energy acting the football.

**As its rising it is gaining potential energy. The movement of the ball is caused by kinetic energy. Potential builds up as it rises and kinetic energy reduces. At its highest point it has 0% kinetic energy and 100% potential energy until it drops where this gradually reverses.**

37. Convert 0°C into Kelvins.

$$0^{\circ}\text{C} = 273 \text{ Kelvins}$$

38. What is the difference between Thermal energy and heat?

**All objects have thermal energy (Kinetic energy + potential energy. But an object is heated when thermal energy is transferred from one object to another.**

39. Prove that radiation is not in need of particles to be transfer heat.

**The suns heat is transferred via radiation (electromagnetic waves) though spacer which is a vacuum (has no particles).**

40. Give the definition of specific heat.

**Amount of thermal energy required to increase the temperature of 1Kg of a material by 1°C.**

# Term 1 Final Revision

## Chapter 2 Final Questions

### Multiple Choice

1	C
2	C
3	A
4	C
5	A
6	D
7	C
8	C
9	D
10	A
11	A
12	A
13	D
14	C
15	C
16	C
17	A
18	B
19	B
20	C

### Short Answer questions

21. What is the name given to the outer electron shell of an atom?

**Valence Shell**

22. How many electrons can the 2nd shell of an atom hold?

**8 electrons**

23. Which electron shell of an atom has the least energy?

**The 1st shell.**

24. Draw the electron dot diagram for Nitrogen.



25. In which type of chemical bonding does sharing of electrons take place?

**Covalent bonding**

26. Outline the Electronic configuration of Neon.

**[2,8]**

27. How many electrons are involved in the bonding pair in a Double Bond?

**4 electrons**

28. Is the bond stronger in F<sub>2</sub> or O<sub>2</sub>?

**O<sub>2</sub>**

29. How are electrons distributed in a metallic bond?

**Sea of delocalised electrons**

30. What charge does an atom have after gaining electrons?

**Negative charge.**

### Long Answer questions

**31.** Why Water is considered a Polar molecule?

**It has Oxygen which attracts electrons to itself making it partially negative and hydrogen is partially positive.**

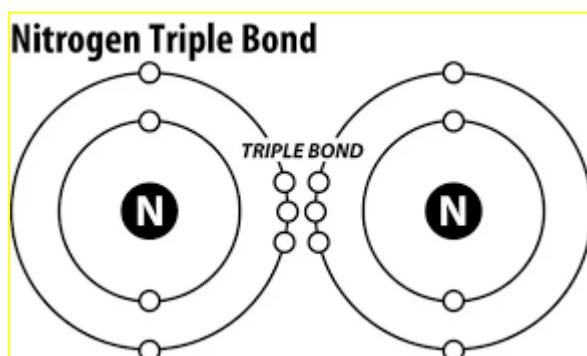
**32.** Relate the energy of an electron shell to its distance from the nucleus.

**The further away the electron shell is from the nucleus the more energy it has as it's less under the influence of the nucleus due its distance.**

**33.** Compare the reactivity of Chlorine and Argon.

**Chlorine is more reactive than Argon as it requires one more electron to complete its outer (valence) shell. Argon has a full outer shell and doesn't require any electrons and therefore is unreactive.**

**34.** Display clearly the electrons in a N<sub>2</sub> chemical bond.



**35.** State 3 different properties of a covalent compound.

**Low melting and boiling point, poor conductor of heat and electricity, dull appearance, gas, liquid or solid, will not dissolve in water.**

**36.** State 3 different properties of an ionic compound.

**Solid crystals, high melting and boiling point, dissolves in water, solids are poor conductors, ionic compounds in solutions can conduct electricity.**

**37.** State 3 different properties of a metallic compound.

Usually solid at room temperature, high melting and boiling point, don't dissolve in water, good conductor of electricity and heat, shiny surface, can be hammered and pulled into wires.

**38.** Explain how metals are able to conduct heat and electricity.

**Metals have a sea of delocalised electrons which carry electrical charge throughout the metal.**

**39.** State the number of electrons in the valence shell of phosphorus and which element can be used to stabilize it.

**Phosphorus has 5 electrons in its outer shell. It needs 3 more electrons to fill its shell. Boron, Aluminium, gallium or indium can be used to stabilize Phosphorus.**

**40.** Explain the reactivity of Noble Gases.

**Noble gases have a full outer shell and therefore do not react with anything. Low reactivity.**

# Term 1 Final Revision

## Chapter 3 Final Questions

### Multiple Choice

1	D
2	C
3	A
4	D
5	C
6	B
7	C
8	C
9	A
10	C
11	D
12	D
13	B
14	C
15	B
16	D
17	A
18	C
19	C
20	C

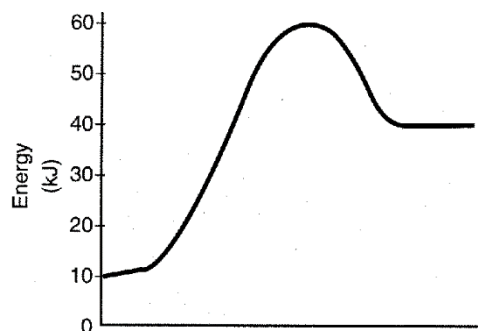


## Short Answer questions

### Reaction Progress

21. Given the diagram shown, determine the:

- a. Heat of the products: **40 KJ**
- b. Heat of the reactants: **10 KJ**
- c. Activation energy: **20 KJ**



22. Give examples of a chemical properties change.

**Change in color, formation of bubbles, change in odor, and formation of precipitate.**

23. Give examples of chemical Energy changes.

**Warming or cooling, release of light.**

24. State the number of atoms in C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>.

**Carbon – 6, Hydrogen – 12, Oxygen 6.**

25. Which side of a chemical equation do you find the reactants?

**Left**

26. How many products are formed during a synthesis reaction?

**One**

27. Oxygen is always a reactant in which type of reaction?

**Combustion**

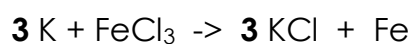
28. Balance the equations

29. And label the type of reaction on the line to the left.

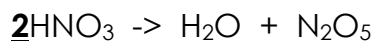
Reaction types include:

single displacement - double displacement – synthesis – decomposition - combustion.

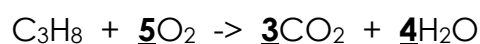
**Single displacement**



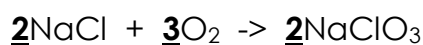
**Decomposition**



**Combustion**



**Synthesis**



30. In an exothermic reaction is energy absorbed or released?

**Energy is released.**

## Long Answer questions

31. Explain what happens in terms of chemical bonds during a reaction.

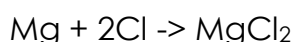
**Bonds are broken in the reactants and atoms are rearranged. Bonds are reformed again within the new arrangement.**

32. State what the law of conservation of mass states.

**The total mass of reactants must equal the total mass of products.**

33. Write a balanced equation for the following reaction:

**Magnesium chloride is the product of a reaction between magnesium and chlorine.**



34. Compare a synthesis and decomposition reaction.

**Synthesis reactions start off with multiple reactants but have only one product.**

**Decomposition has one reactant and multiple products.**

35. Compare Endothermic and exothermic reactions.

**Endothermic reactions have higher energy products and therefore energy (heat) needs to go in the reaction to make the reaction proceed. Endothermic reactions feel cold.**

**Exothermic reactions have lower energy products and therefore release energy (heat) during the reaction. Exothermic reactions feel warm.**

36. What is the activation energy of any reaction?

**The minimum energy needed for the reaction to proceed.**

37. Explain how a rate of reaction can be increased if the reactant(s) are solids?

**By increasing the surface area by breaking the solid down into smaller pieces, increasing the concentration of reactants, increasing the temperature of the reaction, adding a catalyst.**

38. State how adding a catalyst can increase the rate of a reaction?

**Catalyst help to reduce the activation energy of a reaction therefore more particles can overcome the lower energy barrier in order for the reaction to proceed.**

39. Compare enzymes and inhibitors.

**Enzymes are biological catalysts which help to speed up reactions.**

**Inhibitors are substances which slow down or stop a chemical reaction.**

40. Give an example of where inhibitors can be useful.

**Used in food industry to inhibit or slow down food getting spoilt.**

# Term 1 Final Revision

## Chapter 4 Final Questions

### Multiple Choice

<b>1</b>	<b><i>B</i></b>
<b>2</b>	<b><i>D</i></b>
<b>3</b>	<b><i>C</i></b>
<b>4</b>	<b><i>C</i></b>
<b>5</b>	<b><i>C</i></b>
<b>6</b>	<b><i>A</i></b>
<b>7</b>	<b><i>C</i></b>
<b>8</b>	<b><i>B</i></b>
<b>9</b>	<b><i>B</i></b>
<b>10</b>	<b><i>D</i></b>
<b>11</b>	<b><i>C</i></b>
<b>12</b>	<b><i>B</i></b>
<b>13</b>	<b><i>D</i></b>
<b>14</b>	<b><i>C</i></b>
<b>15</b>	<b><i>C</i></b>
<b>16</b>	<b><i>C</i></b>
<b>17</b>	<b><i>D</i></b>
<b>18</b>	<b><i>D</i></b>
<b>19</b>	<b><i>C</i></b>
<b>20</b>	<b><i>A</i></b>

### Short Answer questions

21. How can an object become electrically charged?

**By gaining or giving or up electrons**

22. Give an example of static electricity on a large scale in nature.

**Lightning**

23. In a series circuit, with two light bulbs, if one of the bulbs burns out, what will to the other bulb?

**Go out**

24. What three things do you need to produce an electrical circuit?

**A battery (source), wire (conductor), bulb (load)**

25. A wire wrapped around a nail in a closed circuit is an example of what?

**Electromagnet**

26. The force that two electrically charged objects apply to each other is...

**An electric force**

27. What will two negatively charged objects do in close vicinity?

**Repel**

28. What is used to turn sunlight energy into electrical energy?

**Solar cells**

29. Give an example for a gas that is used by Fuel cells.

**Hydrogen**

30. What happens to the brightness of the bulbs as more and more bulbs are added to a series circuit?

**Become dimmer**

### Long Answer questions

31. What are electrical circuit in a house made from and why?

**The circuits in a house are wired parallel because parallel circuits are more reliable. One broken bulb won't affect the other lights in the house. And more bulbs can be added without effecting the brightness of the other bulbs.**

32. Why do we wrap electrical wires in plastic?

**Plastic is a good insulator and keeps the electricity from harming anyone.**

33. What would happen to a balloon after rubbing it on a cloth and taking it close to a wall?

**A balloon with static electricity will stick to the wall because the balloon is negatively charged and is attracted to the positive charge near the surface of the wall.**

34. Explain how la light bulb turns electrical energy into light energy?

**Electrons moving in the filament collide with atoms in the filament. The atoms absorb the kinetic energy and turn it into light energy.**

35. Why are Series circuits unreliable and inefficient?

**One break in the circuit will cause the whole circuit to break. Adding more bulbs to a series circuit will reduce the light emitted from the other bulbs.**

36. What does Voltage measure?

**The amount of energy used to move one coulomb of electrons through a circuit.**

37. What's the function of a safety cut off switch in an eclectically powered device?

**To shut off the device if it becomes dangerous to handle.**

38. Why does a compass point north?

**The earth has molten iron and nickel inside its outer core creating a huge magnetic field. So the earth has a magnetic north and south pole.**

39. How can magnetic material be turned into temporary magnet?

**By placing a permanent magnet near it casing the magnetic materials magnetic domain to line up.**

40. What is an electromagnet?

**A temporary magnet made with current carrying wire coil wrapped around a magnetic core.**

## Mock Exam 1

Choose the best answer:

(\_\_\_ / 7)

- The atoms in the products of a chemical reaction \_\_\_\_\_
  - were present in the reactants.
  - did not exist before the reaction.
  - were created using energy from the reaction.
- What term refers to the part of a thermostat that expands and contracts to turn a furnace on and off?
  - coolant
  - piston
  - bimetallic coil
  - heat engine
- Any material that flows is a \_\_\_\_\_.
  - liquid
  - fluid
  - current
  - gas
- Compared with electrons that are closer to the nucleus, those that are farther away have
  - less energy.
  - more energy.
  - equal energy
- Which compound is a polar molecule?
  - H<sub>2</sub>
  - H<sub>2</sub>O
  - CO<sub>2</sub>

6. Which example is a double-replacement reaction?

- A-  $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$
- B-  $\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$
- C-  $\text{HCl} + \text{FeS} \rightarrow \text{FeCl}_2 + \text{H}_2\text{S}$

7. Which situation would cause a reaction to occur more quickly?

- A- reducing the pressure of a gaseous reactant
- B- increasing the surface area of a solid reactant
- C- lowering the temperature of a liquid reactant
- D- decreasing the concentration of a liquid reactant

**Respond** to each statement on the lines provided.

( \_\_\_ / 8 )

8. Identify one change in property and one change in energy that indicate that a chemical reaction might have occurred.

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9. What is one form of energy that is output from a heat engine?

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10. What is an electric circuit?

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11. Describe three properties of metallic compounds.

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Choose the best word from the word box to complete each sentence.

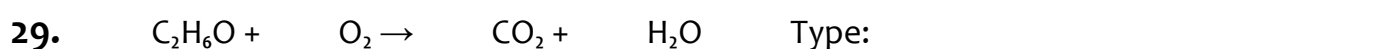
( \_\_\_ / 12)

valence electron - electric field – magnetic domain – magnetic force – electron dot diagram – ion -  
electric current – chemical formula - electromagnetism – electric discharge– metallic bond

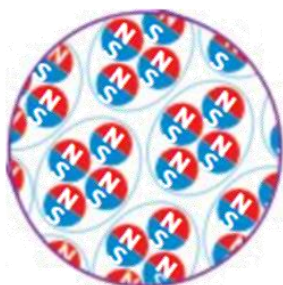
12. A \_\_\_\_\_ is a region in a magnetic material in which the magnetic fields of the atoms all point in the same direction
13. \_\_\_\_\_ is an outermost electron of an atom that participates in chemical bonding.
14. An \_\_\_\_\_ is an atom that is no longer electrically neutral because it has lost or gained valence electrons.
15. \_\_\_\_\_ a model that represents valence electrons in an atom as dots around the element's chemical symbol.
16. A \_\_\_\_\_ is a group of chemical symbols and numbers that represent the elements and the number of atoms of each element that make up a compound.
17. The process of an unbalanced electric charge becoming balanced is an \_\_\_\_\_
18. A \_\_\_\_\_ is a bond formed when many metal atoms share their pooled valence electrons.
19. The movement of electrically charged particles is an \_\_\_\_\_
20. \_\_\_\_\_ is a push or a pull a magnetic field applies to either a magnetic material or an electric current.
21. The invisible region surrounding a charged object is called an \_\_\_\_\_
22. The relationship between electricity and magnetism is called \_\_\_\_\_
23. \_\_\_\_\_ is a substance that slows or stops a chemical reaction



**Balance** the following chemical reaction then write the type of this reaction. ( \_\_\_ / 12)



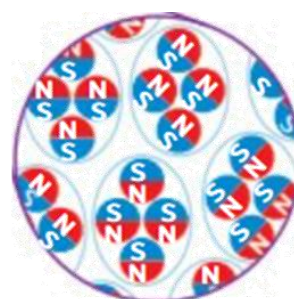
**Write** whether the object is magnetic material, magnet or not a magnetic material. ( \_\_\_ / 6)



27. ....



28. ....



29. ....

**Complete** the following table with the correct word.

( \_\_\_ / 5)

Source of electricity	Changes energy from	Changes energy into
Battery	30. _____	31. _____
32. _____	Mechanical energy	
33. _____	Solar energy	
34. _____	Chemical energy	

## Mock Exam 2

**Choose the best answer:**

(\_\_\_ / 28)

1. How is electricity formed?
  - A- Transfer of protons
  - B- Transfer of atoms
  - C- Transfer of electrons
  - D- Transfer of neutrons
  
2. Which of the following would be the best material to use for making tea kettles?
  - A- graphite, specific heat 710
  - B- iron, specific heat 450
  - C- copper, specific heat 380
  - D- aluminum, specific heat 920
  
3. The location of the strongest magnetic forces is the \_\_\_\_\_.
  - A- Electromagnets
  - B- magnetic domains
  - C- magnetic fields
  - D- magnetic poles
  
4. Endothermic reactions are reactions that:
  - A- absorb heat
  - B- release heat
  - C- do not involve heat
  - D- take place instantaneously

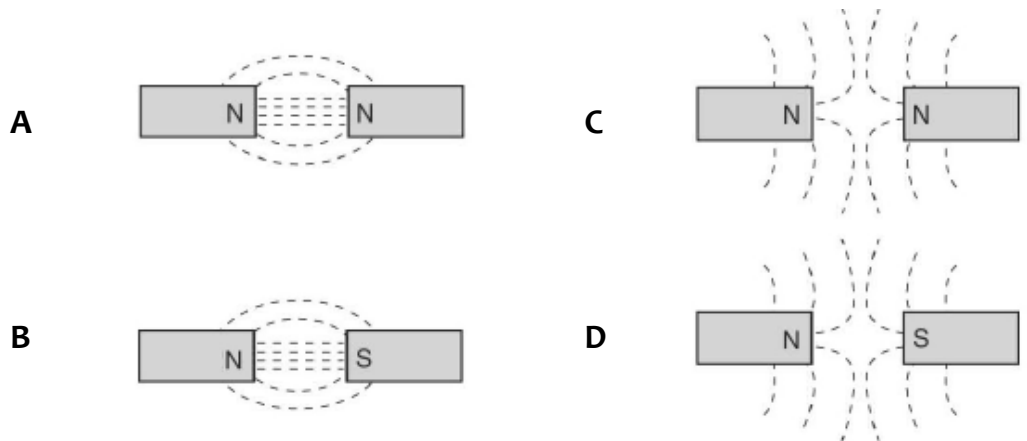
5. An ionic bond is the attraction between\_\_\_\_\_

- A- similarly charged ions
- B- oppositely charged ions
- C- neutral ions
- D- neutral atoms

6. A balloon is placed in a cold room. What process takes place inside the balloon?

- A- Thermal contraction
- B- Thermal conduction
- C- Thermal radiation
- D- Thermal expansion

7. Which combination of magnetic field lines and poles shows two magnets repelling each other?



8. The function of an electric motor is to change \_\_\_\_.

- A- chemical energy to electrical energy
- B- electrical energy to chemical energy
- C- electrical energy to mechanical energy
- D- mechanical energy to electrical energy

9. Chemical equations must be balanced to satisfy the \_\_\_\_.

- A- law of definite proportions
- B- law of multiple proportions
- C- law of conservation of mass
- D- principle of Avogadro

**10.**What is a double bond?

- A-** a bond between two atoms
- B-** one pair of electrons shared between two atoms
- C-** two pairs of electrons shared between two atoms
- D-** two pairs of electrons shared between four atoms

**11.** What factor accounts for the fact that powdered sugar dissolves more quickly than granulated sugar under the same conditions?

- A-** temperature
- B-** concentration
- C-** nature of reactants
- D-** surface area

**12.**What are the two types of current?

- A-** Fast and slow current
- B-** Alternating and Direct current
- C-** Proton and electron current

**13.** Which of the following is NOT found on the periodic table?

- A-** the atomic number of each element
- B-** the symbol of each element
- C-** the density of each element
- D-** the atomic mass of each element

**14.**A bimetallic coil is made from how many types of coils?

- A-** 1
- B-** 2
- C-** 3
- D-** 4

**Distinguish** between the terms in each of the following pairs

( \_\_\_ / 12)

1. Ionic bond, covalent bond

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2. parallel circuit, series circuit

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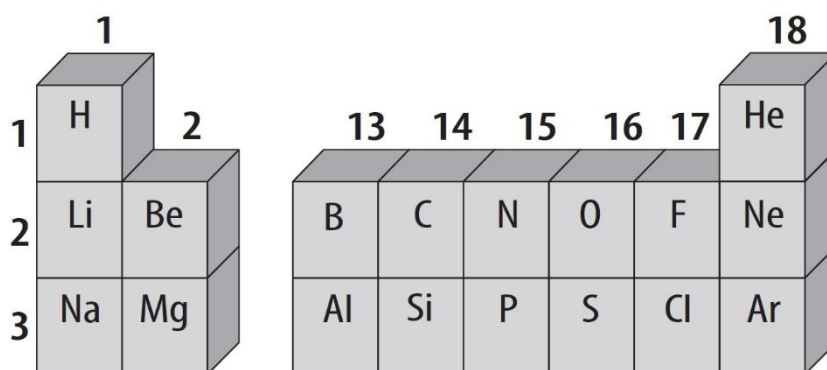
3. temperature, thermal energy

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**Directions:** This diagram shows the first 18 elements of the periodic table. Use the diagram to answer each question.

( \_\_\_ / 10)



4. How many valence electrons do atoms of oxygen (F) have?

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5. How many valence electrons do atoms of sulfur (P) have?

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6. How many chemical bonds can an atom of carbon (Mg) form?

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7. How many chemical bonds can an atom of carbon (Na) form?

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8. How many chemical bonds can an atom of carbon (S) form?

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