PLASTICS MODULE

e-Series "Grade Sheet"

NAME:_____
Partner:_____
Period:_____ Rotation: ___

MODULE GRADE: **COURSE GR.** _____
POST TEST _____ **MODULE AVE.=** _____

PLASTICS "WORKSHEET" **"WORKSHEET" TOTAL=** _____

LAB PERFORMANCE: ____ ____ ____ ____ ____ ____ ____ ____ ____ ____
(If you are absent, write ABS on the line for the day you miss and **DISCUSS** what you need to make up with the teacher) **LAB PERFORMANCE TOTAL=**_____

Extra Credit—Discuss this with the instructor before beginning!!!

WORD SEARCH ____(5) Extra Plastic Project _____ (5)(Project Name: _____)
MODULE REPORT ____(5) **Module NOTES** _____(0-10)
CHALLENGES ____(5) **TOTAL EXTRA CREDIT**= _____
BONUS POINTS *** _____

PLASTICS "WORKSHEET"

LESSON 2 –Show Completed "Mold" to teacher. Person #1 Project **T.I.:** ____(10)
"Vacuum Form Mold" #2: Person #2 **(Vacuum Mold) T.I.:** ____(10)

LESSON 3- Basic Chemistry of Plastics. Be sure to clean up your mess at the sink including the equipment you used.
Describe what happened in "Chemical Foam Experiment #1"- _____
_____.
What happened when you added the salt? _____.
Describe what happened in "Chemical Foam Experiment #2": _____
_____.
How was the foam different in the second experiment? _____.(10)
(some of the answers above are on the direction sheets)

LESSON 4-Properties of Plastic: Go to the sink, follow the directions and make the "Slime".
"Vacuum Form Mold" #2: should have been done and stamped in Lesson 2.
Environmental Impacts-Write notes from videos. **Env. Impacts Paper:** ____(5)

LESSON 5 -Injection Mold: **Discussion with teacher** before activity.
When you are ready to make your screwdriver, call the teacher to help. **T.I.:** ____(20)

LESSON 6-"Polymer Experiment"
What happened to the "Goo" when you squeezed your hand? (circle one) Goo got hard "OR" Goo got liquid
What happened when you opened your hand? (circle one) Goo got hard "OR" Goo got liquid
Explain why you think the "Goo" reacted and got hard when you squeezed it? (Speculate)
_____.(10)

Completed Key Chain Project **Key Chain:** ____(10)

LESSON 7-
Activity of Choice". Write Project Type/Name here: _____ **T.I. :** ____(10)
Career Guidance Report- **C.G. NOTES:** ____(10)
STUDY GUIDE TURNED IN **Study Guide :** ____(5)
TAKE YOUR VACUUM MOLD ITEMS FROM THEGREEN CABINET!!

Worksheet Total: _____

Plastics Study Guide

1. Which of the following statements are true? (Course Introduction)
All plastics are biodegradable.
Most plastics are not biodegradable.
There is no environmental importance to non-biodegradable plastics..
There is no problem in disposing of plastics..

2. What is the word plastics derived from? (1-The Development of Plastics)
Plasma, as related to producing blood
The Greek word plastikos, meaning to mold or form
Posture, meaning to take shape
Percentile, as related to a percentage of certain chemicals

3. What is the function of the plastic vacuum machine? (2-Using a Plastics Vacuum Forming Machine)
Forms plastic to the image of a mold
Creates plastic
Develops natural plastics
Develops synthetic plastics

4. During the molding process, when should the control switch be thrown from the heat position to the vacuum position? (2-Molding a Plastic Shape, Step #10)
After the molding process is completed
At any time during the process
At the very beginning of the molding process
When the heated plastic sheets begin to sag

5. A substance that cannot be separated into other substances is known as which of the following? (3-Chemistry of Plastics) Compound Mixture Element Atom

6. Which of the following do elements in chemical formulas identify? (3-Chemistry of Plastics)
The number of atoms and electrons in a molecule
The number of elements and neutrons in an element
The type and number of atoms in a molecule
The number of neutrons and protons in an atom

7. A nuclear symbol is used identify an element and has three parts. What are the parts? (3-Identifying an Element)
Symbol of the element, number of protons, and total number of protons and neutrons
Symbol of the element, number of atoms, and the atomic number
Number of electrons, number of protons, and number of neutrons
Number of symbols, number of atoms, and number of neutrons

8. What are plastics called that can repeatedly be softened by heat and reformed? (4-Properties of Plastics)
Thermosets Thermoplastic Thermal polymers Formed and molded

9. Which of the following best describes polymerization? (3-Polymerization)
Carbon containing monomers combine to form a new substance.
Atoms are heated to form polymers.
Heat and pressure create neutrons.
Thermosets and thermoplastics combine to form monomers.

10. Injection molding machines make use of _____. (5-Using the Injection Molding Machine)
motors and conveyor belts gravity and ice pressure and heat hammers and bolts

11. The purpose of the purge block in an injection molding machine is _____. (5-Using the Injection Molding Machine)
to block any attempt to clean the machine when it is too hot
to remove ant dirt or impurities before it is used
to release pressure after a plastic injection
to remove any plastic that may remain after an injection

12. What is a class of thermosetting resins called that make excellent electrical insulators? (6-Thermosetting Resins)
Phenolics Silicones Polyesters Catalysts

13. What is the resin favored by the auto body shops to make repairs? (6-Thermosetting R./Epoxy Resins)
Cement Putty Polyesters Epoxy

14. The thermoplastic family are polymers _____. (7-Thermoplastic Resins)
of a very simple molecular structure
of a very complicated molecular structure
were about the first plastics to be developed
that are extremely poisonous

15. A very common polyvinyl plastic is: (7-Thermoplastic Resins/Polyvinylidene)
Nylon Saran Wrap Water bottle Styrofoam

16. Which of the following statements is true? (8-How Plastics are Fabricated)
Thermoplastics solidify upon being heated to a desired shape.
Thermoplastics solidify upon being cooled to a desired shape.
Thermosets solidify into a melting product.
Thermosets and thermoplastics are basically the same type product.

17. Which of the following processes form thermoplastic sheets into a desired shape by applying heat and pressure? (8-Processing Methods)
Casting Injection molding Compression molding Thermoforming

18. Which of the following is true regarding the use of plastics for electronic and electrical usage? (9-Plastics for Electronics)
The use of plastics is declining.
The use of plastics is increasing.
There are no new uses for plastics in these industries.
Plastics in electronics peaked in 1980.

19. Why have plastics become dominant in the integrated circuit industry?(9-Growth of Plastic Materials in the Industry)
They are cheaper than other materials.
They carry higher thermal loads.
They have a high degree of mechanical and chemical stability.
All of the above are correct.

20. What is considered the single biggest problem with plastics? (10-Recycling)
They weigh too much.
They are difficult to fabricate.
There are too many varieties.
They are not biodegradable.
21. What do we mean when we say synthetic plastics are not biodegradable? (10-Recycling)
They can't be eaten by humans.
They require long periods to become natural.
Only biologists can transform plastics into biodegradables.
Synthetics are inert, which means the polymer is left behind as a dust.
22. Since the development of the chip, what material is credited with revolutionizing electronics? (11-Plastics Today)
Metal Ceramic Glass Plastics
23. Polyethylene terephtalate is used by bottle manufacturers; what is its symbol? (11-Plastics Today)
PET PTE PHT PEH
24. Raw petroleum oil is separated into a number of gases and liquids using a process called _____. (12-Careers in Plastics)
separation filtering filtering tower fractioning tower fracturing tower
25. _____ produce the dies or molds used to manufacture plastics. (12-Careers in Plastics)
Mechanical engineers Electronic engineers Toolmakers Industrial chemists

PLASTICS

V6.0 Study Guide (Post Test)

Circle the correct answers to these questions as you come upon them during your next seven lessons. This study guide can then be used as a resource for your final test!

1. The word plastic is derived from the Greek word plastikos, meaning to form or __Lesson 1- The Development of Plastics____. ***mold, heat, burn, bend***

2. Gutta percha, a natural plastic that is a rubber-like, is obtained from __Lesson 1- The Development of Plastics_____. ***dirt, trees, rubber, plants***

3. The __Lesson 1- The Development of Plastics_____ plastic was used as a cover for the first underwater telegraph cable. ***amber, rubber, gutta percha, none of the above***

4. A Swiss chemistry professor named Christian Schoenbein discovered a material called __Lesson 1- The Development of Plastics____. ***cellulose nitrate, elastomers, gutta percha, asphalt***

5. The evolution of synthetic plastics started in the mid-__Lesson 1- Development of Plastics____ century.
twentieth, seventeenth, eighteenth, nineteenth

6. The first photographic film was __Lesson 1- Natural or Synthetic_____.
Celluloid, cellulose nitrate, elastomer, synthetic

7. The first commercial application for __Lesson 2- First Entirely Synthetic Plastic____ was an alternative to rubber for electrical insulation.
celluloid, bakelite, cellulose, gutta percha

8. By using __Lesson 2- Using a Vacuum Forming Mold_____ and a vacuum, a vacuum molding machine forms plastic to the image of a mold. ***molds, pressure, tension, heat***

9. The plastics you use with the vacuum molding machine are sheets of polystrene, which are ___Lesson 2- Using A Vacuum Forming Mold_____.
thermoplastic, thermosets, cross-linked, rubber

10, You place the mold onto the ___Lesson 2 Molding a Plastic Shape_____ with the finished side up when you use a vacuum forming machine.
wire mesh heat table, vacuum table, inner and outer material, control panel holding frame

11. Each sample of matter can be classified as one of two types: a pure substance or a __Lesson 3- The Chemistry of Plastics_____. ***compound, element, atom , mixture***

12. A substance that cannot be separated into other substances by an ordinary chemical change is an ___Lesson 3- The Chemistry of Plastics_____. ***element, atom, electron, all of the above***

13. ___Lesson 3- The Chemistry of Plastics_____ are formed when atoms combine with other atoms.
Elements, Compounds, Atoms, Plastics

14. The simplest structure that displays the physical and chemical properties of a compound is a(n) __Lesson 3- The Chemistry of Plastics_____. ***atom, proton, neutron, molecule***

15. The formula for carbon dioxide is CO2. This means that each ;molecule contains ___Lesson 3- The Chemistry of Plastics_____ atom of carbon (C) and 2 atoms of oxygen.
1, 2, 3, 0

16. The number of ___Lesson 3- Identifying an Element_____ in the nucleus of each atom of an element is the atomic number of that element.
neutrons, electrons, protons, atoms

17. The total number of protons and ___Lesson 3- Identifying an Element_____ is the mass number.
neutrons, electrons, protons, atoms

18. ____Lesson 4- Properties of Plastics____ are plastics that can repeatedly be softened by heat and reformed. ***Thermosets, Synthetics, Thermoplastics, Resins***

19. ___Lesson 4- Properties of Plastics_____ are plastics that were once molded into a shape but can never be reheated and returned to a moldable state. ***thermosets, Synthetics, Thermoplastics, Resins***

20. All plastics, whether natural, synthetic, thermoplastic or thermoset, are __Lesson 4- Properties of Plastics____. ***thermosets, polymers, thermoplastics, monomers***

21. Polymers are giant molecules made up of many small molecules called ___Lesson 4- Properties of Plastics____. ***molecules, polymers, atoms, monomers***

22. The nature of injection molding combines ___Lesson 5- Using the Injection Molding Machine_____ and heat. ***a vacuum, pressure, liquid, molding***

23. The ___Lesson 5- Using The Injection Mold____ must be molten to successfully injection mold.
plastic, mold, pressure, none of the above

24. The __Lesson 5- Using the Injection Mold Mach.___ is used to load the plastic pellets into the heating block. ***heating block, mold clamp, filler tool, alignment screw***

25. The molds are made of two halves and held together by the __Lesson 5- Using the Injection Molding Mach._____. ***heating block, mold clamp, filler tool, alignment screw***

26. You must press down on the __Lesson 5- Using the Injection Molding Mach._____ in one swift motion to inject complete part. ***Heating block, mold, clamp, mold, handle***

27. ___Lesson 6-Th... have the ability to endure heat.

28. The ___Lesson ... es and glues and have excellent elect... ***er***

29. __Lesson 6- Th... up under all known soaps and dishwate...

30. The __Lesson 6... herefore do not have bubbles in the... ***sters***

B	N	I	S	F	E	R	N	D	L	G	F	T	O	T
A	K	O	H	Y	E	N	I	E	C	O	H	O	L	E
K	M	M	I	L	N	O	I	O	U	E	O	A	C	S
E	W	U	L	T	L	T	M	M	R	T	C	T	P	O
L	G	I	U	U	C	P	H	M	A	I	R	U	A	M
I	F	U	L	C	O	E	O	E	M	L	T	O	D	R
T	G	L	T	U	A	P	J	E	T	T	E	L	N	E
E	E	O	N	T	L	V	H	N	Y	I	O	M	S	H
C	P	D	O	A	A	C	O	M	I	M	C	G	R	T
T	O	G	S	P	H	E	N	O	L	I	C	S	E	N
B	M	T	S	R	E	T	S	E	Y	L	O	P	M	O
G	I	Y	E	L	U	C	E	L	O	M	Y	A	O	T
C	E	L	E	M	E	N	T	S	L	I	M	E	N	O
U	R	E	A	J	M	A	O	F	Q	Z	Y	U	O	R
A	H	C	R	E	P	B	X	X	D	S	J	Q	M	P

BAKELITE
CELLULOID
CHEMICAL
COMPOUND
ELEMENT
FILLER
FOAM
GOO
GUTTA
VACUUM
INJECTION
MELAMINE
MOLD
MOLECULE
MONOMERS
NEUTRON
PERCHA
PHENOLICS
PLASTIC
POLYESTERS
PROTON
PUTTY
SLIME
SYNTHETIC
THERMOPLASTIC
THERMOSET
TOOL
UREA