Congratulations on your participation in the NSBE Science Bee 2016. In this packet you will find all 360 possible questions that will be used in competition including 20 bonus round questions*. 88% of the questions come from all of the science disciplines taught at Selma High School. So that students can open their minds to wider areas of study, we have included 15 astronomy questions, 15 computer science questions, and 15 zoology questions. We have provided you the correct answers. It is your duty to learn the correct answers to the questions to avoid elimination and advance through rounds.

There are 4 types of questions:
- True/False
- Short Answer
  - Some of the answers have two parts. In order to avoid elimination, you must provide both parts of the answer.
- Spelling
  - Just as if you were in a spelling bee, you will be allowed to ask for a sentence, a definition, subject, or language of origin.
- Multiple choice (bonus round only)

During the competition: You will be assigned a random number the day of the competition to ensure fairness. You will sit on the stage in numerical order. The questions will be asked in a different order than they appear in the study guide. Once called to the stage you will have 30 seconds to answer the question after it has been read to you. You may ask the annunciator to repeat the question only once. If you have not answered in the allotted time, you will be eliminated. If you answer incorrectly, you will also be eliminated.

Astronomy
Computer Science
Zoology
Physics
Chemistry
Physical Science
Environmental Science
Biology
Anatomy and Physiology

*Unlike the standard round questions, we will only provide you with the questions and not the answers. It is up to you research them on your own. If you perform a quick google search, you will find that most of the answers will occur within the first two pages of results. We assure you that you will have plenty of time to study them.
1. What are the two main groups into which cells are classified?
   - eukaryotic and prokaryotic

2. In human cells, what are the structures in which protein synthesis takes place?
   - Ribosomes

3. What is the membrane-bound organelle in a eukaryotic cell that contains chromosomes and controls the structure and function of the cell?
   - Nucleus

4. In what organelle do the final stages of cellular respiration occur?
   - Mitochondria

5. What is the process by which organisms keep their internal conditions stable?
   - Homeostasis

6. Many factors determine the condition of an ecosystem. What is any living part of an ecosystem considered to be?
   - Biotic factor

7. These organisms can capture energy from sunlight and convert it into forms that living cells can use. Based on their method of energy consumption, what are these organisms classified as?
   - Autotrophs

8. A tapeworm lives in the intestines of a mammal and absorbs all of their food. What type of symbiotic relationship is this?
   - Parasitism

9. In a tropical rainforest, a dense covering is formed by the leafy tops of tall trees. What is this covering called?
   - The canopy

10. How do prokaryotes reproduce?
    - Binary fission

11. Approximately how many calories does a gram of glucose contain?
    - 4 calories
12. In the 19th century, an Austrian monk studied genetics using pea plants. He later developed the punnett square. Who is this person?
   Gregor Mendel

13. What are changes in DNA that affect genetic information?
   Mutations

14. What are the two gases that plants must exchange?
   Oxygen and carbon dioxide

15. What is a symbiotic relationship in which both species benefit?
   Mutualism

16. Water has many properties that gives it unique abilities. One of these abilities is rising through thin tubes. What is this ability called?
   Capillary action

17. Fruits release a hormone that stimulates their tissues to ripen. What is the name of this hormone?
   Ethylene

18. What is the green pigment in plants that captures sunlight and turns it into energy?
   Chlorophyll

19. What is the disease caused by an uncontrolled division of abnormal cells in a part of the body?
   Cancer

20. What term describes an allele that exerts its phenotypic effect in the heterozygote and masks the recessive allele?
   Dominant (allele)

21. Spell the word thigmotropism.

22. Spell the word zygote.

23. Spell the word xylem.

24. Spell the word mitosis.

25. Spell the word euploidy.
26. What does DNA stand for?
   Deoxyribonucleic acid

27. What does RNA stand for?
   Ribonucleic acid

28. What is the tip of the end of a chromosome that shortens with each cell division and may thereby regulate the number of times a cell can divide?
   Telomere

29. What is the cord that connects a fetus to the placenta called?
   Umbilical cord

30. What is the term that describes an organism that is composed of only one cell?
   Unicellular

31. What is the evolutionary history of a group of organisms?
   Phylogeny

32. What is an osteoblast?
   Bone-forming cell

33. A nucleotide consists of a 5-carbon sugar bonded to a nitrogenous base and what else?
   Phosphate group

34. What is the term for a small pit or hollow cavity, as in bone or cartilage, where a cell or cells are located?
   Lacuna

35. What is the term for the division of the nucleus?
   Karyokinesis

36. What is a unit of heredity existing as alleles on a chromosome?
   Gene

37. True or false? Each antibody combines with a specific antigen.
   True

38. True or false? An amino acid is composed of an amino group and a base group.
   False
39. What is the protective protein that contains the genetic material of a virus?  
   Capsid

40. What is the scientific study of life called?  
   Biology

41. What are observable, coordinated responses to environmental stimuli?  
   Behavior

42. True or false? Pumpkins, tomatoes, and avocados are fruits.  
   True

43. What is the transfer of pollen from a pollen cone to a seed cone?  
   Pollination

44. What is the secondary xylem that builds up year after year in trees and becomes annual rings called?  
   Wood

45. What Dutch spectacle-maker from Middelburg is associated with the invention of the first optical telescope and is also sometimes credited for inventing the first truly compound microscope?  
   Zacharias Janssen
Environmental Science 45 Questions

1. What is a massive, irregularly shaped slab of solid rock, generally composed of both continental and oceanic lithosphere?
   Tectonic plate

2. A rock’s composition has been transformed by heat and pressure. What type of rock is this?
   Metamorphic

3. This envelope of gases surrounds a planet or other celestial body. Earth has one of these and it is divided into 5 layers. It provides shield from solar radiation and prevents greenhouse gases from escaping back into space. What is this gases envelope called?
   Atmosphere

4. In 1915, Alfred Wegener theorized that continents ride on giant plates that have been moving very slowly across the surface of Earth for 300 million years. What is the name of this theory?
   Continental drift

5. What is a type of tropical cyclone accompanied by thunderstorms and, in the Northern Hemisphere, a counterclockwise circulation of winds near the earth's surface?
   Hurricane

6. What is the alternate rise and fall of the surface of oceans, seas, and bays caused by the gravitational pull of the Moon?
   Tide

7. What are underground layers of rock that are saturated with water that can be brought to the surface through natural springs or by pumping?
   Aquifers

8. This Northern US city is currently known for being plagued by a drinking water contamination crisis caused by its corrosive river leaching lead into the municipal water supply. Name this city.
   Flint, Michigan

9. What is a mountain or hill that has a crater or vent through which lava, rock fragments, hot vapor, and gas are being or have been erupted from the earth's crust?
   Volcano

10. What is a gas that contributes to the greenhouse effect by absorbing infrared radiation?
    Greenhouse gas
11. What is a sudden and violent shaking of the ground that results from movements within the earth's crust or volcanic action?
   Earthquake

12. What is an icicle-shaped formation that hangs from the ceiling of a cave?
   Stalactite

13. What is the warm phases of the climate cycle in the Pacific Ocean that has a global impact on weather patterns?
   El Nino

14. What is the deepest part of the world's oceans located in the western Pacific Ocean to the east of the Mariana Islands?
   Mariana Trench

15. What is the formal name of the natural electrical phenomenon that can be observed near the North Pole?
   Aurora Borealis

16. Of the 7 major land biomes, which of them carries the most species?
   Tropical rainforest

17. What is the thin layer at Earth's surface where life exists?
   Biosphere

18. 78% of the Earth's atmosphere is made up of what element?
   Nitrogen

19. What is the transfer of heat by air currents?
   Convection

20. How many oxygen atoms does a molecule of ozone contain?
   3

21. In which part of the atmosphere do airplanes fly?
   Stratosphere

22. True or false? In a closed system, energy enters the environment but water does not.
   True

23. What is the collective term for all of the members of a species that live in an area at the same time?
   Population
24. What is a group of organisms that are closely related and can mate to produce fertile offspring?
   species

25. What are the imaginary lines that measure in degrees the distance north and south of the equator?
   Latitude

26. What are the imaginary lines that measure in degrees the distance east and west of the prime meridian?
   Longitude

27. This land biome contains the northern coniferous forest that stretches in a broad band across the Northern Hemisphere just below the Arctic Circle. What is this biome?
   Taiga

28. What is the average number of years a person is expected to live?
   Life expectancy

29. True or false? A large fraction of Earth’s water supply is freshwater.
   False

30. What is the pH of pure water?
   7

31. What is a prolonged period during which rainfall is below average in an area?
   Drought

32. What is the wearing away of rock or soil by wind and water?
   Erosion

33. What is the study of the harmful effects of substances on organisms?
   Toxicology

34. What is the state of the atmosphere at a particular place at a particular moment?
   Weather

35. True or false. The ozone protects earth from ultra-cyan radiation.
   False
36. This material is composed of minerals that form in long thin fibers and is valued for its resistance to heat. It was banned in the US for causing a disease that results from scarred lung tissue when inhaled. Name this material.
   Asbestos

37. When a body of water increases in temperature, what type of pollution can result?
   Thermal pollution

38. What is the process of removing salt from water?
   Desalination

39. Spell the word tsunami.

40. Spell the word seismograph.

41. Spell the word asthenosphere.

42. Spell the word reservoir.

43. Spell the word understory.

44. Standing at nearly 30,000 feet above sea level in the Mahalangur mountain range in Nepal and Tibet, this geographical land feature is the Earth’s tallest mountain. What is its name?
   Mount Everest

45. What is a landform that forms from deposition of sediment carried by a river as the flow leaves its mouth and enters slower-moving or standing water?
   River delta
Astronomy 15 Questions

1. Spell the word aphelion.

2. Spell the word hypernova.

3. What is the unit used to measure gravitational force?
   Newtons

4. The surface of Mars is covered with a compound that gives it its red hue. What is the name of this compound?
   Iron oxide

5. What color is a Martian sunset?
   Blue

6. In 2006, an unmanned spacecraft was dispatched to survey Pluto and its moons along with other Kuiper Belt objects. It finally reached the edge of our solar system in 2015. What is the name of this spacecraft?
   New Horizons

7. True or false? A light year is the distance that light travels in a century.
   False

8. What is the name of the most prominent crater on the moon?
   Tycho

9. In 1609 Galileo discovered four moons orbiting Jupiter. Three of them are named "Io", "Ganymede" and "Callisto." What did he name the other one?
   Europa

10. The planets in our solar system orbit around a star called the Sun. One complete orbit is considered the planet's year, and one day is how it a planet takes to rotate once on its axis. How many days is Earth's year?
    365 days

11. The sixth planet from the Sun features an extensive ring system, what is the name of this planet?
    Saturn
12. After the sun and the planets, what is the largest body in our solar system? 
   Ganymede

13. True or false? There are more stars in the sky than all of the grains of sand on Earth. 
   true

14. What element is the sun mostly composed of? 
   Hydrogen

15. This famous African American astrophysicist is currently involved with the American Museum of Natural History and the Frederick P. Rose Director of the Hayden Planetarium. In 2014, he hosted the educational documentary series Cosmos. Who is this person? 
   Neil deGrasse Tyson
Computer Science 15 Questions

1. Spell the word bandwidth.

2. Spell the word yottabyte.

3. What type of device is a computer monitor?
   output device

4. On October 29, 1969, the first-ever computer-to-computer link was established. This network would be forever known as the precursor to what we now know as the Internet. What is the name of this network?
   ARPANET

5. What does HTTP stand for?
   Hyper Text Transfer Protocol

6. What is a set of printable or displayable text characters in a specific style and size?
   Font

7. In terms of computing, what does RAM stand for?
   Random Access Memory

8. This free operating system kernel was developed by Linus Torvalds in 1991. Since its initial release, it has grown to have over 18 million lines of source code. What is the name of this operating system?
   Linux

9. The QWERTY layout was devised and created in the early 1870s by a newspaper editor and printer who lived in Milwaukee, Wisconsin. Who is this person?
   Christopher Latham Sholes

10. What is the name of the object-oriented computer programming language commonly used to create interactive effects within web browsers?
    Javascript

11. Shaped like the animal of the same name, this computer hardware component is responsible for moving a cursor across a computer display. What is it called?
    Mouse
12. In terms of computing, what does ROM stand for?
   Read Only Memory

13. Along with whom did Steve Jobs found Apple?
   Steve Wozniak

14. What are On-screen pictures that symbolize various commands?
   Icons

15. Firefox, Opera, Chrome, Safari and Internet Explorer are types of what?
   Internet browsers
Zoology 15 questions

1. True or False. A frog’s skin is a respiratory organ.
   True

2. True or false. Chickens have teeth.
   False

3. These animals have single four-chambered stomachs and collectively produce 21 billion gallons of milk and 25 billion pounds of beef a year in the US. Name this animal.
   Cow

4. This animal is one of many marsupials native to Australia, and is an expert jumper and swimmer that lives in groups called mobs. Name this animal.
   Kangaroo

5. What is term for a group of ferrets?
   Business

6. To what genus do foxes belong?
   Vulpes

7. True or false? Polydactyl cats are also referred to as “Hemingway cats” because the author was so fond of them.
   True

8. What is the common name for the group of aquatic, flightless birds living almost exclusively in the Southern Hemisphere, especially in Antarctica?
   Penguin

9. What is the second element in the Latin binomial name of a species, which follows the generic name and distinguishes the species from others in the same genus?
   Specific epithet

10. What is the taxonomic category of the highest rank that groups together all forms of life having certain fundamental characteristics in common?
    Kingdom

11. Which of the 6 eukaryotic kingdoms do humans belong to?
    Animalia

12. Which of the 6 eukaryotic kingdoms do mushrooms belong to?
    Fungi
13. True or false? A spider is an insect. 
   False


15. Spell the word wattle.
Anatomy and Physiology 45 Questions

1. Spell the word humerus.
2. Spell the word electrolyte.
3. Spell the word maxilla.
4. Spell the word deltoïd.
5. Spell the word clavicle.
6. A typical human rib cage consists of how many ribs?
   24
7. Which chamber of the human heart pumps fully oxygenated blood to the aorta and hence to the body?
   Left ventricle
8. What part of the human brain is the regulating center for swallowing and vomiting?
   Medulla oblongata
9. In what part of the blood does the formation of antibodies take place?
   Plasma
10. What is the term for an abnormal lateral curvature of the spine?
    Scoliosis
    True
12. True or false? The great saphenous veins are the shortest veins in the body.
    False
13. What is the thin glistening sheet of the endothelium that lines the chambers of the heart?
    Endocardium
14. This organ is a hollow sphere. Its wall is composed of three tunics, or coats, and its interior is filled with fluids called humors that help maintain its shape. Name this organ.
    Eye
15. What are neuron processes that convey incoming messages toward the cell body? 
   Dendrites

16. True or False? For diffusion to occur, there must be a selectively permeable membrane. 
   True

17. What is the connective tissue that stores fat? 
   Adipose

18. True or False? Psoriasis is a type of cutaneous lesion. 
   True

19. What is a type of tissue damage and cell death caused by intense heat, electricity, UV radiation or acidic chemicals? 
   Burn

20. This area of the human brain is very involved in the ability to speak is and can be found at the base of the precentral gyrus. Name this area. 
   Broca’s area

21. What does MRI stand for? 
   magnetic resonance imaging

22. What three wavelengths of visible light or colors are each of the varieties of cones in the eye sensitive to? 
   Red, blue, green

23. The outer ear is composed of the auricle and what other structure? 
   Pinna

24. In what part of the ear is a cochlear implant placed to allow a deaf people to hear? 
   Cochlea

25. True or false? Steroid hormones include sex hormones made by the gonads and hormones produces by the adrenal cortex 
   True

26. Asthma affects which system of the body? 
   Respiratory

27. What is the scientific name for the disease Type II diabetes? 
   diabetes mellitus
28. What is the average human body temperature in either Fahrenheit or Celsius?
   98.6 F or 37 C

29. The ABO blood groups are based on the type of antigens a person inherits. Type A contains A antigens and Type B contains B antigens. Which antigens does Type O contain?
   none/neither

30. What protein is hair mostly made of?
   Keratin

31. True or false. It is impossible to live with one kidney.
   false

32. Name the internal organ in which the major part of the digestion of food occurs, being a pear-shaped enlargement of the alimentary canal linking the esophagus to the small intestine in humans and many mammals.
   Stomach

33. What are the pair of organs in the rib cage that consist of elastic sacs with branching passages into which air is drawn so that oxygen and carbon dioxide can be exchanged?
   Lungs

34. What is the opening in the lower part of the human face, surrounded by the lips, through which food is taken in and from which speech and other sounds are emitted?
   mouth

35. What is the part projecting above the mouth on the face of a person or animal, containing the nostrils and used for breathing and smelling?
   Nose

36. What is the lower extremity of the leg below the ankle, on which a human stands or walks? Humans tend to have two of these.
   foot/feet

37. What is the joint between the thigh and the lower leg in humans?
   knee

38. This organ is part of the large intestine and is the final part of the digestive system. Its function is to reabsorb fluids and process waste products from the body and prepare for its elimination. Name this organ.
   Colon
39. True or false? The liver plays a role in only one metabolic process in the body.
   False

40. How many bones does the human body have?
   206

41. True or False? Teeth are bones.
   False

42. Also known as the voice box, this hollow muscular organ forms an air passage to the
   lungs and holds the vocal cords in humans and other mammals. What is this organ?
   Larynx

43. What is the outermost layer of the skin called?
   Epidermis

44. The human hand is connected to which two bones of the arm?
   Radius and ulna

45. What type of technician is trained to collect and process blood samples?
   Phlebotomist
Physical science 45 questions

1. Spell the word exothermic.
2. Spell the word perihelion.
3. Spell the word hypothesis.
4. Spell the word malleable.
5. Spell the word photoelectric.

6. The atomic number of an element provides the quantity of what subatomic particle?
   Protons

7. What type of properties are appearance, texture, and density?
   Physical Properties

8. What is the ability or tendency to float in water or air or some other fluid?
   Buoyancy

9. True or false? Matter is anything that has mass and takes up space.
   True

10. What is the term for the amount of matter in an object?
    Mass

11. What is the scientific tool that is used to measure mass?
    Balance or Scale

12. What is the physical phenomenon produced by the motion of electric charge that results in attractive and repulsive forces between objects?
    Magnetism

13. What is a material system made up of two or more different substances that are not combined chemically?
    Mixture

14. What is a type of mixture in which a substance dissolves in another and spreads evenly throughout out?
    Solution

15. True or false? An object with a set volume and shape is called a liquid.
    False
16. What is the amount of heat energy required to raise the temperature of one gram of water 1 degree Celsius?
   1 calorie

17. Name the four states of matter.
   Solid, liquid, gas, plasma

18. What is the freezing point of water in either degrees Fahrenheit or Celsius?
   32 F or 0 C

19. What is the process in which matter goes from being solid to being a liquid?
   Melting

20. What is the process in which matter goes directly from being solid to being a gas?
   Sublimation

21. What is the process in which matter goes directly from being a gas to being a solid?
   Deposition

22. What is the conversion of a vapor or gas to a liquid?
   Condensation

23. The SI is founded on how many SI base units for mutually independent base quantities?
   7

24. What is the formula for calculating momentum?
   Mass times velocity (or p = m • v)

25. What is the term for the overall force acting on an object?
   Net Force

26. What is the resistance that one surface or object encounters when moving over another?
   Friction

27. What is the apparent force that acts outward on a body moving around a center, arising from the body’s inertia?
   Centrifugal force

28. What is the force that acts on a body moving in a circular path and is directed toward the center around which the body is moving?
   Centripetal Force
29. What is the term for a positively charged ion?
   Cation

30. What is the term for a negatively charged ion?
   Anion

31. What is a chemical bond that involves the sharing of electron pairs between atoms?
   Covalent Bond

32. What is any change in matter that results in the formation of new chemical substances?
   Chemical Change

33. What is the term for a type of chemical bond where a pair of electrons is unequally shared between two atoms?
   Polar covalent bond

34. What is matter that has a specific composition and specific properties?
   Substance

35. What is a type of mixture that is composed of components that are not uniform?
   Heterogeneous Mixture

36. What tool is a chemical detector of hydrogen ions to visually determine acidity?
   pH Indicator

37. What term describes a substance with a pH balance greater than 7?
   Base/basic

38. What term describes a substance with a pH balance less than 7?
   Acid/acidic

39. What is a substance that undergoes change in a chemical reaction?
   Reactant

40. What is a substance formed as a result of a chemical reaction?
   Product

41. What is a chemical reaction that breaks down a compound into simpler products called?
   Decomposition

42. What is a chemical reaction in which two or more simple substances combine to form a new, more complex substance called?
   Synthesis
43. A system in which no matter can enter or leave is called a what?
   Closed System

44. What are the building blocks of matter called?
   Atoms

45. What is the collective term for the metallic group of elements often placed below the periodic table consisting of elements fifty-seven through seventy one?
   Lanthanide Series
Physics 45 questions

1. Spell the word trough.

2. Spell the word equilibrium.

3. Spell the word galvanometer.

4. Spell the word joule.

5. Spell the word tokamak.

6. What is a series of images of a moving object that records its position after equal time intervals?
   Motion diagram

7. True or false? If the mass of the Earth somehow decreased with no change in radius, your weight would stay the same.
   False

8. What does a torque acting on an object tend to produce?
   Rotation

9. The long, heavy tail of a spider monkey enables the monkey to easily vary its what?
   Center of gravity

10. Two people are balanced on a see-saw. If one person leans away from the center of the see-saw, that person's end of the see-saw will do what?
    Fall

11. When a twirling ice skater extends her arms outward, what happens to her rotational inertia?
    It increases

12. True or false? Induction occurs when an object becomes charged without physically contacting another charged object.
    true
13. The units of electric field are measured as
   Newtons per Coulomb

14. True or false? In a good insulator, electrons are usually free to move around.
   False

15. What does electrical potential represent?
   Energy per charge

16. What is an ampere a unit of?
   Electrical charge

17. What is power directly proportionate to?
   Current and voltage

18. True or false? Magnetic domains normally occur in iron.
   True

19. What is the time needed for a wave to make one complete cycle?
   Period

20. What is the distance between successive identical parts of a wave?
   Wavelength

21. Where can you touch a standing wave on a rope without disturbing the wave?
   Node

22. In physics, what is the unit of work known as?
   Joule

23. In physics, what is the unit of power known as?
   Watt

24. A job is done slowly, and an identical job is done quickly. Both jobs require the same amount of work but different amounts of what?
   Power
25. True or false? The force of an apple hitting the ground depends upon the color of the apple.
   False

26. True or false? A collision is considered elastic if the objects stick together.
   False

27. A table tennis ball launcher is fired. Compared to the impulse on the ball, the impulse on the launcher is what?
   The same

28. True or false? "Centrifugal forces" are an apparent reality to observers in a reference frame that is still.
   False

29. A person weighs less at the equator than at the poles because of what?
   Earth's rotation

30. Where is the center of gravity of a softball bat located?
   Handle

31. True or false? Black holes in outer space have enormous gravitational fields.
   True

32. The frequency of a light source doubles as the light approaches you. As the same light source moves away from you at the same speed, by how much does its frequency decrease?
   Half

33. True or false? Plasmas exist at high temperatures.
   True

34. What is a transparent material with a larger refractive index than air?
   Lens

35. True or false? The buoyant force on an object is least when the object is fully submerged.
   False

36. Light bends as it enters a different medium. What is this known as?
   Refraction

37. What type of lens is a magnifying glass?
38. True or false? Conductors have high resistance.
   False

39. What is the earth's primary source of energy?
   The Sun

40. True or false? Iron is attracted by magnets.
   True

41. Who is the youngest physicist to receive a nobel prize?
   Lawrence Bragg

42. True or False? Sunlight exerts solar radiation pressure.
   True

43. What scientist is well known for his theory of relativity?
   Albert Einstein

44. True or false? Infrared light has a wavelength that is too long to be visible for humans?
   True

45. True or false? On average, our bodies constantly resist an atmospheric pressure of about 10 kg per square cm.
   False
Chemistry 45 Questions

1. What is the theoretical temperature that is thought to be the lowest possible temperature?
   Absolute zero

2. Developed by 17th century physicist Robert Boyle, what is the principle that the pressure of a gas varies inversely with its volume at constant temperature?
   Boyle’s Law

3. What is the symbolic representation of a chemical reaction where the reactant entities are given on the left hand side and the product entities on the right hand side?
   Chemical Equation

4. What is a process that leads to the transformation of one set of chemical substances to another?
   Chemical Reaction

5. What is a substance formed by a chemical reaction of two or more elements in fixed amounts relative to each other?
   Compound

6. What is the term used to refer to the amount of a substance in a liquid or in fixed amounts relative to each other?
   Concentration

7. What term describes a substance that is able to destroy solid materials by a chemical reaction?
   Corrosive

8. What is the branch of chemistry concerned with the proportions in which elements are combined in compounds and the quantitative relationships between reactants and products in chemical reactions?
   Stoichiometry

9. What is the thickness of a solid, liquid, or gas measured by its mass per unit of volume?
   Density

10. What is the deviation in the direction of a wave at the edge of an obstacle in its path?
    Diffraction

11. What is a tiny particle of matter that is smaller than an atom and has a negative electrical charge?
    Electron
12. Called aurum by the Latin-speaking Romans, this element is used to color glass, cure rheumatoid arthritis, and is used in 75% of the world’s jewelry. What is this element?
   Gold

13. On the Mohs mineral hardness scale, the hardness of talc is 1, and the hardness of quartz is 7. What is the hardness of diamond?
   10

14. What type of tool is used to measure the volume of a liquid?
   Graduated Cylinder

15. What is a term that describes a substance that easily becomes a gas?
   Volatile

16. What is a compound that exhibits isomerism with one or more other compounds?
   Isomer

17. True or False? The element carbon is a transition metal.
   false

18. What is the atomic number of the element aluminum?
   13

19. What is the symbol for the element mercury?
   Hg (Read as “H” first, then “g”)

20. The element of atomic number 74 is a hard steel-gray metal of the transition series. It has a very high melting point (3410°C) and is used to make electric light filaments. What is this element?
   Tungsten

21. New Zealand physicist Ernest Rutherford was awarded the Nobel Prize in chemistry in 1908 and is now known as the father of nuclear physics. In 1997, what element on the periodic table was named after him?
   Rutherfordium

22. What is the first element on the periodic table?
   Hydrogen

23. What is the chemical formula for water?
   H2O
24. At room temperature, what is the only metal on the periodic table that is in liquid form?
   Mercury

25. True or false? Sodium hydroxide (NaOH) is an acid.
   false

26. What is the symbol for the element Potassium?
   K

27. What is the symbol for the element Iron?
   Fe (Read “F” first then “e”)

28. True or false? Alcohol can dissolve salt.
   false

29. True or false? A neutron has no net electric charge.
   True

30. What are atoms of the same chemical element that have different atomic mass?
    Isotopes

31. What is the fourth most abundant element in the universe in terms of mass?
    Carbon

32. What are substances that are initially involved in a chemical reaction?
    Reactants

33. What substance is considered the “universal solvent”?
    Water

34. As of this year, how many elements on the periodic table?
    118

35. What is the collective term for odorless, colorless, monatomic gases with very low chemical reactivity?
    Noble Gases

36. True or false? A nuclear reaction where the nucleus of an atom splits into smaller parts is known as nuclear fusion.
   false
37. True or false? A pure element can take on many forms.
   True

38. True or False? Water is the only substance on Earth to freeze from top to bottom.
   True

39. What is the solid form of carbon dioxide called?
   Dry Ice

40. Although oxygen gas is colorless, the liquid and solid forms of oxygen are not. What color are these forms of oxygen?
   Blue

41. Spell the word alkali.

42. Spell the word viscosity.

43. Spell the word allomorph.

44. Spell the word microcentrifuge.

45. Spell the word faraday.