Tossup

1) Physics Multiple Choice: Which of the following scientists came up with the theory of relativity?

w) Einstein
x) Newton
y) Leibnitz
z) Tesla

Answer: **w) Einstein**

Bonus

1) Physics Short Answer: Einstein's theory of relativity includes what famous formula which equates the energy of a particle with its rest mass?

Answer: $E=mc^2$

Tossup

2) Chemistry Multiple Choice: Which of the following elements has the fewest number of protons and is the first element on the periodic table?

w) hydrogen
x) helium
y) Lithium
z) Argon

Answer: **w) hydrogen**

Bonus

2) Chemistry Short Answer: Which group of elements are considered stable because they contain a full outer shell?

Answer: Nobel Gases

Tossup

3) Biology Short Answer: What is the basic unit of life known as?

Answer: Cells

Bonus

3) Biology Short Answer: In what organelle in prokaryotic cells does protein synthesis take place?

Answer: Ribosomes

Tossup

4) Energy Multiple Choice: Which of the following types of energy does an object contain while in motion

w) potential
x) **kinetic**
y) gravitational
z) elastic

Answer: x) **kinetic**

Bonus

4) Energy Short Answer: Most semiconductors are made from which metalloid?
Answer: Silicon

Tossup

5) Earth and Space Short Answer: What is the most abundant gas in the universe?
Answer: Hydrogen

Bonus

5) Earth and Space Short Answer: Stars that die may produce brilliant explosions. What are these explosions known as?
Answer: Supernova

Tossup

6) Math Short Answer: What is the additive inverse of -6?
Answer: 6

Bonus

6) Math Short Answer: How many prime numbers are less than 10?
Answer: 4

Tossup

7) Physics Short Answer: What is the term for a change in velocity with respect to time?
Answer: Acceleration

Bonus

7) Physics Short Answer: To two significant figures, what is the acceleration due to gravity on Earth in m/s^2?
Answer: 9.8

Tossup

8) Chemistry Short Answer: What is the term for a transition from gas to liquid?
Answer: Condensation

Bonus

8) Chemistry Short Answer: Carbon dioxide transitions directly into gas from solid at STP. What is the term for this phase change?
Answer: Sublimation

Tossup

9) Biology Multiple Choice: Which of the following is the largest organ in the human body

w) liver
x) skin
y) femur
z) brain

Answer: **x) skin**

Bonus

9) Biology Short Answer: What organ system is primarily responsible for defending the body from infections?
Answer: Immune system

Tossup

10) Energy Short Answer: What astronomic body does most of the energy that reaches Earth come from?
Answer: The SUN

Bonus

10) Energy Short Answer: What kind of light rays from the sun are known to cause sunburn?
Answer: Ultraviolet

Tossup

11) Earth and Space Multiple Choice: What planet is known as the Earth's twin?

w) venus
x) mars
y) mercury
z) pluto

Answer: w) Venus

Bonus

11) Earth and Space Short Answer: What are the names of Mars's two moons?
Answer: Phoebos and Deimos

Tossup

12) Math Multiple Choice: Which of the following fractions is the smallest

w) 1/6
x) 1/7
y) 1/8
z) 1/9

Answer: z)1/9

Bonus

12) Math Short Answer: What is the value of 5!(read as 5 factorial)?

Answer: 120

Tossup

13) Physics Short Answer: How much momentum does a 7kg object have when moving at 8 m/s?
Answer: 56

Bonus

13) Physics Short Answer: How much kinetic energy does a 7kg object have moving at 8 m/s?

Answer: 224 J

Tossup

14) Chemistry Short Answer: what is the value of absolute zero on the Kelvin scale?
Answer: 0

Bonus

14) Chemistry Short Answer: what temperature scale is commonly used in the United States to measure air temperature as well as body temperature?
Answer: Fahrenheit

Tossup

15) Biology Short Answer: what is the genetic material inside the nucleus of eukaryotic cells made from?
Answer: DNA or Deoxyribonucleic Acid

Bonus

15) Biology Short Answer: RNA is a nucleic acid like DNA except that RNA contains what base not found in DNA?
Answer: Uracil

Tossup

16) Energy Short Answer: What type of alternative energy equipment uses the power of the sun to generate electricity?

Answer: Solar panels

Bonus

16) Energy Short Answer: most solar panels are made from what element, which can be doped to make P type and N type?
Answer: Silicon

Tossup

17) Earth and Space Multiple choice: what types of rock form from lava cooling?
w)igneous
X) sedimentary
Y) metamorphic
Z) magma
Answer: w) igneous

Bonus

17) Earth and Space Short Answer: which scientist proposed the theory of continental drift, which was ignored until long after he died?
Answer: Alfred Wegener

Tossup

18) Math Short Answer: The Knicks won game 5 of the Eastern Conference finals by a score of 111 to 94. By how many points did they win?
Answer: 17

Bonus

18) Math Short Answer: What is the slope of a line passing through the points (5,6) and (3,12)?
Answer: -3

Tossup

19) Physics Short Answer: what is the equivalent resistance of three resistors of 3, 7 and 25 ohms connected in series?

Answer: 35

Bonus

19) Physics Short Answer: How much power is dissipated by a circuit with a voltage of 12 volts and total current 11 amperes?
Answer: 132

Tossup

20) Chemistry Short Answer: what subatomic particle is responsible for the chemical properties of an element?
Answer: Electrons

Bonus

20) Chemistry Short Answer: some atoms have the same number of protons but different number of neutrons. What are such atoms called?
Answer: isotopes

Tossup

21) Biology Multiple Choice: which of the following scientists came up with the law of evolution by natural selection
w) James Watson
X) Gregor Mendel
y) Charles Darwin
Z) Francis Crick
Answer: y) Charles Darwin

Bonus

21) Biology Short Answer: what is the term for a random often harmful change in the genetic material of an organism?
Answer: mutation

Tossup

22) Energy Multiple Choice: in which of the following types of alternative energy would you expect electricity to be harvested from water stored behind a dam?
w) wind
X) solar
Y) hydroelectric
Z) nuclear

Answer: y) hydroelectric

Bonus

22) Energy Short Answer: What is the term for the tools that help step down the voltage between transmission lines and homes?
Answer: Transformers

Tossup

23) Earth and Space Multiple Choice: which of the following is an instrument used to measure air pressure?
w) anemometer
X) psychrometer
y) thermometer
Z) barometer
Answer: Z) barometer

Bonus

23) Earth and Space Short Answer: on what chart would you find a plot of a star's temperature versus luminosity?
Answer: HR diagram