

NATIONAL DOUBLE ELIMINATION - 10

TOSS-UP

1. ERSC; Multiple Choice: Low, layered gray clouds that produce light precipitation are called  
(W) cumulus.  
(X) stratus.  
(Y) cirrus.  
(Z) nimbus.

ANSWER: X- STRATUS

BONUS

1. ERSC; Multiple Choice: The tropical rain forest habitat covers only about seven percent of the Earth's surface but contains what percent of Earth's species?  
(W) 50 to 80  
(X) 25 to 40  
(Y) 10 to 25  
(Z) 7 to 14

ANSWER: W- 50 TO 80

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TOSS-UP

2. BIOL; Multiple Choice: Several years ago in a wide area of the Pacific Ocean, extensive damage was done to coral reefs by the sudden appearance of  
(W) stinging brittle stars.  
(X) crown-of-thorns starfish.  
(Y) oval heart urchins.  
(Z) extra large tunicates.

ANSWER: X- CROWN-OF-THORNS STARFISH

BONUS

2. BIOL; Multiple Choice: Potential anti-cancer and anti-viral drugs are produced from chemicals extracted from  
(W) starfish and sea cucumbers.  
(X) sea cucumbers and sea urchins.  
(Y) sea urchins and feather stars.  
(Z) feather stars and starfish.

ANSWER: W- STARFISH AND SEA CUCUMBERS

**TOSS-UP**

3. COMP; Multiple Choice: Which computer pioneer was also a Rear Admiral of the U.S. Navy?

(W) Steve Jobs  
(X) John Backus  
(Y) John von Neumann  
(Z) Grace Hopper

ANSWER: Z– GRACE HOPPER

**BONUS**

3. COMP; Short Answer: What standard procedure in Pascal opens a file for writing?

ANSWER: REWRITE

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**TOSS-UP**

4. PHYS; Multiple Choice: During simple harmonic motion, the magnitude of the acceleration

(W) is constant.  
(X) always increases.  
(Y) remains the same.  
(Z) increases then decreases.

ANSWER: Z– INCREASES THEN DECREASES

**BONUS**

4. PHYS; Multiple Choice: To decrease the centripetal force on an object travelling in a circular path, you can

(W) increase the speed of the object.  
(X) increase the mass of the object.  
(Y) increase the radius of the circle.  
(Z) decrease the radius of the circle.

ANSWER: Y– INCREASE THE RADIUS OF THE CIRCLE

**TOSS-UP**

5. GENR; Multiple Choice: One metal dissolved in another is called

(W) an alloy.  
(X) an assay.  
(Y) a mineral.  
(Z) a ceramic.

ANSWER: W- AN ALLOY

**BONUS**

5. GENR; Multiple Choice: Which of the following trees is known to live longer than the Giant Sequoia?

(W) Grey Oak  
(X) Japanese Chestnut  
(Y) Bristlecone pine  
(Z) Ponderosa pine

ANSWER: Y- BRISTLECONE PINE

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**TOSS-UP**

6. CHEM; Multiple Choice: Which of the following terms refers to the number molecules or ions attached to a central metallic atom?

(W) coordination number  
(X) connection number  
(Y) bonding number  
(Z) none of these

ANSWER: W- COORDINATION NUMBER

**BONUS**

6. CHEM; Short Answer: How many milligrams are in one metric carat?

ANSWER: 200 MILLIGRAMS

### TOSS-UP

7. ASTR; Multiple Choice: If you were on the equator, you would have to travel about 1000 miles per hour to keep the Sun continuously overhead. About how fast would you have to travel on the Moon to keep the Sun overhead?

(W) 1 mile per hour  
(X) 10 miles per hour  
(Y) 100 miles per hour  
(Z) 1000 miles per hour

ANSWER: X- 10 MILES PER HOUR

### BONUS

7. ASTR; Multiple Choice: Pluto's distance from the Sun varies a lot. At its closest approach, it's about 30 astronomical units (AU) from the Sun. About how far from the Sun is Pluto at its furthest distance?

(W) 35 AU  
(X) 40 AU  
(Y) 50 AU  
(Z) 70 AU

ANSWER: Y- 50 AU

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### TOSS-UP

8. BIOL; Multiple Choice: If an arthropod has three distinct body parts, it is

(W) a crustacean.  
(X) an insect.  
(Y) a chelicerate.  
(Z) a millipede.

ANSWER: X- AN INSECT

### BONUS

8. BIOL; Multiple Choice: A uniramian with one pair of legs on each of its many segments and poison claws is a

(W) centipede.  
(X) millipede.  
(Y) winged insect.  
(Z) wingless insect.

ANSWER: W- CENTIPEDE

**TOSS-UP**

9. MATH; Short Answer: A job foreman needs to choose TWO workers out of TEN employees. How many different combinations of workers are possible?

ANSWER: 45

**BONUS**

9. MATH; Short Answer: A cube is to be painted. If no two adjacent faces are to be painted the same color, what is the smallest number of colors required?

ANSWER: 3

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**TOSS-UP**

10. PHYS; Multiple Choice: The direction of an electric field is defined as the direction of the force on a

- (W) positive test charge.  
(X) negative test charge.  
(Y) negatively charged sphere.  
(Z) neutral hollow sphere.

ANSWER: W- POSITIVE TEST CHARGE

**BONUS**

10. PHYS; Multiple Choice: As the working voltage of a capacitor increases, the capacitance of the capacitor usually

- (W) decreases continuously.  
(X) increases continuously.  
(Y) remains the same.  
(Z) decreases, then increases.

ANSWER: Y- REMAINS THE SAME

TOSS-UP

11. CHEM; Multiple Choice: Which of the following contain sp<sup>2</sup> (read s-p-2) hybridized carbon atoms?

(W) alkanes  
(X) alkenes (pron. al-keens)  
(Y) alkynes (pron. al-kines)  
(Z) cycloalkanes

ANSWER: X- ALKENES

BONUS

11. CHEM; Multiple Choice: Which of the following is NOT appropriate for a description of benzene?

(W) characteristic reactivity of an alkene  
(X) volatile liquid  
(Y) aromatic hydrocarbon  
(Z) resonance hybridization

ANSWER: W- CHARACTERISTIC REACTIVITY OF AN ALKENE

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TOSS-UP

12. COMP; Short Answer: You are programming in BASIC on your PC. What statement do you use in your program if you want the program to stop so that you can assign a value to a variable.

ANSWER: INPUT (also accept GET or INKEY)

BONUS

12. COMP; Multiple Choice: During the nineteenth century, a mathematician designed a forerunner of the modern stored-program computer which he named an “analytical engine.” Who was this mathematician?

(W) Anthony Taylor  
(X) Lord Byron  
(Y) Charles Babbage  
(Z) Joseph Jacquard

ANSWER: Y- CHARLES BABBAGE

**TOSS-UP**

13. BIOL; Multiple Choice: In a crayfish, the abdomen contains the  
(W) sensory hairs.  
(X) mandibles.  
(Y) swimmerets.  
(Z) large claws.

ANSWER: Y- SWIMMERETS

**BONUS**

13. BIOL; Multiple Choice: As the larvae of echinoderms become adults, their form changes from  
(W) radial symmetry to bilateral symmetry.  
(X) bilateral symmetry to radial symmetry.  
(Y) non-symmetry to bilateral symmetry.  
(Z) non-symmetry to radial symmetry.

ANSWER: X- BILATERAL SYMMETRY TO RADIAL SYMMETRY

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**TOSS-UP**

14. ASTR; Short Answer: Which planet has the most volcanoes?

ANSWER: VENUS

**BONUS**

14. ASTR; Multiple Choice: When the Pioneer 10 space mission came to an end in 1997, about how far was the Pioneer 10 space probe from Earth?  
(W) 62 million miles  
(X) 620 million miles  
(Y) 6.2 billion miles  
(Z) 62 billion miles

ANSWER: Y- 6.2 BILLION MILES

### TOSS-UP

15. PHYS; Multiple Choice: Water flows through a horizontal pipe at a constant volumetric rate. At a location where the cross sectional area decreases, the velocity of the fluid

(W) increases.  
(X) decreases.  
(Y) stays the same.  
(Z) stops.

ANSWER: W- INCREASES

### BONUS

15. PHYS; Multiple Choice: What is the maximum possible speed of impact, in meters per second, upon the surface of the earth for a faraway object initially at rest that falls to earth by virtue of only the earth's gravity?

(W) 1.1  
(X) 5.5  
(Y) 11.2  
(Z) 18.7

ANSWER: Y-- 11.2

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### TOSS-UP

16. CHEM; Multiple Choice: Which of the following is NOT a means of preparing carbon dioxide?

(W) burning coke in the absence of air  
(X) combustion of methane  
(Y) heating certain normal carbonates  
(Z) reaction of acids and carbonates

ANSWER: W- BURNING COKE IN THE ABSENCE OF AIR

### BONUS

16. CHEM; Multiple Choice: Which of the following are not lipids?

(W) fats and oils  
(X) starches  
(Y) steroids  
(Z) waxes

ANSWER: X- STARCHES

TOSS-UP

17. ERSC; Multiple Choice: To keep track of pressure, weather maps are drawn with lines connecting points of equal pressure. These lines are called

(W) isotherms.  
(X) equibars.  
(Y) fronts.  
(Z) isobars.

ANSWER: Z- ISOBARS

BONUS

17. ERSC; Multiple Choice: About how many years ago did water vapor begin to accumulate in the Earth's early atmosphere?

(W) 4 million  
(X) 4 billion  
(Y) 40 million  
(Z) 40 billion

ANSWER: X- 4 BILLION

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TOSS-UP

18. GENR; Multiple Choice: Which of the following is not a major pollutant from automobiles?

(W) carbon monoxide  
(X) unburned hydrocarbons  
(Y) nitrous oxide  
(Z) sulfur dioxide

ANSWER: Z- SULFUR DIOXIDE

BONUS

18. GENR; Multiple Choice: The major form of pollution from a nuclear reactor is

(W) radioactivity.  
(X) particulate formation.  
(Y) thermal pollution.  
(Z) noise pollution.

ANSWER: Y- THERMAL POLLUTION

### TOSS-UP

19. PHYS; Multiple Choice: In one nano-second, gamma rays will travel about what distance in air?

(W) 1 inch  
(X) 1 foot  
(Y) 1 yard  
(Z) 1 rod

ANSWER: X- 1 FOOT

### BONUS

19. PHYS; Multiple Choice: A ball is thrown vertically upward and returns to the ground 6 seconds later. The height to which the ball rises is closest to

(W) 29 meters.  
(X) 44 meters.  
(Y) 58 meters.  
(Z) 78 meters.

ANSWER: X- 44 METERS

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### TOSS-UP

20. CHEM; Multiple Choice: Which of the following is a metallic salt of a fatty acid?

(W) soap  
(X) plastic  
(Y) rubber  
(Z) petroleum

ANSWER: W- SOAP

### BONUS

20. CHEM; Multiple Choice: Which of the following describes the orientation of bonds in an sp<sub>3</sub> (read s-p-3) hybridized atom?

(W) trigonal  
(X) linear  
(Y) tetrahedral  
(Z) planar

ANSWER: Y- TETRAHEDRAL

**TOSS-UP**

21. BIOL; Short Answer: The genioglossus, the hyoglossus, and the styloglossus are all muscles that control what body part?

**ANSWER: THE TONGUE**

**BONUS**

21. BIOL; Multiple Choice: Land snails and slugs breathe by means of specially adapted

- (W) gills.
- (X) lungs.
- (Y) mantle cavities.
- (Z) hearts.

**ANSWER: Y– MANTLE CAVITIES**

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**TOSS-UP**

22. PHYS; Short Answer: Most of what we call background radiation comes from two sources. One is the naturally radioactive elements around us. What is the other source?

**ANSWER: THE COSMOS (ACCEPT OUTER SPACE OR COSMIC RADIATION)**

**BONUS**

22. PHYS; Multiple Choice: If materials become superconducting when cooled, any magnetic field will be expelled. This is called

- (W) diamagnetism.
- (X) repulsion.
- (Y) the Landow Effect.
- (Z) the Meissner effect.

**ANSWER: Z– THE MEISSNER EFFECT**

TOSS-UP

23. MATH; Short Answer: How many meters are there in a gigameter?

ANSWER: ONE BILLION OR 10 TO THE 9TH POWER

BONUS

23. MATH; Multiple Choice: Find the sum of the first 20 terms: 4, 7, 10, 13, ...

- (W) 1300
- (X) 910
- (Y) 780
- (Z) 650

ANSWER: Z – 650

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TOSS-UP

24. BIOL; Short Answer: The common name for Pellagra-preventive factor is

ANSWER: NIACIN (OR NIACIN AMIDE OR NICOTINIC ACID)

BONUS

24. BIOL; Multiple Choice: The first arthropods appeared in the sea about

- (W) 25,000 years ago.
- (X) 100 million years ago.
- (Y) 600 million years ago.
- (Z) 1 billion years ago.

ANSWER: Y- 600 MILLION YEARS AGO

**TOSS-UP**

25. CHEM; Short Answer: How many hydrogen atoms are there in the organic compound 1,1,2,2-tetrabromoethane (read: tetra - bromo - ethane)?

ANSWER: 2

**BONUS**

25. CHEM; Multiple Choice: Which of the following four elements has the largest atomic radius?

- (W) strontium
- (X) francium
- (Y) calcium
- (Z) bromine

ANSWER: X- FRANCIUM