

## NATIONAL DOUBLE ELIMINATION - 6

### TOSS-UP

1. GENR; Multiple Choice: Which country gets most of its heat and electricity from geothermal energy?

(W) Iceland  
(X) Italy  
(Y) Japan  
(Z) Philippines

ANSWER: W- ICELAND

### BONUS

1. GENR; Short Answer: Linseed oil comes from what plant?

ANSWER: FLAX

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### TOSS-UP

2. PHYS; Multiple Choice: The greatest induced EMF will occur in a straight wire moving at constant speed through a uniform magnetic field when the angle between the direction of the wire's motion and the direction of the magnetic field is

(W) 0 degrees.  
(X) 30 degrees.  
(Y) 60 degrees.  
(Z) 90 degrees.

ANSWER: Z- 90 DEGREES

### BONUS

2. PHYS; Multiple Choice: The Michelson interferometer was designed to study the nature of

(W) water waves.  
(X) sound waves.  
(Y) sunlight.  
(Z) an "ether".

ANSWER: Z- AN "ETHER"

**TOSS-UP**

3. BIOL; Multiple Choice: The toothless mammals are classified in the order  
(W) Edentata.  
(X) Chiroptera.  
(Y) Rodentia.  
(Z) Sirenia.

**ANSWER: W– EDENTATA**

**BONUS**

3. BIOL; Multiple Choice: Mammals had split into three groups by the end of the  
(W) Triassic Period.  
(X) Cretaceous Period.  
(Y) Permian Period.  
(Z) Jurassic Period.

**ANSWER: X– CRETACEOUS PERIOD**

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**TOSS-UP**

4. ASTR; Multiple Choice: The presence of maria on the moon indicates that  
(W) a large amount of volcanic activity has occurred since the moon formed.  
(X) many meteorites have hit the moon since it first cooled.  
(Y) few meteorites have hit the moon.  
(Z) the moon has a dense atmosphere.

**ANSWER: W– A LARGE AMOUNT OF VOLCANIC ACTIVITY HAS OCCURRED SINCE THE MOON WAS FORMED**

**BONUS**

4. ASTR; Multiple Choice: The asteroid belt did not form a planet because  
(W) Jupiter's gravity kept it from forming.  
(X) some of the particles were too large.  
(Y) it was too rocky.  
(Z) some of the particles moved too slowly.

**ANSWER: W– JUPITER'S GRAVITY KEPT IT FROM FORMING**

### TOSS-UP

5. CHEM; Multiple Choice: In what kind of reaction does an uncombined element displace an element that is part of a compound?

(W) direct combination.  
(X) double replacement.  
(Y) single replacement.  
(Z) decomposition.

ANSWER: Y- SINGLE REPLACEMENT

### BONUS

5. CHEM; Multiple Choice: In what kind of reaction do two or more reactants come together to form a single product?

(W) direct combination  
(X) double replacement  
(Y) triple replacement  
(Z) decomposition

ANSWER: W- DIRECT COMBINATION

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### TOSS-UP

6. COMP; Multiple Choice: A programmer must follow the rules for coding a particular programming language. These rules are called

(W) pseudocode.  
(X) iteration.  
(Y) syntax.  
(Z) documentation.

ANSWER: Y- SYNTAX

### BONUS

6. COMP; Multiple Choice: Object-oriented programming involves all of the following except

(W) polymorphism.  
(X) application generator.  
(Y) encapsulation.  
(Z) inheritance.

ANSWER: X- APPLICATION GENERATOR

### TOSS-UP

7. BIOL; Multiple Choice: The first Homo sapiens appeared about  
(W) 30,000 years ago.  
(X) 500,000 years ago.  
(Y) 1,900 million years ago.  
(Z) 4 million years ago.

ANSWER: X- 500,000 YEARS AGO

### BONUS

7. BIOL; Multiple Choice: Each of the following is a prosimian except the  
(W) lemur.  
(X) loris.  
(Y) baboon.  
(Z) aye-aye.

ANSWER: Y- BABOON

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### TOSS-UP

8. PHYS; Multiple Choice: An x-ray photon collides with a free electron, and the photon is scattered. During this collision there is conservation of  
(W) momentum but not energy.  
(X) neither momentum nor energy.  
(Y) energy but not momentum.  
(Z) both momentum and energy.

ANSWER: Z- BOTH MOMENTUM AND ENERGY

### BONUS

8. PHYS; Multiple Choice: Light is normally incident on a thin soap film and is reflected. If the wavelength of this light is "L" and the index of refraction of the soap film is "N," complete destructive interference will occur for a film thickness of  
(W)  $L / 8N$  (read: L divided by 8N).  
(X)  $L / 4N$  (read: L divided by 4N).  
(Y)  $L / 2N$  (read: L divided by 2N).  
(Z)  $3L / 4N$  (read: 3L divided by 4N).

ANSWER: Y--  $L / 2N$

**TOSS-UP**

9. ERSC; Multiple Choice: Magma that squeezes into horizontal cracks and hardens forms a  
(W) dike.  
(X) batholith.  
(Y) sill.  
(Z) volcanic neck.

ANSWER: Y- SILL

**BONUS**

9. ERSC; Multiple Choice: Magma that squeezes into vertical cracks and hardens forms a  
(W) dike.  
(X) batholith.  
(Y) rill.  
(Z) volcanic neck.

ANSWER: W- DIKE

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**TOSS-UP**

10. CHEM; Multiple Choice: Assuming that zinc is a more active metal than lead, what will happen if a lead metal strip is placed into a solution of zinc nitrate?  
(W) More lead metal will be formed.  
(X) Lead will replace zinc in the solution.  
(Y) Zinc and lead will combine to form a double metal compound.  
(Z) Nothing will happen.

ANSWER: Z- NOTHING WILL HAPPEN

**BONUS**

10. CHEM; Multiple Choice: The number of moles of a reactant or product is determined by dividing its mass by  
(W) Avogadro's number.  
(X) the molar mass of the substance.  
(Y) the volume of the substance.  
(Z) the molar ratio of reactants to products.

ANSWER: X- THE MOLAR MASS OF THE SUBSTANCE

TOSS-UP

11. BIOL; Multiple Choice: The first fossil placed in the genus Homo was  
(W) Homo habilis.  
(X) Homo neanderthalensis.  
(Y) Homo erectus.  
(Z) Homo sapiens.

ANSWER: W- **HOMO HABILIS**

BONUS

11. BIOL; Multiple Choice: The anthropoid branch that contains the Old World monkeys does not include  
(W) humans.  
(X) lemurs.  
(Y) great apes.  
(Z) baboons.

ANSWER: X- LEMURS

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TOSS-UP

12. CHEM; Multiple Choice: In a balanced chemical equation, how do you determine the limiting reactant?  
(W) Complete a mass-mass problem for each reactant.  
(X) Compare coefficients and choose the smallest.  
(Y) Choose the reactant present in the smallest amount.  
(Z) Look up the reaction in a reference book.

ANSWER: W- COMPLETE A MASS-MASS PROBLEM FOR EACH REACTANT

BONUS

12. CHEM; Multiple Choice: In a balanced equation describing a chemical reaction involving solid substances, the coefficients refer to the relative number of  
(W) grams.  
(X) liters.  
(Y) cubic centimeters.  
(Z) particles.

ANSWER: Z- PARTICLES

**TOSS-UP**

13. MATH; Multiple Choice: Which of the following shapes of tiles cannot be used to completely cover a flat area?

(W) an obtuse triangle  
(X) a trapezoid  
(Y) a regular pentagon  
(Z) a regular hexagon

**ANSWER: Y- A REGULAR PENTAGON**

**BONUS**

13. MATH; Short Answer: Given five distinct points on a line, how many distinct segments can be named using these five points?

**ANSWER: 8**

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**TOSS-UP**

14. GENR; Multiple Choice: If a metal can be drawn into wires relatively easily, it is called

(W) malleable.  
(X) ductile.  
(Y) extractive.  
(Z) tactile.

**ANSWER: X- DUCTILE**

**BONUS**

14. GENR; Multiple Choice: Which of the following is believed to not affect long-term global warming?

(W) volcanism  
(X) biomass combustion  
(Y) carbon dioxide  
(Z) solar variability

**ANSWER: X- BIOMASS COMBUSTION**

TOSS-UP

15. BIOL; Multiple Choice: The group of great apes does not include

- (W) orangutans.
- (X) gibbons.
- (Y) baboons.
- (Z) chimpanzees.

ANSWER: Y- BABOONS

BONUS

15. BIOL; Multiple Choice: Adaptations that are not specific to hominids are

- (W) changes in hip bones.
- (X) bipedal locomotion.
- (Y) opposable thumbs.
- (Z) arms that rotate in circles.

ANSWER: Z- ARMS THAT ROTATE IN CIRCLES

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TOSS-UP

16. ASTR; Multiple Choice: Neptune was the last planet to be visited by which space probe?

- (W) Voyager I
- (X) Galileo
- (Y) Voyager II
- (Z) Titan

ANSWER: Y- VOYAGER II

BONUS

16. ASTR; Multiple Choice: Pluto is different from the other outer planets because

- (W) it may have been a moon of Neptune that escaped.
- (X) it formed near Earth and moved outward.
- (Y) it is too close to the inner planets.
- (Z) none of the above

ANSWER: W- IT MAY HAVE BEEN A MOON OF NEPTUNE THAT ESCAPED

### TOSS-UP

17. PHYS; Multiple Choice: As the temperature of the air increases from 0 degrees Celsius to 20 degrees Celsius, the wavelength of a sound made by a tuning fork of fixed frequency does which of the following?

(W) increases  
(X) decreases  
(Y) remains the same  
(Z) increases up to a maximum, then remains constant

ANSWER: W- INCREASES

### BONUS

17. PHYS; Multiple Choice: A 10,000-watt motor operates an elevator weighing 5000 newtons. Assuming no frictional losses, how high is the elevator raised in 10 seconds?

(W) 2 meters  
(X) 20 meters  
(Y) 50 meters  
(Z) 100 meters

ANSWER: X- 20 METERS

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### TOSS-UP

18. CHEM; Multiple Choice: In a balanced chemical equation, the molar ratio of the two reactants is determined from the

(W) coefficient for each reactant.  
(X) number of grams of each reactant.  
(Y) number of atoms in each reactant.  
(Z) liters of each reactant.

ANSWER: W- COEFFICIENT FOR EACH REACTANT

### BONUS

18. CHEM; Multiple Choice: The percent yield of products from a chemical reaction is the ratio of

(W) expected yield to actual yield.  
(X) actual yield to expected yield.  
(Y) actual yield to minimum yield.  
(Z) expected yield to minimum yield.

ANSWER: X- ACTUAL YIELD TO EXPECTED YIELD

**TOSS-UP**

19. ERSC; Multiple Choice: Iceland is located at a

- (W) convergent boundary.
- (X) hot spot.
- (Y) divergent boundary.
- (Z) transform fault boundary.

**ANSWER: Y– DIVERGENT BOUNDARY**

**BONUS**

19. ERSC; Multiple Choice: Approximately how many of Earth's volcanoes are currently active?

- (W) 2100
- (X) 1500
- (Y) 1000
- (Z) 600

**ANSWER: Z– 600**

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**TOSS-UP**

20. COMP; Multiple Choice: Users on a LAN utilize a computer that stores programs and data files called a

- (W) client server.
- (X) file server.
- (Y) peer.
- (Z) bulletin board.

**ANSWER: X– FILE SERVER**

**BONUS**

20. COMP; Multiple Choice: A 4GL (read four-g-l) language used to retrieve data from a database management system is called

- (W) an application generator.
- (X) a report generator.
- (Y) a program generator.
- (Z) a query language.

**ANSWER: Z– A QUERY LANGUAGE**

**TOSS-UP**

21. BIOL; Short Answer: The common name for the antineuritic vitamin is

**ANSWER: VITAMIN B-1 OR THIAMINE**

**BONUS**

21. BIOL; Multiple Choice: Cro-Magnons differed from Neanderthals because they had each of the following except

- (W) a complex culture.
- (X) great art.
- (Y) heavy-set bodies.
- (Z) a variety of tools and spear points.

**ANSWER: Y- HEAVY-SET BODIES**

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**TOSS-UP**

22. MATH; Short Answer: Name the two co-discoverers of the fundamental theorem of calculus.

**ANSWER: (SIR ISAAC) NEWTON AND (BARON VON) LEIBNITZ**

**BONUS**

22. MATH; Short Answer: Twelve square tiles, one inch on a side, are arranged in a rectangle, without overlapping. What is the number of inches in the sum of all possible distinct perimeters?

**ANSWER: 56**

**TOSS-UP**

23. PHYS; Multiple Choice: A 10 volt battery connected to a capacitor delivers a charge of 0.5 coulombs. The capacitance of the capacitor is

(W) 0.02 farads.  
(X) 0.05 farads.  
(Y) 2 farads.  
(Z) 5 farads.

**ANSWER: X- 0.05 FARADS**

**BONUS**

23. PHYS; Multiple Choice: A car is moving along a straight horizontal road at a speed of 20 meters per second. The brakes are applied and a constant force of 5000 Newtons decelerates the car to a stop in 10 seconds. The mass of the car is

(W) 1250 kilograms.  
(X) 2500 kilograms.  
(Y) 5000 kilograms.  
(Z) 10,000 kilograms.

**ANSWER: X- 2500 KILOGRAMS**

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**TOSS-UP**

24. CHEM; Short Answer: The elements in Group 8A of the periodic table are called the

**ANSWER: NOBLE GASES**

**BONUS**

24. CHEM; Multiple Choice: Who classified elements into triads?

(W) Mendeleev  
(X) Moseley  
(Y) Newlands  
(Z) Dobereine

**ANSWER: Z- DOBEREINER**

TOSS-UP

25. PHYS; Short Answer: Suppose the power of a prescription lens is 4 diopters. What is the focal length of the lens in centimeters?

ANSWER: 25 (CENTIMETERS)

BONUS

25. PHYS; Multiple Choice: The mass spectrograph directly yields a value for which one of the following?

- (W) mass of a photon
- (X) mass of a neutron
- (Y) masses of isotopes of elements
- (Z) mass to charge ratio of ions

ANSWER: Z-- MASS TO CHARGE RATIO OF IONS