NATIONAL DOUBLE ELIMINATION - 1

TOSS-UP

1. GENR; Multiple Choice: A barn is a unit of

(W) length.
(X) area.
(Y) volume.
(Z) weight.

ANSWER: X– AREA

BONUS

1. GENR; Short Answer: What object does a selenologist study?

ANSWER: THE MOON

TOSS-UP

2. PHYS; Multiple Choice: The primary pigments are

(W) blue, red, and green.
(X) yellow and magenta.
(Y) magenta and cyan.
(Z) yellow, magenta, and cyan.

ANSWER: Z– YELLOW, MAGENTA, AND CYAN

BONUS

2. PHYS; Multiple Choice: A spring with a force constant of 100 Newtons per meter is loaded with a mass of 1.0 kilogram. The period of vibration of this system is approximately

(W) .03 seconds.
(X) .31 seconds.
(Y) .63 seconds.
(Z) 1.2 seconds.

ANSWER: Y– .63 SECONDS

TOSS-UP

3. BIOL; Multiple Choice: In the bones of a newborn baby, osteocytes secrete mineral deposits that replace

(W) tendons.
(X) cartilage.
(Y) ligaments.
(Z) collagen.

ANSWER: X– CARTILAGE

BONUS

3. BIOL; Multiple Choice: Cartilage is not replaced by bone in an adult's

(W) ribs.
(X) jaw.
(Y) nose.
(Z) inner ear.

ANSWER: Y– NOSE

TOSS-UP

4. ASTR; Multiple Choice: New evidence suggests that the remnant of a star that became a Supernova is usually

(W) a White Dwarf.
(X) a neutron star.
(Y) a Black Hole.
(Z) a Quasar.

ANSWER: X– A BLACK HOLE

BONUS

4. ASTR; Short Answer: The process which prevents the complete gravitational collapse of a White Dwarf star is known as

ANSWER: ELECTRON DEGENERACY

TOSS-UP

5. CHEM; Multiple Choice: How does hydrogen bonding affect the boiling point of water?

(W) It significantly lowers it.
(X) It slightly lowers it.
(Y) It increases it.
(Z) It has no effect.

ANSWER: Y– IT INCREASES IT

BONUS

5. CHEM; Multiple Choice: The strength of induced dipole attractions

(W) increases with the size of molecules.
(X) is greater than other intermolecular forces.
(Y) is greater than intramolecular forces.
(Z) is the same for all types of substances.

ANSWER: W– INCREASES WITH THE SIZE OF THE MOLECULES

TOSS-UP

6. COMP; Multiple Choice: A binary code that most microcomputers use is called

(W) binary.
(X) EBCDIC (pron: eeb-cee-dick).
(Y) ASCII (pron: ask-ee).
(Z) parity bit.

ANSWER: Y– ASCII

BONUS

6. COMP; Multiple Choice: Fragmentation describes

(W) lost files on a floppy disk.
(X) uneven distribution of data on a hard disk.
(Y) breaking programs into smaller modules to speed up processing.
(Z) destruction of the hard disk.

ANSWER: X– UNEVEN DISTRIBUTION OF DATA ON A HARD DISK

TOSS-UP

7. BIOL; Multiple Choice: The two layers of any joint capsule consist of

(W) cartilage and tendons.
(X) tendons and ligaments.
(Y) ligaments and synovial fluid.
(Z) synovial fluid and cartilage.

ANSWER: Y– LIGAMENTS AND SYNOVIAL FLUID

BONUS

7. BIOL; Multiple Choice: When a joint is injured, too much fluid can move into the joint causing

(W) bursitis.
(X) arthritis.
(Y) resorption of calcium.
(Z) deposition of calcium.

ANSWER: W– BURSITIS

TOSS-UP

8. PHYS; Multiple Choice: Light has a dual nature because it is

(W) a wave form.
(X) particlelike.
(Y) wavelike and particlelike.
(Z) due to constructive and destructive interference.

ANSWER: Y– WAVELIKE AND PARTICLELIKE

BONUS

8. PHYS; Multiple Choice: Corrective lenses for farsightedness make light rays

(W) converge before they enter the eye.
(X) diverge before they enter the eye.
(Y) converge after they enter the eye.
(Z) diverge after they enter the eye.

ANSWER: W– CONVERGE BEFORE THEY ENTER THE EYE

TOSS-UP

9. ERSC; Multiple Choice: Foliated rocks are distinguished by

(W) flaking.
(X) banding.
(Y) weathering.
(Z) cementation.

ANSWER: X– BANDING

BONUS

9. ERSC; Short Answer: Which geologist believed that "the past history of the globe must be explained by what can be seen happening now?"

ANSWER: HUTTON

TOSS-UP

10. CHEM; Multiple Choice: Amorphous solids, because of their disordered arrangement of particles and the associated properties, are often more appropriately labeled

(W) imperfect solids.
(X) semi-solids.
(Y) hydrated solids.
(Z) supercooled liquids.

ANSWER: Z– SUPERCOOLED LIQUIDS

BONUS

10. CHEM; Multiple Choice: The intermolecular force of attraction between induced dipoles is called

(W) an induction force.
(X) a polarization force.
(Y) a dispersion force.
(Z) an inversion force.

ANSWER: Y– A DISPERSION FORCE

TOSS-UP

11. BIOL; Multiple Choice: The light and dark bands seen in skeletal muscles are

(W) thin and thick filaments.
(X) cross-bridges.
(Y) actin filaments.
(Z) myosin filaments.

ANSWER: W– THIN AND THICK FILAMENTS

BONUS

11. BIOL; Multiple Choice: When the keratin-producing cells of the skin die, they produce

(W) an additional hypodermis layer.
(X) an additional dermis layer.
(Y) a waterproof coating.
(Z) a layer of melanin.

ANSWER: Y– A WATERPROOF COATING

TOSS-UP

12. CHEM; Multiple Choice: Compared to intramolecular forces, the strength of intermolecular forces is

(W) substantially greater.
(X) slightly greater.
(Y) slightly less.
(Z) substantially less.

ANSWER: Z– SUBSTANTIALLY LESS

BONUS

12. CHEM; Multiple Choice: The molecules in a liquid at a particular temperature

(W) all have the same kinetic energy.
(X) each have different but fixed kinetic energies.
(Y) have a range of kinetic energies.
(Z) have kinetic energies unrelated to the temperature.

ANSWER: Y– HAVE A RANGE OF KINETIC ENERGIES

TOSS-UP

13. MATH; Multiple Choice; Matrix C is the product of matrix A times matrix B. Which of the following must be TRUE.

(W) The number of rows of A equals the number of rows of B.
(X) The number of columns of A equals the number of columns of B.
(Y) The number of rows of A equals the number of columns of B.
(Z) The number of columns of A equals the number of rows of B.

ANSWER: Z– THE NUMBER OF COLUMNS OF A EQUALS THE NUMBER OF ROWS OF B

BONUS

13. MATH; Multiple Choice: If the log base x of 81 equals 6, then x is equal to

(W) 3.
(X) 9.
(Y) 1/3.
(Z) the cube root of 9.

ANSWER: Z– THE CUBE ROOT OF 9

TOSS-UP

14. GENR; Multiple Choice: When petroleum is refined, it is subject to a number of processes including cracking. During the cracking process,

(W) lighter hydrocarbons are combined to form heavier ones.
(X) heavy hydrocarbons are broken up into lighter ones.
(Y) lighter hydrocarbons are separated by distillation.
(Z) oxygen is used to burn the heavier hydrocarbons.

ANSWER: X– HEAVY HYDROCARBONS ARE BROKEN UP INTO LIGHTER ONES

BONUS

14. GENR; Multiple Choice: As of 1996, approximately what percentage of the electricity generated in the U.S. was produced by nuclear power plants?

(W) 5%
(X) 10%
(Y) 20%
(Z) 40%

ANSWER: Y– 20%

TOSS-UP

15. BIOL; Multiple Choice: As cells of the epidermis become older, they

(W) divide by mitosis.
(X) add cellular contents.
(Y) begin making keratin.
(Z) become rounded.

ANSWER: Y– BEGIN MAKING KERATIN

BONUS

15. BIOL; Multiple Choice: Two vitamins produced by the body are vitamin D and

(W) vitamin A.
(X) vitamin C.
(Y) vitamin E
(Z) vitamin K.

ANSWER: Z– VITAMIN K

TOSS-UP

16. ASTR; Short Answer: When a star begins to deplete the supply of hydrogen in its core, its outer layer expands and the star is known as a

ANSWER: RED GIANT

BONUS

16. ASTR; Multiple Choice: A Planetary Nebula is

(W) A very young star.
(X) A cloud of gas and dust where new stars are forming.
(Y) An interstellar molecular cloud.
(Z) An expanding shell of gas surrounding a dying star.

ANSWER: Z– AN EXPANDING SHELL OF GAS SURROUNDING A DYING STAR

TOSS-UP

17. PHYS; Multiple Choice: Microscopes use

(W) one concave lens and one convex lens.
(X) one convex lens.
(Y) two concave lenses.
(Z) two convex lenses.

ANSWER: Z– TWO CONVEX LENSES

BONUS

17. PHYS; Multiple Choice: A substance that transmits light but no detail of that light is

(W) translucent.
(X) opaque.
(Y) transparent.
(Z) polarized.

ANSWER: W– TRANSLUCENT

TOSS-UP

18. CHEM; Multiple Choice: Liquids and solids are referred to as the condensed states of matter because they

(W) have their water molecules removed.
(X) have greater densities than gases.
(Y) are less strongly bonded than gases.
(Z) are lower in energy than gases.

ANSWER: X– HAVE GREATER DENSITIES THAN GASES

BONUS

18. CHEM; Multiple Choice: A condition in which the rates of two opposing changes that are occurring simultaneously are equal is referred to as

(W) a false equilibrium.
(X) a dynamic equilibrium.
(Y) an unstable equilibrium.
(Z) a static equilibrium.

ANSWER: X– A DYNAMIC EQUILIBRIUM

TOSS-UP

19. ERSC; Multiple Choice: The pressure and heat that produce magma are caused in part by

(W) gravity.
(X) magnetic fields.
(Y) radioactivity.
(Z) lava.

ANSWER: Y– RADIOACTIVITY

BONUS

19. ERSC; Multiple Choice: Fine-grained, extrusive rocks include all of the following except

(W) granite.
(X) andesite.
(Y) basalt.
(Z) rhyolite.

ANSWER: W– GRANITE

TOSS-UP

20. COMP; Multiple Choice: Which of the following is a binary-type programming language that the computer can run directly?

(W) RAM language
(X) Machine language
(Y) Parity language
(Z) Instruction language

ANSWER: X– MACHINE LANGUAGE

BONUS

20. COMP; Multiple Choice: Which of the following is not a type of scanning technology?

(W) MICR (spell out)
(X) POS
(Y) OMR
(Z) OCR

ANSWER: X– POS

TOSS-UP

21. BIOL; Short Answer: The bone structure known as the mental protruberance provides protruding structure for the

ANSWER: CHIN

BONUS

21. BIOL; Multiple Choice: Nutritionists agree that in a balanced diet, the energy derived from fats should be no more than

(W) 10 percent.
(X) 20 percent.
(Y) 30 percent.
(Z) 40 percent.

ANSWER: Y– 30 PERCENT

TOSS-UP

22. MATH; Short Answer: The population of a near-by town was 10,000 in January, 1997. It is estimated that the population will increase by 10% each year. What will be the population of the town in January, 1999?

ANSWER: 12,100

BONUS

22. MATH; Short Answer: A woman is 22 years older than her daughter. Nine years ago she was twice as old as her daughter. What are their present ages?

ANSWER: THE WOMAN IS 53 YEARS OLD, THE DAUGHTER IS 31 YEARS OLD

TOSS-UP

23. PHYS; Short Answer: In a light-water reactor, the coolant is ordinary water. What is the moderator?

ANSWER: WATER or THE SAME WATER

BONUS

23. PHYS; Multiple Choice: The function of lubricants is to change

(W) fluid friction to sliding friction.
(X) fluid friction to rolling friction.
(Y) sliding friction to fluid friction.
(Z) sliding friction to rolling friction.

ANSWER: Y– SLIDING FRICTION TO FLUID FRICTION

TOSS-UP

24. CHEM; Short Answer: Who discovered radioactivity?

ANSWER: Z– BECQUEREL (pron:beck-cure-rell)

BONUS

24. CHEM; Multiple Choice: Water has unique and unusual properties because of the

(W) linear shape of water molecules.
(X) small size of the water molecules.
(Y) dispersion forces between water molecules.
(Z) hydrogen bonds between polar water molecules.

ANSWER: Z– HYDROGEN BONDS BETWEEN POLAR WATER MOLECULES

TOSS-UP

25. PHYS; Short Answer: When an object is falling at a steady rate and the force of gravity acting on it is balanced by the force of air resistance, the object is said to have what kind of velocity?

ANSWER: TERMINAL

BONUS

25. PHYS; Multiple Choice: Treads on tires

(W) increase friction.
(X) reduce friction.
(Y) decrease stopping motion.
(Z) prevent the braking of a car.

ANSWER: W– INCREASE FRICTION