

2018 – 2019 TAME High School Practice Divisional Science Test

- (1) In humans, which of these is required for carrying oxygen from the lungs to body cells?
A) Red blood cells
B) Platelets
C) White blood cells
D) Nephrons
- (2) Two objects are traveling toward each other on an air track when they collide. One object has a mass of 2 kilograms and the other has a mass of 6 kilograms. The smaller object is moving at a speed of 2 m/s while the other is moving at a speed of 1 m/s. What is the result of their collision?
A) They come to a complete stop.
B) They move in the same direction as the smaller object was moving, at 4 m/s.
C) They move in the same direction as the larger object was moving, at 0.25 m/s.
D) They move in the same direction as the smaller object was moving, at 0.25 m/s.
- (3) Chickenpox is a disease caused by
A) a virus.
B) rabid bats.
C) plutonium.
D) codons.
- (4) Which element is an alkali metal?
A) K
B) Mg
C) Xe
D) Al
- (5) Which of these can be separated by using a magnet?
A) A mixture of sand and salt
B) Rust formed from iron and oxygen
C) A mixture of aluminum oxide and salt
D) A mixture of sand and bits of iron
- (6) The amount of information you can place on a compact disc mostly depends on the wavelength of the laser used to write and read the information with the smallest wavelength getting the most information on the disc. Which of the following would place the most amount of information?
A) radio wavelength
B) blue wavelength
C) red wavelength
D) green wavelength
- (7) The process by which food molecules are broken down to release energy is called
A) photosynthesis.
B) respiration.
C) transpiration.
D) digestion.
- (8) Unicellular microorganisms that lack chlorophyll are called
A) mollusks
B) autotrophs
C) viruses
D) bacteria
- (9) Which of the following substances contains a triple bond?
A) BF_3
B) C_2F_2
C) H_2S
D) HOF
- (10) How many significant figures does the measurement 10.7050 kilograms have?
A) 6
B) 5
C) 4
D) 3

- (11) A sample of $C_{12}H_{22}O_{11}$, contains 0.4662 moles of carbon atoms. How many moles of hydrogen atoms are there in the sample?
A) 0.2543 moles
B) 0.9324 moles
C) 0.8547 moles
D) 10.26 moles
- (12) How many atoms are there in one formula unit of $(NH_4)_4Fe(CN)_6$?
A) 25
B) 28
C) 15
D) 33
- (13) How many ml of 0.300 molar sulfuric acid is to be added to 50.0 ml of 0.250 molar barium hydroxide solution to neutralize completely?
A) 30.0 ml
B) 60.0 ml
C) 41.7 ml
D) 110 ml
- (14) A forward horizontal force of 12 N is used to move a 240 N sled at constant velocity on a frozen pond. What is the coefficient of friction?
A) 2
B) 0.05
C) 0.5
D) 20
- (15) If a satellite moves above Earth's atmosphere in a circular orbit with constant speed, then
A) the net force on it is zero.
B) its acceleration is toward the Earth.
C) it will fall back to Earth when its fuel is used up.
D) its acceleration and velocity are always in the same direction.
- (16) Animals are
A) multicellular, heterotrophic, and haploid.
B) multicellular, heterotrophic, and diploid.
C) multicellular, autotrophic, and haploid.
D) multicellular, autotrophic, and diploid.
- (17) Which of the following would **not** be considered nitrogen-fixing plant?
A) clover
B) peas
C) alfalfa
D) corn
- (18) A sample of gas occupies a volume of 1.664 liters at STP. What pressure would it exert if it is transferred to a 1.524-liter vessel with a temperature of $22.5^\circ C$?
A) 122.6 kPa
B) 83.75 kPa
C) 102.8 kPa
D) 22.5 kPa
- (19) A solution in a beaker has some undissolved solute lying on the bottom of the beaker. If the rate of crystallization is equal to the rate of dissolution of the excess solute, the solution is described as
A) concentrated
B) unsaturated
C) supersaturated
D) saturated
- (20) Which enzyme is used when energy in the ATP molecule is released and the third phosphate breaks off and is formed?
A) ADP
B) NDP
C) AGP
D) uracil

- (21) What organisms are the producers in any community?
A) birds
B) green plants
C) wolves
D) worms
- (22) As pollution in rivers increases, what dissolved gas is decreased in water?
A) oxygen
B) carbon dioxide
C) hydrogen
D) nitrogen
- (23) If you hear thunder 5.0 s after seeing a flash of lightning, the distance to the lightning is about
A) 330 m.
B) 1200 m.
C) 600 m
D) 1700 m.
- (24) An example of a chemical compound is
A) table salt.
B) air.
C) granite.
D) bronze.
- (25) All fluids are
A) gases.
B) liquids or gases.
C) non-metallic.
D) liquids.
- (26) To obtain absolute pressure from the gauge pressure
A) subtract atmospheric pressure.
B) subtract 273.
C) add atmospheric pressure.
D) add 273.
- (27) Which of the following is a vector quantity?
A) speed
B) work
C) force
D) time
- (28) If the chemical equation below is correctly balanced, the sum of the smallest set of integer coefficients will be
- $$\mathbf{BaCl_2 + K_3PO_4 \rightarrow KCl + Ba_3(PO_4)_2 (s)}$$
- A) 7
B) 10
C) 12
D) 16
- (29) A scientific experiment is inaccurate unless it includes
A) the use of a microscope.
B) a reference.
C) a control.
D) a timing event.
- (30) When blood calcium levels begin to drop below homeostatic levels, what is released causing calcium to be released from the bones?
A) Parathyroid hormone
B) Osteocytes
C) Calcitonin
D) Osteoclasts
- (31) What is the epidermal layer missing in the human skin?
A) Stratum lucidum
B) Hypodermis
C) Stratum basale
D) Stratum granulosum

- (32) What is the name for the process of identifying a person using “lip prints”?
- A) Entomology
B) Neurotrophly
C) Cheiloscopy
D) Dactyloscopy
- (33) Which is produced in the aerobic breakdown of a glucose molecule?
- A) water
B) carbon dioxide
C) alcohol
D) oxygen
- (34) Which is the category in the taxonomic hierarchy that contains related phyla or divisions?
- A) kingdom
B) population
C) class
D) order
- (35) Which of the following is a compound?
- A) potassium
B) carbon
C) salt
D) titanium
- (36) If silver has a density of 10.5 g/mL, what volume does 118.307 g of silver occupy?
- A) 11.3 L
B) 1.20 mL
C) 1.20 L
D) 11.3 mL
- (37) How much heat energy is required to raise the temperature of 76.890 g of lead from 20.0°C to 97.5°C? The specific heat of lead is 0.128 J/g-°C.
- A) 763 kJ
B) $2.15 \times 10^{-5} \text{J}$
C) 763 J
D) $2.15 \times 10^5 \text{J}$
- (38) If the mass of the pendulum bob is tripled and the length of the pendulum arm is also tripled, then the time for one complete vibration is increased by a factor of
- A) 9
B) $3\sqrt{3}$
C) $\sqrt{3}$
D) $\frac{1}{9}$
- (39) An object that weighs 120 N is lifted 2-m vertically. How much work was done in lifting the object?
- A) 60 J
B) 30 J
C) 480 J
D) 240 J
- (40) Your motorboat can move 30 km/h in still water. How much time will it take you to move 12 km upstream, in a river flowing 6.0 km/h?
- A) 50 min
B) 30 min
C) 20 min
D) 10 min
- (41) In mammals, steroid hormones are produced both in the gonads and in the
- A) adrenal medulla.
B) pancreas.
C) thymus.
D) adrenal cortex.
- (42) Which are the most numerous cells in the central nervous system?
- A) glial cells
B) seminal cells
C) interneurons
D) astrocytes

- (43) One of the allotropes of carbon is graphite. How many grams of graphite contain the same number of atoms as 16.00 grams of oxygen?
A) 12.00 g
B) 21.33 g
C) 32.00 g
D) 16.00 g
- (44) In the Watson-Crick model of DNA, the amount of adenine always equals the amount of
A) uracil.
B) thymine.
C) urine.
D) cytosine.
- (45) A 10-kg mass slides down a flat hill that makes an angle of 10° with the horizontal. If friction is negligible, what is the resultant force on the mass?
A) 1.7 N
B) 17 N
C) 196 N
D) 98 N
- (46) Which of the following is a scalar quantity?
A) weight
B) electric field
C) temperature
D) displacement
- (47) The area under a force versus time graph represents
A) impulse.
B) acceleration.
C) work.
D) energy.
- (48) The stage of mitosis in which the nuclear membrane forms and the nucleolus appears is called
A) anaphase.
B) metaphase.
C) interphase.
D) telophase.
- (49) Does the centripetal force acting on an object do work on the object?
A) Yes, since it takes energy to turn an object.
B) Yes, since a force acts on the object and the object moves.
C) No, because the force and displacement of the object are perpendicular.
D) Maybe, it depends if the object is moving in a vertical or horizontal circle.
- (50) Which one of the following glands enlarges to produce the condition known as goiter?
A) posterior pituitary
B) thyroid
C) tonsils
D) urethra

**2018 – 2019 TAME High School Practice Divisional Science Test
Answer Key**

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|--------|--------|
| (1) A | (26) C |
| (2) B | (27) C |
| (3) A | (28) C |
| (4) A | (29) C |
| (5) D | (30) A |
| (6) B | (31) A |
| (7) D | (32) C |
| (8) D | (33) A |
| (9) B | (34) A |
| (10) A | (35) A |
| (11) C | (36) D |
| (12) D | (37) B |
| (13) C | (38) C |
| (14) B | (39) D |
| (15) B | (40) A |
| (16) B | (41) D |
| (17) D | (42) A |
| (18) A | (43) A |
| (19) D | (44) B |
| (20) A | (45) B |
| (21) B | (46) C |
| (22) A | (47) A |
| (23) D | (48) D |
| (24) A | (49) C |
| (25) B | (50) B |