

SC10F Practice Exam

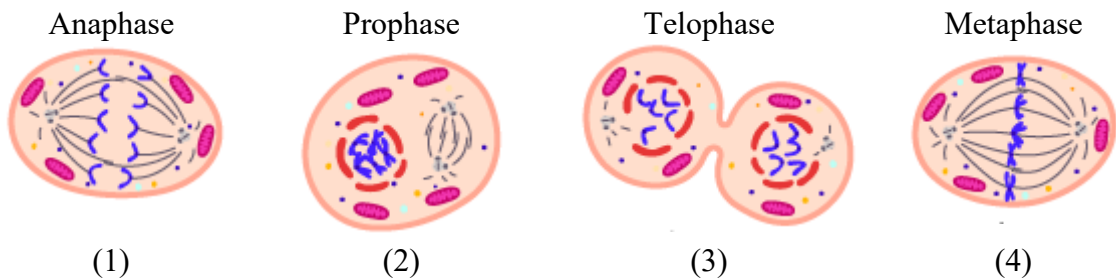
Part A – Multiple Choice

Reproduction

1. Mitosis is

- (A) the production of gametes.
- (B) the division of one cell into two genetically identical cells.
- (C) the production of cells that are genetically unique.
- (D) the division of one cell into four genetically identical cells.

2. The following pictures represents cells in the various stages of mitosis.



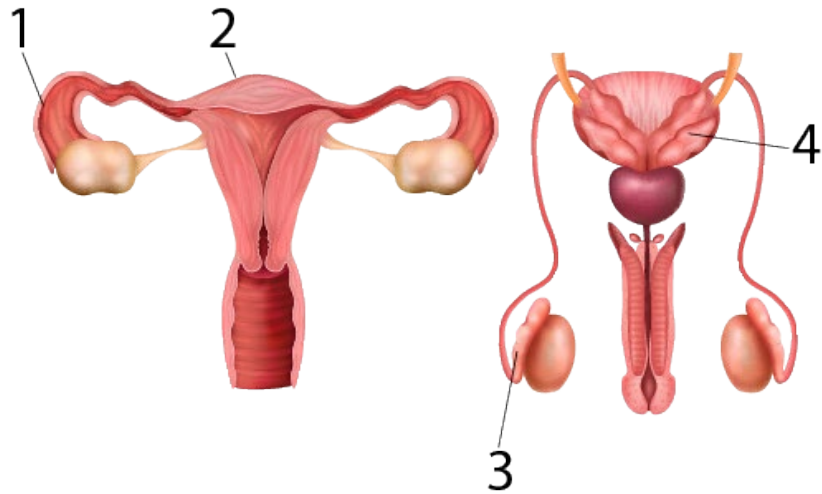
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Which of the following sequences is the correct order of the stages?

- (A) 1, 2, 3, 4
 - (B) 2, 1, 4, 3
 - (C) 2, 4, 1, 3
 - (D) 4, 1, 3, 2
3. Cells with half the number of chromosomes are called _____ cells.
- (A) homologous
 - (B) haploid
 - (C) diploid
 - (D) halfloid

4. Which of the following statements about mitosis and meiosis is true?
- (A) Meiosis produces 4 haploid cells and mitosis produces 2 diploid cells.
 - (B) Meiosis produces 2 haploid cells and mitosis produces 4 diploid cells.
 - (C) Meiosis produces 4 diploid cells and mitosis produces 2 haploid cells.
 - (D) Meiosis produces 2 diploid cells and mitosis produces 4 haploid cells.
5. Asexual reproduction
- (A) requires one parent and produces non-identical offspring.
 - (B) requires one parent and produces identical offspring.
 - (C) requires two parents and produces non-identical offspring.
 - (D) requires two parents and produces identical offspring.
6. When yeast cells divide, a small outgrowth breaks away from the parent cell. This type of asexual reproduction is called
- (A) spore formation.
 - (B) regeneration.
 - (C) budding.
 - (D) vegetative propagation.
7. What is the function of the vas deferens?
- (A) routing sperm towards the prostate
 - (B) the production of liquids to protect and nourish sperm
 - (C) the production of sperm
 - (D) routing semen to the outside of the body
8. What is the function of the vagina?
- (A) allows the entry of sperm into the female reproductive system
 - (B) allows the elimination of urine
 - (C) it provides nutrients to the fetus
 - (D) it is where the eggs are stored

Questions 9 through 12 refer to the following diagram.



9. What is the name of the structure labeled 1?

- (A) bladder
- (B) urethra
- (C) fallopian tube
- (D) egg

10. What is the name of the structure labeled 2?

- (A) cervix
- (B) vagina
- (C) ovum
- (D) uterus

11. What is the name of the structure labeled 3?

- (A) testicle
- (B) bladder
- (C) epididymis
- (D) sperm

12. What is the name of the structure labeled 4?

- (A) urethra
- (B) prostate
- (C) vas deferens
- (D) seminal vesicle

13. Which of the following hormones is produced in the testes?

- (A) estrogen
- (B) follicle stimulating hormone (FSH)
- (C) testosterone.

14. An embryo is

- (A) another name for a fetus.
- (B) the cell formed during fertilization.
- (C) the cell that fertilizes the egg.
- (D) an organism in its early stage of development.

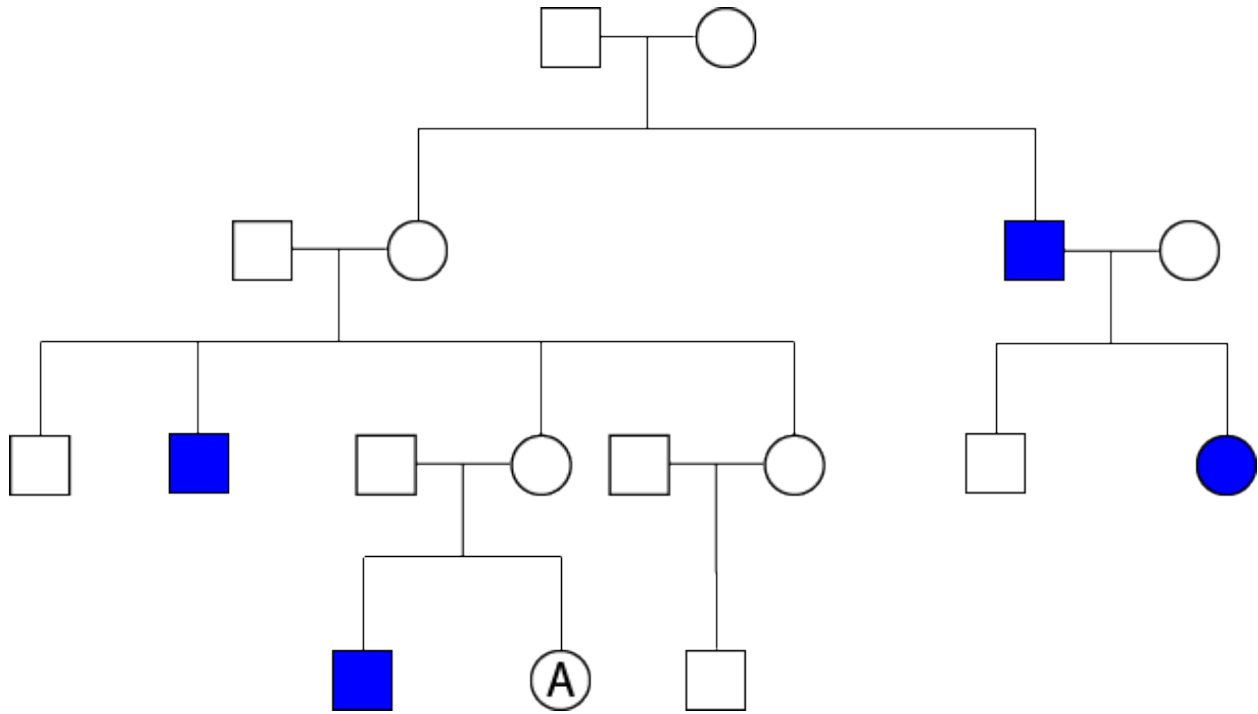
15. An organism with two like genes for a trait is said to be

- (A) heterozygous.
- (B) homozygous.
- (C) dominant.
- (D) recessive.

16. Which of the following represents a heterozygous genotype?

- (A) BB
- (B) bb
- (C) Bb
- (D) B

17. The following pedigree tracks color blindness. Color blindness is a recessive sex-linked trait.



What is the genotype of the person labeled A.?

- (A) $X^B X^B$ only
- (B) $X^B X^b$ only
- (C) $X^B X^b$ or $X^B X^B$
- (D) $X^B Y$

Atoms and Elements

18. What is an element?
- (A) the smallest piece of any substance
 - (B) a group of atoms that are all of the same type
 - (C) a mixture of metals
 - (D) a mixture of non-metals
19. A mixture that is the same throughout is a
- (A) heterogeneous mixture.
 - (B) homogeneous mixture.
 - (C) compound
20. What is the symbol for potassium?
- (A) Po
 - (B) P
 - (C) K
 - (D) Kr
21. The atomic number of an element is defined as
- (A) the number of electrons in the atom.
 - (B) the number of neutrons in the atom.
 - (C) the number of protons in the atom.
 - (D) its weight.
22. The mass of an atom is determined by the number of
- (A) protons in the nucleus.
 - (B) electrons in the electron shells.
 - (C) protons and neutrons in the nucleus.
 - (D) protons and neutrons in the electron shells.

23. Which element has an atomic number of 4?
- (A) Helium
 - (B) Beryllium
 - (C) Titanium
 - (D) There is no element with an atomic number 4.
24. Elements that are found in the same family have
- (A) the same number of electrons in their outer shell but have different atomic masses.
 - (B) the same number of protons in the nucleus but have different atomic masses.
 - (C) a different number of electrons in the outer shell but have the same atomic masses.
 - (D) a different number of protons in the nucleus but have the same atomic masses.
25. Elements that are found in the same period have
- (A) the same number of protons in the nucleus but a different number of electron shells.
 - (B) the same number of electron shells but a different number of protons in the nucleus.
 - (C) a different atomic mass and a different number of electron shells.
 - (D) the same atomic mass but a different number of protons in the nucleus.
26. An element is ductile and a poor conductor of heat. This element would be best classed as a
- (A) metal.
 - (B) non-metal.
 - (C) metalloid.
27. Which of the following element families is the **least** reactive?
- (A) alkali metals
 - (B) alkaline earth metals
 - (C) chalcogens
 - (D) noble gases

28. Which statement best describes atoms and molecules?

- (A) Atoms are the smallest particle of matter and molecules are the smallest particles in a compound.
- (B) Atoms are the smallest particle in a compound and molecules are the smallest particle of matter.
- (C) Atoms and molecules are the same thing.

29. What elements make up the chemical formula for baking soda: NaHCO_3 ?

- (A) Nitrogen, Hydrogen, Carbon and Oxygen
- (B) Nitrogen, Aluminum, Hydrogen and Cobalt
- (C) Sodium, Hydrogen and Cobalt
- (D) Sodium, Hydrogen, Carbon and Oxygen

The Nature of Electricity

30. An object becomes positively charged when

- (A) electrons leave it.
- (B) electrons enter it.
- (C) protons leave it.
- (D) protons enter it.

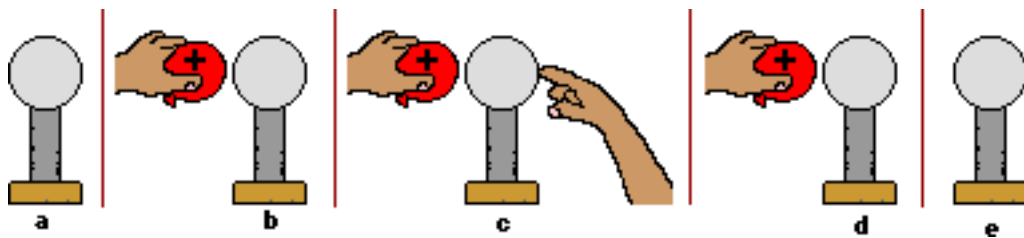
31. An object is attracted to both a neutral and negative rod. Its charge could be

- (A) positive.
- (B) negative.
- (C) neutral.
- (D) either positive or neutral.

32. The temporary separation of charges in a conductor is called

- (A) induction.
- (B) conduction.
- (C) polarization.
- (D) current.

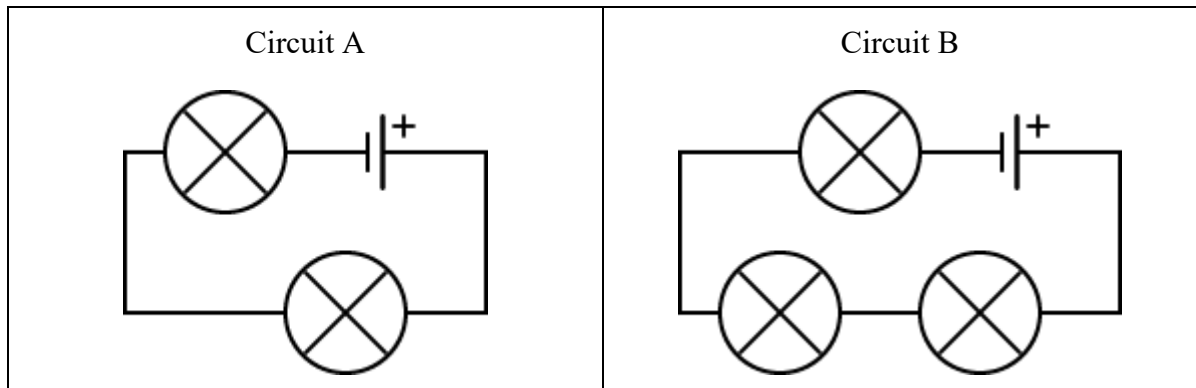
33. A neutral conducting sphere is charged by induction using a positively charged balloon, as shown in the following diagram. What charge will be left on the sphere at the end of step e?



- (A) positive
- (B) negative
- (C) neutral
- (D) It is impossible to determine charge using this information.

34. A device uses 3.0 Coulombs of charge every 2 seconds. The current flowing through the device is
- (A) 6.0 A.
 - (B) 3.0 A.
 - (C) 1.5 A.
 - (D) 0.67 A.
35. The current in a wire is 2.0 A. How much charge passes a point in 5.0 s?
- (A) 10 C
 - (B) 3.0 C
 - (C) 2.5 C
 - (D) 0.4 C
36. In a parallel circuit
- (A) there is more than one path for charge to flow.
 - (B) the voltage drop is different across the components.
 - (C) the current is the same everywhere in the circuit.
37. Two light bulbs are connected in series with a battery. If a third light bulb is added to the circuit, the brightness of the bulbs will
- (A) increase.
 - (B) decrease.
 - (C) stay the same.
38. What is the purpose of a circuit breaker?
- (A) To protect against too much voltage in a circuit.
 - (B) To protect against too much current in a circuit.
 - (C) To protect against too much resistance in a circuit.
 - (D) To protect against low voltages.

39. The batteries and bulbs of the two circuits shown below are identical. In which circuit will there be the lowest resistance?



- (A) The resistance will be lowest in Circuit A.
(B) The resistance will be lowest in Circuit B.
(C) The resistance will be the same in both circuits.
40. If the rate of electrical power is \$0.10/kWh, calculate the cost of using a 1500 W space heater over a period of 100 days when it is used 10 hours a day.
- (A) \$150.00
(B) \$15.00
(C) \$150,000.00
(D) \$1.50