



Chemistry

Name: _____

Section _____

NUCLEAR ENERGY WS

Date: _____

Directions (1-10): For each statement or question, choose the word or expression that, of those given, best completes the statement or answers the question.

- 1 Energy is released during the fission of Pu-239 atoms as a result of the
 - (1) formation of covalent bonds
 - (2) formation of ionic bonds
 - (3)** conversion of matter to energy
 - (4) conversion of energy to matter
- 2 Which reaction is accompanied by the release of the greatest amount of energy?
 - (1) combustion of 10. g of propane
 - (2) electrolysis of 10. g of water
 - (3)** nuclear fission of 10. g of uranium
 - (4) oxidation of 10. g of iron
- 3 A serious risk factor associated with the operation of a nuclear power plant is the production of
 - (1) acid rain
 - (2) helium gas
 - (3)** greenhouse gases, such as CO₂
 - (4)** radioisotopes with long half-lives
- 4 The energy released by a nuclear reaction results primarily from the
 - (1) breaking of bonds between atoms
 - (2) formation of bonds between atoms
 - (3)** conversion of mass into energy
 - (4) conversion of energy into mass
- 5 Which equation represents a fusion reaction?
 - (1) H₂O_(g) → H₂O_(l)
 - (2) C_(s) + O_{2(g)} → CO_{2(g)}
 - (3)** ${}_1^2\text{H} + {}_1^3\text{H} \rightarrow {}_2^4\text{He} + {}_0^1\text{n}$
 - (4) ${}_{92}^{235}\text{U} + {}_0^1\text{n} \rightarrow {}_{36}^{91}\text{Kr} + {}_{56}^{142}\text{Ba} + 3 {}_0^1\text{n}$
- 6 A nuclear reaction in which two light nuclei combine to form a more massive nucleus is called
 - (1)** addition
 - (2) fission
 - (3)** fusion
 - (4) substitution
- 7 What is a problem commonly associated with nuclear power facilities?
 - (1) A small quantity of energy is produced.
 - (2) Reaction products contribute to acid rain.
 - (3)** It is impossible to control nuclear fission.
 - (4)** It is difficult to dispose of wastes.
- 8 One benefit of nuclear fission reactions is
 - (1) nuclear reactor meltdowns
 - (2) storage of waste materials
 - (3)** biological exposure
 - (4)** production of energy
- 9 A nuclear fission reaction and a nuclear fusion reaction are similar because both reactions
 - (1) form heavy nuclides from light nuclides
 - (2) form light nuclides from heavy nuclides
 - (3)** release a large amount of energy
 - (4) absorb a large amount of energy
- 10 Nuclear fusion *differs* from nuclear fission because nuclear fusion reactions
 - (1)** form heavier isotopes from lighter isotopes
 - (2) form lighter isotopes from heavier isotopes
 - (3)** convert mass to energy
 - (4) convert energy to mass