

Nuclear Energy Basics

Nuclear Energy · Practice Test · 20 Questions

1. Which subatomic particle is released during the fission of a Uranium-235 nucleus to trigger further fission events?

- A) Proton
- B) Neutron
- C) Electron
- D) Positron

2. What is the primary fuel source used in most conventional nuclear power reactors?

- A) Coal
- B) Natural gas
- C) Uranium
- D) Hydrogen

3. In a nuclear power plant, what is the main purpose of the control rods?

- A) To absorb neutrons and regulate the fission rate
- B) To convert heat directly into electricity
- C) To cool the reactor core
- D) To store spent nuclear fuel

4. Which process involves the splitting of a heavy atomic nucleus into smaller nuclei?

- A) Nuclear fusion
- B) Nuclear fission
- C) Radioactive decay
- D) Chemical combustion

5. What is the role of the moderator in a nuclear reactor?

- A) To increase the speed of neutrons
- B) To slow down neutrons to increase fission probability
- C) To accelerate the flow of coolant
- D) To prevent the release of radiation

6. Which Australian state currently has legislation that prohibits the construction of nuclear power plants?

- A) Queensland
- B) New South Wales
- C) Victoria
- D) All of the above

7. What form of energy is primarily used to drive the steam turbines in a nuclear power plant?

- A) Thermal energy
- B) Kinetic energy of alpha particles
- C) Chemical potential energy
- D) Magnetic energy

8. Which isotope of Uranium is the most commonly used fuel in nuclear reactors?

- A) Uranium-238
- B) Uranium-235
- C) Uranium-234
- D) Uranium-233

9. What is the name of the process that powers the Sun, involving the combination of light nuclei?

- A) Nuclear fission
- B) Nuclear fusion
- C) Alpha decay
- D) Beta decay

10. What does the acronym 'PWR' stand for in the context of nuclear reactor designs?

- A) Power Water Reactor
- B) Pressurized Water Reactor
- C) Primary Waste Reactor
- D) Proton Well Reactor

11. Which material is commonly used as a neutron moderator in nuclear reactors?

- A) Lead
- B) Graphite
- C) Gold
- D) Iron

12. Approximately what percentage of global electricity is generated by nuclear power?

- A) 5%
- B) 10%
- C) 25%
- D) 50%

13. What is the main byproduct of a nuclear power plant that requires long-term geological disposal?

- A) Carbon dioxide
- B) Spent nuclear fuel
- C) Sulfur dioxide
- D) Methane

14. Which of these is a non-renewable energy source?

- A) Wind
- B) Solar
- C) Nuclear
- D) Hydro

15. Where is the heat generated within a nuclear power plant?

- A) The turbine
- B) The cooling tower
- C) The reactor core
- D) The transformer

16. What type of reaction maintains a steady supply of energy in a nuclear reactor?

- A) Chain reaction
- B) Exothermic chemical reaction
- C) Combustion reaction
- D) Endothermic reaction

17. What is the function of the containment building in a nuclear power plant?

- A) To generate electricity
- B) To house the steam turbines
- C) To prevent the release of radioactive materials
- D) To mine uranium ore

18. Which country is currently the world's largest producer of nuclear power by total volume?

- A) United States
- B) France
- C) Japan
- D) China

19. Nuclear power plants are often located near large bodies of water primarily to:

- A) Provide a source of hydroelectricity
- B) Provide water for cooling the steam
- C) Dissolve nuclear waste
- D) Extract minerals for fuel

20. What is the primary energy transformation that occurs in a nuclear reactor?

- A) Nuclear potential energy to thermal energy
- B) Chemical energy to electrical energy
- C) Kinetic energy to nuclear energy
- D) Electrical energy to thermal energy