

Nuclear power LEDE-HISTORY version C

1. Fermi thought he had discovered _____, when he actually discovered _____

- a) fission; hesparium
- b) hesperium; fission
- c) hesperium; fusion
- d) fusion; hesparium

2. Ernest Rutherford's "moonshine" was

- a) what he called the idea of harnessing nuclear power
- b) what he called alpha particles
- c) what called neutrons
- d) what he called the idea of relying on fossil fuels

3. It was discovered that radioactive elements released immense amounts of energy according to the principle of mass-energy equivalence in the _____

- a) early 19th century
- b) early 20th century
- c) late 19th century

4. Estimates of additional nuclear generating capacity to be built by 2035 fell by _____ percent after the Fukushima nuclear accident in 2011.

- a) 10
- b) 90
- c) 50

5. According to Wikipedia, the prediction made in 1954 that electricity would someday be "too cheap to meter" was

- a) an effort to promote nuclear fusion as an energy source
- b) an argument that fossil fuels are so abundant that we don't need nuclear energy
- c) an effort to promote nuclear fission as an energy source

6. Chadwicks discovery of the neutron was significant because

- a) neutrons permit induced radiation
- b) neutrons are slow
- c) neutrons are stable

7. In 1953, "Atoms for Peace" was

- a) a presidential speech warning of the need for nuclear arms agreements
- b) a presidential speech promoting nuclear energy production
- c) a protest movement centered in US universities
- d) a congressional committee

8. The first nuclear power plant to contribute to the grid was situated in

- a) Virginia
- b) Oak Ridge
- c) Great Britain
- d) Russia

9. In terms of lives lost per unit of energy generated, evidence suggests that nuclear power has caused _____ fatalities per unit of energy generated than the other major sources of energy.

- a) less
- b) more
- c) comparable

10. The Atomic Age, published in 1945, predicted ...

- a) that fossil fuels would go unused
- b) widespread radiation poisoning
- c) a world government to prevent nuclear war
- d) nuclear war

11. The third worst nuclear disaster occurred in Russia (1957) and was kept secret for 30 years

- a) true
- b) false

12. More US nuclear submarines sank due to nuclear accidents than did Russian submarines

- a) true
- b) false

13. According to Wikipedia, the amount of green house gasses associated with the construction and maintenance of nuclear power plants is _____ than the emissions associated with other renewable sources (wind, solar, and hydro power.)

- a) less
- b) about the same
- c) greater

14. Neutrons and protons both have "strong" short range interactions with the nucleus. Why can't slow protons be used to cause nuclei to undergo fission?

- a) protons move at the speed of light
- b) slow protons can induce fission but they are too expensive to produce
- c) protons are positively charged
- d) slow protons are attracted to the nucleus

15. How does Wikipedia assess the prospects of commercial fusion power production before 2050?

- a) unlikely
- b) impossible
- c) expected
- d) likely

16. Chadwick's discovery of the neutron was significant because neutrons

- a) are not radioactive
- b) can be used to create radioactive material at a low price
- c) are an excellent fuel for nuclear power

17. What fraction of the world's electricity was produced by nuclear power in 2012?

- a) 13%
- b) 3%
- c) 63%
- d) 33%

18. From the figure depicting percentage of power produced by nuclear power plants, we see that the proper ranking from greatest to least reliance on nuclear power for three nations is

- a) France, United States, with Turkey least reliant.
- b) France ,Turkey , with the United States least reliant.
- c) United States, France, with Turkey least reliant.
- d) United States, Turkey, France least reliant.

19. The Manhattan project made

- a) plutonium and enriched uranium
- b) uranium and enriched plutonium
- c) plutonium and enriched hesparium

20. Fermi used _____ to create what he thought was _____

- a) transuranic (heavy) elements; a new source of slow neutrons
- b) slow neutrons; "moonshine"
- c) slow neutrons; a new element heavier than uranium (called a transuranic element)
- d) "moonshine"; fast neutrons

21. The worldwide number of nuclear reactors and their net capacity grew steadily from 1960, and

- a) did not begin to level off until Chernobyl (1986)
- b) leveled off between Three Mile Island (1979) and Chernobyl (1986).
- c) fluctuated randomly but with a strong correlation with the world economy and price of oil
- d) briefly fell sharply after Three Mile Island (1979), rose again, and again fell after Chernobyl (1986)

22. The worst nuclear disaster on record occurred in Russia

- a) true
- b) false

23. Which was developed first, nuclear power generation or nuclear weapons?

- a) they were developed simultaneously
- b) nuclear power generation
- c) nuclear weapons