

## Nuclear power LEDE-HISTORY version B

1. The worst nuclear disaster on record occurred in Russia

- a) true
- b) false

2. The Manhattan project made

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

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

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

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

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

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

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

6. Ernest Rutherford's "moonshine" was

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

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

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

8. 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) greater
- b) less
- c) about the same

9. Fermi used \_\_\_\_\_ to create what he thought was \_\_\_\_\_

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

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

- a) true
- b) false

11. 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) comparable
- b) less
- c) more

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

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

13. It was discovered that radioactive elements released immense amounts of energy according to the principle of mass–energy equivalence in the \_\_\_\_\_

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

14. Fermi thought he had discovered \_\_\_\_\_, when he actually discovered \_\_\_\_\_

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

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

- a) true
- b) false

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

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

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

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

19. Chadwick's discovery of the neutron was significant because

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

20. In 1953, "Atoms for Peace" was

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

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

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

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

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

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

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