**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

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| --- | --- |
|  | 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

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| --- | --- |
|  | 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

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

7. In 1953, "Atoms for Peace" was

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| --- | --- |
|  | 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.

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

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

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| --- | --- |
|  | 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?

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| --- | --- |
|  | 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?

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

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

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| --- | --- |
|  | 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?

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| --- | --- |
|  | 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

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| --- | --- |
|  | 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

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| --- | --- |
|  | 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 |