

MULTIPLE CHOICE QUESTION BANK

CHAPTER 1: INTRODUCTION

1. Which of the following statements is **true** (only one):
 - a. The growth rate of energy consumption has kept pace with GNP growth.
 - b. Oil use has expanded more than any other fuel since 1940.
 - c. We reached the point last year where we imported no oil.
 - d. Electricity use has actually fallen since 1975.

Answer: b
2. Which of the following is a non-renewable resource?
 - a. uranium
 - b. water
 - c. wind
 - d. biomass
 - e. radiant solar

Answer: a
3. Today, the U.S. imports about what percentage of the oil it uses?
 - a. 10%
 - b. 25%
 - c. 40%
 - d. 60%
 - e. 80%

Answer: d
4. One of the primary motivating forces behind our per capita reduction in energy use in the 1980's was _____.
 - a. a smaller population growth
 - b. higher oil prices
 - c. increased nuclear power costs
 - d. increased domestic oil discoveries

Answer: b
5. The most significant aspect of world consumption of energy over the last 40 years has been the _____.
 - a. growth of nuclear power
 - b. expanding use of oil
 - c. increased use of coal
 - d. emphasis on energy conservation
 - e. increase in our fossil fuel reserves

Answer: b
6. If you started with \$100 in the bank and you had \$200 after letting it sit there for 5 years, what would be the annual interest rate you received?
 - a. 2%
 - b. 5%
 - c. 10%
 - d. 14%
 - e. 22%

Answer: d

7. Continued use of the fuels most relied upon in developing countries will eventually lead to _____.
a. depletion of soil nutrients
b. severe thermal pollution of water
c. increased oil prices
d. depletion of coal reserves in those countries

Answer: a

8. If the growth rate of the number of solar collectors is 7% per year, then 1000 units in use in 2010 will grow to _____ units by the year 2040.
a. 1200 b. 2000 c. 4000 d. 8000 e. 20,000

Answer: d

9. The Hubbert curve for an energy resource displays what quantity on the y-axis?
a. time b. total production c. yearly production d. amount of fuel left

Answer: c

CHAPTERS 2 AND 3: ENERGY MECHANICS

10. A net force of 30 newtons is applied to a block of mass 10 kg. The force that must be applied to a block of mass 5 kg to give it equal acceleration is _____.
a. 5 b. 10 c. 15 d. 20 e. 30 N

Answer: c

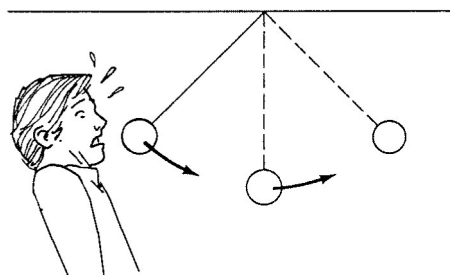
11. If a constant non—zero force is applied to an object, its velocity will certainly _____.
a. change b. stop c. be zero d. be constant e. equal acceleration

Answer: a

12. Which of the following is a unit of energy:
a. watt b. ft—lb/sec c. newton/sec. d. horsepower e. joule

Answer: e

13. Our nosecracker moved back and forth as shown. The kinetic energy will be greatest at point:



- a. A b. B c. C

Answer: b

14. For a fossil fueled electrical generating plant, 10,000 Btu of chemical energy into the plant will result in about how many Btu's of waste heat dumped into the environment:
a. 0 b. 1000 c. 4000 d. 6000 e. 10,000 Btu's

Answer: d

15. If a net force of 30 newtons is applied to a cart of mass 3 kg at rest, the velocity of the cart at the end of 5 meters will be ____ m/s.
a. 5 b. 10 c. 12 d. 25 e. 30

Answer: b

16. The cost of running a set of eight 100 watt light bulbs for 6 hours, with the cost of electricity at 9¢ per kWh, is approximately:
a. 5¢ b. 24¢ c. 43¢ d. 54¢ e. 72¢

Answer: c

17. A 100 lb sack of potatoes falls from an airplane. As the velocity of fall increases, the air resistance also increases. When air resistance equals 100 lb, the acceleration of the sack will be ____ m/sec/sec.
a. 0 b. 16 c. 32 d. 9.8 e. 24

Answer: a

18. Pumped storage facilities _____.
a. increase the overall efficiency of a power plant
b. make use of the output of electricity from photovoltaic cells
c. are used to produce electricity mainly at night
d. have an increase in their potential energy mainly at night
e. cannot be used with a nuclear plant

Answer: d

19. If the energy conversion efficiencies in a 3 step process are 30% for the first step, 40% for the second, and 20% for the third, the overall efficiency (step one to end) is about:
a. 2% b. 10% c. 20% d. 50% e. 90%

Answer: a

20. What is the minimum work that a motor must do to lift a 70 lb object from the floor to a height of 14 feet?
a. 5 b. 70 c. 700 d. 980 e. 2010 ft-lbs

Answer: d

21. If the push that you give to a bike is the action force, then the reaction force is _____.
a. the force of the bike upon you
b. the weight of the bike
c. the friction force on the tires
d. the acceleration of the bike
e. air resistance on the bike

Answer: a

Multiple Choice Questions

22. If the height of water behind a dam is increased by a factor of two, then the maximum kinetic energy of the water at the bottom of the dam will increase by a factor of _____.
a. one b. two c. four d. zero

Answer: b