Chapter 1: MEASUREMENT

- 1. The SI standard of time is based on:
 - A. the daily rotation of the earth
 - B. the frequency of light emitted by Kr^{86}
 - C. the yearly revolution of the earth about the sun
 - D. a precision pendulum clock
 - E. none of these

Ans: E

- 2. A nanosecond is:
 - A. $10^9 \, s$
 - B. $10^{-9} \, s$
 - C. 10^{-10} s
 - D. 10^{-10} s
 - E. 10^{-12}
 - Ans: B
- 3. The SI standard of length is based on:
 - A. the distance from the north pole to the equator along a meridian passing through Paris
 - B. wavelength of light emitted by Hg¹⁹⁸
 - C. wavelength of light emitted by Kr^{86}
 - D. a precision meter stick in Paris
 - E. the speed of light

Ans: E

- 4. In 1866, the U. S. Congress defined the U. S. yard as exactly 3600/3937 international meter. This was done primarily because:
 - A. length can be measured more accurately in meters than in yards
 - B. the meter is more stable than the yard
 - C. this definition relates the common U. S. length units to a more widely used system
 - D. there are more wavelengths in a yard than in a meter
 - E. the members of this Congress were exceptionally intelligent Ans: C
- 5. Which of the following is closest to a yard in length?
 - $A. \quad 0.01\,\mathrm{m}$
 - B. 0.1 m
 - C. 1 m
 - $D. \quad 100\,\mathrm{m}$
 - $E. \quad 1000\,\mathrm{m}$

Ans: C

Chapter 1: MEASUREMENT 1

STUDENTS-HUB.com

Uploaded By: anonymous

- 6. There is no SI base unit for area because:
 - A. an area has no thickness; hence no physical standard can be built
 - B. we live in a three (not a two) dimensional world
 - C. it is impossible to express square feet in terms of meters
 - D. area can be expressed in terms of square meters
 - E. area is not an important physical quantity

Ans: D

- 7. The SI base unit for mass is:
 - A. gram
 - B. pound
 - C. kilogram
 - D. ounce
 - E. kilopound
 - Ans: C
- 8. A gram is:
 - A. 10^{-6} kg
 - B. 10^{-3} kg
 - C. 1 kg
 - D. 10^3 kg
 - E. 10^6 kg Ans: B
- 9. Which of the following weighs about a pound?
 - A. 0.05 kg
 - B. 0.5 kg
 - C. 5 kg
 - D. 50 kg
 - E. 500 kg

Ans: D

10. $(5.0 \times 10^4) \times (3.0 \times 10^6) =$

- A. 1.5×10^9
- B. 1.5×10^{10}
- C. 1.5×10^{11}
- D. 1.5×10^{12}
- E. 1.5×10^{13}
 - Ans: C
- 11. $(5.0 \times 10^4) \times (3.0 \times 10^{-6}) =$
 - A. 1.5×10^{-3}
 - B. 1.5×10^{-1}
 - C. 1.5×10^1
 - D. 1.5×10^3
 - E. 1.5×10^5
 - Ans: B
- 2 Chapter 1: MEASUREMENT

STUDENTS-HUB.com

12. $5.0 \times 10^5 + 3.0 \times 10^6 =$ A. 8.0×10^5 B. 8.0×10^6 C. 5.3×10^5 D. 3.5×10^5 E. 3.5×10^6 Ans: E 13. $(7.0 \times 10^6)/(2.0 \times 10^{-6}) =$ A. 3.5×10^{-12} B. 3.5×10^{-6} C. 3.5

- D. 3.5×10^6
- E. 3.5×10^{12}
 - Ans: E
- 14. The number of significant figures in 0.00150 is:
 - A. 2
 - B. 3
 - C. 4
 - D. 5
 - E. 6
 - Ans: B
- 15. The number of significant figures in 15.0 is:
 - A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5

Ans: C

16. $3.2 \times 2.7 =$

- A. 9
- B. 8
- C. 8.6
- D. 8.64
- E. 8.640
 - Ans: C

Chapter 1: MEASUREMENT 3

- 17. 1.513 + 27.3 =
 - A. 29
 - B. 28.8
 - C. 28.9
 - D. 28.81
 - E. 28.813
 - ()Ans: B

18. 1 mi is equivalent to 1609 m so 55 mph is:

- A. 15 m/s
- B. 25 m/s
- C. 66 m/s
- D. 88 m/s
- E. 1500 m/s $\,$
 - Ans: B
- 19. A sphere with a radius of 1.7 cm has a volume of:
 - A. $2.1 \times 10^{-5} \text{ m}^3$
 - B. $9.1 \times 10^{-4} \text{ m}^3$
 - C. $3.6 \times 10^{-3} \text{ m}^3$
 - D. $0.11 \ {\rm m}^3$
 - E. 21 m^3
 - Ans: A
- 20. A sphere with a radius of 1.7 cm has a surface area of:
 - A. $2.1 \times 10^{-5} \text{ m}^2$
 - B. $9.1\times 10^{-4}~\mathrm{m^2}$
 - $C. \quad 3.6\times 10^{-3}~\mathrm{m^2}$
 - D. $0.11 \ {\rm m}^2$
 - $E. \quad 36 \ \mathrm{m}^2$
 - Ans: C
- 21. A right circular cylinder with a radius of 2.3 cm and a height of 1.4 m has a volume of:
 - A. $0.20 \ {\rm m}^3$
 - B. 0.14 m^3
 - C. $9.3 \times 10^{-3} \text{ m}^3$
 - D. $2.3 \times 10^{-3} \text{ m}^3$
 - E. $7.4 \times 10^{-4} \text{ m}^3$
 - Ans: D
- 22. A right circular cylinder with a radius of 2.3 cm and a height of 1.4 cm has a total surface area of:

 - D. $5.3 \times 10^{-3} \text{ m}^2$
 - E. $7.4 \times 10^{-3} \text{ m}^2$
 - Ans: D
- 4 Chapter 1: MEASUREMENT

STUDENTS-HUB.com

Uploaded By: anonymous

23. A cubic box with an edge of exactly 1 cm has a volume of:

- A. 10^{-9} m^3
- B. 10^{-6} m^3
- C. 10^{-3} m^3
- D. 10^{3} m^{3}
- E. 10^{6} m^{3}
 - Ans: B

24. A square with an edge of exactly 1 cm has an area of:

- A. 10^{-6} m^2
- B. 10^{-4} m^2
- C. 10^{2} m^{2}
- D. 10^4 m^2
- E. 10^{6} m^{2}
 - Ans: B

25. 1 m is equivalent to 3.281 ft. A cube with an edge of 1.5 ft has a volume of:

- A. $1.2 \times 10^2 \text{ m}^3$
- B. $9.6 \times 10^{-2} \text{ m}^3$
- C. 10.5 m^3
- D. $9.5\times 10^{-2}~\mathrm{m^3}$
- E. 0.21 m^3
 - Ans: B
- 26. During a short interval of time the speed v in m/s of an automobile is given by $v = at^2 + bt^3$, where the time t is in seconds. The units of a and b are respectively:
 - A. $\mathbf{m} \cdot \mathbf{s}^2$; $\mathbf{m} \cdot \mathbf{s}^4$ B. $s^3/m; s^4/m$ C. m/s^2 ; m/s^3

 - D. m/s^3 ; m/s^4 E. m/s^4 ; m/s^5

Ans: D

- 27. Suppose A = BC, where A has the dimension L/M and C has the dimension L/T. Then B has the dimension:
 - A. T/M
 - B. L^2/TM
 - C. TM/L^2
 - D. L^2T/M
 - E. M/L^2T

Ans: A

Chapter 1: MEASUREMENT $\mathbf{5}$

STUDENTS-HUB.com

Uploaded By: anonymous

- 28. Suppose $A = B^n C^m$, where A has dimensions LT, B has dimensions $L^2 T^{-1}$, and C has dimensions LT^2 . Then the exponents n and m have the values:
 - A. 2/3; 1/3
 - B. 2; 3
 - C. 4/5; -1/5
 - D. 1/5; 3/5
 - E. 1/2; 1/2
 - Ans: D

6 Chapter 1: MEASUREMENT

STUDENTS-HUB.com