TEST BANK

Physics Principles with Applications

Douglas C. Giancoli

6th Edition
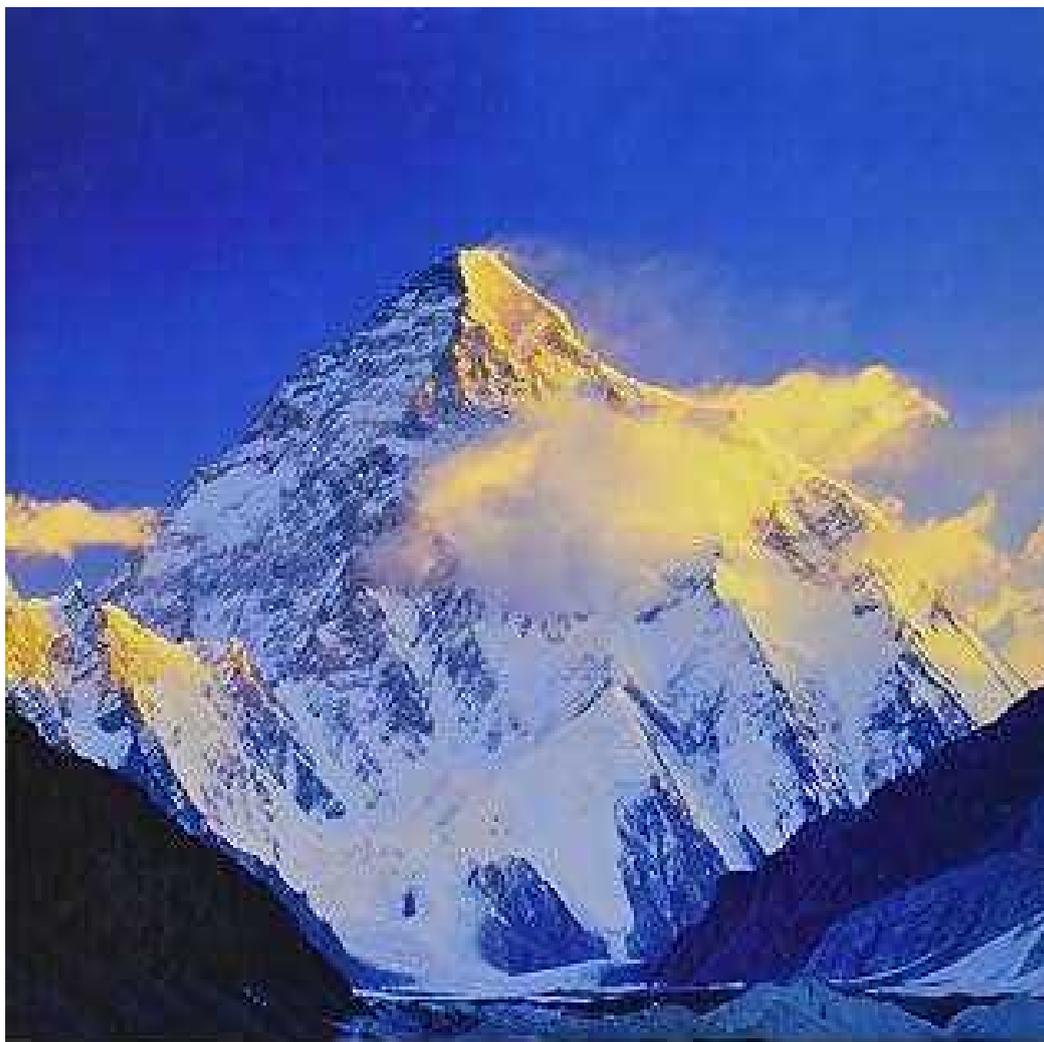
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Chapter 1   Introduction, Measurement, Estimating

Conceptual Questions

1) Four students measure the mass of an object, each using a different scale. They record their results as follows:

Student	A	B	C	D
Mass (g)	49.06	49	50	49.2

Which student used the least precise scale?

   A) A

   B) B

   C) C

   D) D

Answer: C
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2) Four students measure the mass of an object, each using a different scale. They record their results as follows:

Student	A	B	C	D
Mass (g)	49.06	49	50	49.2

Which student used the most precise scale?

   A) A

   B) B

   C) C

   D) D

Answer: A
Diff: 1   Page Ref: Sec. 1.4

3) A useful method of expressing very small or very large numbers is

   A) scientific notation.

   B) arabic numerals.

   C) the metric system.

   D) roman numerals.

Answer: A
Diff: 1   Page Ref: Sec. 1.4

4) All of the following are base units of the SI system except:

  A) kilogram.

  B) kelvin.

  C) meter.

  D) volt.

  Answer: D
  Diff: 1   Page Ref: Sec. 15-1.6

5) Select the list which contains only SI basic units.

  A) liter, meter, second, watt

  B) joule, kelvin, kilogram, watt

  C) candela, kelvin, meter, second

  D) joule, newton, second, watt

  Answer: C
  Diff: 1   Page Ref: Sec. 1.5-1.6

6) How many basic units does the SI system have?

  A) four

  B) five

  C) seven

  D) ten

  Answer: C
  Diff: 1   Page Ref: Sec. 1.5-1.6

7) The base SI unit of time is

  A) hour.

  B) minute.

  C) second.

  D) millisecond.

  Answer: C
  Diff: 1   Page Ref: Sec. 1.5-1.6

8) In the CGS system, what are the fundamental units?

  A) Newton, centimeter, second

  B) kilogram, meter, second

  C) gram, centimeter, minute

  D) gram, centimeter, second

  Answer: D
  Diff: 2   Page Ref: Sec. 1.5-1.6

9) The metric prefix for one one-thousandth is
   A) milli.
   B) centi.
   C) kilo.
   D) mega.

Answer: A
Diff: 1   Page Ref: Sec. 1.5-1.6

10) The metric prefix for one one-hundredth is
    A) milli.
    B) centi.
    C) kilo.
    D) mega.

Answer: B
Diff: 1   Page Ref: Sec. 1.5-1.6

11) The metric prefix for one thousand is
    A) milli.
    B) centi.
    C) kilo.
    D) mega.

Answer: C
Diff: 1   Page Ref: Sec. 1.5-1.6

12) Express the number 0.02 days using a prefix of Table 1-4.
    A) 2 decidays
    B) 2 centidays
    C) 2 millidays
    D)   2
    microdays

Answer: B
Diff: 1   Page Ref: Sec. 1.5-1.6

13) What is the conversion factor between km/h and m/s?
    A) 0.0278 m/s
    B) 0.278 m/s
    C) 3.60 m/s
    D) 16.7 m/s

Answer: B
Diff: 1   Page Ref: Sec. 1.5-1.6

14) What is the conversion factor between km/h^2 and m/s^2?

    A) 7.72×10^{-6} m/s^2

    B) 2.78×10^{-1} m/s^2

    C) 1.30×10^{4} m/s^2

    D) 3.60 m/s^2

Answer: A
Diff: 1   Page Ref: Sec. 1.5-1.6

15) What is the conversion factor between cm^2 and m^2?

    A) 0.01 m^2/cm^2

    B) 0.0001 m^2/cm^2

    C) 100 m^2/cm^2

    D) 10000 m^2/cm^2

Answer: B
Diff: 1   Page Ref: Sec. 1.5-1.6

16) The position, x, of an object is given by the equation $x = A + Bt + Ct^2$, where t refers to time. What are the dimensions of A, B, and C?

    A) distance, distance, distance

    B) distance, time, time^2

    C) distance, distance/time, distance/time^2

    D) distance/time, distance/time^2, distance/time^3

Answer: C
Diff: 2   Page Ref: Sec. 1.8

Quantitative Problems

1) What is the percent uncertainty in the measurement 2.58 ± 0.15 cm?

    A) 2.9%

    B) 5.8%

    C) 8.7%

    D) 12%

Answer: B
Diff: 2   Page Ref: Sec. 1.4

2) What, approximately, is the percent uncertainty for the measurement 5.2?

    A) 1%

    B) 2%

    C) 3%

    D) 4%

Answer: B
Diff: 2   Page Ref: Sec. 1.4

3) What is the percent uncertainty in the area of a circle whose radius is 1.8×10^4 cm?

    A) 1.1%

    B) 5.6%

    C) 11%

    D) 56%

    Answer: C

    Diff: 3   Page Ref: Sec. 1.4

4) What is the volume, and its approximate uncertainty, of a sphere of radius 1.96 ± 0.01 m?

    A) $31.5 \pm 0.2 \ m^2$

    B) $31.5 \pm 0.3 \ m^2$

    C) $31.5 \pm 0.4 \ m^2$

    D) $31.5 \pm 0.5 \ m^2$

    Answer: D

    Diff: 3   Page Ref: Sec. 1.4

5) The number of significant figures in 10001 is

    A) two.

    B) three.

    C) five.

    D) six.

    Answer: C

    Diff: 1   Page Ref: Sec. 1.4

6) The number of significant figures in 0.01500 is

    A) two.

    B) three.

    C) four.

    D) five.

    Answer: C

    Diff: 1   Page Ref: Sec. 1.4

7) The number of significant figures in 0.040 is

    A) one.

    B) two.

    C) three.

    D) four.

    Answer: B

    Diff: 1   Page Ref: Sec. 1.4

8) Which of the following has three significant figures?

   A) 305.0 cm

   B) 0.0500 mm

   C) 1.00081 kg

   D) 8.060×10^{11} m^2

Answer: B

Diff: 1   Page Ref: Sec. 1.4

9) What is the sum of 2.67 + 1.976 + 2.1?

   A) 6.7

   B) 6.75

   C) 6.746

   D) 6.7460

Answer: A

Diff: 1   Page Ref: Sec. 1.4

10) What is the difference between 103.5 and 102.24?

   A) 1.3

   B) 1.26

   C) 1.260

   D) 1.2600

Answer: A

Diff: 1   Page Ref: Sec. 1.4

11) What is the product of 12.56 and 2.12?

   A) 27

   B) 26.6

   C) 26.23

   D) 26.627

Answer: B

Diff: 1   Page Ref: Sec. 1.4

12) What is the result of 2.43 d 4.561?

   A) 5.3278×10^{-1}

   B) 5.328×10^{-1}

   C) 5.33×10^{-1}

   D) 5.3×10^{-1}

Answer: C

Diff: 1   Page Ref: Sec. 1.4

13) What is the cosine of 55e?

  A) 0.6

   B) 0.57

   C) 0.574

   D) 0.5736

Answer: B
Diff: 1   Page Ref: Sec. 1.4

14) The length and width of a rectangle are 1.125 m and 0.606 m, respectively. Multiplying, your
    calculator gives the product as 0.68175. Rounding properly to the correct number of significant
    figures, the area should be written as

  A) 0.68 m^2.

   B) 0.682 m^2.

   C) 0.6818 m^2.

   D) 0.68175 m^2.

Answer: B
Diff: 1   Page Ref: Sec. 1.4

15) The length and width of a rectangle are 1.125 m and 0.606 m, respectively. You calculate the
    rectangle's perimeter by adding these and multiplying by two. Your calculator's display reads
    3.462. To the correct number of significant figures, this should be written as

  A) 3.5 m.

   B) 3.46 m.

   C) 3.462 m.

   D) 3.4620 m.

Answer: C
Diff: 1   Page Ref: Sec. 1.4

16) A rectangle is 3.25 m long and 1.5 m wide. What is its area ?

  A) 4.875 m^2

   B) 4.87 m^2

   C) 4.80 m^2

   D) 4.9 m^2

Answer: D
Diff: 2   Page Ref: Sec. 1.4

17) A rectangular garden measures 15 m long and 13.7 m wide. What is the length of a diagonal from one corner of the garden to the other?

  A) 18 m

  B) 19 m

  C)　　20

  m

  D) 4.1 $\cdot$ 10^2 m

  Answer: C
  Diff: 2　　　Page Ref: Sec. 1.4

18) Select the smallest value.

  A) 15 $\cdot$ 10^{-3}

  B) 0.15 $\cdot$ 10^0

  C) 0.00015 $\cdot$ 10^3

  D) 0.00000015 $\cdot$ 10^6

  Answer: A
  Diff: 1　　　Page Ref: Sec. 1.4

19) Write the number 0.00045 in power of ten notation.

  A) 4.5 $\cdot$ 10^{-4}

  B) 4.5 $\cdot$ 10^{-3}

  C) 4.5 $\cdot$ 10^{-2}

  D) 4.5 $\cdot$ 10$^-$

  1

  Answer: A
  Diff: 1　　　Page Ref: Sec. 1.4

20) 0.0001776 can also be expressed as

  A) 1.776 $\cdot$ 10^{-4}.

  B) 17.72 $\cdot$ 10^4.

  C) 1772 $\cdot$ 10^5.

  D) 177.2 $\cdot$ 10^7.

  Answer: A
  Diff: 1　　　Page Ref: Sec. 1.4

21) 4567.89 is properly expressed in scientific notation as

  A) 4.56789 $\cdot$ 10^3.

  B) 45.6789 $\cdot$ 10^2.

  C) 456.789 $\cdot$ 10^1.

  D)　　4567.89　　$\cdot$

  10^0.

  Answer: A
  Diff: 1　　　Page Ref: Sec. 1.4

22) Convert 1.2×10^{-3} to decimal notation.
   A) 1.200
   B) 0.1200
   C) 0.0120
   D) 0.0012

   Answer: D
   Diff: 1   Page Ref: Sec. 1.4

23) Write out the number 8.42×10^{-5} in full with a decimal point and correct number of zeros.
   A) 0.00000842
   B) 0.0000842
   C) 0.000842
   D) 0.00842

   Answer: B
   Diff: 1   Page Ref: Sec. 1.4

24) What is the result of $(0.410 + 0.021) \times (2.20 \times 10^3)$?
   A) 880
   B) 946
   C) 948
   D) 950

   Answer: C
   Diff: 2   Page Ref: Sec. 1.4

25) Write the number 13.5 gigameters as full (decimal) numbers with standard units.
   A) 135,000 m
   B) 135,000,000 m
   C) 135,000,000,000 m
   D) 13,500,000,000 m

   Answer: D
   Diff: 1   Page Ref: Sec. 1.5-1.6

26) 100 mL is equivalent to which of the following?
   A) 1 kL
   B) 10^{-6} mL
   C) 0.1 L
   D) 0.01 ML

   Answer: C
   Diff: 1   Page Ref: Sec. 1.5-1.6

27) How many grams is forty milligrams?

   A) 0.000040 g

   B) 0.00040 g

   C) 0.040 g

   D) 40000 g

Answer: C

Diff: 1   Page Ref: Sec. 1.5-1.6

28) How many meters is sixty kilometers?

   A) 600,000 m

   B) 60,000 m

   C) 60 m

   D) 0.06 m

Answer: B

Diff: 1   Page Ref: Sec. 1.5-1.6

29) 1 angstrom = 10^{-10} m and 1 fermi = 10^{-15} m, what is the relationship between these units?

   A) 1 angstrom = 10^5 fermi

   B) 1 angstrom = 10^{-5} fermi

   C) 1 angstrom = 10^{-25} fermi

   D) 1 angstrom = 10^{+25} fermi

Answer: A

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30) 0.00325×10^{-8} cm can also be expressed in mm as

   A) 3.25×10^{-12} mm.

   B) 3.25×10^{-11} mm.

   C) 3.25×10^{-10} mm.

   D) 3.25×10^{-9} mm.

Answer: C

Diff: 2   Page Ref: Sec. 1.5-1.6

31) Which one of the following is not equivalent to 2.50 miles? (1 mi = 1.609 km = 5280 ft, 1 ft = 12 in.)

   A) 1.32×10^4 ft

   B) 1.58×10^5 in.

   C) 4.02×10^3 km

   D) 4.40×10^3 yd

Answer: C

Diff: 1   Page Ref: Sec. 1.5-1.6