Test bank chapter (1)

Choose the correct answer

1. The SI unit of time is the

   a) hour
   b) second
   c) minute
   d) ampere

2. The diameter of an atom is approximately 1×10^{-7} mm. What is this diameter when expressed in nanometers?

   a) 1×10^{-18} nm
   b) 1×10^{-15} nm
   c) 1×10^{-9} nm
   d) **1×10^{-1} nm**

3. 6.0 km is how many micrometers?

   a) 6.0×10^{6} μm
   b) 1.7×10^{-7} μm
   c) 6.0×10^{9} μm
   d) 1.7×10^{-4} μm

4. The SI prefixes *giga* and *micro* represent, respectively:

   a) 10^{-9} and 10^{-6}.
   b) 10^{6} and 10^{-3}.
   c) 10^{3} and 10^{-3}.
   d) 10^{9} and 10^{-6}.

5. Which of these quantities represents the largest mass?

   a) 2.0×10^{2} mg
   b) 0.0010 kg
   c) 1.0×10^{5} μg
   d) 2.0×10^{2} cg

6. How many cubic centimeters are there in exactly one cubic meter?

   a) 1×10^{-6} cm^3
   b) 1×10^{-3} cm^3
   c) 1×10^{-2} cm^3
   d) 1×10^{6} cm^3

$°F = ((\frac{9}{5}) \cdot °C) + 32$ القانون :

7. Ammonia boils at -33.4°C. What temperature is this in °F?

$°F = ((\frac{9}{5})(-33.4)) + 32$

$= -28.12 \approx -28.1°F$

a) -60.1°F
b) -92.1°F
c) -28.1°F
d) +13.5°F

8. Which of the following is not an SI base unit?

a) **Kilometer** X → prefix مشتقة
b) Kilogram ✓ للكتلة
c) Second ✓ للوقت
d) Kelvin ✓ للحرارة

9. Which of the following SI base units is not commonly used in chemistry? (مشاع/عادة)

a) kilogram
b) kelvin
c) **candela**
d) mole

10. Which of the following prefixes means 1/1000?

a) kilo
b) deci
c) centi
d) milli

$1/1000 = 1 \times 10^{-3}$
توازي ال milli

11. Which of the following prefixes means 1000?

a) kilo
b) deci
c) centi
d) milli

$1000 = 1 \times 10^{3}$
توازي ال Kilo

12. Convert -77°F to kalvin ?

a) 212.6 K
b) -212.6 K
c) -28.1 K
d) +13.5 K

ج/ ما في علاقة بين ال °F وال K ..
فأحول من °F لـ °C ومن ثم من °C لـ K ..

$°C = (\frac{5}{9})(°F - 32)$

$= (\frac{5}{9})(-77 - 32) = -60.55°C$

$K = °C + 273.15$

$= -60.55 + 273.15$

$= 212.6 K$

13. The number 0.0005678 expressed in scientific notation is:

a) 5.678×10^{4}
b) 5.67×10^{-7}
c) 5.678×10^{-4}
d) $5.678\ 10^{-3}$

0.0005678 (1 2 3 4)

5.678×10^{-4}

Explanation: Since this number is less than one star moving the decimal point to the right until there is ONE non-zero number to the left of the decimal point. Write the rest of the number as is. Write the exponent as the number of places the decimal point was moved.

14. Which of the following is the smallest distance?

a) 21 m
b) 2.1×10^{2} cm
c) 21 mm
d) **2.1×10^{4} pm**

(a) 21m
(b) $2.1 \times 10^{2} \div 10^{2} \rightarrow m = 2.1\ m$
(c) $21mm \div 10^{3} \rightarrow m = 0.021m$
(d) $2.1 \times 10^{4} pm \div 10^{12} \rightarrow m = 2.1 \times 10^{-8} m$

Explanation: Even though 2.1×10^{4} is the largest number in this question, the units of pm (picometers) are the smallest units here, making it the smallest distance.

15. What temperature is 95 °F when converted to degrees Celsius?

a) 63 °C
b) **35 °C**
c) 127 °C
d) 15 °C

$°C = (\frac{5}{9})(°F - 32)$: القانون

$= (\frac{5}{9})(95 - 32)$

$= 35°C$

16. What temperature is 37 °C when converted to kelvin?

a) **310.15**
b) 99 k
c) 236 k
d) 67.15

$K = °C + 273.15$: القانون

$K = 37 + 273.15$

$= 310.15K$

17. What temperature is 77 K when converted to degrees Celsius?

a) –296 °C
b) 105 °C
c) **–196 °C**
d) 25 °C

$K = °C + 273.15$: القانون

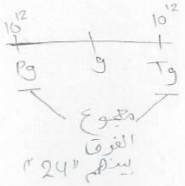
$77 = °C + 273.15$

$°C = 77 - 273.15$

$= -196.15 \approx -196°C$

18. Express 75 Tg as pg

a) 0.75 pg
b) **$75 X10^{24}$ pg**
c) 0.75 pg
d) $75 X10^{-24}$ pg



$75\ Tg \rightarrow pg$

$75 \times 10^{24} pg$

19. The SI prefixes *Tara* and *nano* represent, respectively:

Tera 10^{12}, Nano 10^{-9}

a) 10^{-9} and 10^{-6}.
b) 10^{6} and 10^{-3}.
c) 10^{3} and 10^{-3}
d) 10^{12} and 10^{-9}

20. Which of these quantities represents the smallest mass?

a) 2.0×10^2 mg
b) 0.0010 kg
c) **1×10^5 µg**
d) 2.0×10^2 cg

(a) $2\times10^2 mg \xrightarrow{\div 10^3} g$ $= 0.2 = 2\times10^{-1} g$
(b) $0.0010 Kg \xrightarrow{\times 10^3} g$ $= 1g$
(c) $1\times10^5 \mu g \xrightarrow{\div 10^6} g$ $= 0.1g \approx 1\times10^{-1} g$
(d) $2\times10^2 cg \xrightarrow{\div 10^2} g$ $= 2g$

21. Express 7.5 ng as Tg

a) **$7.5 X10^{-21}$ Tg**
b) $75 X10^{24}$ Tg
c) 0.75 Tg
d) $7.5 X10^{21}$ Tg

$7.5 ng \rightarrow Tg$

$7.5 \div 10^{21} = 7.5\times10^{-21} Tg$

$9 + 12 = 21$

28. At what temperature does the numerical reading on a Fahrenheit thermometer equal that on a Celsius thermometer?

a) 0 °F
b) **– 40°F**
c) 100 °F
d) –32 °F

Explanation: since the temperature reading is the same so that mean °F = °C

? F = [°C × 9/5] + 32 °F

Let temperature = t

t = [t × 9/5] + 32 °F

t - 9/5 t = 32 °F

-4/5 t = 32 °F

t = - 40 °F = -40 °C

اول طريقة :

$°C = (\frac{5}{9})(-40 - 32)$

$= -40°$

ثاني طريقة :

$°F = ((\frac{9}{5})°C) + 32$

$t = (t(\frac{9}{5})) + 32°$

$t - (\frac{9}{5})t = 32$

$1 - \frac{9}{5} = \frac{-4}{5}$

$(-\frac{5}{4}) - \frac{4}{5}t = 32(\frac{-5}{4})$

$1t = -40$

$t = -40°F$

وكمان

$t = -40°C$