Significant figures, Units for measurement, Matter and Separation of mixture

1. **One fermi is**
   - **Answer:** (a) 10^{-13} cm
   - **Reasoning:** 1 fermi = 1 femtometer = 10^{-15} m. Converting to cm: 10^{-15} m × 100 cm/m = 10^{-13} cm.
2. **A picometre is written as**
   - **Answer:** (d) 10^{-12} m
   - **Reasoning:** 1 pm = 10^{-12} m by definition.
3. **One atmosphere is equal to**
   - **Answer:** (a) 101.325 kPa
   - **Reasoning:** Standard atmospheric pressure = 101325 Pa = 101.325 kPa.
4. **Dimensions of pressure are same as that of**
   - **Answer:** (c) Energy per unit volume
   - **Reasoning:** Pressure = Force/Area = $ML^{-1}T$-2; Energy/Volume = ($ML^{2}T$-2)/L^3 = $ML^{-1}T$-2.
5. **The prefix 10^18 is**
   - **Answer:** (d) Exa
   - **Reasoning:** Kilo=10^3, Mega=10^6, Giga=10^9, Tera=10^{12}, Peta=10^{15}, Exa=1018.
6. **Significant figures for 161 cm, 0.161 cm, 0.0161 cm**
   - **Answer:** (b) 3, 3, 3
   - **Reasoning:** Leading zeros do not count; all numbers have 3 significant figures.
7. **Significant figures in 0.00051**
   - **Answer:** (c) 2
   - **Reasoning:** Leading zeros are not counted; digits 5 and 1 are counted.
8. **Halogen purified by sublimation**
   - **Answer:** (d) I_2
   - **Reasoning:** Iodine sublimes easily; other halogens are gases or liquids.
9. **Difference in density is the basis of**

- **Answer:** (c) Gravity Separation
- **Reasoning:** Gravity separation separates components based on density differences.

10. **Element indicating life on Earth**
    - **Answer:** (c) Carbon
    - **Reasoning:** Carbon forms organic compounds; essential for life.
11. **Compound added to table salt for health**
    - **Answer:** (c) NaI
    - **Reasoning:** Iodine deficiency is prevented by adding NaI to salt.
12. **Contains only one element**
    - **Answer:** (b) Diamond
    - **Reasoning:** Diamond is pure carbon; other options are compounds or mixtures.
13. **Maximum number of known elements**
    - **Answer:** (a) Metals
    - **Reasoning:** Most elements in the periodic table are metals.
14. **Not an element**
    - **Answer:** (c) Silica
    - **Reasoning:** Silica (SiO_2) is a compound, not an element.
15. **Mixture of $ZnCl_2$ and $PbCl_2$ separated by**
    - **Answer:** (b) Crystallization
    - **Reasoning:** Different solubilities allow selective crystallization.
16. **Mixture of methyl alcohol and acetone separated by**
    - **Answer:** (b) Fractional distillation
    - **Reasoning:** Close boiling points require fractional distillation.
17. **Significant figures in $((29.2-20.2)(1.79\times10^5))/1.37$**
    - **Answer:** (b) 2
    - **Reasoning:** Subtraction: 29.2-20.2=9.0 (2 sig. figs), Multiplication/Division → least sig. figs = 2.
18. **Pure ethyl alcohol in 81.4 g sample containing 0.002 g water**
    - **Answer:** (d) 81 g
    - **Reasoning:** 81.4-0.002 = 81.398 → rounded to correct sig. figs = 81 g.

19. **Unit J Pa^{-1} is equivalent to**
    - **Answer:** (a) m^3
    - **Reasoning:** J/Pa = (N·m)/(N/m^2) = m^3.
20. **Mass nearest to milligram**
    - **Answer:** (c) 16.428 g
    - **Reasoning:** Milligram = 0.001 g → closest mass with 3 decimal places = 16.428 g.
21. **Significant figures in 6.02×10^23**
    - **Answer:** (b) 3
    - **Reasoning:** Only 6, 0, 2 counted → 3 sig. figs.
22. **Prefix zepto stands for**
    - **Answer:** (d) 10^{-21}
    - **Reasoning:** Zepto = 10^{-21}, femto=10^{-15}, atto=10^{-18}.
23. **Significant figures in 3400**
    - **Answer:** (a) 2
    - **Reasoning:** No decimal → trailing zeros not counted → 2 sig. figs.
24. **Significant figures in 6.0023**
    - **Answer:** (a) 5
    - **Reasoning:** All digits counted.
25. **Significant figures in P=0.0030, Q=2.40, R=3000**
    - **Answer:** (b) 2, 3, 4
    - **Reasoning:** 0.0030 → 2 sig. figs, 2.40 → 3 sig. figs, 3000 → 4 sig. figs if decimal written.
26. **Significant figures in 60.0001**
    - **Answer:** (b) 6
    - **Reasoning:** All digits counted.
27. **Weight reported from 3.929 g and 4.0 g**
    - **Answer:** (c) 3.9 g
    - **Reasoning:** Least precise measurement = 4.0 g → 2 sig. figs → report weight as 3.9 g.