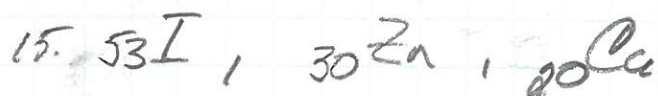
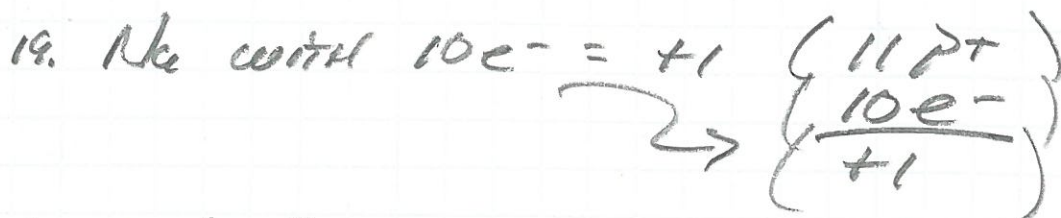


- CHECK YOUR NOTES & LECTURES UPLOADED TO WEBSITE DURING AUG. 24 & AUG. 25 FOR INFO ON THESE PEOPLE.
- A QUANTITATIVE OBSERVATION IS ONE WITH SORT OF PRESENCE / ABSENCE INFORMATION LIKE:
 - THAT BIRD HAS RED EYES
 - PRONGHORN ANTELOPE RUN FAST
 - MONET PAINTED BEAUTIFUL LANDSCAPES
 A QUANTITATIVE OBSERVATION IS ONE WITH MEASUREMENTS OR QUANTITIES (NUMERIC VALUES)
 - PRONGHORN RUN UP TO 90 km / hr
 - MR. FITCH WEIGHS 89 kg
- 5 INDICATORS OF CHEMICAL CHANGE ARE:
 - CHANGE IN COLOR
 - CHANGE IN TEMPERATURE
 - PRODUCTION OF A SOLID (PRECIPITATION)
 - PRODUCTION OF A GAS
 - PRODUCTION OF LIGHT
- PHYSICAL CHANGE
 - CHEMICAL CHANGE
 - PHYSICAL "
 - CHEMICAL "
 - PHYSICAL "
 - PHYSICAL "
- $1 \text{ PROTON} = 1 \text{ ATOMIC MASS UNIT}$
 $1 \text{ NEUTRON} = 1 \text{ AMU}$
 $1 \text{ ELECTRON} = \frac{1}{1837} \text{ OF AN AMU} = .0005 \text{ AMU}$
- $\text{PROTON} = +1$ $\text{NEUTRON} = 0 \text{ (NO CHANGE)}$
 $\text{ELECTRON} = -1$
- PROTONS AND NEUTRONS ARE FOUND IN THE NUCLEUS.
- ELECTRONS EXIST IN ORBITALS CERTAIN DISTANCES FROM THE NUCLEUS.
- ATOMIC NUMBER IS THE NUMBER OF PROTONS IN AN ELEMENT.

10. THE ATOMIC MASS NUMBER OF AN ELEMENT IS THE # OF PROTONS + # OF NEUTRONS.
11. AN ION IS AN ATOM WITH A CHARGE DUE TO UNEQUAL #S OF PROTONS (p^+) AND ELECTRONS (e^-).
12. ISOTOPES ARE DIFFERENT FORMS OF AN ELEMENT DUE TO DIFFERENT NUMBERS OF NEUTRONS. AS A RESULT, THE DIFFERENT ISOTOPES ALSO HAVE DIFFERENT ATOMIC MASSES.
13. ^{235}U AND ^{239}U DIFFER DUE TO DIFFERENT NUMBERS OF NEUTRONS.
14. ATOMIC MASSES ON PERIODIC TABLES ARE AVERAGE ATOMIC MASSES, CALCULATED USING % ABUNDANCE OF EACH ISOTOPE.



16. $\text{Ne} = 20.18 \text{ AMU}$ $\text{Cu} = 63.55 \text{ AMU}$ $\text{Sn} = 118.69 \text{ AMU}$



20. a. 6 sig figs
- b. 4 sig figs
- c. 4 sig figs
- d. 2 sig figs
- e. 3 sig figs

21. a. 0.165 L
- b. 20 km
- c. .49
- d. 270 g
- e. 47 ml
- f. 8.35 ml

22. a. $9.47 \cdot 220 = 2083.4 \Rightarrow 2100$ (2 SF)
 b. $812.000 \cdot .0050 = 4060 \Rightarrow 4100$ (2 SF)
 c. $82.250 / 12 = 6.85416... \Rightarrow 6.9$ (2 SF)
 d. $18 / 55 = .0345... \Rightarrow .035$ (2 SF)
 e. $58 + 8.2 = 66.2 \Rightarrow 66$
 f. $0.05 + .100 = 0.150 \Rightarrow 0.15$
 g. $100 + 78 = 178 \Rightarrow 200$
 h. $74.3 - 0.2113 = 74.0887 \Rightarrow 74.1$

23. a. $(3.85 \text{ cm}) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = .0385 \text{ m} = .039 \text{ m} = .04 \text{ m}$

b. $(7.5 \text{ L}) \left(\frac{1000 \text{ ml}}{1 \text{ L}} \right) = 7500 \text{ ml}$

c. $(90.25 \text{ g}) \left(\frac{1 \text{ kg}}{1000 \text{ g}} \right) = .09025 \text{ kg} = .09 \text{ kg}$

d. $(13 \text{ ml}) \left(\frac{1 \text{ L}}{1000 \text{ ml}} \right) = .013 \text{ L}$

e. $(15 \text{ ml}) \left(\frac{1 \text{ cm}^3}{1 \text{ ml}} \right) = 15 \text{ cm}^3$

f. $22^\circ \text{C} + 273 = 295 \text{ K}$

g. $(32 \text{ ft}) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) = 975.36 \text{ cm}$

h. $(30 \text{ mi}) \left(\frac{1.61 \text{ km}}{1 \text{ mi}} \right) = 48.3 \text{ km}$

i. $(160 \text{ km}) \left(\frac{1 \text{ mi}}{1.61 \text{ km}} \right) = 99.38 \text{ mi}$

24. $(25 \text{ L}) \left(\frac{1000 \text{ g}}{1 \text{ L}} \right) = 11340 \text{ g}$ $(1.62 \text{ qt}) \left(\frac{946 \text{ L}}{1 \text{ qt}} \right) = 1532.52 \text{ L}$
 $\frac{11340 \text{ g}}{1532.52 \text{ L}} = 7.3995 \text{ g/cm}^3 = 7.4 \text{ g/cm}^3$ $= 1532.52 \text{ ml}$
 $= 1532.52 \text{ cm}^3$

25. $5.5\text{-mm} = .55\text{ cm} \rightarrow \frac{4}{3}\pi (.55\text{ cm})^3$
 $V = \left(\frac{4}{3}\pi (.55\text{ cm})^3\right) = 696.91\text{-mm}^3 = .696909\text{ cm}^3$

$$\rho = \frac{M}{V} = \frac{4.085\text{ g}}{.69691\text{ cm}^3} = .00586\text{ g/cm}^3$$

$$= \frac{4.085\text{ g}}{.696909\text{ cm}^3} = 5.86\text{ g/cm}^3$$

26. $(145\text{-ml}) \left(\frac{1\text{ g}}{\text{ml}}\right) = 145\text{ g H}_2\text{O (liquid)}$

$$\rho = \frac{M}{V} \quad \rho_{\text{solid}} = .912\frac{\text{g}}{\text{ml}} \quad M_{\text{solid}} = 145\text{ g}$$

$$V = \frac{M}{\rho} = \frac{145\text{ g}}{.912\frac{\text{g}}{\text{ml}}} = 158.12\text{-ml} = \text{VOL } 145\text{ g ICE}$$

$$158.12\text{-ml} - 145\text{-ml} = 13.12\text{-ml GAIN in VOLUME}$$

SOLID H₂O LIQUID H₂O AFTER FREEZING

27. 15 kg GASOLINE $\rho_{\text{gas}} = .690\frac{\text{g}}{\text{ml}} \quad \rho = \frac{M}{V} \quad V = \frac{M}{\rho}$

$$\frac{15000\text{ g GASOLINE}}{.690\frac{\text{g}}{\text{ml}}} = 21739.13\text{-ml GASOLINE}$$

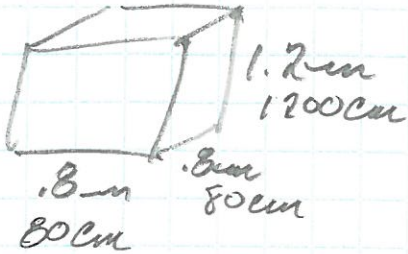
21739.13-ml METHANOL $\rho_{\text{METH}} = .791\frac{\text{g}}{\text{ml}} \quad D \cdot V = M$

$$\left(.791\frac{\text{g}}{\text{ml}}\right) (21739.13\text{-ml}) = 17195.65\text{ g METHANOL}$$

REV UI EXAM

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28.



$$M = 3.2 \text{ kg} = 3200 \text{ g}$$

$$V = (80 \text{ cm})(80 \text{ cm})(120 \text{ cm}) = 768000 \text{ cm}^3$$

$$= 7.68 \times 10^5 \text{ cm}^3$$

$$D = \frac{M}{V} = \frac{3200 \text{ g}}{768000 \text{ cm}^3} = .0042 \text{ g/cm}^3$$

$$29. (100 \text{ LBS}) \left(\frac{453.6 \text{ g}}{\text{LBS}} \right) = 45360 \text{ g POTATOES}$$

$$(15 \text{ GALL}) \left(\frac{3.785 \text{ L}}{\text{GALL}} \right) \left(\frac{1000 \text{ mL}}{\text{L}} \right) \left(\frac{1 \text{ g}}{\text{mL}} \right) = 56775 \text{ g H}_2\text{O}$$

$$(5 \text{ L}) \left(\frac{1000 \text{ mL}}{\text{L}} \right) \left(\frac{13.534 \text{ g}}{\text{mL}} \right) = 40602 \text{ g H}_2$$

\therefore 15 GALL H₂O WEIGHS THE MOST

30. 7 p⁺ 11 n⁰

31. ${}^{40}_{19}\text{K} = 40 - 19 = 21$ NEUTRONS (N⁰)

32. Ca HAS 20 e⁻

33. ${}^{244}_{94}\text{Pu} = 94 \text{ p}^+$

34. $244 - 94 = 150 \text{ N}^0$

35. W = 183.85 AMU

Sn = 118.69 AMU

Tc = 127.60 AMU

$$36. (.9889)(12.000 \text{ AMU}) + (.0111)(13.0034 \text{ AMU}) = 12.0098 \text{ AMU}$$

$$= 12.01 \text{ AMU}$$

REV U1 EXAM

6

$$37. (.0742)(6.0151 \text{ AMU}) + (.9258)(7.0160 \text{ AMU}) = 6.9417 \text{ AMU}$$

$$= 6.94 \text{ AMU}$$

$$38. (.9967)(14.0031 \text{ AMU}) + (.0033)(15.0001 \text{ AMU}) = 14.00679 \text{ AMU}$$

$$= 14.01 \text{ AMU}$$

$$39. (.7553)(34.9689 \text{ AMU}) + (.2447)(36.9659 \text{ AMU}) = 35.4575 \text{ AMU}$$

$$= 35.46 \text{ AMU}$$

$$40. (.0072)(235.0439 \text{ AMU}) + (.9927)(238.0508 \text{ AMU})$$

$$= 238.00534 \text{ AMU}$$

$$= 238.01 \text{ AMU}$$