Q1(A):

The electronic configurations are:

(1): 2,3

(2): 2,6

$\boxed{(3)}$: 2,8,2

(4): 2,8,8,2

(5): 2,8,6

Q1(B):

The oxidation number of N in HNO_3 is +5.

(1): -3

(2): 0

(3): +2

(4): +4

$\boxed{(5)}$: +5

Q1(C):

There are $\boxed{3}$ isomers:

Alcohols: Propan-1-ol, Propan-2-ol

Ether: ethyl methyl ether (methoxyethane)

Q1(D):

$\boxed{(1)}$: Linear molecule with $C = O$ double bond.

(2): Bent molecule with $H - O$ single bonds only.

(3): Trigonal pyramidal molecule with $N - H$ single bonds only.

(4): Linear molecule with $C \Xi C$ triple bond.

(5): Tetrehydral molecules with single bonds only.

Q1(E):

(1): It is a alkene with $C = C$ double bonds.

(2): It contains a benzene.

$\boxed{(3)}$: It contains only sing bond.

(4): It contains a $C = O$ double bond in the $-COOH$ group.

(5): It contains a $C = O$ double bond.

Q1(F):

(1): It contains two $-COOH$ groups.

$\boxed{(2)}$: It contains only one $-COOH$ group.

(3): It contains two $-COOH$ groups.

(4): It contains two $-COOH$ groups.

(5): It contains no $-COOH$ groups.

Q1(G):

$63.5 + 32.0 + 4 \cdot 16.0 + 5 \cdot 18 = \boxed{249.5}$.

Q2:

(1): After 0.5 mol of CO and H_2O are produced, 0.5 mol of CO_2 and H_2 are consummed (and becomes 0.5 mol eventually).

$K_C = \frac{0.5 \cdot 0.5}{0.5 \cdot 0.5} = \boxed{1.0}$.

(2): Let x be the number of moles, considering the K_C, we have

$$\frac{x \cdot x}{(0.5 + 0.5 - (x - 0.5))(0.5 - (x - 0.5))} = 1$$

$$x^2 = 1.5 - 2.5x + x^2$$

$$x = \boxed{0.60}$$

Q3:

By $\Pi = cRT$, the osmotic pressure increases with the molarity of the solution. The solution with higher osmotic pressure will pass through the semipermeable membrane until the osmotic pressure reaches equilibrium.

Therefore, the solution level of B will rise (to dilute the solution) and the level of A will drop (to concentrate the solution) $\boxed{(4)}$.

Q4:

(A): Combine the two equations, we have $CO = C(graphite) + \frac{1}{2}O_2 - 111\ kJ$,

i.e. the heat of formation of CO is $\boxed{111\ kJ/mol}$.

(B): $\frac{14.0}{12.0+16.0} = 0.5\ mol$ of CO froms and $\frac{66.0}{12.0+2\cdot16.0} = 1.5\ mol$ of CO_2 forms.

Therefore, $0.5 \cdot 111 + 1.5 \cdot 394 = \boxed{646.5\ kJ}$ of heat is generated.

Q5:

(A): $Q = It = 12 \cdot (1 \cdot 60 \cdot 60) = \boxed{4.32 \times 10^4}\ C$.

(B): The reaction in the cathode is $Ag^+ + e^- \rightarrow Ag$.

The molar ratio $e^- : Ag = 1 : 1$.

As $4.32 \times 10^4 = \frac{4.32\times10^4}{9.65\times10^4} = \frac{4.32}{9.65}\ mol$ of electrons passed through the circuit,

$\frac{4.32}{9.65} \cdot 108.0 \approx \boxed{48.3\ g}$ of silver eposited at the cathode.

Q6:

(A): The equation is given by $C_2H_2 + 2H_2 \rightarrow C_2H_6$.

As 0.850 mol of C_2H_6 is produced, $2 \cdot 0.850 = \boxed{1.7\ mol}$ of H_2 is used.

(B): 1.7 mol of gas is equivalent to $1.7 \cdot 22.4 = \boxed{38.1\ l}$.

Q7:

(A): Considering the percentage mass of C in CO_2, the mass of C atom in the compound=$21.5 \cdot \frac{12.0}{12.0+2 \cdot 16.0} = \frac{129}{22}\ mg$.

Similarly, the mass of H atom in the compound=$\frac{17.4}{18}\ mg$.

Therefore, the mass of O atom=$14.8 - \frac{129}{22} - \frac{17.4}{18} = \frac{263}{33}\ mg$.

The molar ratio $C : H : O = \frac{\frac{129}{22}}{12.0} : \frac{17.4}{18} : \frac{\frac{263}{33}}{16.0} \approx 1 : 2 : 1$.

Hence, the compositional formula is $\boxed{CH_2O}$.

(B): Solving $n(12.0 + 2 \cdot 1.0 + 16.0) = 60$ for integer n, we have $n = 2$.

Therefore, the molecular formula is $\boxed{C_2H_4O_2}$.

Q8:

(A): Let m be the molecular mass of the amino acid.

To form one peptide bond, a H_2O molecule (molecular mass 18). For a tripeptide, 2 peptide bonds are formed.

Therefore, we have $3m - 2 \cdot 18 = 2.52m$, i.e. $m = \boxed{75}$.

(B): Let the three amino acids be A,B,C.

All tripeptides that can be formed are:

ABC, ACB, BAC, BCA, CAB, ABD

Totally $\boxed{6}$ isomers.

Note: If one knows some maths, the number of isomers=$3! = \boxed{6}$.