

CHEMISTRY

1. (4)
2. (1)
Atomic mass
$$= \frac{10 \times 19 + 81 \times 11}{100} = \frac{190 + 891}{100} = \frac{1081}{100} = 10.81$$
3. (3)
0.1 M AgNO_3 will react with 0.1M NaCl to form 0.1M NaNO_3 . But as the volume doubled, conc. of $\text{NO}_3^- = \frac{0.1}{2} = 0.05\text{M}$.
4. (3)
Let weight of metal oxide = 100 gm
Weight of oxygen = 32 gm
 \therefore weight of metal = $100 - 32 = 68\text{gm}$
Equivalent weight of oxide
$$= \frac{\text{wt. of metal}}{\text{wt. of oxygen}} \times 8 = \frac{68}{32} \times 8 = 17.$$
5. (2)
The acid is dibasic.
Molecular weight of $\text{H}_3\text{PO}_3 = 3 + 31 + 48 = 82$
 \therefore Equivalent weight
$$= \frac{\text{Molecular weight}}{\text{Basicity}} = \frac{82}{2} = 41.$$
6. (3)
 $\text{C}_2\text{H}_4 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$
 \therefore 28 gm C_2H_4 requires 96 gm oxygen
- \therefore 2.8×10^3 gm C_2H_4 requires =
$$\frac{96}{28} \times 2.8 \times 10^3 \text{ gm} = 9.6 \times 10^3 \text{ gm} = 9.6 \text{ kg}.$$
7. (1)
 \therefore 2.24 L of gas has mass = 4.4 gm
 \therefore 22.4 L of gas has mass
$$= \frac{4.4}{2.24} \times 22.4 = 44$$

So given gas is CO_2 because CO_2 has molecular mass = 44.
8. (1)
44g of CO_2 has $2 \times 6 \times 10^{23}$ atoms of oxygen
4.4g of CO_2 has $= \frac{12 \times 10^{23}}{44} \times 4.4$
$$= 1.2 \times 10^{23} \text{ atoms}.$$
9. (3)
According to Avogadro's hypothesis equal volumes of all gases under similar conditions of temperature and pressure contains equal number of molecules.
10. (4)
Amount of gold = 19.7 kg
$$= 19.7 \times 1000 \text{ gm} = 19700 \text{ gm}$$

Number of moles $= \frac{19700}{197} = 100$
 \therefore Number of atoms = $100 \times 6.023 \times 10^{23}$
$$= 6.023 \times 10^{25} \text{ atoms}.$$