

① 3d

②  $= \frac{56}{28} = 2$

③ Na

④ 1+

⑤ c

⑥ (ii) is correct  
half filled subshell configuration more stable

⑦ a) Cu

b) hydrogen gas

⑧ a) distance increases energy level increases.

b) correct

c) correct

d) s subshell common

⑨ a) moles =  $\frac{120}{24} = 5$  moles

molecules =  $5 N_A$

atoms =  $5 N_A$

b) 1 mole of oxygen = 16g of oxygen

16g of oxygen =  $1 \times 6.022 \times 10^{23}$  atoms of oxygen

64g.

⑩ a) a) 4L

b) cylinder A as volume decreases pressure increases } Boyle's Law

⑪ a) 4

b) 3d

c) 10

⑫ m-m of  $SO_2 = 64$

a) 64

b) ~~molar mass~~ 64

100  
25  
4  
00

a) mass of 1 gmm  $\text{SO}_2 = 64$

b) find molecules in 1 gmm  $\text{SO}_2$

$$\text{moles} = \frac{64}{64} = 1 \text{ mole}$$

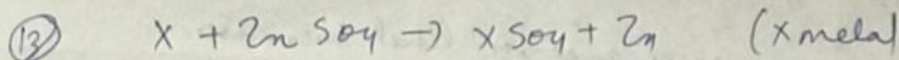
$$\text{molecules} = 1 \times 6.022 \times 10^{23}$$

$$1 \text{ gmm } \text{SO}_2 = 64$$

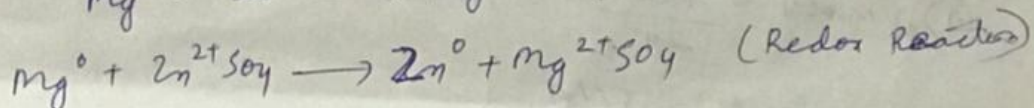
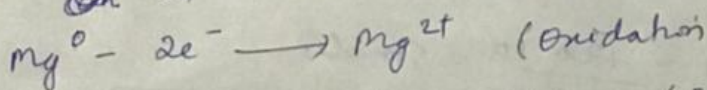
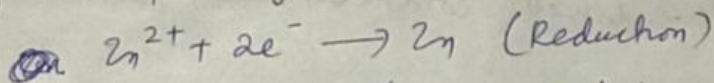
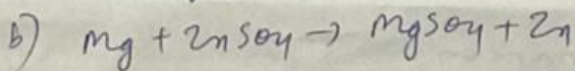
c) find no. of moles of molecules in 320 g of  $\text{SO}_2$

$$\text{moles} = \frac{320}{64} = 5 \text{ mole}$$

$$\text{molecules} = 5 \text{ NA}$$



a) X is more reactive than Zn  
So Mg is the metal



c) Zn occurs Reduction as  $\text{Zn}^{2+}$  changed to Zn  
~~Zn changed from its ionic state to metallic~~  
 $\text{Zn}^{2+}$  (metallic state)  $\rightarrow$   $\text{Zn}^0$  (ionic state)

14) a) 22.4 L

b) no. of moles =  $\frac{\text{Volume}}{22.4}$

$$= \frac{112}{22.4}$$

$$= \frac{1120}{224} = \underline{\underline{5 \text{ mole}}}$$

$$\frac{1 \times 224 \times 5}{1120}$$

c) molecules = 5 NA

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$$a) \frac{V_1}{T_1} = \frac{V_2}{T_2} = \frac{V_3}{T_3}$$

$$\frac{600}{300} = \frac{800}{T_2} = \frac{a}{450}$$

$$600 T_2 = 800 \times 300$$

$$T_2 = \frac{800 \times 300}{600} = \frac{240000}{600} = 400$$

$$120 \dots$$

$$\frac{800}{400} = \frac{V_3}{450}$$

$$V_3 = \frac{450 \times 800}{400} = 900$$

$$\frac{275}{4} = 68.75$$

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- a) (a)  $T_2 = 400$
- (b)  $V_3 = 900$

b) Charles law

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~~35 3p 0~~

a)  $1s^2 2s^2 2p^6 3s^2 3p^1$

b) period - 3  
block - p

c)  $1s^2 2s^2 2p^6 3s^2 3p^6$

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a) Boyle

b) volume - 44.8 L

$$V_1 = 44.8 \text{ L}$$

$$P_1 = 1 \text{ atm}$$

$$V_2 = 22.4 \text{ L}$$

$$P_2 = ?$$

$$P_1 V_1 = P_2 V_2$$

$$1 \times 44.8 = P_2 \times 22.4$$

$$P_2 = \frac{1 \times 44.8}{22.4}$$

$$P_2 = 2 \text{ atm}$$

c) To increase vol of gas without changing pressure and mass is to increase temperature as by Charles law

- 18)
- a) B
  - b) D
  - c) A
  - d)  $DA_2$

19)

- energy of molecules in gas
- distance b/w molecules
- attraction force b/w molecules
- freedom of movement of molecules in gas

a) . The distance between the molecules is very large.  
~~The average kinetic~~

. Molecules are far apart in gases. The intermolecular force of attraction is very less in gases.

The molecules in gases have more freedom to move compared to solids & liquids. They have a great deal of space between them and high kinetic energy.

b) When the gas is put under pressure by reducing volume of container the space between the particles is reduced and the pressure exerted by their collisions increase. If volume is held constant but temperature of gas increases then pressure will also increase.

20 a)  $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$

b) In  $MnO_2$  Mn has +4 oxidation state

so  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3$

c) because of small energy difference between d and s subshells they show variable oxidation state