UBND HUYỆN TÂN YÊN

TRƯỜNG THCS AN DƯƠNG

ĐỀ CHÍNH THỨC

;V-- 2/

**KỲ THI CHỌN HSG LỚP 9**

**NĂM HỌC 2024-2025**

**MÔN KHTN 2**

*Thời gian làm bài: 150 phút*

*(Đề thi gồm: 04 trang)*

*Ngày thi: 26 tháng 10 năm 2024*

**PHẦN TRẮC NGHỆM (3,0 ĐIỂM** )

**DANG 1: Câu hỏi có nhiều lựa chọn (1,0 ttiim).**

* *Thí sinh trả lời từ câu 1 đến câu 4. Mỗi câu chọn 1 phương án trả lời đúng.*

**Câu 1:** Phương trình hóa học nào sau đây không đúng?

* 1. H2S04 + BaCh -+ BaS04 + 2HC1
  2. Al + 2HC1 -+ AlCh + H2
  3. CO2+ Ca(OH)2 -+ CaC03 + H20
  4. CaCOJ + 2HC1 -+ CaCh + CO2 + H20

**Cau 2:** Dful tu tu den du khi car on dioxide vao 6ng nghiem d\lllg dung djch calcium hydroxide.

Hi n tm;mg quan sat duqc t:ong o g nghiem la

* A. xuat hlen ngay ket tua van d\lc mau trfulg, khong tan. ' B. khong c6 hien tuqng gi thay d6i trong 6ng nghiem.

C. ban dclu khong c6 hien tuqng gi, sau d6 c6 ket tua trfulg, khong tan.

D. ban dclu c6 ket tua trfulg, sau d6 ket tua tan dcln d€n h€t.

**Cau 3:** Thi nghiem nao sau day chung minh sit (iron) la kim lo i ho t d9ng hoa h9c m{lllh han d6ng (copper)? •

A. Df>t chay mQt day s t va m◊t day dfing trong khi oxygen.

B. D&t chay mQt day sit va mQt day dfing trong khi chlorine.

C. Cho ffiQt dinh s t da lam St,iCh vao 6ng nghiem chira dung dich copper (II) sulfate.

D. Cho m9t dinh silt va mQt day d6ng da lam si.ich vao dung dich silver nitrate (AgNOJ) d\lllg trong hai 6ng nghiem rieng biet.

**Can 4:** Trong nQc cua con k.i n va ong c6 chira cac acid (vi d\l: formic acid). Khi ngum. bi ong df>t, kien d6t se gay dau nhirc, stmg ffiy. Sir d\lllg chdt nao sau day d boi ngay vao vet df>t se giup giam stmg ffiy, dau nhirc? , ,

A. Voi toi B. Giamb C. Nucrc muoi D. Nuoc duong

DANG 2: **Cau hoi tric nghifm tlung/sai (1,0 di m).**

* + *Thi sinh tra /iii cau 5. Trong m6i ya), b), c), d) thi sinh ch()n dung (DJ hoijc sai (SJ.*

**Can 5:** Trong cong nghiep, IDQt luqng 16n NaHCOJ va Na2C03 dugc san xudt theo phuang phap Solvay bing each cho khi CO2 (ldy tu nhiet phan da voi) vao dung djch chira sodium chloride (NaCl) bao hoa va ammonia (NH3) bao hoa. PTilli chung cua phan ung:

*CO2(aq)* + *H2O(l)* + *NH3(aq)* + *NaCl(aq)-+ NH4Cl(aq)* + *NaHCO3(s)* (1)

NaHCOJ tach ra dem nhlet phan thu duqc soda (Na2C03):

2NaHC03 Na2C03+ CO2+ H20 (2)

NH4Cl sinh ra *a* (I) dugc sir d\lllg d€ tai tao NHJ bfulg each tac d\mg vcri Ca(OH)2 t o ra tu Cao. Phuong phap Solvay con duqc gQi la phu g phap tudn hoan ammonia. , ,

1. Phan ung (1) xay ra duqc la do NaHco3 c6 d{> tan kem han cac muoi khac nen bi ket tinh truoc.
2. Trong th\lC te san xuAt, nguoi ta dun n6ng h6n hqp cac chit tham gia phan (mg (1) d€ thu duqc ngay Na2C03.
3. NaHC03 c6 (mg d\lllg lam b(>t notrong cong nghi p th\Ic phfun la d\Ia theo phan ung (2).

1

1. Qua trlnh san xuit NaHCO3 va Na2CO3 theo phucmg phap Solvay se phat thai m{>t lm;mg Ion khi ammonia gay o nhiem moi trucmg.

D G 3: Cau hoi tric nghifm, tra loi n iin (1,0 di@m). , \_

*Thi sinh tra Zin tit cau 6 ,ilen cau 9 bang each tinh va ghi lqi ket qua cua moi cau vao bai thi.*

**Cau 6:** Hqp chit XY2 phf> bien ong sud\lllg d lam ccr ch6 danh lua b g banh xe trong cac iµig sung cb. M6i J?han tu 2 c6 tong cac h t proton, neutron, electron bfillg 178; trong,d6, so h t mang di n nhieu hcm so h?t kh?ng mang di n la 54, sf> h?t mang di n ua X it hem so h?t mang

di n cua·Y la 12. Trong bang tuan hoan cac nguyen t6 ho hQc, nguyen to X 6 o thu bao nhieu? Cau 7: Th\IC hi n m(>t phan ung trong binh kin theo SCY do:

X(khf) Y (khf) + Z(khl) ( 1) ,

D8 drulh gia muc dQ xay ra nhanh hay ch cua phan ung h6a hQc nguoi ta dung khai ni m toe d{> phan ung. Bi€t khi tang nhi t d{> len 10°C, t6c d(> cua phan ung (1) tang len 4 lful. d 40°C, thoi gian d8 phan un (1) xay ra hoan toan la 8 phut. N€u ti€n hanh phan ung *a* 60°C vm cung lm;mg

chit X va cac dieu ki n phan ung khac dugc gift khong df>i thi thoi gian d€ phan ung (1) xay ra hoan toan la X phut. Gia ttj cua X la bao nhieu? *{kit qua lam trim ilin hang phdn mu<Yi).*

Can 8: H6n hgp A gf>m Fe va kim lo M (hoa tri khong df>i) c6 ti 1 s6 mol cua M va Fe trong h6n hgp la 1 : 3. Cho 19,2 gam h6n hgp A tan hit vao dung dich HCl (du), thu dugc 9,916 lit khi H2. Cho 19,2 gam h6n hgp A tac d\lflg h€t voi Ch (du) thi cful dung 13,6345 lit khi Ch. Phful tram

khfii lm;mg cua cua kim lo?i M trong h6n hgp A la a%. Gia ttj cua a la bao nhieu? *(lam tron kit qua din hang phtin muai). Thi tich cac khi dut;1c do adiJu ki n chudn (dkc).*

**Can 9:** Hoa tan hoan toan 2,52 gam kim loi;ii Fe vao dung dich H2SO4 10% loang, vira du, sau khi

phan ung k€t thuc thu duqc dung dich A. Lam I dung djch A thu duqc 5,56 gam tinh th€ mm3i sulfate ng nuoc tach ra (tinh th8 X) va con li;ti dung djch mu6i sulfate bao boa c6 n6ng d(> 9,275%. Trong 5,?6 gam.tinh tha X c6 chua m gam nuoc. Gia tri cua m la bao nhieu? *(lam tron kit*

*qua ain hangphan tram).*

**PHAN Tl/ LU (7,0 di m)**  -. •• • ,' .

**Cao 10 (1,5 di,m):** . •

* 1. DS nghien ctru tinh chit cua acid vo ca X, nguoi ta ti€n hanh cac thi nghi m sau:
* **Thi nghiim 1:** Cho 2 dun$ djch cid vo,ca X loang vao fmg nghiem d\Illg 5 mL dung dich barium chloride 0,lM thay c6 ket tua trang xuat hi n.
* **Thi nghifm 2:** Cho 1 mAu kim lo?i d6ng vao 6ng nghiem chua 2 mL dung dich acid vo ccr X d dac, dun n6ng thi thiy dung djch chuy n sang mau xanh, c6 khi mui h c thoat ra.
* **Thi nghifm 3:** Cho 1 it tinh the ducmg saccharose (C12H22O11) vao c6c thuy tinh, sau d6 nho *tir* tir 2 mL dung djch acid vo ccr X d d c vao c6c thi thdy mau tri\ng cua saccharose chuy€n sang mau vang, sau d6 chuySn sang mau nau va cu6i cung thanh kh6i xfip mau den bi bQt khi <liy len

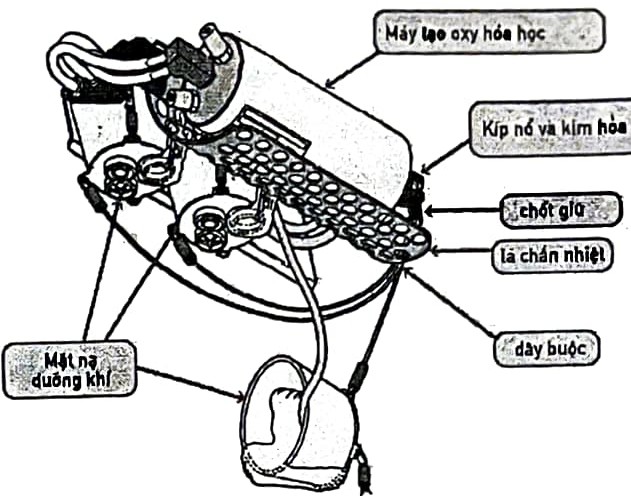
mieng c6c.

Xac djnh acid vo ccr X vi t PTHH giai thich hi n tu'?'llg cho m6 thi nghi m tren.

* 1. May ti;to oxygen (02) h6a hQc (hinh ve ben) Ia thiet bi chua hon hgp gom: sodium chlorate (NaClQ3), potassium chlorate (KCIO3), barium peroxide (BaO2) va b(>t iron (Fe). May t?o oxygen h6a hQc duqc su d\J!lg d t o o?')'gen trong may bay, tr kho!1g gian.

rong tinh huong khfut cap tren may bay' khi dUQ'C yeu cau SU d\lilg m t n d ong khi, chung ta ph{u keo m m t !1 xu6ng trucrc khi deo m t n?. Khi keo m m t n , kip no va kim hoa se dugc kich ho t cung cap nhi t cho qua trlnh phan buy sodium chlorate ***(phdn ung 1)*** va potassium

chlorate ***(phan ung 2)*** t o oxygen d ho hdp B◊t iron tac d\lflg vm oxygen ***(phti'! ,rng 3)*** la phan ung toa nhi t, giup qua trlnh phan huy sodi chlorate va potassium chlorate dien ra ti€p t\lc ma

kh,.. bi gian do . Tuy nhien, ong qua trinh phan buy

,.ong b•i chlorate c6 kh,a. nax.u..g xu"a'th"l"n pha• n u' ng ph\l, sinh

cac mu c,..A (mau vangl\lc)•Kb,1' Aduqc 10 1• b6bm• ban•um

rakhidQ h ,.\_ d" h" h:..

perox"ide nen khong anh Uuu,.g ehn,.\_S\I, O, ap. ,

Vi t phucmg trlnh h6a hQC cac P au ung tu 1 den 3 trong doan thong tin tren.

**Ciu 11 (1,0 dilm**,**):** ::. \_ , .,.. ,

1. C6 4 lQ h6a chat mat nhan du c kihit;u la X, y, Z, T. Mf>i lQ d\Ifig m(>t trong cac dung d1ch sau: H2SO4, K2CO3,

Ba(HCO3)2, Mg(HCO3)2 ng theo u u.rtren). I> xac

dinh h6a chit d\Illg trong mo1 lQ, ngucn ta da th\fc hi n cac

thlnghiem va thiy hi n tuqng nhu sau: ,

\_ Cho dung dich o lQ Z vao dung dich *CJ* lQy ho c lQ T thay c6 khi thoat ra. ,

\_ Cho dung di h *CJ* }Q Z va? dung ich *CJ* lQ X ho c dun n6ng dung djch *a* IQ X ho c dun nong dung dicholQ Y deu thay c6,ket tua trang va c6 khi thoat ra.

Xac dµili x, Y, z,T va viet cac phucmg trinh h6a hQc xay ra. . ,

1. Mufii an (NaCl) c6 lful p chat la Na2CO3, CaCh, BaCh. Trinh bay phucmg phap de tinh c e thu duc;rc mufii an tinh khiet (cac d\Ulg C\l, hoa chit c6 du), viet PTHH cac phan rmg xay ra (neu c6).

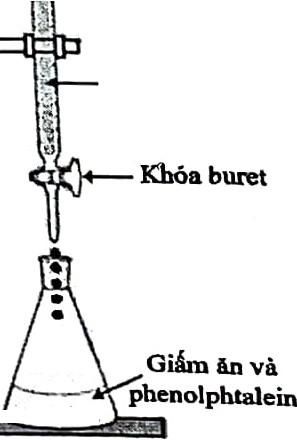
**Cau 12 (1,5 <li@m): Thi nghifm chuin <le) acid-base**

De xac dµili nfmg de) acetic acid c6 trong m9t miu giAm an, m(>t nh6m h9c sinh ti n hanh thi nghi m sau:

* + Buac l: Pha loang i 0,00 mL giAm an b g nuac cit trong binh dinh mire duqc 100,00 mL

dung d\ch X. Dung pipet liy 10,00 mL dung dich X cho vao binh tam giac rfii them vai gic;,t ch t chi thi **phenolphthalein.** \.

* + - Buac 2: Trang s ch buret b g nuac cdt,u d6'trang l i bkg m9t it dung cijch NaOH 0,02 M. L p d\lllg C\l nhu hinh ben. Cho dung dich NaOH 0,02 M vao c6c thuy tinh, sau d6 r6t vao buret (da kh6a) va chinh v€ vi,ich O *(buret ghi thi tich tang ddn tu tren xu6ng duai).*
    - Buoc 3: Viµ}kh6a buret de dung dich NaOH trong buret chay tir tir rung giQt vao binh tam giac df>ng thcri lie d€u binh. Quan sat d€n khi dung dich trong binh tam giac chuyen tir khong mau sang mau hf>ng b n trong khoang 20 giay thl dung 1 .
    - Buac 4: Ghi l i the tich dung dich NaOH da dung.



L p l i thi nghi m 3 1 .

1. Vi€t phucmg trinh h6a hQc cua phan ung xay ra.
2. Vl sao oBu!5'c 2 phai tr:1Ilg1 buret b g dung dich NaOH 0,02M sau khi da nia s ch bang nuac cat?
3. The tich dung dich NaOH 0,02M trong 3 lful thi nghi m duc;rc ghi l i nhu sau:

j}.-Buret

**D=gdich**

**NaOH**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **La**). **n 1** | **Lin2** | **La**). **n3** |
| **VNaOH(mL)** | 37,5 | 37,4 | 37,6 |

Tinh n6ng d(> mol/L cua acetic acid trong m u giAm an tren.

. **;d)** 1 on? Ian}11! nghi m thu 2, t thoi diem dung dich trong binh tam - ,

g ac d01 mau, the tich dQc dugc tren buret la 37 4 mL va c6 m(>t giQt dung dich con treo *a* dau du6i

c a bur t. M(>t h9c sinh A cho ling cdn ldy gidt dung dich nay vao binh tam giac; M?t hQc sinh B

Ii;ii\_ch? rang nen b6 iiQt dung dich nay. So sanh anh huong cua hai each lam nay den nong d(> acetic acid tinh dugc tu ket qua thi nghiem tren.

3

cau13 **(1,0 tti m): hi carbon dioxide va hifu ll'llg nha kinh**

Khi carbon dioxide (CO2) dugc coi la tac nhan chinh gay hieu *img* nha kinh, lam tang nhiet

dQtrai dftt, gay ra hi, n tuqng\_n6ng len toan c u va bi€n d6i khi h u. ,

1. MQt trong so cac ngu n chinh phat thai CO2la qua trinh df>t chay nhien Heu h6a th ch. Viet cac phucmg trlnh phan ung ot chay cac nhien Heu h6a th ch sau day t o ra CO2. --
2. Than da (coi thanh ph chu yeu la carbon).
3. D!u mo ( oi thanh phan ch y€u la cac hydrocarbon c6 cong thuc chung la CJI1).
4. Cho biet tit nam 17SO den nam 2019, n6ng d9 CO2 trong khi quyen tnii dat da tang tit

280 ppm len 415 ppm.

1. Tinh the tich CO2 (theo mL) trong 1 m3 khi quy6n trai dAt vao nam 1750 va nam 2019. N6ng dQ CO2 trong khi quyen vao nam 2019 da tang them bao nhieu phdn tram so v6i nam 1750?
2. Theo uac tinh, m6i ppm CO2 tang them trong khi quy6n lam nhiet d9 trai ddt tang khoang 0,Ol°C. Voe tinh xem nhi t d<) trai ddt da tang bao nhieu d(> tu nam 1750 t6i nam 2019.

*Cho* ***bi€t:*** 1 ppm = m<)t ph tri u; n€u nf>ng d(> m(>t khi trong khi quy€n la a ppm thi trong m<;>t

tri uph the tich khi quyen se co a ph th6 tich khi d6.

1. Cong ngh thu gift khong khi 1:r\Ic ti€p la m{>t cong nghe tri6n v9ng de tach CO2 tu khong khi. Trong cong ngh nay, nguoi ta su d1,mg m{>t dung dich kiSm (thuong la dung djch NaOH u)

d h5.p th\l khi CO2 **(b116-c 1).** Sau d6, dung djch chdt hdp th1,1 da qua su dl,lllg duqc tai sinh bang phan img v6i calcium hydroxide **(bmrc 2).** K€t tua mau tri\ng A1 thu duqc *a* bu6c 2 phan hliy &

9oo·c, sinh ra CO2 va ch!lt rful A2 (buac 3). Sau d6, calcium hydroxide dugc tai t o biog phan img cua A2 v6i nuoc **(buac 4).** Viet cac phucmg trinh phan ung h6a hQc xay ra ung v6i cac bu&c fu l t6i.4.

1. Em hay d t hai bH n phap d8 giam phat thai CO2 vao khi quy€n.

**Cau 14 (2,0 di@m):**

1. V6 tnmg c6 chira calcium o d g Ca O3. De ac difih ham luqng CaCQ3 trong vo trung, trong phong thi nghi m nguoi ta c6 the lam nhu sau: Lay 1,0 gam v6 trung kho, da dugc lam s ch, hoa tan hoan toan trong *50* mL dung djch HCI 0,4M. L<;>c dung dich sau phan irng thu duqc *50* mL dung djch X. Liy 10,0 mL X cho vao binh tam giac, them 1 - 2 gi<;>t phenolphthalein. Ti€p theo nh6 tung gic;>t dung djch NaOH 0,IM vao binh tam giac d€n khi dung dich xudt hi n mau h6ng thdy hit *5,6* mL dung djch NaOH. Gia thi t cac P chdt khac trong v6 trung khong tac d\lllg v6i HCl. Xac djnh ham lm;mg CaCO3 trong v6 mmg.
2. **A** la h6n hqp hai oxide cua hai kim lo i. Cho CO du di qua 3,165 gam A nung n6ng, sau khi phan ung xay ra hoan toan, thu duc;rc h6n hqp chdt ri\n A1 va h6n hqp khi A2. D3n h6n h<l,P khi A2 qua dung djch Ba(OH)2 du, thu duqc 2,955 gam ket tua mau trfulg. Cho A1 phan ung het v6i dung djch H2SO4 10% loang, sau phan *tmg* c6 0,01125 mol khi thoat ra, thu duqc dung dich A3 chi chua m(>t chit tan c6 n6ng,d◊ a% va 3,495 gam m(>t chfrt rin. Cho dung djch A3 tac dl,lilg v6i dung

djch NaOH thi thu du9c ket ma mau tr4ng xanh ddn chuyen sang nau d6 trong khong khi. r

1. Xac djnh cac chat trong A.
2. Tinh a va xac,dinh phait tram khfii luqng cac chfrt trong A.

*(Cho nguyen tu-khoi cua m9t s6nguyen t6: H* = *J; C* = *12; N* = *14; 0* = *16; Na= 23; Mg= 24; Al= 27; P* = *31; S* = *32; Cl= 35,5; Br= 80; K* = *39; Ca= 40; Fe* = *56; Cu= 64; Zn= 65;*

*Ag= 108; I= 127; Ba= 137).*

*Thi sinh khong SU' di.mg bang tudn hoim cac nguyen tah6a h9c*

***----Hit----***

*GH(.),ten thi s*,*inh:* ...... ... ... ...... ... ... ... .................... *S<5 bao danh:* ...................

*1am thi so 1* ••• •••... ... ... ... ... ................... *Gz"a'm thi· s<5 2* •••·•· ••• ••••••• ••• •••..••• ••• •••

4

UBND THANH PH6HAIDUONG

### PHONG GlAO Dl)C VA DAO T O KY Tm CHQN HQC SINH GI6I LOP 9 - VONG t

**NAM HQC 2024-2025**

**MON:HOAHQC**

**HUONG DAN CHAM**

### PHAN TRAC NGHI.tM (3,0 diem)

*Thai gian lam bai: 150 phut (HDC g6m: 05 trang)*

*Ngay thi: 05 thizng 10 nam 2024*

### D G 1:Can hoi tric nghifm ,nhi@u phtrO'llg an bra cb9n (1,0 di m).

*Thi sinh tra l<li tu cau 1 den au 4. M6i cau hoi chi ch9n m9t phuang an tra lai dung.*

*M6i cau tra lai dun$! au<;1c 0,25 diem*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| l | **Can** ' | **1** | | | 2 | **3** | 4 |
| I | **l)apan** | , | **B**." | , | **D** | **C** | **A** |

### D G 2: Can hoi trac ngh1 m dung ai (1,0 di m).

*Thi sinh tra lcn cau 5. Trang moi ya), b), c), d) thi sinh ch9n dung (DJ ho{ic sai (SJ.*

* + *Thi sinh chi l¥a ch9n chinh xac O1 y trong OJ cau hoi ilu<;1c 0, 1 iliim;*
  + *Thi sinh chi l'!a ch9n chinh xac 02 y trong 01 cau hoi ilu<;1c 0,25 iliim;*
  + *Thi sinh chi l¥a ch9n chinh xac 03 y trong 01 cau hoi ilur;,c 0,5 iliim;*

*v*

* + *Thi sinh lua chon chinh xac ca 04 tronf! 01 cau hoi ilur;,c 1 iliim.·*

|  |  |  |
| --- | --- | --- |
| **Ciu** | y | Dapan |
| **5** | **a** . | **Diin2** |
| **b** | **Sai** |
| **C** | **l>iin2** |
| **d** | **Sai** |

### D G 3: Cau tric nghi m tra lM ngan (1,0 di@m). , \_

*Thi sinh tra lui tu cau 6 ain cau 9 bdng each tinh va ghi l i ket qua cua moi cau vao bai thi M6i cau triz lai ilunf! iluac O,25 iJiJm* , -

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Ciu** | **6** | 7 | **8** | 9 |
| Dao an | **26** | **0,5** | **12,5** | **2,52** |

*Ctiu 6: Gr;,iy*

*2px* + *4py* + *nx* + *2ny* = *178 2px* + *4py* = *nx* + *2nr +54 2px* = *4pr-12*

*=>px* = *26; py=]6 Ctiu 7: G<1i y*

*Khi nhi t il9 tang thi tac il9 phan ung tang, thai, gian phan ung giam* ,

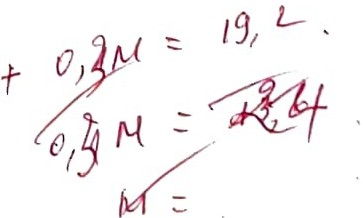
*Pu J: Khi tang nhi t i19 tu 4(i1C /en 60°C thi toe il9 phan g tang 4.4=16 lan ( vi khi tang nhi t il9 /en 1(fJC t6c il9 phan ung tiing Zen 4 Ian)*

=> *Thai gian phim ung la 8/16= 0,5 phut Ctiu 8: G(li y*

*2M* + *2nHCI* 2MCln +nH2

*Fe* + *2HCl* FeCh + H2

*2M* + *nCli* 2MCln

*2Fe* + *3Cli* 2FeCb

*D{it sd mol cua M, Fe Mn lu(lt la a, b ta co nM:nFe* = *J:3=>b=3a C6cacPT:56b+aM=J9,2* [t f) *0,5na* + *1,5b=0,55 I* I i

*0, 5na* + *b= 0,4*

=> *h=0,3, a= 0,1, M=24(Mg); %Mg= 12,5%*

*Cau9: G(liy*

1

*G9i CT cua tinh thi la FeS04. nH20*

# Fe + H2SO4 FeSO4 + H2

Sd *mol* Fe = *0,045 mol* => *Kh4i lu(fng dd* H2SO4= 44,1 g

Kh i lUQngH2 = 0,09 g

*Khoi lu(fng* FeSO4 = 6,84 g

Theo DLBTKL => Kh&i luQng dd sau pu = 2,52 + 44,1 - 0,09 = 46,53 g

# Kh&i\uQng dd sau khi lam l = 46,53 - 5,56 = 40,97 g

MaC%dd FeSO4 con l i = 9,275%

=>Kh&i \uQngFeSO4 trong dd con l i = 40 97 9 275 =3,8 g

•

• •

, **100**

=

# =>'Khoi \uQllgFeS(?4 tr ng inh the= 6,84 -3,8 3,04 g

S&mo\ tumth =So muoi ket tinh =3,04:152= 0,02 mol

=>Kh&i\u¢g mol cua tinh the= 5,56:0,02=278(g/mol) Tinh toan152+18n =278 => n= 7

Kh i \uQD.gnu6cttong tinh the =7.18.0,02= 2,52(g) => *m=2,52*

## PHAN TU LUA.N (7,0 mlm)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Cau** | **y** | | **Dapan** | | | | | | | l)**1**.i**em** |
| **10.**  **(1,5 dilm)** | **1** | | - Dungdich X la dung dich H2SO4  -TNl: H2SO4 + BaCh BaSQ4 + 2 HCl | | | | | | | 0,25 |
| -TN2: Cu+ 2H2SO4d cn6ng CuSO4 + SO2 + 2H2O | | | | | | | 0,25 |
| -TN3: C12lh2O11 **S04d4,c** ) **12C** + **l lH2O**  C + 2H2SO4 d c CO2+ 2SO2 + 2H2O | | | | | | | 0,25  0,25 |
|  | | - Cac phucmg trlnh h6a hQC xay ra   1. 2NaC\O3 2NaCl + 302 2. 2KClO3 2Kctl + 302 ..,. | | | | | | | 0,25 |
| \ | | |
|  | | **2** |
|  | (3) 3Fe + 202 Fe3Q4 | | | | | | 0,25 |
| 11.  (1,0 ai m) | | **1** | | - Xac dinh cac ch!t: | | | | | | 0,25  r |
|  | H2SO4 | K2CO3 | Ba(HCO3)2 | M!!CHCO3)2 |  |
| H2SO4 |  | t | -!-,t | t |
| K2CO3 | t |  | -!, | -!, |
| Ba(HCQ3)2 | -!,, t | -!, |  |  |
| Mg(HCO3)2 | t | -!, |  |  |
| Dunn6ng |  |  | -!,, t | -!,, t |
| - Cho dung dich olQ Zvao dung dich *CJ* lQ Y ho c T thay c6 khi  thoat ra va khi cho dung dich *CJ* lQ Z vao dung dich *CJ* lQ X ho c dun n6ng dung dich x·hay dung dich Y d u th!y c6 k t tlia trmg va c6 khi thoat ra X la Ba(HCO3)2, Y la Mg(HCO3)2, Z  la H2SO4, T la K2CO3. | | | | | |
| - Viet cac phuong trinh phan ung:  H2SO4 +Mg(HCO3)2 MgSQ4 + 2H2O + 2CO2t H2SO4 + K2CO3 K.iSO4 + H2O + CO2t  H2SO4 +Ba(HCO3)2 BaS04-1- + 2H2O + 2CO2t  Ba(HCO3)2 Baco3-l,+ C02t + H2O MgffiCO3)2 MgCO3-l-+ CO2t + H2O | | | | | | 0,25 |

2

----7\---,:-Buoc 1: ay hfin hQp muf>i an lful p chat boa vao nuoc, khuay d u, de lang sau d6 lQc bo k€t tua.

\_ Buoc 2: Them dung dich Na2CO3 (du), khuiy d u, de l g dung dich, lQc b6 k€t tua.

\ \_ Buoc 3: Them dung dich HCl, kbu!y d u d€n khi khong con khi thoat ra.

2 \_ Buoc : Co c dung dich, lam kho ch!t r thu duqc NaCl tinh khiet.

0,25

Na2CO3 + BaCh --+ BaCO3! + 2NaCl Na2CO3 + CaCh --+ CaCOJ ! + 2NaC1 Na2CO3 + 2HC1 --+ 2NaCl + CO2 + H2O

*HS lam each khac, nJu dun cho tliim tucmJ! tlucrn .*

Phuang trlnh h6a hQc:

1. CH3COOH + NaOH-+ CH3COONa + H2O

0,25

0,25

**12.**

**(1,5 ttiim)**

**13.**

Trang buret b g dung dich NaOH d h ch sai s6 ve nbng de)

1. cua dung dich NaOH chuful.

Tinh nf>ng d(> acetic acid:

VNaOH= 37,S + 37,4 + 37,6 =37,5 (mL)

3

llNaoH= nett cooH= 37,5.10·3.0,02 = 7,5.10-4 (mol)

1. )

C = 7•5•10-4 = 0,075 (M)

Mai,coo1t(l() 10.10-3

= 0,075.100 0 75 (M)

**QlfDOH<»'mln)** 10 '

Hai each lam deu' khong anh hucmg d n ket qua nf>ng dQ acetic

1. acid tinh duqc vi gia tri 37,4 mL da bao gf>m ca giQt dung dich

con treo cr dAu buret.

- Cac phucmg trlnh h6a hQc

* 1. C+O2 CO2

**1**

* 1. C,H,+( x+ )o, xCO,+; H,O

1. lm3 = 106mL (1 tri u mL)

Nam 1750: n6ng dQ CO2= 280 ppm + Trong lm3 khi quy n c6

280mLCO2.

Nam 2019: n6ng dQ CO2= 415 ppm-+ Trong lm3khi quy n c6

2

415 mL CO2.

0,25

0,25

0,25

0,25

0,25

0,25

0,25

(1,0 **diim)**

.**L**u**V**Q**'**

**415-280**

---.100%

tang no'- ng do CO2tinh theo %:

* 280

=48,21%

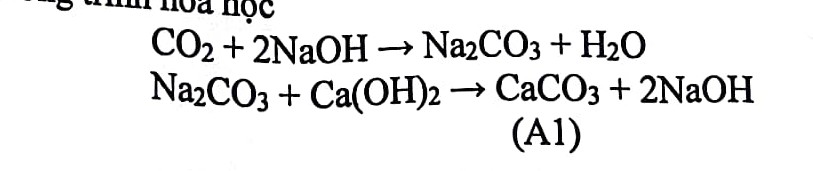
1. Do tang nhi t d(>: (415 - 280).0,01 = 1,3s0c

3

Caco3 CaO + CO2

(A2) CaO + H2O --+ Ca(OH)z

0,25



3

- - Thuc ddy viec trong cay' tai o rung va bao ve khu V\(C rung



4 hien c6.

- Su d\lilg cac nwig luQng s ch (nang luqng gi6, nang lm;mg m t trcri) thay the nwig lUQlll! tu ngu6n nhien lieu h6a th ch.

0,25

n"a = 0,05.0,4 = 0 02 (mol) • n = *5,*6 x 0,1 = 0,00056 (mol)

' ' **NaOH 1000**

Phuong trlnh h6a h9c:

CaCO3 + 2HC1 CaC12 +CO2 + H2O (1) NaOH + HCNI aCl+ *I!iO* (2)

0,25

**14.**

**(2,0 ttiim)**

Theo phuong trinh h6a hQc (2): nHcl(dit>= nNaOH= 0,00056 (mol)

V y trong 50 mL dung dich X: nHCl(dit) = 5.0,00056 = 0,0028(mol)

1. Theo phuong trinh h6a hQc (1): nHCICpit)= 0,02- 0,0028 = 0,0172(mol)

1

neaco

3

= 2 nHCt(pit) = 0,0086 (mol)

V y kh6i lm;mg cua CaCO3 c6 trong v6 tnmg la:

meaco = 0,0086.100 = 0,86 (gam)

**3**

Ham luqng cua CaCO3trong v6 tnmg:

%CaCO = 0•86•100% =86%

3 1,0

'fl?.eo bai ta c6: A3 tac d\lilg v6i dung djch NaOH t o ket tua trang xanh sau d6 h6a .au do ngoai khong khi v y trong AJ c6 FeSO4 trong A c6 ch(r oxide cua Fe.

I>?t cong thuc cac chdt trong A la FexOy va M2On (n la h6a tri cua kim lo i M). (x, y, n € N•)

Theo bai ta c6: A1 tac d\lflg v6i H2SO4 sau phan ung kh6i lm;mg chdt rAn thu dugc la 3,495 > 3,165 suy ra M2On khong tac d\lflg v6i CO ma phan ung v6i H2SO4 tao k t tua.

1. Phuong trlnh h6a h9c:

FexOy +yCO xFe + yCO2 (1) CO2+ Ba(OH)2 --- BaCO3 + H2O (2) M2O0 +nH2SO4--- MiCSO4)0 +nH2O (3) Fe+ H2SO4--- FeSO4 + H (4) FeSO4 +2NaOH--- Fe(OH)2 +Na2SO4 (5)

2

2

0,25

0,25

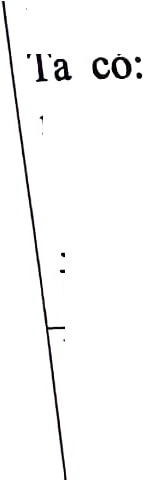
C

0,25

4Fe(OH)2 +0

2 +2H O 4Fe(OH)3 (6)

Theo phuong trlnh h6a hQc (1, 2, 3) ta c6:



2,955

nBaC03 = 197 = 0,015 (mol) = nco1

nFe =nH =0,01125(mol) mFc=0,63(gam)

1

nO(oxidepu) = Ilcol =0,015 (mol) mO(oxide) = 16.0,015 = 0,24 (gam)

Ta co ti l thanh phftn v kh6i cua Fe va 0:

0,25

-56x = -0-,63

-x = -3

va,..y co,..ng th'uc cu• a ox·tde l'a Fe3o4

16y 0,24 y 4 •

Bao toan khoi luqng:

m .d =mA +m mA =3,165-0,24=2,925(gam)

0

Olli C I I

-t mA, = mPe + mM o. mMA = 2,925 - 0,63 = 2,295 (gam)

1

Theo phuang trlnh h6a hQc (3)

0,25

n =n 2,295 = 3,495 **M=68** Sn

MA M,(s0.>. 2M +16n 2M+ 96n '

Bi n lu :

Vmn=2thlM= 137 (Ba)

V y cong thuc h6a h9c cua oxide la BaO.

b) Dung dich A3 la FeSO4

Theo phucmg trlnh boa hQc (3, 4) ta c6:

**nHaso.** = nPe + ns.o = 0,01125 + 2,295 = 0,02625 (mol)

153

mddH so= 0,02625.9 .1!)0% ::;:..25 725 (gam)

> • 10% I \ ,

Bao toan kh6i luQ11g: *I*

**2,925** + **25,725** =field Peso, +**mBaSO,** +mH,

**ffidd** PcSO• = **25,1325 (gam)**

mPeso, = **0,01125.152** = 1,71(gam)

N6ng dQ phAn % cuaFeSO4:

C%= 1,71.100%6\_ 8

0,25

25,1325- • %

a= 6,8

Phan tram khoi luQng cac chdt trong A:

Taco: mp **e:**O**,** ,

+m**BaO** =m IDp O =3,165-2,295=0,87(gam)

0,25

*01.* 2,295.100% *n1.* 27 *5'½*

**A e3** ,

= = = '

**7'0IDBa0 3,165 72,5%; -;oIDPeiO, *o***

--- **H t** ------