`1-qism: Har bir topshiriq 0,9 balldan baholanadi

1. Qaysi elementning 1,00 gr na`munasi eng ko`p molekulani o`zida saqlaydi?
A) Bakminsterfulleren, C_{60} B) Ozon, O_3
C) Oq fosfor, P_4 D) Oltingugurt, S_8

2. 0,1 M li 1 ml ikki valentli metal saqlagan eritmaning rangi och pushti bo`lib, unga 1 ml konsentirlangan HCl kislota eritmasi qo`shilsa, eritma rangi yorqin-ko`k rangga o`zgaradi. Metall ionini aniqlang.
A) Ca^{2+} B) Mn^{2+}
C) Co^{2+} D) Cu^{2+}

3. Iodid ion asosli sharoitda permanganat bilan gipoyodit ionigacha quyidagi reaksiya bo`yicha oksidlanadi:
$I^- + MnO_4^- \rightarrow IO^- + MnO_2$
Tenglashtirilgan reaksiya tenglamasida gidroksid ionining iodid ioniga miqdoriy nisbati qanday?
A) 3 : 1 B) 2 : 1
C) 1 : 1 D) 2 : 3

4. $Na[V(CO)_6]$ kompleksida vanadiyning oksidlanish darajasi qanday?
A) -1 B) +3
C) +5 D) +6

5. Qaysi kvant sonlar kombinatsiyasini real atomga qo`llash mumkin? Kvant sonlarning kelish ketma – ketligi – [bosh kvant son (n), orbital kvant son (l), magnit kvant son (m_l), spin kvant son (m_s)].
A) [1, 0, +1/2, +1/2] B) [3, 0, 0, -1/2]
C) [2, 2, 1, +1/2] D) [3, 2, 1, 1]

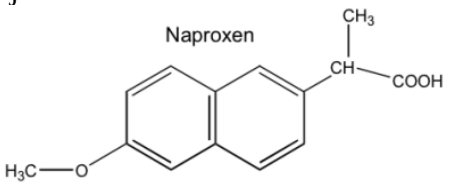
6. I_3^- da markaziy atom I gibridlanishini aniqlang.
A) sp^2 B) sp^3
C) dsp^3 D) d^2sp

7. Pastda keltirilgan atomlarni atom radiusi kamayib borishi taribida joylashtiring.
Pb, P, Cl, F, Si
A) Cl > F > Pb > Si > P B) Pb > Si > P > F > Cl
C) Pb > Si > P > Cl > F D) Pb > Cl > P > Si > F

8. Quyidagi ikki atomli molekulalardan qaysi biri eng yuqori bog` energiyasiga ega.
A) CO B) N_2
C) O_2 D) H_2

9. Kumush saqlovchi 1,50 gr ruda eritildi va barcha Ag^+ 0,124 gr Ag_2S ga aylandi. Rudadagi kumushning massa ulushini aniqlang.
A) 6,41% B) 7,20%
C) 8,27% D) 10,8%

10. Naproksenda qancha uglerod atomi sp-, sp^2- va sp^3- gibridlanishda hamda molekulada qancha π-bog` mavjud?



A) sp = 0, sp^2 = 10, sp^3 = 4, π = 5 B) sp = 0, sp^2 = 11, sp^3 = 3, π = 6
C) sp = 0, sp^2 = 11, sp^3 = 3, π = 5 D) sp = 1, sp^2 = 9, sp^3 = 4, π = 5

`2-qism: Har bir topshiriq 1,5 balldan baholanadi

11. 45°C da suvning ion ko`paytmasi $4{,}0\times10^{-14}$ ga teng. Shu temperaturada toza suvning pH qiymatini aniqlang.
A) 6,7 B) 7,0
C) 7,3 D) 13,4

12. Reaksiyaning tog`ri reaksiya tezlik konstantasi $2{,}3\times10^{6}$ s^{-1} ga, muvozanat konstantasi $4{,}0 \times 10^{8}$ ga teng. Teskari reaksiya tezlik konstantasi nechaga teng?
A) $1{,}1 \times 10^{-15}$ s^{-1} B) $5{,}8 \times10^{-3}$ s^{-1}
C) $1{,}7\times10^{2}$ s^{-1} D) $9{,}2\times10^{14}$ s^{-1}

13. Pastda keltirilgan reaksiyaning muvozanat konstantasidan foydalanib,
$2SO_3(g)=2SO_2(g) + O_2(g)$ K = $1{,}8\times10^{-5}$

quyidagi reaksiyaning muvozanat konstantasini aniqlang
$SO_2(g) + 1/2O_2(g)=SO_3(g)$ K = ?
A) $2{,}1 \times 10^{-3}$ B) $4{,}2 \times 10^{-3}$
C) $2{,}4\times10^{2}$ D) $5{,}6\times10^{4}$

14. HCN 0,010 M li eritmasining dissotsiyalanish darajasi qancha? (K = $6{,}2 \times 10^{-10}$ kislotalik konstantasi)
A) 0,0025% B) 0,025%
C) 0,25% D) 2,5%

15. C_3H_8O formulaga nechta izomer to`g`ri keladi?
A) 1 B) 2
C) 4 D) 3

16. Tarkibida 10% qo`shimchalari bo`lgan 50 g ohaktoshdan necha g karbonat angidrid olish mumkin?
A) 5 B)5.6
C) 10 D)19.8

17. Tarkibida 75% sof malaxit bo`lgan 200 g mineraldan qancha g mis (II) oksid ajratib olish ($Cu(OH)_2\cdot CuCO_3 = 2CuO + CO_2 + H_2O$) mumkin? Reaksiya unumi – 0.9.
A)144.15 B)108.11
C) 97.3 D) 87.57

18. Na_xSO_{x+2} tarkibli tuzning 1 g ida $4.24\cdot10^{21}$ ta oltingugurt atomi bo`lsa, *x* ni aniqlang.
A) 1 B) 2
C) 3 D) 4

19. Cl^- elektron konfiguratsiyasi keltirilgan qatorni toping.
A) $1s^22s^22p^63s^23p^63d^84s^0$ B) $1s^22s^22p^63s^23p^63d^24s^0$
C) $1s^22s^22p^63s^23p^63d^04s^0$ D) $1s^22s^22p^63s^23p^63d^{10}4s^0$

20. $CaCO_3$ + Q (issiqlik) ⇆ CO_2+CaO reaksiyada sistema muvozanatini o'ng tomonga siljitish uchun quyidagilardan qaysilarini amalga oshirish kerak?
1) haroratni ko'tarish; 2) bosimni oshirish; 3) haroratni pasaytirish; 4) CO_2 konsentratsiyasini kamaytirish;

A) 2, 3 B) 1, 4
C) 2, 4 D) 1, 3

`3-qism: Har bir topshiriq 2,6 balldan baholanadi

21. Tartib raqami 19 bo`lgan element atomlarida nechta elektron pog`ona bor?

22. ^{32}S izotopi va ^{16}O, ^{17}O va ^{18}O izotoplaridan foydalanib necha xil oltingugurt (IV) oksidi molekulalarini olish mumkin?

23. Agar reaksiya unumi 70% bo`lsa, 2.45 g bertolle tuzidan necha l (n.sh.da) kislorod olish mumkin?

24. Tabiiy mis 63 va 65 izotoplardan iborat bo`lib, uning atom massasi 63.54 ga teng. Har bir izotopning tabiatdagi molyar ulushini mos ravishda aniqlang.

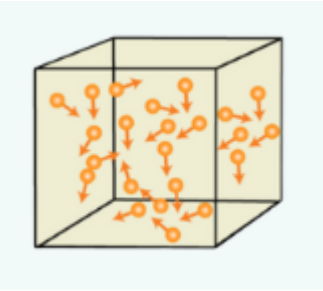
25. Qaysi agregat holatda har qanday modda elektr tokini o'tkazadi?

26. O`zgarmas harorat va hajmli germetik konteyner ichiga 3:1 mol nisbatda mos ravishda vodorod va azot joylandi, tegishli katalizator ishtirokida ammiak gazi hosil bo`ldi. Muvozanat qaror topganidan so`ng vodorod parsial bosimi kvadratining ammiak parsial bosimiga nisbati 0.2 ga teng bo`lsa, $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ reaksiyasining muvozanat kanstantasi Kp ni hisoblang.

27. Gazifikatsiya jarayonida ko`mir — uglerod monooksid va vodorod aralashmasiga aylanadi, aralashma suv gazi deb ataladi: $H_2O_{(g)}+C_{(q)}\rightarrow CO_{(g)}+H_{2(g)}$
Quyida berilgan reaksiya tenglamalari va entalpiya o`zgarishlaridan foydalanib, yuqoridagi reaksiyaning entalpiya o`zgarishini hisoblang.

$2C_{(q)}+O_{2(g)}\rightarrow 2CO_{(g)}$ $\Delta_r H^0 = -221.0$ kJ/mol
$2H_{2(g)}+O_{2(g)}\rightarrow 2H_2O_{(g)}$ $\Delta_r H^0 = -483.6$ kJ/mol

28.

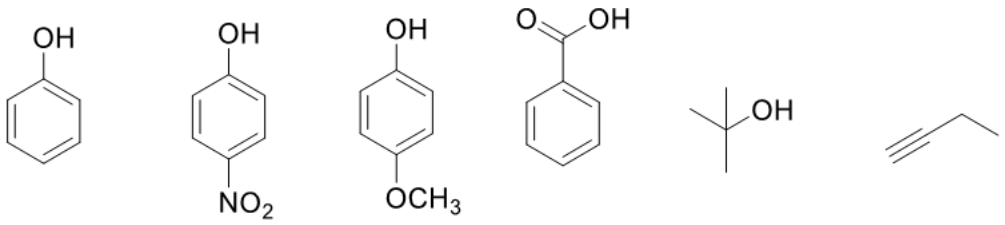


Chap tomondagi rasmda idish ichida dumaloq shakldagi molekulalar tasvirlangan. Ko'satkichlar molekulalarning harakat yo'nalishi va tezligini ifodalaydi.

Rasmni tahlil qilib, unda moddaning qaysi agregat holati ifodalanganini yozing.

29. 500 ml suvda 0,050 mol HSCN eritilishidan eritma tayyorlandi. Eritmada vodorod ionlari konsentratsiyasi $8.88\cdot10^{-6}$ mol/l ekanligi aqinlandi. HSCN uchun kislotalik konstantasini (Ka) aniqlang.

30. Pastda keltirilgan moddalarni kislotalik kuchi kamayishi tartibida joylashtiring.



1 2 3 4 5 6