

1-qism: Har bir topshiriq 0.9 balldan baholanadi

1. A – noma'lum oltingugurt oksidi. Uning 1 g ida  $9.406 \cdot 10^{21}$  ta molekula bo'lsa, noma'lum oksidni aniqlang.

- A) SO                      B) SO<sub>2</sub>  
C) SO<sub>3</sub>                     D) SO<sub>4</sub>

2. 1 molekula ozonning (O<sub>3</sub>) massasini aniqlang.

- A) 48 g                      B) 16 g  
C)  $7.97 \cdot 10^{-23}$  g        D)  $2.66 \cdot 10^{-23}$  g

3. Qaysi qatorda Zn<sup>2+</sup> ionining elektron konfiguratsiyasi to'g'ri ko'rsatilgan?

- A)  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9 4s^1$                       B)  $1s^2 2p^6 3s^2 3p^6 3d^{10} 4s^0$   
C)  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9 4s^2$                       D)  $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^0$

4. Oltingugurtning allotropik ko'rinishlaridan birida (S<sub>x</sub>) 8 g oltingugurt na'munasi  $2.508 \cdot 10^{22}$  ta molekula saqlasa, oltingugurt molekulasini formulasi aniqlang.

- A) S<sub>4</sub>                         B) S<sub>6</sub>  
C) S<sub>8</sub>                         D) S<sub>10</sub>

5. 10 l gaz 2 l gacha izotermik (T=const) qisilganda bosim 25 kPa bo'ldi. Dastlabki bosimni aniqlang.

- A) 3 kPa                      B) 5 kPa  
C) 7 kPa                      D) 9 kPa

6. 1.4 g A metal atmosfera azoti bilan reaksiyaga kirishib ( $6A + N_2 = 2A_3N$ ) 2.33 g A<sub>3</sub>N hosil qilgan bo'lsa, A ni aniqlang.

- A) Li                         B) Na  
C) K                         D) Rb

7. 3p, 3d, 4s va 4p energetik pog'onachalarni elektronlar bilan to'lish ketma-ketligida joylashtiring.

- A) 3p, 3d, 4s, 4p        B) 3p, 4s, 3d, 4p  
C) 4p, 4s, 3p, 3d        D) 3d, 3p, 4s, 4p

8. Tabiiy litiy ikki barqaror izotop <sup>6</sup>Li (7.3%) va <sup>7</sup>Li (92.7%) lardan iborat bo'lsa, litiyning atom massasini aniqlang.

- A) 6.727                      B) 6.827  
C) 6.927                      D) 6.967

9. N<sub>2</sub> + O<sub>2</sub> = 2NO reaksiya uchun to'g'ri reaksiyaga massalar ta'siri qonunini ko'rsating.

- A)  $v_{to'g'ri} = k [N_2][O_2][NO]^2$     B)  $v_{to'g'ri} = k [N_2][O_2]$   
C)  $v_{to'g'ri} = k [NO]^2$                       D)  $v_{to'g'ri} = k [N_2][NO]^2$

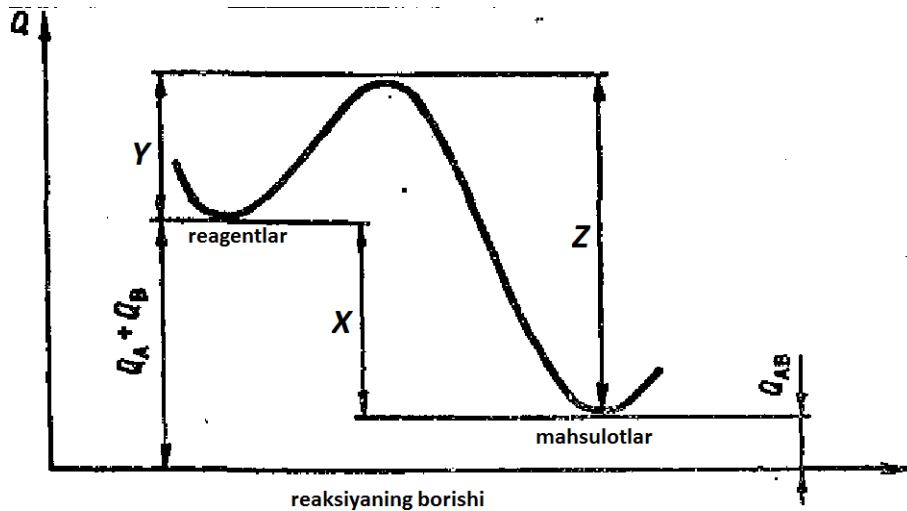
10. 0.1 g natriy gidroksid saqlovchi 1 dm<sup>3</sup> eritmaning vodorod ko'rsatkichini (pH) hisoblang. Ishqorni to'liq dissotsiyatsiyalanadi deb qarang.

- A) 2.6                         B) 3.6  
C) 11.4                        D) 10.4



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

11. Quyida  $\{A + B = AB\}$  reaksiyaning energetik profili keltirilgan:



Diagrammadagi noma`lum harflar nimani bildiradi, mos variantlarni tanlang	Variantlar	
X	A	To`g`ri reaksiyaning aktivlanish energiyasi
Y	B	Teskari reaksiyaning aktivlanish energiyasi
Z	C	Reaksiyaning issiqlik effekti

- A) X-C, Y-A, Z-B                      B) X-B, Y-A, Z-C  
C) X-C, Y-B, Z-A                      D) X-A, Y-B, Z-C

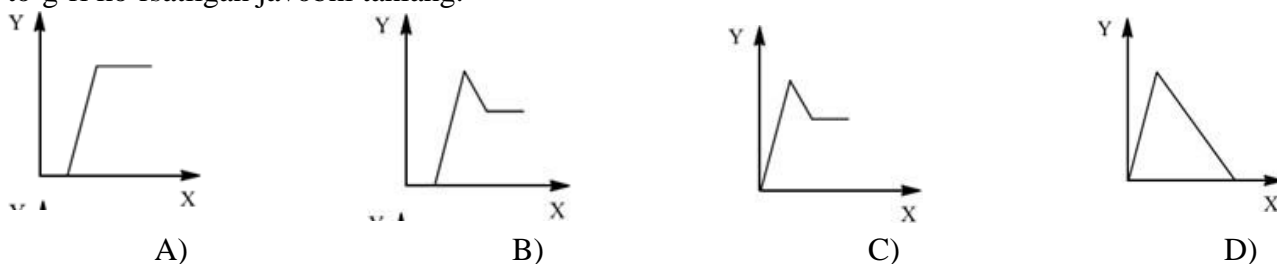
12. Quyidagi qatorda kislotalar kuchi oshib borishi ketma-ketligini ko`rsating:  $\text{ClH}_2\text{CCOOH}$ ,  $\text{Cl}_2\text{HCCOOH}$ ,  $\text{Cl}_3\text{CCOOH}$

- A)  $\text{ClH}_2\text{CCOOH} < \text{Cl}_2\text{HCCOOH} < \text{Cl}_3\text{CCOOH}$                       B)  $\text{ClH}_2\text{CCOOH} < \text{Cl}_3\text{CCOOH} < \text{Cl}_2\text{HCCOOH}$   
C)  $\text{Cl}_3\text{CCOOH} < \text{Cl}_2\text{HCCOOH} < \text{ClH}_2\text{CCOOH}$                       D)  $\text{Cl}_3\text{CCOOH} < \text{ClH}_2\text{CCOOH} < \text{Cl}_2\text{HCCOOH}$

13. Bor modeliga ko`ra vodorod atomidagi elektronning energiyasi quyidagicha aniqlanadi:  $E = \frac{-13,6}{n^2}$  (eV), bu yerda  $n = 1, 2, 3, \dots$  va h.k. butun sonlar. Bor modeliga ko`ra elektronni 1-orbitadan ( $n = 1$ ) 5-orbitaga ( $n = 5$ ) o`tkazish uchun qancha energiya (eV) talab qilinadi?

- A) 13,06                      B) 10,2  
C) 13,6                      D) 40,8

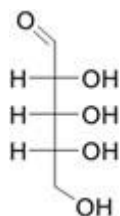
14. NaOH eritmasi  $\text{H}^+$ ,  $\text{Mg}^{2+}$  va  $\text{Al}^{3+}$  ionlarini saqlagan rangsiz eritmaga tomchilatib qo`shildi. Hosil bo`layotgan cho`kma massasi (Y o`qda) ning sarflangan NaOH eritmasi hajmi (X o`qda) ga bog`liqligi to`g`ri ko`rsatilgan javobni tanlang.



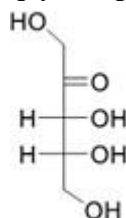
15.  $2O_3(g) \rightarrow 3O_2(g)$  reaksiyasida kislorodning hosil bo'lish tezligi  $3,0 \cdot 10^{-7} \text{ mol}/(\text{dm}^3 \cdot \text{s})$ . Ozonning sarflanish tezligi qanday  $\text{mol}/(\text{dm}^3 \cdot \text{s})$ ?

- A)  $1,6 \cdot 10^{-10}$       B)  $3,0 \cdot 10^{-7}$   
C)  $2,0 \cdot 10^{-7}$       D)  $4,5 \cdot 10^{-7}$

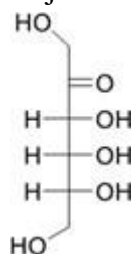
16. Quyidagi birikmalardan qay biri piranoza formasida mavjud bo'la olmaydi?



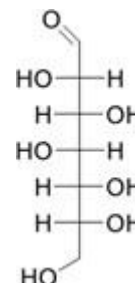
A)



B)



C)



D)

17. DNK yarimkonservativ replikatsiyaga uchraydi, ya'ni har bir zanjir alohida ko'payadi va yangi DNK molekulasiga aylanadi. Yangi zanjirlarni  $^{14}\text{N}$  yoki  $^{15}\text{N}$  saqlovchi substartlar ishtirokida hosil qilish mumkin. Tajribada bir zanjiri faqat  $^{14}\text{N}$ , ikkinchi zanjiri esa faqat  $^{15}\text{N}$  tutuvchi DNK (gibrid DNK) ishlatildi. Gibrid DNK  $^{14}\text{N}$  saqlovchi substrat ishtirokida replikatsiya qilindi. Agarda tajriba boshida bitta gibrid DNK molekulasi bo'lgan bo'lsa, 4 ta replikatsiya siklidan so'ng  $^{15}\text{N}$  tutadigan ikkizanjirli molekulaning ulushini toping.

- A)  $\frac{1}{4}$       B)  $\frac{1}{8}$   
C)  $\frac{1}{16}$       D)  $\frac{1}{32}$

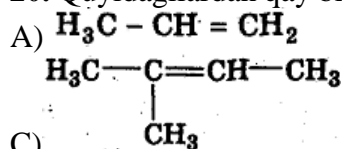
18. Berilgan tartibda elementlarning oxirgi elektroni uchun orbital kvant sonining qiymati qanday o'zgaradi (elementning tartib raqamlari berilgan)?  $11 \rightarrow 17 \rightarrow 3 \rightarrow 18$  a) ortadi b) kamayadi c) o'zgarmaydi

- A) 1-a, 2-b, 3-a.      B) 1-b, 2-b, 3-a.  
C) 1-a, 2-b, 3-b.      D) 1-a, 2-b, 3-c.

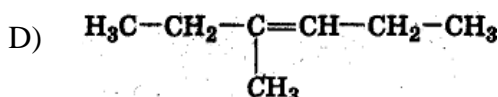
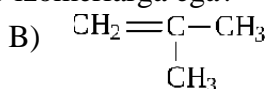
19. Ma'lum reaksiyaning temperatura koeffisienti 2.5 ga teng. Shu reaksiya temperaturasi  $20^\circ\text{C}$  dan  $45^\circ\text{C}$  gacha oshirilganda reaksiya tezligi qanday o'zgaradi?

- A) 2.5 marta oshadi      B) 9.88 marta oshadi  
C) 61.76 marta oshadi      D) 2.5 marta kamayadi

20. Quyidagilardan qay biri sis-trans-izomerlarga ega?



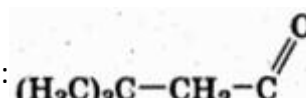
C)



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

21. Arxeologlar yog'ochdan ishlangan jihoz na'munasini aniqlashdi. Undagi uglerod-14 izotopining miqdori hozirgi vaqtda Yerda o'suvchi daraxtlardagiga nisbatan 75 % ni tashkil etdi. Aniqlangan jihozning yoshini aniqlang.  $t_{1/2} (^{14}\text{C}) = 5730$  yil.

22. Quyidagi tuzni ishqor bilan qizdirilganda hosil bo'lgan uglevodorodni nomlang:

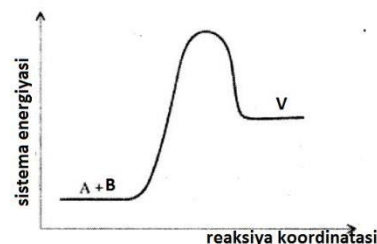


23. Bor modeliga ko'ra vodorod atomidagi elektronning energiyasi quyidagicha aniqlanadi:  $E = \frac{-13,6}{n^2}$  (eV), bu yerda  $n = 1, 2, 3, \dots$  va h.k. butun sonlar. Bor modeliga ko'ra elektronni 1-orbitadan ( $n = 1$ )  $\infty$  (cheksizinchi)-orbitaga ( $n = \infty$ ) o'tkazish uchun qancha energiya (eV) talab qilinadi?

24. Propandagi barcha kovalent bog'larni uzish uchun 4006 kJ/mol energiya kerak bo'ladi, n-pentandagi barcha kovalent bog'larni uzish uchun esa 6356 kJ/mol energiya kerak. C-C bog' o'rtacha energiyasini aniqlang, kJ/mol da.

25. Fosfat kislota quyidagi dissotsiyalanish konstantalariga ega:  
 $pK_{1a} = 2.12$      $pK_{2a} = 7.21$      $pK_{3a} = 12.32$   
Digidrofosfat ioni uchun asoslik konstantasini hisoblang.

26. Agar  $A + B \rightarrow V$  reaksiyaning energetik diagrammasi o'ng tomondagi sur'atda ifodalangan bo'lsa, uning ekzotermik yoki endotermik ekanligini aniqlang.



27. 20 g noma'lum metall xlorid kislota eritmasi bilan ta'sirlashganida 6.85 litr (n.sh.da) vodorod ajralib chiqqan bo'lsa, noma'lum metallni aniqlang.

28.  $xS_2O_3^{2-} + yI_2 \rightarrow zS_4O_6^{2-} + 2I^-$  yarim-reaksiyadagi x,y,z koeffisientlarni aniqlang. (Javob faqat barcha koeffisientlar to'g'ri bo'lsagina inobatga olinadi)

29.  ${}_{91}Pa \rightarrow {}_{82}Pb + x{}^4_2\alpha + y{}^0_{-1}\beta$ . Protaktiniy izotopi parchalanganda 41.6 mg qo'rg'oshin va  $6.02 \cdot 10^{20}$  dona elektron hosil bo'ldi. Protaktiniy izotopidagi neytronlar sonini toping (Pa neytronlari soni Pb nikidan 19 taga ko'p).

30. Gaz fazasida kechadigan  $X_2 + 2Y_2 \rightarrow 2XY_2$  reaksiyaning tezligi bosim 6 marta oshirilganda qanday o'zgaradi?



**O'quvchilar tayyorgarlik ko'rishlari uchun o'tgan yilgi savollar keltirilmoqda.**

Maktabgacha va maktab ta'limi vazirligi Fan olimpiadalari bo'yicha iqtidorli o'quvchilar bilan ishlash departamenti tomonidan tuman bosqichi uchun nazorat materiallari shakllantirildi.

Telegram kanalimiga obuna bo'ling! 

<https://t.me/ustoz>