FIZIKA

1.

Quyida umumiy tezlanish va uning tashkil etuvchilari orasidagi munosabatlar berilgan.

1) $a_\tau > a$; 2) $a \geq a_\perp$; 3) $a_\perp > a$; 4) $a \geq a_\tau$.
Bu yerda: a – umumiy tezlanish; a_τ – tangensial tezlanish; $a_\perp$ – normal tezlanish.

Berilgan munosabatlardan to‘g‘rilarini toping.

A) *2, 3*

B) *1, 3*

C) *1, 2*

D) *2, 4*

2.

Bikrligi 1,6 kN/m bo‘lgan prujinaga 5 kg massali yuk osilgan.

Prujinaning deformatsiyasini (cm) toping.

A) *5/8*

B) *25/8*

C) *5/4*

D) *5/16*

3.

Prujinali mayatnikning to‘liq mexanik energiyasi 5 marta ortsa, **uning tebranish amplitudasi necha marta o‘zgaradi?**

A) $\sqrt{5}$ *marta ortadi*

B) $\sqrt{5}$ *marta kamayadi*

C) 5 *marta ortadi*

D) 5 *marta kamayadi*

4.

Arava g‘arbga 5/13 m/s tezlik bilan harakatlanmoqda, vertolyot esa 12/13 m/s tezlik bilan shimolga harakatlanmoqda.

Ularning nisbiy tezligini (m/s) aniqlang.

A) $\frac{\sqrt{92}}{13}$

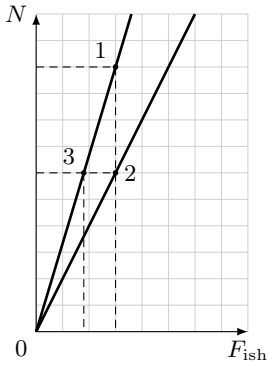
B) 1

C) $\frac{\sqrt{119}}{13}$

D) $\frac{\sqrt{104}}{13}$

5.

Grafikda sirtning normal reaksiya kuchining jismga ta'sir etuvchi ishqalanish kuchiga bog'liqligi tasvirlangan.



1-, 2- va 3-nuqtalardagi ishqalanish koeffitsiyentlari (μ) orasidagi to'g'ri munosabatni toping.

A) $\mu_1 = \mu_3 > \mu_2$

B) $\mu_1 > \mu_3 > \mu_2$

C) $\mu_1 > \mu_2 > \mu_3$

D) $\mu_2 > \mu_1 = \mu_3$

6.

Yerning Quyosh atrofidagi aylanma harakatining tezligi 30 km/s ga teng. Zuhro sayyorasining Quyosh atrofidagi aylanish radiusi Yernikiga nisbatan 25 % kichik.

Zuhro sayyorasining Quyosh atrofida aylanish tezligini (km/s) toping.

A) *44,6*

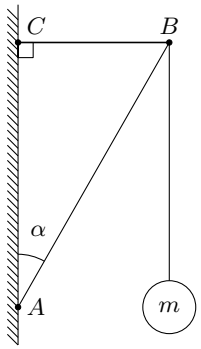
B) *30,5*

C) *34,6*

D) *39,0*

7.

Massasi m=12 kg bo‘lgan jism ipga osilgan. Bunda $\sin\alpha$=5/13.



Bunda AB sterjenda vujudga keladigan reaksiya kuchini (N) toping.

A) *155*

B) *165*

C) *130*

D) *140*

BMBA

8.

Agar shardagi geliyni teng miqdordagi neon bilan almashtirilsa, **sharning ko‘tarish qobiliyati necha marta o‘zgaradi?**

Havoning molyar massasi 29 g/mol, sharning xususiy og‘irligi hisobga olinmasin.

A) *29/4 marta kamayadi*

B) *25/9 marta kamayadi*

C) *29/20 marta kamayadi*

D) *20/4 marta ortadi*

9.

Sistema ikki jismdan iborat: massasi 4 kg bo‘lgan birinchi jism sharqqa tomon 3 m/s tezlik bilan, massasi 0,5 kg bo‘lgan ikkinchi jism janubga tomon 10 m/s tezlik bilan harakatlanmoqda.

Sistemaning to‘liq impulsini (kg·m/s) aniqlang.

A) *14,6*

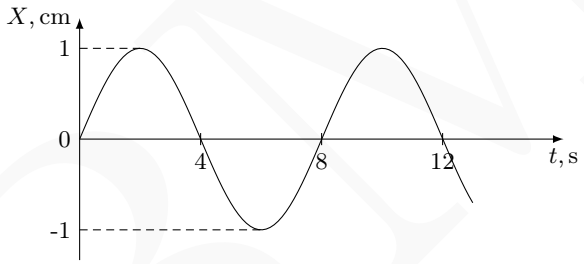
B) *9,6*

C) *18*

D) *13*

10.

Chizmada garmonik tebranayotgan jismning $X(t)$ bog‘lanish grafigi tasvirlangan.



Grafikdan foydalanib, t=8/3 s paytdagi jismning tezlanishini (a_x) (cm/s^2) toping.

A) $-\dfrac{\sqrt{3}\pi^2}{32}$

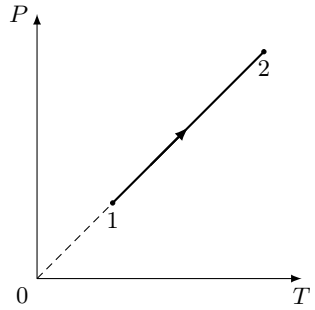
B) $\dfrac{\sqrt{3}\pi^2}{32}$

C) $-\dfrac{\pi^2}{32}$

D) $\dfrac{\pi^2}{32}$

11.

Gaz rasmda ko‘rsatilgandek 1-holatdan 2-holatga o‘tkazildi.



Bu qanday jarayon va bu jarayonda gazning zichligi qanday o‘zgaradi?

A) *izobarik; kamayadi*

B) *izoxorik; ortadi*

C) *adiabatik; o‘zgarmaydi*

D) *izoxorik; o‘zgarmaydi*

12.

Xonani 290 K dan 300 K gacha isitilganida havoning bosimi o‘zgarmadi.

Xonadagi havoning ichki energiyasi qanday o‘zgargan?

A) *chiziqli kamaygan*

B) *chiziqli ortgan*

C) *ichki energiya temperaturaning kvadratiga proporsional ravishda ortgan*

D) *o‘zgarmagan*

13.

Idishdagi gazning bosimi 1,5 MPa ga, temperaturasi 27 °C ga teng. Temperaturani 60 °C ga oshirilganda, gazning 40 % i idishdan chiqib ketdi.

Idishdagi oxirgi bosimni (MPa) aniqlang.

A) *0,96*

B) *1,08*

C) *1,21*

D) *0,88*

14.

4 mol geliyning ichki energiyasi 9600 J ga teng.

Uning absolyut temperaturasini (K) toping.

A) *154*

B) *193*

C) *122*

D) *238*

15.

Havodagi suv tomchisining hajmi 32 mm^3 ga teng. π=3

Undagi sirt tarangligi hisobiga vujudga kelgan qo‘shimcha bosimni (Pa) toping.

A) *73*

B) *146*

C) *18*

D) *36*

16.

8 μC zaryadli jism **nechta elektronini yo‘qotgan bo‘ladi?**

A) $5 \cdot 10^{13}$

B) $5 \cdot 10^{12}$

C) $5 \cdot 10^{14}$

D) $12{,}8 \cdot 10^{13}$

17.

120 V li kuchlanish tarmog‘iga ulangan o‘tkazgichdan 2,5 minutda 3,6 kJ issiqlik ajraldi.

O‘tkazgichdan o‘tayotgan tok kuchini (A) toping.

A) *12*

B) *0,1*

C) *0,2*

D) *5*

BMBA

18.

Tebranish konturidagi kondensatorning zaryadi kamaya boshladi.

Bunda tok kuchining moduli qanday o‘zgaradi?

A) *o‘zgarmay turadi*

B) *kamayadi*

C) *bu ikki miqdor bir-biriga bog‘liq emas*

D) *ortadi*

19.

Q va q zaryadli zarralar orasidagi masofani 10 cm dan 5 cm ga qisqartirish uchun tashqi kuch 4/5 mJ ish bajardi.

Ularni yana 3 cm ga yaqinlashtirish uchun qancha ish (mJ) bajarish kerak?

A) *2,4*

B) *4,8*

C) *8/15*

D) *16/15*

20.

Ikkita bir xil o‘lchamli metall sferalar -40 V va 110 V potensialgacha zaryadlangan.

Ular bir-biriga tekkizilib qaytarib olindi.

-40 V potensialli sferaning oxirgi potensialini (V) toping.

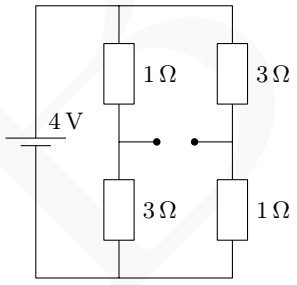
A) *-5*

B) *35*

C) *65*

D) *70*

21.



Berilgan sxemadagi klemmalarga ideal voltmetr ulansa, **u necha voltni ko‘rsatadi?**

A) *2,5*

B) *3*

C) *1,5*

D) *2*

22.

Alyuminiy qarshiligining temperatura koeffitsiyentini aniqlash uchun alyuminiy simga bir xil kuchlanish berildi. Sim avval eriyotgan muzga botirilganda tok kuchi 35 mA bo‘lgan bo‘lsa, qaynoq suvga botirilganda 25 mA bo‘ldi.

Alyuminiy qarshiligining temperatura koeffitsiyentini ($\cdot 10^{-3}$ $\mathbf{K}^{-1}$) toping.

A) *2,9*

B) *4*

C) *2,4*

D) *1,7*

23.

Ikkita zaryadli zarra bir jinsli turli magnit maydonlarda aylanma harakat qilmoqda. 1-zarraning aylanish radiusi $2r$ ga, 2-siniki esa $3r$ ga teng.

Zarralarga ta’sir qilayotgan Lorens kuchlari teng bo‘lsa, ularning kinetik energiyalari nisbati $\frac{E_1}{E_2}$ ni aniqlang.

A) *3/2*

B) *4/9*

C) *2/3*

D) *9/4*

24.

Ikkita zaryadli zarra bir jinsli turli magnit maydonlarda aylanma harakat qilmoqda. 1-zarraning aylanish radiusi $2r$ ga, 2-siniki esa $3r$ ga teng.

Zarralarning kinetik energiyalari teng bo‘lsa, ularga ta’sir qilayotgan Lorens kuchlari nisbati $\frac{F_1}{F_2}$ ni aniqlang.

A) *3/2*

B) *2/3*

C) *4/9*

D) *9/4*

25.

5 Ω induktiv, 4 Ω aktiv va 2 Ω sig‘im qarshiliklar effectiv qiymati 50 V kuchlanishli o‘zgaruvchan elektr tarmoqqa ketma-ket ulangan.

Zanjirda ajralayotgan foydali quvvatni (W) aniqlang.

A) $400\sqrt{2}$

B) $200\sqrt{2}$

C) *400*

D) *200*

26.

Ko‘zgu burilganida ko‘zgudan akslangan nur 40 ° ga burilgan.

Ko‘zgu necha gradusga burilgan?

A) *20*

B) *26*

C) *16*

D) *12*

27.

Botiq sferik ko‘zgudan 20 cm masofada joylashgan buyumning 5/3 marta kattalashgan haqiqiy tasviri hosil bo‘ldi.

Ko‘zguning egrilik radiusini (cm) toping.

A) *12,5*

B) *100*

C) *25*

D) *50*

28.

Difraksion panjaraning doimiysi 6 μm ga teng. Monoxromatik nur panjaraga tik tushib difraksiyalandi. Bunda 5-tartibli maksimum markaziy maksimum bilan deyarli 90° burchak hosil qiladi.

Nurning to‘lqin uzunligini (μm) aniqlang.

A) *1,25*

B) *1,32*

C) *1,1*

D) *1,2*

29.

Neytral qo‘rg‘oshin $^{207}_{82}Pb$ atomida **nechta elektron bor?**

A) *82*

B) *125*

C) *289*

D) *207*

30.

Elektron bilan pozitron uchrashganda annigilyatsiya hodisasi ro‘y beradi va dastlabki zarralar o‘rnida ikkita gamma-kvant hosil bo‘ladi. m_e – elektron massasi.

Agar dastlabki zarralarning tezligi kichik bo‘lsa, hosil bo‘lgan har bir kvantning impulsini aniqlang.

A) $\frac{2m_ec^2}{h}$

B) m_ec

C) $\frac{m_ec^2}{2h}$

D) $\frac{m_ec}{2}$

31.

Radioaktiv izotoplarning dastlabki soni 10^{20} ta, yarim yemirilish davri 24 h ga teng.

Har bir yadro yemirilishida 400 keV energiya ajralib chiqsa, 30 sutkada ajraladigan yadro energiyasini (MJ) toping.

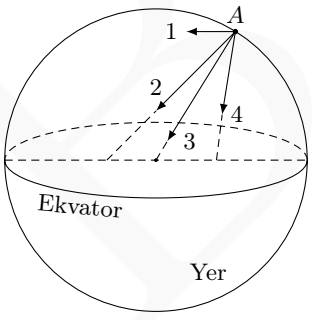
A) *4,5*

B) *7,2*

C) *6,4*

D) *5,3*

32.



Rasmda **Yerning A nuqtasida turgan jismning og‘irligi qanday yo‘nalganini toping.**

A) *3*

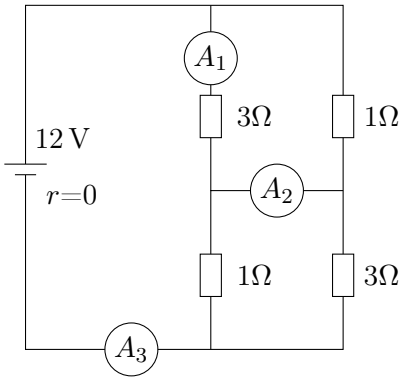
B) *1*

C) *4*

D) *2*

33-35-test topshiriqlariga mos keluvchi javoblarni (A-F) javob variantlaridan tanlang.

Rasmda elektr zanjir tasvirlangan.



33. A_1 **ampermetrning ko‘rsatishini (A) aniqlang.** **34.** A_2 **ampermetrning ko‘rsatishini (A) aniqlang.** **35.** A_3 **ampermetrning ko‘rsatishini (A) aniqlang.**	A) *8* B) *4,5* C) *2* D) *1,5* E) *4* F) *6*

36.

Qirrasining uzunligi 2 cm bo‘lgan kub shaklidagi 2 ta muz bo‘lagi asosining yuzasi 50 cm^2 bo‘lgan, 45,6 g suv quyilgan silindrik idishda tashlandi.

a) Muzlar erib ketgandan so‘ng suyuqlikning idish tubiga beradigan bosimini (Pa) toping.

Javob: a) _____

b) Muzlar erib ketgandan so‘ng suyuqlikning idish tubiga beradigan bosim kuchini (N) hisoblang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

37.

Silindrik idishga teng massali suv va kerosin quyildi. Suyuqliklar ustunining umumiy balandligi 27 cm ga teng.

a) Suv ustunining balandligini (cm) aniqlang.

Javob: a) _____

b) Idish tubidan 8 cm balandlikdagi nuqtada suyuqliklarning umumiy bosimini (Pa) toping.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

38.

Uzunligi 8 m, qiyalik burchagi 37° bo‘lgan silliq qiya tekislik tepasidan 20 kg massali jism sirpanib tushdi. $\cos 37°=0{,}8$

a) Jismning qiya tekislik etagidagi tezligini (m/s) toping.

Javob: a) _____

b) Bu jarayonda og‘irlik kuchining bajargan ishini (J) toping.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

39.

Bir atomli ideal gazga 60 J issiqlik berib hajmi izobarik ravishda 3 marta oshirildi.

a) Bunda gazning absolyut temperaturasi qanday o‘zgaradi?

Javob: a) _____

b) Gazning bajargan ishini (J) aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

40.

Issiqlik sig‘imi 500 J/K bo‘lgan idishda 10 °C temperaturali 5 l suv bor. Idishga -5 °C temperaturali 1 kg muz tashlandi.

a) Natijaviy temperaturani (°C) toping.

Javob: a) _____

b) Muzning olgan issiqlik miqdorini (kJ) aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

41.

Proton induksiyasi B bo‘lgan magnit maydonga tik uchib kirdi va r radiusli aylana bo‘ylab harakatlana boshladi. m – protonning massasi, e – elementar zaryad.

a) Uning aylanish chastotasini aniqlang.

Javob: a) _____

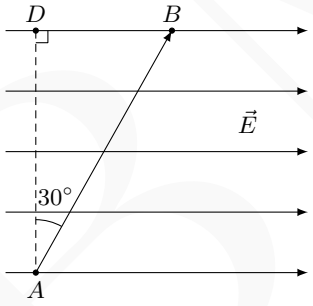
b) Protonning tezligini aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

42.

Maydon kuchlanganligi E bo‘lgan bir jinsli elektr maydonda harakatlanayotgan proton l masofaga ko‘chib, A nuqtadan B nuqtaga yetib bordi.



a) Protonning kinetik energiyasi qanchaga o‘zgarganligini aniqlang.

Javob: a) _____

b) Proton $ABDA$ yopiq yo‘l bo‘ylab ko‘chirilganda elektr kuchlar bajaradigan ishni aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

43.

Suvdagi nurning intensivligi 27 W/m^2 ga teng.

a) Nurdagi elektromagnit maydon energiyasining zichligini (J/m^3) aniqlang.

Javob: a) _____

b) Nur suvdagi ko‘zgudan tik akslansa, ko‘zguga beradigan bosimini (Pa) aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

44.

Quyoshning diametri $13{,}8\cdot10^8$ m ga, Yer bilan Quyosh orasidagi masofa $1{,}5\cdot10^{11}$ m ga teng. Fokus masofasi 0,5 m bo‘lgan Yerdagi linza ekranda Quyoshning haqiqiy tasvirini hosil qilmoqda.

a) Tasvir bilan linza orasidagi masofani (mm) toping.

Javob: a) _____

b) Quyosh tasvirining diametrini (mm) toping.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.

45.

G‘alayonlangan vodorod atomining ionlashish energiyasi 3,4 eV ga teng.

a) Atom fotonni yutib impuls momentini $2\hbar$ ga oshirsa, uning ionlanish energiyasi (eV) nimaga teng bo‘lishini aniqlang.

Javob: a) _____

b) Atom fotonni yutib impuls momentini $2\hbar$ ga oshirsa, undagi elektronning tezligi necha marta o‘zgarishini aniqlang.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko‘chirib yozing.