

**MEXANIKA FANINI O'ZLASHTIRISHDA INTENSIV USULLARDAN
FOYDALANISH BO'YICHA ADABIYOT(MAHALLIY VA HORIIY)LARNI
QIYOSIY O'RGANGANLIK HUSUSIDA.**

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Annotatsiya: Ushbu maqolada Mexanika fanini o'zlashtirishda intensiv usulda o'qitish uchun eng maqbul adabiyot yaratish-mahalliy va xorijiy oliy ta'lim muassasalarida yaratilgan mavjud adabiyotlar taxlili o'rganilgan va yoritilgan.

Kalit so'zlar: Farmon va qaror, texnika, texnologiya, o'qitish metodikasi, kompetentlik, talabalar.

**REGARDING THE COMPARATIVE STUDY OF LITERATURE (DOMESTIC
AND FOREIGN) ON THE USE OF INTENSIVE METHODS IN MASTERING
MECHANICAL SCIENCE.**

Abstract: In this article, intensive training in mastering the subject of mechanics to create optimal literature-the analysis of existing literature created in domestic and foreign higher educational institutions is studied and highlighted.

Keywords: Decree and regulation, methodology, technology, teaching methods, competence, students.

**ПО ПОВОДУ СРАВНИТЕЛЬНОГО ИЗУЧЕНИЯ ЛИТЕРАТУРЫ
(ОТЕЧЕСТВЕННОЙ И ЗАРУБЕЖНОЙ) ПО ИСПОЛЬЗОВАНИЮ
ИНТЕНСИВНЫХ МЕТОДОВ В ОСВОЕНИИ МЕХАНИЧЕСКОЙ НАУКИ.**

Аннотация: В этой статье интенсивное обучение в освоении предмета механика для создания оптимальной литературы-изучен и освещен анализ существующей литературы, созданной в отечественных и зарубежных высших учебных заведениях.

Ключевые слова: Указ и постановление, методика, технология, методика обучения, компетентность, студенты.

KIRISH

O'zbekiston Respublikasi Prezidentining 2017 yil 20 apreldagi "Oliy ta'lim tizimini yanada rivojlantirish chora-tadbirlari to'g'risida"gi PQ-2909-sonli qarorida "... yangi avlod o'quv adabiyotlarning yaratish va ulari oliy ta'lim muassasalarining ta'lim jarayoniga keng tatbiq etish, oliy ta'lim muassasalarini zamonaviy o'quv, o'quv-metodik va ilmiy adabiyotlar bilan ta'minlash, shu jumladan, eng yangi horijiy adabiyotlar sotib olish va tarjima qilish, axborot-resurs markazlari fondlarni muntazam yangilab borish" Oliy ta'lim tizimini kelgusida yanada kompleks rivojlantirish bo'yicha eng muhim vazifalardan biri etib qat'iy belgilangan [1].

Mazkur ko'rsatmalar asosida malakali kadrlar tayyorlash borasida oliy ta'lim tizimi oldida mavjud dolzarb muammo va kamchiliklari bartaraf etishga yo'naltirilgan. Xususan, ta'lim mazmuni va sifatiga alohida e'tibor qaratilayotgan bugungi kunda, barcha sohalarda bo'lgani kabi texnika ta'lim yo'nalishlarida ham o'quv adabiyotlari mazmuni va shaklini tanqidiy- taxliliy

monitornig qilish asosida yangi avlod darsliklarni yaratish, ta'lim bosqichlari kesimida ularning uzviyligi-uzluksizligini ta'minlash barobarida islohotlar olib borish zarurligini tasdiqlaydi.

ASOSIY QISM

Yaratiladigan har bir darslik eng avvalo, ta'lim-tarbiya maqsadlariga, davlat ta'lim standartlariga mos kelishi, tegishli fan asoslarning xayot bilan hamnafasligini ta'minlagan holda tabiat va jamiyat rivojlanishi qonunlarni tushinishda ta'lim oluvchilarga ko'maklashuvchi vositalardan biri bo'lmog'i lozim.

Ta'lim-tarbiya jarayonida eng muhim o'rni tutuvchi darslik, ta'lim oluvchilar tomonidan davlat ta'lim standarti va o'quv dasturida belgilangan bilimlar, ya'ni o'quv-biluv materiallari¹ faol va ongli sur'atda o'zlashtirilishini ta'minlashga mo'ljallangan asosiy o'quv kitobidir.

Ta'lim beruvchi va ta'lim oluvchilar faoliyatlarni darslik vositasida uyg'unlashtirishning shakl va usullari darslikdan foydalanishning metodik qo'llanmasida ifodasini topadi. Metodik qo'llanma barcha didaktik vositalari ta'lim-tarbiya jarayonlariga jalb etishda pedagogning go'yoki ishonchli "maslahatchisi" hisoblanadi. Binobari, metodik qo'llanma darslik yaratishga asos bo'lib xizmat qiladi.

Darslik yaratish jarayonidari faoliyatni umumlashgan holda to'rt bosqichga ajratish mumkin, bu jarayondan keyin, darslikning uzluksiz takomillashuv jarayoni boshlanadi va u qayta nashr - takomillashish shaklida ilmiy-tadqiqiy tarzda rivojlana boradi.

Dastlab asosiy e'tibor ta'lim oluvchilarga qanday o'quv-biluv materiallarni xavola etish va qay tarzda yetkazish singari muammolarni xal etish ko'zda tutiladi. So'ngra esa ta'lim maqsadi, mazmuni, tarkibi, tuzilishi va ijtimoiy funksiyalari muayyan o'quv fani shaklida namoyon qilinadi. Bunda barcha o'quv fanlari umumiy maqsad tevaragida betakror vazifasi bilan uyg'unlashadi. Shu tariqa darslik yaratishning birinchi va ikkinchi bosqichlarda asosan ta'limning maqsadi, mazmuni, uning tarkibiy qismlari, tuzilishi, ijtimoiy funksiyalari har tomonlama taxliliy o'rganiladi va to'laqonli shakllantiriladi. Darsliklarning yuqoridagi funksiyalari konseptual ahamiyat kasb etib, barcha o'quv fanlarida bunga amal qilinishi lozim.

Yuqorida ta'kidlanganidek, barcha sohalarida o'quv adabiyotlari yangi avlodini yaratishda amaldari DTS, TTS, o'quv dastur va o'quv rejalar eng muhim tayanch vazifalari bajaradi.

Shu nuqtai nazardan qaraganda, eng avvalo DTS, o'quv dastur va o'quv

rejalarni takomillashtirish borasida qilinishi zarur bo'lgan ilmiy- pedagogik muammolar, ularni yaratishga qo'llaniladigan asosni metodik talablar hamda bu borada mavjud muammolarni bartaraf etishga qaratilgan ilmiy asoslangan tavsiya va takliflar xususida fikr-mulohazalar yuritish lozim.

Jamiyatning rivojlanish tendensiyasi ta'lim-tarbiya jarayonlarni takomillashuviga mos keladi, ya'ni bilimlar dinamik tarzda o'sib, yangi bosqichlarga chiqadi.

Tabiiyki, bunday murakkab jarayonlar ta'lim-tarbiya jarayonlari o'zining g'oyat murakkabligi, uzluksiz ravishda takomillashuvchanligi va davomiyligini talab qilayotgan shu kunlarda pedagog-olimlar oldiga nafaqat usib kelayotgan yosh avlodni, balki jamiyatdagi barcha faol fuqaro-shaxslarni o'zlari yashaydigan ijtimoiy-siyosiy muhit - xayotga munosib ravishda tayyorlash va qayta tayyorlash kabi real xayotiy talablar ijrosini ta'minlashga va muntazam ravishda yangilanishga yo'naltirilgan vazifalari quyib boradi.

Oxirgi yillarda o'quv dasturlarni takomillashtirish, yangidan shakllanmrish, amaliyotga tadbiq etish, ta'lim nazariyasi va amaliyoti, darsliklari baxolash mezonlari

jarayonlarida xal etilishi lozim bo'lgan muammolar U.Q.Musayev, R.F.Safarova, D.Shodiyev, M.Rixsiyevlar hamda ta'lim-tarbiya jarayonlarida axborot-kommunikatsion texnologiyalari qo'llash samaradorligini oshirishning nazariy va amaliy asoslari, pedagogik shart-sharoitlar, shuningdek, elektron o'quv-metodik majmualar yaratishning ilmiy-metodik talablari R.Juraev, F.M.Zokirova, A.A.Abdukodirov, N.I.Taylakov, A.R.Xodjaboev, G.A.Rasulova kabi pedagog-olimlar tomonidan atroflicha tadqiq qilingan.

Ta'lim sifatini boshqarishning nazariy-metodologik, tashqiliy-pedagogik konseptual asoslari, kadrlar tayyorlashdagi ilmiy-pedagogik muammolar va yo'nalishlar Sh.E.Qurbanov, E.Seytxalilov, H.Saidov, R.Sh.Axliddiov hamda kasbiy pedagogik faoliyat muammolari R.J.Jo'raev, Q.T.Olimov, N.A.Muslimov, M.H.Usmonboyeva, H.Abdukarimov, O.O.Daminov, B.M.Mirzahmedov, A.H.Fafforov, H.H.Saidova, N.Urazov, M.A.Davlatov, A.Nabiyev, P.Matkarimov singari pedagog-olimlarning tadqiqotlarida ilmiy asoslangan.

O'quv adabiyotlari yangi avlodini yaratishning ilmiy-pedagogik va didaktik asoslari, elektron darsliklar yaratish texnologiyasi, masofali ta'lim imkoniyatlari, darsliklar sifatini boshlashning nazariy va metodik asoslari QT.Olimov, R.F.Safarova, N.I.Taylakov hamda zamonavny innovatsion ta'lim texnologiyalari nazariyasi va amaliyoti N.H.Avliyakov, R.J.Ishmuhammedov, N.A.Muslimov, H.Ya.Karimov, N.Sayidaxmedov, U.Q.Tolipov, M.H.Usmonboyeva singari pedagog-olimlarning fundamental ilmiy tadqiqotlari e'tiborga molikdir.

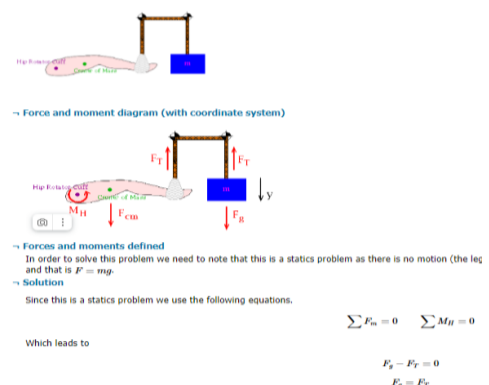
Shuningdek, MDH pedagog-olimlari S.Antonova, V.P.Baspal'ko, M.A.Dubnik, A.Kusanov, I.M.Osmolovskaya, V.M.Rozin, L.Tyo'rnina, A.V.Xutorskoy kabilar o'quv adabiyotlari yangi avlodini hamda V.S.Zaytsev, G.QSelevko, M.A.Fedorovlar esa ta'lim-tarbiya jarayonlarida innovatsion pedagogik va axborot-kommunikatsion texnologiyalardan foydalanish muammolarini xal etish yuzasidan mukammal ilmiy tadqiqotlar olib borganlar.

Horijlik Allen J.H., Assmann V., Selke R., Ansel S. Ugural, Beer F.P., Johnston E.R., De Sholf J.T., Mazurek D.F., Gere J., Timoshenko S., Nibbler R.C., Nash, S.H.A., Green O., John T. De SHolf singari pedagog-olimlarning bevosita mavzuga aloqador darsliklar yaratish texnologiyalarni takomillashtirish va ulardan amalda foydalanish metodikasini tadqiqi bo'yicha ilmiy-pedagogik izlanishlari natijasida yaratgan darsliklari ham ahamiyatlidir.

So'nggi yillarda horijiy texnik oliy ta'lim muassasalari professor-o'qituvchilari tomonidan tayyorlanayotgan o'quv-uslubiy materiallar, darslik va qo'llanmalar ham ta'lim sifatini sezilarli darajada oshishiga xizmat qilishini ko'rishimiz mumkin;

Jumladan,

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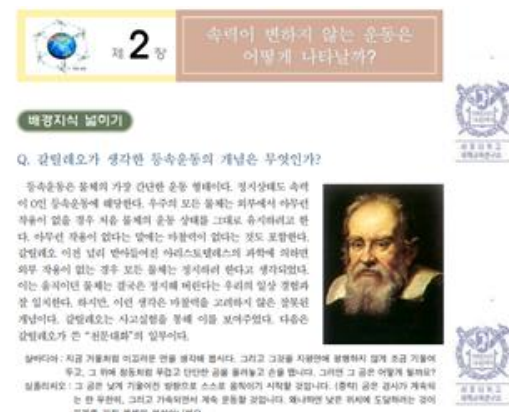


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<https://www.pdfdrive.com/theoretical-mechanics-e7357440.html> havola orqali foydalanish mumkin bo'lgan materialda –taqdim etilgan ma'lumotlar juda qisqa va aniq, masalalar esa reallikka asoslanganligi uchun ham-talabalar tomonidan qisqa muddatda o'zlashtirilishiga erishiladi.(4-rasm)

6.10. Mixed method

One of the most efficient method in the solving of the systems of rigid bodies is the mixed method that uses simultaneously for to determine the reactions the both theorems of equilibrium. This method allows to solve the system of bodies entirely (to determine all the reactions from the external and internal constraints and connections).

For the systems of rigid bodies with open outlines this method can be used for to determine the reactions from the external constraints without to divide the system in bodies or parts.

One system of bodies with open outlines is that system of bodies in which for to arrive, from one point, in the same point, have to pass twice the same line. For a system with closed outlines we can arrive in the same point without to pass twice the same line.

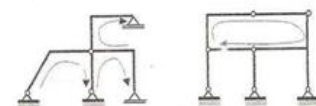
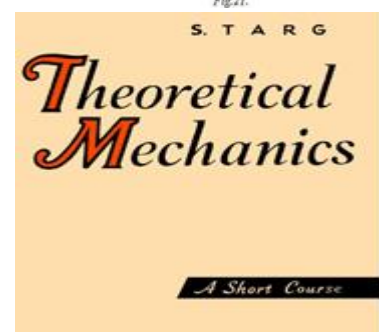


Fig.21.



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havola orqali foydalanish mumkin bo'lgan materialda –taqdim etilgan ma'lumotlar juda qisqa va aniq, masalalar esa reallikka asoslanganligi uchun ham-talabalar tomonidan qisqa muddatda o'zlashtirilishiga erishiladi.(6-rasm)

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havola orqali foydalanish mumkin bo'lgan materialda –taqdim etilgan ma'lumotlar juda qisqa va aniq, masalalar esa reallikka asoslanganligi uchun ham-talabalar tomonidan qisqa muddatda o'zlashtirilishiga erishiladi.(7-rasm)

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havola orqali foydalanish mumkin bo'lgan materialda –taqdim etilgan ma'lumotlar juda qisqa va aniq, masalalar esa reallikka asoslanganligi uchun ham-talabalar tomonidan qisqa muddatda o'zlashtirilishiga erishiladi.(8-rasm)

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havola orqali foydalanish mumkin bo'lgan materialda –taqdim etilgan ma'lumotlar juda qisqa va aniq, masalalar esa reallikka asoslanganligi uchun ham-talabalar tomonidan qisqa muddatda o'zlashtirilishiga erishiladi.(9-rasm)

102 TWO-DIMENSIONAL FORCE SYSTEMS Ch. IV
Determine the reactions at the supports *A* and *B* (Fig. 56a).
Solution. Here we have a system of two connected bodies. To determine the reactions at the supports *A* and *B*, it is necessary to know all the forces acting on the beam *AB*. The

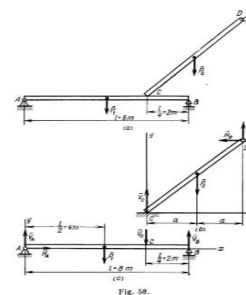


Fig. 56a.

2. Statics

Moment about a point

The magnitude of the moment of a force at a point *O*, is equal to the perpendicular distance from *O* to the line of action of *F*, multiplied by the magnitude of the force: $M = Fd$, where

F – the force applied, *d* – the perpendicular distance from the axis to the line of action of the force. This perpendicular distance is called the moment arm.

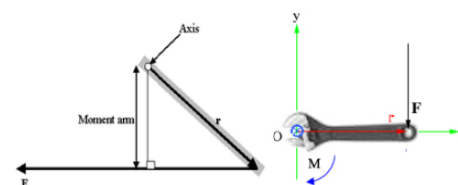


Figure 3.5.2 is a sketch that shows the acceleration and velocity vectors.



Figure 3.5.2: The airplane lands with an initial velocity of 70.0 m/s and slows to a final velocity of 10.0 m/s before heading for the terminal. Note the acceleration is negative because its direction is opposite to its velocity, which is positive.

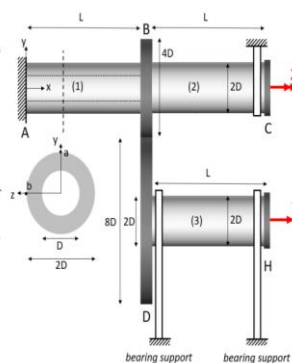
Significance

The final velocity is much less than the initial velocity, as desired when slowing down, but is still positive (see Fig. With jet engines, reverse thrust can be maintained long enough to stop the plane and start moving it backward, which is indicated by a negative final velocity, but is not the case here.

In addition to being useful in problem solving, the equation $v = v_0 + at$ gives us insight into the relationships among velocity, acceleration, and time. We can see, for example, that

PROBLEM #3 (25 points)

Torsion member (1) is connected to ground at *A* and to a gear at *B*. Gear *B* is also attached to torsion member (2). Gear *B* is meshed with gear *D*, which is connected to torsion member (3). A torque of $2T$ is applied at *C* and a torque of T is applied at *H*. All torsion members have a length of L and a shear modulus of G . All torsion members have an outer diameter of $2D$, but torsion member (1) is hollow with an inner diameter of D .



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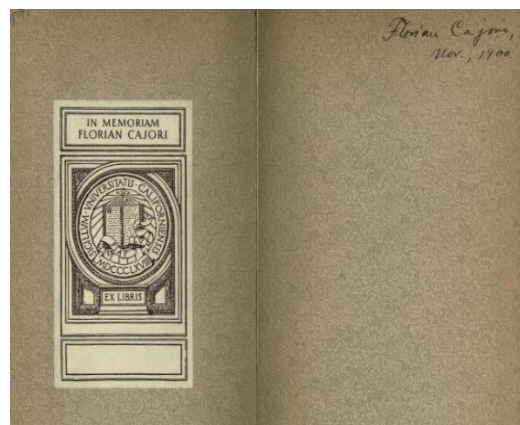
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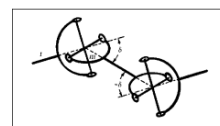
и плоскость – класс 2. Стрелками здесь отмечены возможные перемещения звеньев, которые сохраняются после образования пары.

Таблица 2 - Классификация кинематических пар

Кинематическая пара и ее условное обозначение	Шар - плоскость	Цилиндр - плоскость	Сферическая	Цилиндрическая	Поступательная
Число степеней свободы/класс пары	5 / 1	4 / 2	3 / 3	2 / 4	1 / 5

Для постоянного соприкосновения звеньев в кинематических парах должно быть обеспечено замыкание пары.

Замыкание может быть: кинематическое (конструктивное) –

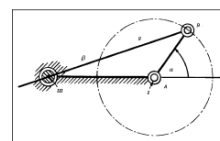
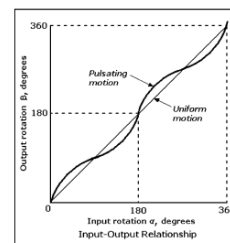


The Universal Joint Drive

The universal joint is a variation of the spherical-slide oscillator, but with angle $\gamma = 90^\circ$. This drive provides a totally rotating output and can be operated as a pair, as shown in the diagram. The equation relating input with output for a single universal joint, where γ is the angle between the connecting link and shaft I, is:

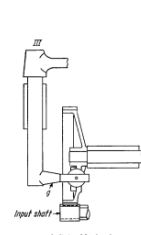
$$\tan \beta = \tan \alpha \cos \delta$$

The output motion is pulsating (see curve) unless the joints are operated as pairs to provide a uniform motion.



The 3D Crank Slide Drive

The three-dimensional crank slide is a variation of a plane crank slide (see



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Thus, the necessary and sufficient conditions of equilibrium for a system of co-planar and non-concurrent forces are:

- The algebraic sum of the resolved parts of the forces along any direction is equal to zero (i.e. $\Sigma X = 0$),
- The algebraic sum of the resolved parts of the forces along a directional right angles to the previous direction is equal to zero (i.e. $\Sigma Y = 0$), and
- The algebraic sum of the moments of the forces about any point in their plane is equal to zero (i.e. $\Sigma M = 0$).

TYPES OF EQUILIBRIUM

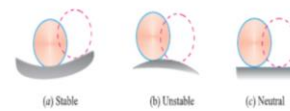
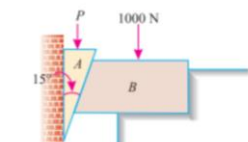


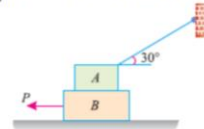
Fig 2.1

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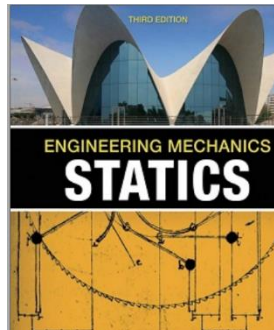
47



If the angle of friction for all the surfaces is 14° , find graphically the force P that should be applied to the wedge. Also check the answer analytically. **Ans.:** 2. Two blocks A and B of weights 1 kN and 2 kN respectively are in equilibrium in Fig. If the coefficient of friction between the two blocks as well as the floor is 0.3, find the force (P) required to move the block B. **Ans. 1.11 kN**



To Jean, Leslie, Lori, John, Nicholas and To Judy, Nicholas, Jennifer, Timothy
Engineering Mechanics: Statics, Third Edition 200 First Stamford Place, Suite 400 Stamford,
CT 06902 USA



2.32 The tow truck's front wheels will be lifted off the ground if the moment of the load W about the rear axle exceeds the moment of the 6200-lb weight of the truck. Determine the largest W that may be safely applied.

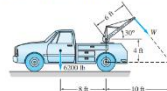


Fig. P2.32

2.33 The force F acts on the gripper of the robot arm. The moments of F about points A and B are 210 N·m and 90 N·m, respectively—both counterclockwise. Determine F and the angle θ .

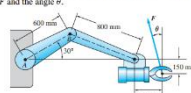


Fig. P2.33

2.34 Compute the moment of the force P about point A.

Engineering Mechanics, Statics and Dynamics, Irving H. Shames Professor Dept. of Civil,
Mechanical and Environmental Engineering The George Washington University

Preface ix

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Figure P2.32

2.32. Draw the free-body diagram for the tow truck and the body B of the gripper. Consider the weight of each part to act at a central location. (Repeat the gripper and payload as concentrated forces, W_1 and W_2 , respectively.)



Figure P2.33

2.33. Draw the free-body diagram for the gripper B , the boom AB , and the tractor T . Consider the weight of each part, W_1 , W_2 , and W_3 .



Figure P2.34

2.34. Draw a free-body diagram of the whole apparatus and of each of its parts: AB , AC , BC , and CD . Include the weights of all bodies. Label forces.

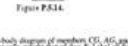


Figure P2.35

2.35. Draw a free-body diagram of members CD , AC , and BC . B is the only weight line of the beam. Label all forces. (Hint: Consider the pin at C as a separate free body.)



Figure P2.36

2.36. Draw the free-body diagram of the horizontally beam AB is shown. Use only x - y components of all vectors drawn.



Figure P2.37

XULOSA

Mualliflar tomonidan esa texnika yo'nalishidagi umumkasbiy fanlar yangi avlodini yaratish jarayoni pedagogik muammo sifatida qaralib, darsliklar yaratishning didaktik tamoyillari, shaxsga yo'naltirilgan texnologiyalari ta'lim sifati-samaradorligira ta'siri, modulli hamda so'nggi axborot va pedagogik texnologiyalar asosida darsliklar yaratish muammolari, darsliklar sifati va samaradorlikni baxolash mexanizmlari singari muammolar ilmiy-nazariy jihatdan tadqiq etilgan va shu tamoillar asosida o'quv uslubiy materiallar tayyorlashni maqsad etib belgilagan.

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