Mašinski fakultet Banja Luka

MEHANIKA III

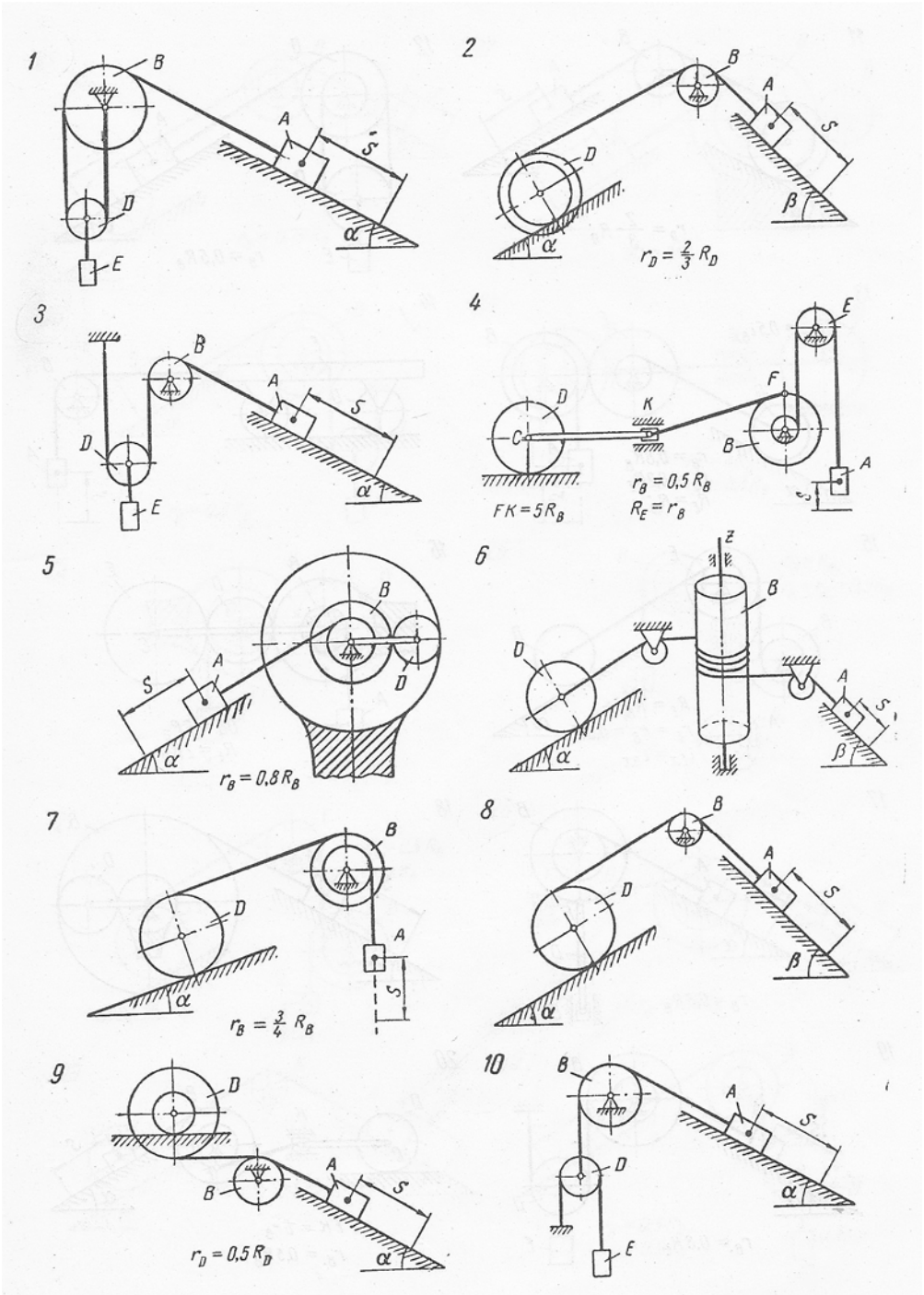
GRAFIČKI RAD BR. 3a

Primjena zakona o promjeni kinetičke energije na mehanički sistem sa jednim stepenom slobode

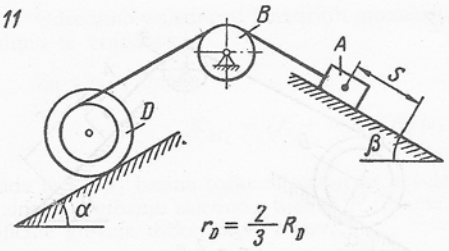
Za zadani mehanički sistem treba odrediti koliku brzinu ima tijelo A nakon što je prešlo put dužine s. Sistem se kreće pod dejstvom vlastitih težina elemenata, a započinje kretanje iz stanja mirovanja. Na skici je prikazan početni položaj sistema. Mase užadi zanemariti. Trenje kotrljanja i sile otpora u ležajevima ne uzimati u obzir.

Varijanta (D-6a, b, c)	m_A	m_B	m_D	m_E	R_B	R_D	i_{Bx}	i_{Dx}	α	β	μ	e cm	s m	Primjedba
	kg				cm		cm		stupnjeva					
1	m	$4m$	$1/5m$	$4/3m$	—	—	—	—	60	—	0,10	—	2	
2	m	$1/2m$	$1/3m$	—	—	30	—	20	30	45	0,22	0,20	2	
3	m	m	$1/10m$	m	—	—	—	—	45	—	0,10	—	2	
4	m	$2m$	$40m$	m	20	40	18	—	—	—	—	0,30	$0,1\pi$	Mase dijelova FK, KC i klizača K zanemarimo
5	m	$2m$	m	—	20	15	18	—	60	—	0,12	—	$0,28\pi$	Masu vodilice zanemariti
6	m	$3m$	m	—	—	28	—	—	30	45	0,10	0,28	1,5	
7	m	$2m$	$4m$	—	16	25	14	—	30	—	—	0,20	2	
8	m	$1/2m$	$1/3m$	—	—	30	—	—	30	45	0,15	0,20	1,75	
9	m	$2m$	$9m$	—	—	30	—	20	30	—	0,12	0,25	1,5	
10	m	$1/4m$	$1/4m$	$1/5m$	—	—	—	—	60	—	0,10	—	3	
11	m	$1/2m$	$1/4m$	—	—	30	—	25	30	45	0,17	0,20	2,5	
12	m	$1/2m$	$1/5m$	m	30	—	20	—	30	—	0,20	—	2,5	
13	m	$2m$	$5m$	$2m$	30	20	26	—	30	—	—	0,24	2	
14	m	$1/2m$	$5m$	$4m$	—	25	—	—	—	—	—	0,20	2	Mase sva četiri kotača su jednake
15	m	$1/2m$	$4m$	$1/2m$	20	15	18	—	60	—	—	0,25	1,5	
16	m	$1/10m$	$1/20m$	$1/10m$	10	12	—	—	—	—	—	—	$0,05\pi$	Masu vodilice zanemarujemo
17	m	$1/4m$	$1/5m$	$1/10m$	20	—	15	—	60	—	0,10	—	$0,16\pi$	Radilicu EF smatrajmo tankim homogenim štapom
18	m	$3m$	m	—	35	15	32	—	60	—	0,15	—	$0,2\pi$	Masu vodilice zanemarimo
19	m	$1/3m$	$1/10m$	m	24	—	20	—	60	—	0,15	—	1,5	
20	m	$2m$	$20m$	—	20	15	16	—	30	—	0,10	0,20	$0,2\pi$	Mase dijelova FK, KC i klizača K zanemarimo
21	m	m	$2m$	—	20	20	16	—	30	45	0,20	0,32	1,2	
22	m	$1/2m$	$1/4m$	—	20	10	—	—	60	—	0,17	—	$0,1\pi$	Masu vodilice zanemarimo
23	m	m	$1/10m$	$4/5m$	20	—	18	—	30	—	0,10	—	1	
24	m	$3m$	$20m$	—	20	30	18	—	—	—	—	0,60	$0,08\pi$	Mase dijelova FK, KC i klizača K zanemarimo
25	m	$1/3m$	$1/4m$	—	16	20	—	—	—	—	—	—	$0,04\pi$	Masu vodilice zanemarimo

26	m	$1/2m$	m	$1/3m$	30	—	20	—	—	—	—	—	$0{,}6\pi$	Mase i momenti inercije kolotura B i B_1 su jednake. Radilicu EF smatrajmo tanskim ho mogenim štapom
27	m	m	$6m$	$1/2m$	20	20	16	—	30	—	—	0,20	2	
28	m	$2m$	$3m$	—	20	—	14	—	60	—	0,10	—	$0{,}1\pi$	Radilicu EF smatrajmo tankim homogenim štapom
29	m	$1/4m$	$1/8m$	—	—	35	—	—	15	30	0,20	0,20	2,4	
30	m	$1/2m$	$3/10m$	$3/2m$	26	20	20	18	30	—	0,12	—	2	

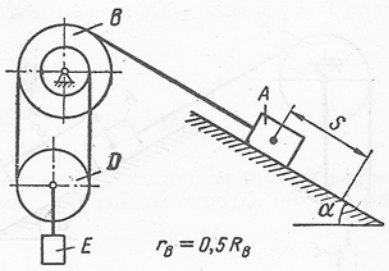


11



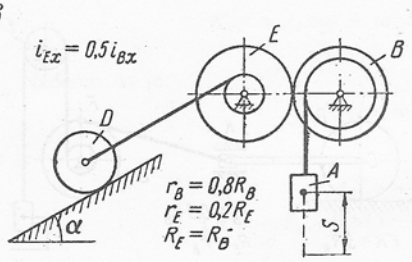
$r_D = \frac{2}{3} R_D$

12



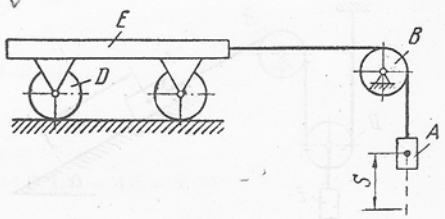
$r_B = 0{,}5 R_B$

13



$r_B = 0{,}8 R_B$
$r_E = 0{,}2 R_E$
$R_E = R_B$

14



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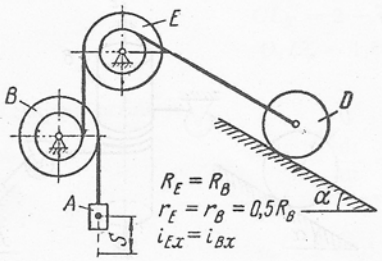
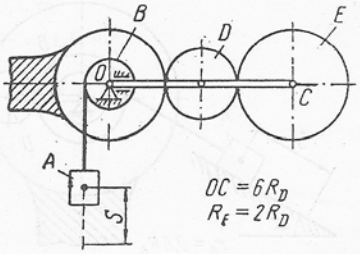


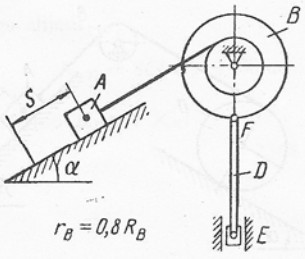
$R_E = R_B$
$r_E = r_B = 0{,}5 R_B$
$i_{Ex} = i_{Bx}$

16



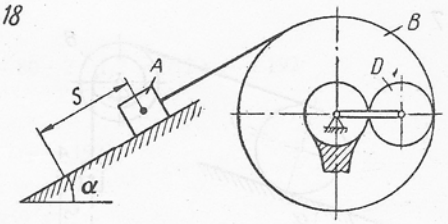
$OC = 6 R_D$
$R_E = 2 R_D$

17



$r_B = 0{,}8 R_B$

18



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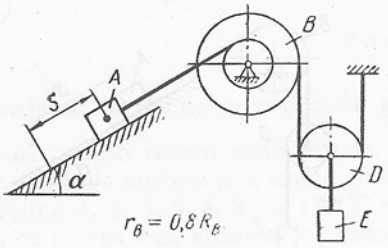
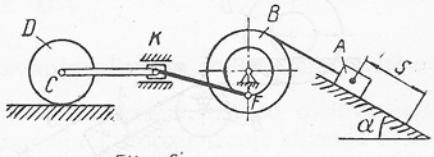


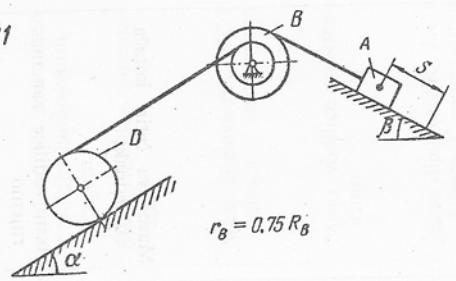
$r_B = 0{,}8 R_B$

20



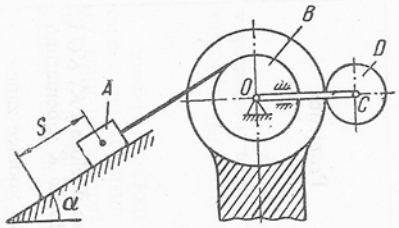
$FK = 6 r_B$
$r_B = 0{,}5 R_B$

21



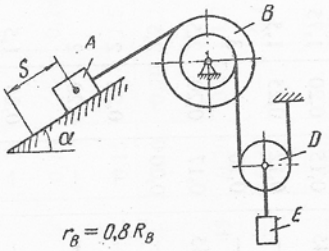
$r_B = 0{,}75\,R_B$

22



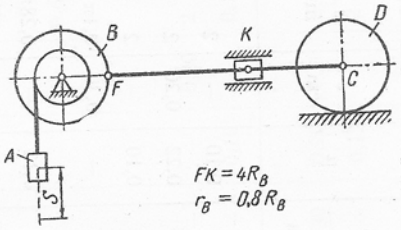
$OC = 2R_B$

23



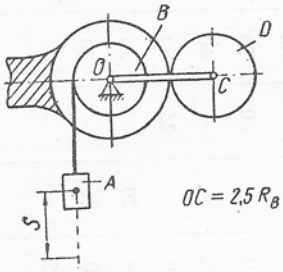
$r_B = 0{,}8\,R_B$

24



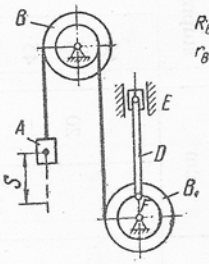
$FK = 4R_B$
$r_B = 0{,}8\,R_B$

25



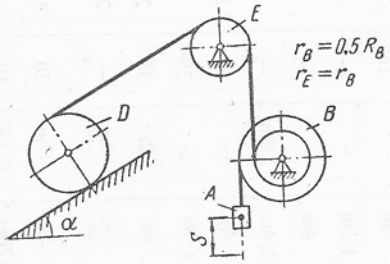
$OC = 2{,}5\,R_B$

26



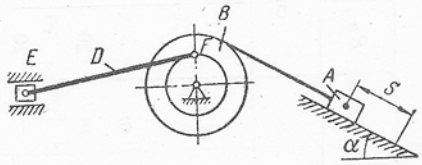
$R_B = R_{B_1}$
$r_B = r_{B_1} = 0{,}5\,R_B$

27



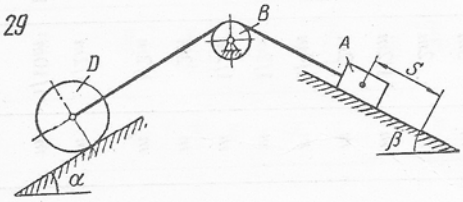
$r_B = 0{,}5\,R_B$
$r_E = r_B$

28



$r_B = 0{,}5\,R_B$

29



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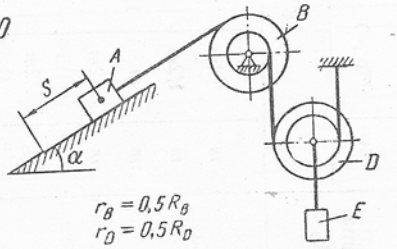

$r_B = 0{,}5\,R_B$
$r_D = 0{,}5\,R_D$