E b k l k h] e Z k h \ Z g b i y j h j] 4 Z h f q u _ c ^ b k p b i e b g u

l j h] j Z f f m k h k l Z \ b e Z

> h p d w g ^ h p	23.06.21	; F E _ [_ ^ _ \
^ h e ` g h k l v m q k l _ i _	i h ^ i b k v ^ Z l Z	b g b p b Z e u n Z f b e b

l j h] j Z f f Z h ^ h [j _ g Z g Z a Z k _ ^ Z 8 3 b b d Z n _ ^ j u ‹

© ª b x g y] i j h l h d h e ‹

Зам. A Z \ _ ^ m x s b c ^ j d h Z n 8 3

^ l g i j h n	23.06.21	: : H \ h ^ _ g d h
m q k l _ i _ g v a \ Z g	i h ^ i b k v ^ Z l Z	b g b p b Z e u n Z f b e b

H l \ _ l k l \ _ g g u c < a H Z 8 . 0 5 . 0 2 (0 3)

^ h p d w g	23.06.21	L < D h e _ k g b d h \ Z
^ h e ` g h k l v m q k l _ i _	i h ^ i b k v ^ Z l Z	b g b p b Z e u n Z f b e b

A Z f _ k l b l ^ _ b e j v d l h j Z b g k l b i l h m l f Z _ l h ^ b q _ k d h c j Z [h l _

^ h p d w g ^ h p	23.06.21	E = N _ l b k h \ Z
^ h e ` g h k l v m q k l _ i _	i h ^ i b k v ^ Z l Z	b g b p b Z e u n Z f b e b

>bkpbiebgu ho©ghfbdZ Fbdjh^ wdhghfbq_kdb_ j_r_gby h[eZklyo `bag_^_yl_evghklb ª \ukr_]h h[jZah\ ±Zgjhy]jZffm[ZdZeZ\jbZhlZ gZijZ\e_gb_ ^ ihjfZlbdZ gªZijZ\e_gb_ ©lMijZ\e_gb_ bgnhjfZpbhggufb j_kmjkh\ b ª hkZfbiªebgZ j_Zebahc_ ©y».dZn_^j

>bkpbiebgu ho©p_e_gnZhjgZjh\Zgb_ m \uimkdgbdZ ke_^mxsbo

MÐ ©Kihkh[_g hij_^_eylv djm] aZ^Zq \ jZfdZo ihklZ\e_ hilbfZevgu_ kihkh[u bo j_r_gby bkoh^y ba ^_ckl\mxsbo ijZ j_kmjkh\ b h]jZgbq_gbcª

MÐ ©Kihkh[_g ijbgbfZgl\ZhgZgu_ wdhghfbq_kdb_ j_r_gby h[eZklyo `bag_^_yl_evghklbª

Kh^_j`Zgb_ ^bkpbiebgu ho\Zlu\Z_l djm] \hijhkh\ k\yaZg ihlj_[bl_ey aZdhghf_jghklyfb ih_^_gb_f nbjfu \ jZaebqguo jugdZfb j_kmjkh\ b ijhkh\ ijZdba\h^kl\Z < aZ_jr_gbb ^ey ZgZ h[s_]h wdhghfbq_kdh]h jZ\gh_kby m^_ey_lky \gbfZgb_ ijhba\h^kl\Z b jZkij_^_e_gby ijh^mdpbb h[s_kl_gghfm [eZ] kijZ_^eb\hklb

Ij_ih^Z\Zgb_ ^bkpbiebgu ho\Zlu\Z_l djm] \hijhkh\ k\yaZg mq_[gh]h ijhe p_dkZb ijZdlbq_kdb_ aZgylby kZfhklhyl_evgZy dhgkmevlZpbb

Ijh]jZffhc ^bkpbiebgu ij_^mkfhlj_gu ke_^mxsb_ \b^u d dhgljhev mki_\Z_fhklb ijhf_`mlyhqmZfywZdlaZkl_gZb

H[sZy ljm^h_fdhklv hk\h_gby ^bkpbiebgu_ lghuolZ\ 180 gbp qZk.h\

Yaud h[mq_gby ih «jmkkbdbc g_

1. l_j_q_gv ieZgbjm_fuo j_amevlZlh\ h[mq_gby ih ^b

P_eb ij_ih^Z\Zgby ^bkpbiebgu ©Wdhghfbd Z FbdjhwdhghfbdZª hagZdhfe_gb_ h[mqZxsboky k hkgh\Zfb wdhghfbq_kdhc f_lh^Zfb hkgh\gufb wdhghfbq_kdbfb dZl_]hjbyfb b aZdhg ^bkpbiebgu klm^_glu ijbh[j_lZxl p_ehklgh_ ij_^klZ\e_gb_ h gZmd_ bamqZxlavZ\dhgkhy wdhghfbq_kdbo y\e_gbc ihemqZxl kbkl_ h ih_^_gbb ihlj_[bl_e_c b nbjf h \aZbfhk\yab jZa\blby wd [eZ]hkhklhygby b khpbZevghc kijZ_^eb\hklb Z lZd`_ ijbh[j_ bf hj]Zgbah\Zlv kh[kl\^_gbh_ \ihlj_[e_gbb b ijhba\h^kl_

1.1. >bkpbiebgu Z^bl \ khklZ\ h[yaZl_h[yZahc\ZlZ_kbjhZ ffu \ukr_]h h[jZah\Zgby HI ^Zhe__

1.2. l_j_q_gv ieZgbjm_fuo j_amevlZlh\ h[mq_gby ih ^bkpl ieZgbjm_fufb j_amevlZlZfb<hk\h_gby HI

< j_amevlZl_ bamq_gby ^bkpbiebgu h[mqZxsbcky ^he`_ dhfi_l_gpbyfb beb bdhfi_l_gpb b ^bdZlhjo ^hklb`_gby ijb_^_gu lZ[ebp_

LZ[ebp_ Zl_j_q_gv dhfi_l_gpb b ^bdZlhjo ^hklb`_gby

DZl_]hjb]jmiiZ dhfi_lgpb	Dh^ b gZbf_g dhfi_l_gpb	Dh^ b gZbf_gh\Zgb_ bg^bdZlh dhfi_l_gpbb
Mgb_jkZe dhfi_l_gpb	MÐ Kihkh[_g hij_^_eylv dj aZ^Zq \ jZfdZ ihklZ\e_gghc b \u[bjZlv hilbfZevgu_ kihkh[u bo j_r_gby bkol ^_ckl\mxsbo ijZ\h\uojfgh bf_xsboky j_kmjkh\ b h]jZgbq_gbc	MÐ A agZlv \b^u j_kmjkh\ b h j_r_gby ihklZ\e_gguo aZ^Zq MÐ < \eZ^_lv gZ\udZfb \u[hjZ kihkh[Z j_r_gby aZ^Zq k mq_lhf mkeh\bc j_kmjkh\ b h]jZgbq_gb
Mgb_jkZe dhfi_l_gpb	MÐ Kihkh[_g ijbgbfZlv h[hkgh\Zggu_ wdhghfbq_kd j_r_gby \ jZaebqguo h[`bag_^_yl_ev	MÐ A agZlv hkgh\u wdhghfbq g_h[oh^bfu_ ^ey j_r_gby ijhn_k aZ^Zq MÐ M mf_lv h[hkgh\u\Zlv ijbg wdhghfbq_kdbo j_r_gby b \Zlvf_l wdhghfbq_kdh]h ieZgbjh\Zgby ^ ihklZ\e_gguo p_e_c MÐ < \eZ^_lv gZ\udZfb ijbgy h[hkgh\Zgguo wdhghfbq_kdbo j jZaebqguo h[eZklyo `bag_^_yl_

2. F_klh ^bkpbiebgu \ kljmdlmj_ HI

>bkpbiebgu Z_[Zah\Zlvky ijb bamq_gbb ijb bamq_gbb b ijhba\h^kl_ jZfdZo rdhevguo ijh]jZff

AgZgby ihemq_ggu_ ijb bamq_gbb fZl_jbZeZ ^Zgghc kZfhklhyl_evgh_ agZq_mlb_kihZevahf\Zlvky ijb bamq_gbb ^jm]b

– ©Wdhghfbd Z FZdjhwdhghfbdZª

3. H[t_f b ljm^h_fdhklv ^bkkpbiebgu

>Zggu_ h[h[s_f h[t_f_ ^bkkpbiebgu ljm^h_fdhklb hl^_e jZ[hlu ih ^bkkpbiebg_ b jZkij_^_e_gb_ wlhklJZm^h_ikfdZhklbgu ih\ lZ[ebp_

LZ[ebp±ZH[t_f b ljm^h_fdhklv ^bkkpbiebgu

<b^ mq_[ghc jZ[hlu	<k_]h	Ljm^h_fdhkl k_f_kljZf
		‹
1	2	3
Общая трудоемкость дисциплины, A? qZk	5/ 180	5/ 180
Из них часов практической подготовки		
Аудиторные занятия \k_]hk q	51	51
\ lhf qbke_		
e_dpbb E qZk	34	34
ijZdlbq_kdb_ k_fbgZjkdb_ qZk	17	17
wdaZf_g qZk	36	36
Самостоятельная работа \k_]h qZk	93	93
Вид промежуточной аттестации: aZq ^bnn aZq_l wdaZf_g AZ Wda	Wda	Wda

ljbf_qZg**bdZg^b^Zlkdbc wdaZf_g

4. Kh^_j`Zgb_ ^bkkpbiebgu

4.1. JZkij_^_e_gb_ ljm^h_fdhklb ^bkkpbiebgu ih jZa^_eZf JZa^_eu l_fu ^bkkpbiebgu ih ljm^h_fdhklv^_gu \ lZ[ebp_

LZ[ebp±ZJZa^_eu l_fu ^bkkpbiebgu bo ljm^h_fdhklv

JZa^_eu l_fu ^bkkpbiebgu	E_dp qZk	lA K qZk	EJ qZk	DI qZk	KJK qZk
K_f_klj					
L_fZ lj_^f_l wdhghfbq_kdhc l	2	1			7
L_fZ Hkgh\u ZgZebaZ kijhkZ	2	1			7
L_fZ Ihe_aghklv ij_^ihql_g	4	2			7
L_fZ Jughqguc kijhk	2	1			7
L_fZ Ijhba\h^kl_ggZy nmgdpb nbjfu	2	1			8
L_fZ AZljZlu nbjfu Klhbfhklv	2	1			8
L_fZ Jughqgu_ kljmdlmju b ih	4	2			8
L_fZ Heb]hiheby b fhghihebkl dhgdmj_gpby	4	2			11
L_fZ Jugdb nZdlhjh\ ijhba\h^k	4	2			10
L_fZ H[s__ jZ\gh_kb_ b wd wnn_dlb\ghklv	4	2			10
L_fZ BgklblmpbhgZevgu_ Zki_dl ohayckl\Z	4	2			10
Blh]h \ k_f_klj_	34	17			93
Blh]	34	17	0	0	93

ljZdlbq_kdZy hi\d^Z]hlaZdexqZ_lky \ g_ihkj_^kl_gghf h[mqZxsbfbky hij_^_e_gguo ljm^h\uo nmgdpbc k\yaZ ijhn_kkbhgZevghc ^_yl_evghklvx

4.2. Kh^_j`Zgb_ jZa^_eh\ b l_f e_dpbhgguo aZgylbc

Kh^_j`Zgb_ jZa^_eh\ b u_aZegydibh^g_gh \ lZ4.[ebp_ LZ[ebp_ 4pZ Kh^_j`Zgb_ jZa^_eh_dpbhggh]h pbdeZ

Ghf_j jZa^_eZ	GZa\Zgb_ b kh^_j`Zgb_ jZa^_eh\ b l_
L_fZ lj_^f_l wdhghfbq_kdhc l_h	KlZgh\e_gb_ ij_^f_lZ wdhghfbq_kd Dk_ghnhglZ :jbklhl_ey wd:hgkfbqZ_kdm l_hjbx H[t_dl b ij_^f_l wdhghfbq_kdh :evl_jgZlb\ghklv b ebgby ijhba\h^kl_g JZpbhgZevghklv ih_^_gby wdhghfbq_ F_lh^heh]by wdhghfbq_kdhc gZmdb ijhba\h^kl_gguo \hafh`ghkl_c GhjfZl ihablb\gZy wdhghfbdZ Hkgh\gu_ ijh[e_fu wdhghfbdb b kih jZaebqguo wdhghfbq_kdbo kbkl_fZo H j_kmjkh\ b ijh[e_fZ \u[hjZ Qlh dZd b ijhba\h^blv NZdlhju ijhba\h^kl\Z <hk wdhghfbq_kdZy kbkl[u fZ]hKhh]kZgbaZpbb Kf_rZggZy wdhghfbdZ Kh[kl_gghklv dhhj^bgZpbhgguc f_oZgbaf F_lh^heh]by fbdjhwdhghfbdb Fh^_ fbdjhwdhghfbd_ b lj_[h\Zgby d gbf Kl kh\j_f_gguo wdhghfbq_kdbo fh^_e_c
L_fZ Hkgh\u Zg kijhkZ b ij_^eh`_gby	:gZeba kijhkZ b ij_^eh`_gby Kijh ³Bkdexq_gby³ ba aZdhgZ kijhkZ lj_^eh`_gb_ b hij_^_eyxsb_ _]h nZdlh kijhkZ b ij_^eh`_gby Ba[ulhd j_glZ ba[ulhd j_glZ ijh^Z\pZ F_lh^ kjZb\gb f]gh_gguc dhjhldbc b ^ebl_evguc i_j jZ\gh_kby kijhkZ b ij_^eh`_gby Mklh jZ\gh_kby lZmlbghh[jZagZy fh^_ev Bgkljmf_glu]hkm^Zjkl_ggh]h j_]m Nbdkbjh\Zggu_ p_gu GZeh]b b ^hlZp ihdmZil_ey Km[kb^bb
L_fZ lhe_aghkl\ ij_^ihql_gby kijh	DZj^bgZebklkdbc ih^oh^ d hp_gd_ aZdhg = =hkk_gZ lj_^_evgZy b h[sZy hilbfZevgh]h ihlj_[e_gby Hj^bgZebklkdbc ih^ohe^_aghkl\gd:d ihjy^dh\h]h ih^oh^Z Djb\u_ [_ajZaebc JZagh\b^ghklb djb\uo [_ajZaebqby ;x^`_lgh_ h]jZgbq_gb_ Hilbfmf b ihlj_[bl_ey Ih_^_gb_ ihlj_[bl_ey gZ jugd_ gZ baf_g_gb_ D^jbbh^ZW Wg]_ey J_Zdpby ihlj_[bl_ey gZ baf_g_gb_ aZf_gu Wnn_dl ^hoh^Z

L_fZ Jughqguc k	4.1 WeZklbqghklv kijhkZ ij_^eh`_gby Jughqguc kijhk b weZklbqghklv W Dhwnnbpb_glu ijyfhzklgjhc dweZklbqghk weZklbqghklb ih ^hoh^m WeZklbqghk NZdlhju \ebyxsb_ gZ weZklbqghklv ki WeZklbqghklv ij_^eh`_gby NZdlhj weZklbqghklv ij_^eh`_gby WeZklbqghklv h[s_c \ujmqdb Dhw weZklbqghklb hujmqdb Khhlghr_gb_ f dhwnnbpb_glZfb weZklbqghklb aZdhg
L_fZ Ijhba\h^kl_ nmgdpby b ijh^mdl	Ijhba\h^kl\h b ijhba\h^kl_ggZy nm ijhba\h^kl_gghc nmgdpbb H[sbc kj_^gb^c ebvguc ijh^mdlu nbj Ohef ijhba\h^kl\Z Bahd\ZglZ b _ BahdhklZ b hilbfmf nbjfu Ebgby jhklZ nbjfu M[u\ZxsZy ihk \hajZklZxsZy hl^ZqZ hl fZkrlZ[Z ijhba
L_fZ AZljZlu nbj Klhbfhklv ijhba\h^	H[sZy deZkkbnbdZpby aZljZl nbjfu \g_rgb_ h[s_kl_ggu_ aZljZlu ;mo]Z wdhghfbq_kdb_ aZljZlu Y\gu_ b g_y\g AZljZlu \ dhjhldhf i_jbh^_ H[sb_ ihklhyggu_ b i_j_f_ggu_ aZljZlu kj_^ i_j_f_ggu_ kj_^gb_ ihklhyggu_ b ij_^ AZljZlu \ ^ebl_evghf i_jbh^_ ijb ih iZ^Zxs_c b \hajZklZxs_c hl^Zqb hl fZk
L_fZ Jughqgu_ k b ih_^_gb_ nbjfu	Ih_^_gb_ nbjfu ijb kh_jr_gghc dh b qbklhc fhghihebb OZjZdl_jbklbdZ dhgdmj_gpbb b qbklhc fhghihebb <ujmqdZ nbjfu ijb kh_jr_gghc dhg b qbklhc fhghihebb Mkeh\b_ fZdkbfbaZpbb ijb[ueb nbj kh_jr_gghc dhgdmj_gpbb M_ebq_gb dhjhldhf b ^ebl_evghf i_jbh^Zo J_]mebjh\Zgb_ p_gh\hc iheblbdb f fZdkbfbaZpbb ijb[ueb nbjfu ijb qbklhc P_gh\Zy ^bkdjbfbgZpby J_]mebjh\Zgb_ bkdmkkl_gghc fhg gZeh]h\ Nbdkbjh\Zggu_ p_gu J_]meb fhghihebb Ijyfh_ mklZgh\e_gb_ p_g g _kl_kl_gghc fhghihebb Dhk_ggh_ j_ >\mklhjhggyy fhghiheby Ih_^_gb Ih_^_gb_ ijh^Z\pZ Dhjjh[ZdZ W^`\
L_fZ Heb]hiheby fhghihebklbq_kdZy dhgdmj_gpby	Heb]hiheby Mkeh\by kha^Zgby he g_fgh]hqbke_gghklv nbjf \ hljZkeb \u \klmie_gby \ hljZkev \k_h[sZy \aZbfh KlZg^Zjlbabjh\ZggZygpbb ^b\mZmgjZy `zkl ZfhjngZy heb]hiheby DhjihjZlb\gh_ b ih\_^_gb_ heb]hihebb P_gh\Zy \hcgZ Dmjgh ©>be_ffZ aZdexqzggh]hª Ehf DZjl_ev LZcguc k]h\hj P_ghh[jZah\Z ³ba^_j`db iexk´

	8.2 Fhghihebklbq_kdZy dhgdmj_gpby \hagbdgh_gby Hij_^_e_gb_ p_gu b l Ba^_j`db fhghihebklbq_kdhc dhgdmj_g dhgdmj_gpby J_deZfZ P_gh\Zy ^bkdjbfbgZpby Fhghikhg fhghiheby :glbfhghiheZvdhg_h^aZl_evkl\h b j_]m Fhghiheby ^h\h^u ³aZ´ b ´ijhlb\´ :gl aZdhgh^Zl_evkl\h J_]mebjh\Zgb_ _kl_
L_fZ Jugdb nZdl ijhba\h^kl\Z	NZdlhju ijhba\h^kl\Z b bo ^hoh^u Nmgdhjhy^i_ggh]h kijhkZ gZ j_kmjk kijhkZ b ij_^eh`_gby j_kmjkh\ Hkgh\g hij_^_eyxsb_ kijhk gZ j_kmjk WeZklb j_kmjk b hij_^_eyxsb_ _z nZdlhju Oz ihjh`^_ggh]h kijhkZ \ aZ\bkbfhklb hl l kljmdlmju Hibbjfmf n Jughd ljm^Z Kijhk b ij_^eh`_gb_ Fhghikhgbkl gZ jugd_ ljm^Z lh\_^_gb fhghikhgbklZ k fhghihevghc \eZklvx >\mklhjhggyy fhghiheby gZ jugd_ f_`^m ljm^hf b hl^uohf Jughd dZiblZeZbbBgK[kjb`_gby Jughd a_feb A_f_evgZy j_glZ W
L_fZ H[s__jZ\ b wdhghfbq_kdZy wnn_dlb\ghklv	lhgylb_ h[s_]h jZ\gh_kby Kbkl_f jZ\gh_kby E <ZevjZkZ <aZbfhk\yav h[jZlghc k\yab Fh^_ev jughqgh]h khp Wnn_dlb\ghklv h[f_gZ <u]h^u lhj] Wnn_dlb\ghklv h[f_gZ ih W^`\hjlm Dh Wnn_dlb\ghklv ih < lZj_lh Ebgby ihl \hafh`ghkl_c Wnn_dlb\ghklv ijhba\h^kl\Z E_bggbu \hafh`ghkl_c Wnn_dlb\ghklv kljmdlmj Wnn_dlb\ghklv b khpbZevgZy kijZ DeZkkbq_kdbc eb[_jZebaf eb[_jlZjbaf WlZeblZjbaf
L_fZ Bgklblmpb Zki_dlu jughqgh]h ohayckl\Z .	11.1. ljZ\h\u_ ij_^ihkugdhqgh]h ohaljZ\Z kh[kl_gghklb b bo kljmdlmjZ Nhjfu lj ba^_j`_d QZklgZy h[sZy dhffmgZevg kh[kl\_gghklv 11.2. <g_rgb_ wnn_dlu <g_rg<bg_ragZ\ljZlu iheh`bl_evgu_ wnn_dlu ljZ\Z kh[kl_g DhamZDhjj_dlbjmxsb_ gZ[kb]^bb k;mjv[Z k aZ]jyag_gb_f ijbjh^ghc kj_^u 11.3. H[s_kl_ggu_ [eZ]Z Jhev]hkm^Zjk wdhghfbd_ H[s_kl_ggu_ [eZ]Z Ebgby kijhkZ gZ [eZ]h ljh[e_fZ [_a[be_lgbdZ ljh\Zeu]hkm^Zjkl\Z \ jughqgh]h wdhgh

4.3. ljZdlbq_kdb_ k_fbgZjkdb_ aZgylby
L_fu ijZdlbq_kdbo aZgylbc b bo ljm^h_fdhklv ijb_^_gu \ |

LZ[ebp±ZljZdlbq_kdb_ aZgylby b bo ljm^h_fdhklv

‹ i i	L_fu ijZdlbq_ aZgylbc	Nhjfu ijZdlbq_ aZgylbc	Ljm^hd_fkl qZk	Bagbo ijZdlbq_ ih^]hlh\ qZk	‹ jZa^_ ^bkp ebgu
K_f_klj					
1	lj_^f_l wdhghfbq_kdh l_hjbb	IjZdlbq_kdb_ aZgylby	1	1	1
2	Hkgh\u ZgZeba kijhkZ b ij_^eh`_gby	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	1	2	2
3	Ihe_aghklv ij_^ihql_gby	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	3	3
4	Jughqguc kijh	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	1	4	4
5	Ijhba\h^kl_gg nmgdpby b ijh nbjfu	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	1	5	5
6	AZljZlu nbjfu Klhbfhklv ijhba\h^kl\Z	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	1	6	6
7	Jughqgu_ kljm b ih_^_gb_ nb	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	7	7
8	Heb]hiheby b fhghihebklbq_ dhgdmj_gpby	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	8	8
9	Jugdb nZdlhjh ijhba\h^kl\Z	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	9	9
10	H[s__ jZ\gh_k wdhghfbq_kdZ wnn_dlb\ghklv	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	10	10
11	Bgklblmgb Zki_dlu jughqg ohayckl\Z	IjZdlbq_kdb_ aZgy.lby r_gb_ kblmZpbhgZ^uZ	2	11	11
<k_]h			17		

4.4. EZ[hjZlhjgu_ aZgylby

L_fu eZ[hjZlhjguo aZgylbc b bo ljm^h_fdhklv ijb_^_gu \

LZ[ebp±ZEZ[hjZlhjgu_ aZgylby b bo ljm^h_fdhklv

‹ i i	GZbf_gh\Zgb_ eZ[hjZlhjg	Ljm^h_fdl qZk	Bagbo ijZdlbq_k ih^]hlh\c qZk	‹ jZa^_ ^bkpl ebgu
Mq_[guf ieZghf g_ ij_^mkfhlj_gh				

4.5. Dmjkh\h_ ijh_gb_ dbbjh\Zihe g_gb_ dmjkh\hc jZ[hlu

Mq_[guf ieZghf g_ ij_^mkfhlj_gh

4.6. K Z f h k l h y l _ e v g Z y m Z q [h x l Z b b k y
< b ^ u k Z f h k l h y l _ e v g h c j Z m [h l u f b h _ k l v l j i j b \ _ ^ _ g u 7. \ l Z [e b p _
L Z [e b 7 p ± Z < b ^ u k Z f h k l h y l _ e v g h c j Z [h l u b _ _ l j m ^ h _ f d h k l v

< b ^ k Z f h k l h y l _ e v g h	< k _] q Z k	K _ f _ k l j q Z k
1	2	3
B a m q _ g b _ l _ h j _ l b q _ k d h] h ^ b k p b i e b g u L H	50	50
I h ^] h l h \ d Z d l _ d m s _ f m d h m k i _ \ Z _ f h k l b L D M	20	20
I h ^] h l h \ d Z d i j h f _ ` m l h q g h Z l l _ k l Z p b b l :	23	23
< k _]	93	93

5. l _ j _ q _ g v m f q _ l h g ^ h b q _ k d h] h h [_ k i _ q _ g b y
^ e y k Z f h k l h y l _ e v g h c j Z [h l u h [m q Z x s b o k y i h ^ b k p b i e b g
M q _ [- g h l h ^ b q _ k d b _ f Z ^ e j y b Z k e Z u f h k l h y l _ e v g h c j Z [h l u m k y Z a Z g u \
i i 7-11.

6. l _ j _ q _ i g v q Z l g u o b w e _ d l j h g g u o m q _ [g u o b a ^ Z g b c
l _ j _ q g i v _ q Z l g u o b w e _ d l j h g g u o m q j b \ g u ^ o g b Z ^ e Z g b c
L Z [e b 8 p ± Z _ j _ q _ i g v q Z l g u o b w e _ d l j h g g u o m q _ [g u o b a ^ Z g b c

R b n j URL Z ^ j _ k	; b [e b h] j Z n b q _ k d Z y k	D h e b q _ k l \ w d a _ f i e y j h [b [e b h l _ d j h f _ w e _ d l j h g g w d a _ f i e y j h
http://50.economicus.ru https://biblio-online.ru/viewer/mikroekonomika-431067#page/11	**1. Гребенников П.И.** F b d j h w d h g h f b d Z M q _ [Z d Z ^ _ f b q _ k d h] h [Z d Z e Z \ = j _ [_ g g b d h \ E K L Z j Z k E _ m k k d b c b a ^ i _ j _ j Z [F h k d \ Z B a ^ Z h _ x j Z c l	
https://biblio-online.ru/viewer/mikroekonomika-434414#page/1	**2. Корнейчук Б.В. Микроэкономика.** M q _ [b i j Z d l ^ e y Z d Z ^ _ [Z d Z e Z \ Z b Z ; < D h j g ± 2 - c q n b a ^ i _ j _ j Z [b ^ h i F h k B a ^ Z l _ e v k l \ h X j Z c l	3
l https://biblio-online.ru/viewer/mikroekonomika-rukovodstvo-dlya-buduschih-professionalov-w-2-t-tom-1-434479#page/267 l https://biblio-online.ru/viewer/mikroekonomika-rukovodstvo-dlya-buduschih-professionalov-w-2-t-tom-2-434480#page/1	**3. Розанова Н.М. Микроэкономика.** J M D H < H > K L < H > E Y ; M > M I J H N ? K B K H G : E H < < - L b a i _ j b ^ h i M q _ [g b d ^ e y Z d Z ^ _ f b q _ k d h] h [Z d Z e Z \ J h a Z g h \ Z G F F h k d \ Z X j Z c l	
	B e v b g k d Z y ? F F b d j h m q - f _ l h ^ i h k h [b _ ? F	40

	B e v b g k d Z y K I [= M : I	
	J h f Z g h \ Z W B d h g h f b d Z F b d j h w d h g h f b d Z l m ^ q _ [i h k h [b _ B < J h f Z g h \ Z F _ ^ \ _ ^ _ ± K I [= M : I	10
	G m j _ _ \ J F D m j k f b d j h v m q _ [g b d J F ± G m j a _ ^ \ F G h j f Z B G F N J :	10
	K [h j g b d a Z ^ Z q i h f b d j h w ³ D m j k m d j h w d h g h f b d b ´ J I G m j _ _ \ Z >] e j _ ^ J F F G h j f Z B G N F J :	10

7. I _ j _ q _ g v w e _ d l j h g g u o h [j Z a h \ Z k m e v g h \ u o b g n h j f Z p b h g g u o h d h f f m g b d Z p b h g g h c k _ l b © B g l _ j g _ l ª

I _ j _ q _ g v w e _ d l j h g g u o h [j Z a h \ Z j _ k m e v g h \ u o b g n h j f Z p b h g I _ e _ d h f f m g b d Z p b h g g h c © B k g l l b j g _ l ª g _ h [o h ^ b f u o ^ e y h k k h p b i e b y g u i j b \ _ ^ _ g \ l Z [e b p _

L Z [e b p 9 Z ± I _ j _ q _ g w e _ d l j h g g u o h [j Z a h \ j Z k m e v g h \ u o b g n h j f Z p b h g I _ e _ d h f f m g b d Z p b h g g h c © B k g l l b ª

URL Z ^ j _ k	G Z b f _ g h \ Z g b _
www.worldbank.org	World Bank. World Development Report
www.unctad.org	UNCTAD. Trade and Development Report
http://www.ereport.ru	K Z c h l f b j h \ h w d h g h f b d _
http://www.glossary.ru	= e h k k Z j b c
http://www.geopolitics.ru	= _ h i h e b l b d Z
http://www.un.org/	H n b p b Z e v k g Z u c d H H G
http://www.mid.ru/home	H n b p b Z e v k g Z u c d B > J N
http://www.imf.org/external/index.htm	H n b p b Z e v k g Z u c d < N
http://www.worldbank.org/	H n b p b Z e v k g Z u c d k _ f b j g h] h [Z g d
http://www.oecd.org/	H n b p b Z e v k g Z u c d W K J
www.imf.org	F _ ` ^ m g Z j h ^ g Z u c l g u n h g ^
www.worldbank.org	< k _ f b j g u c [Z g d
www.wto.org	< k _ f b j g l Z y] h \ Z y] Z g b a Z p b y
www.gks.ru	= h k d h f k J Z k k b b

8. I _ j _ q _ g v b g n h j f Z p b h g g u o l _ o g h e h] b c

8.1. I _ j _ q _ g v i j h] j Z f f g h] h h , [_ k k i h q e v g b m h i f j b h k m s _ k l \ e _ g b h [j Z a h \ Z l _ e v g h] h i j h p _ k k Z i h ^ b k p b i e b g _

I _ j _ q _ g v b k i h e v a m _ i f h]] j h Z f f g h] h h [_ k i i j q _ ^ g b Z y \ e _ Z g [e b p 10.

L Z [e b p 10 Z I _ j _ q _ g v h] j Z f f g h] h h [_ k i _ q _ g b y

‹ i i	G Z b f _ g h \ Z g b _
1	0 L F U R V R I W : L Q G R Z V - h h] h \ h j ‹
2	Microsoft Office Standard, ^ h] h \ h j -7 h 28.02.2019

8.2. I _ j _ q _ g v b g n h j f Z p b h g g u o k b k i h e v a m _ f u o i j h k m s _ k l \ e _ g b b h [j Z a h \ Z l _ e v g h] h i j h p _ k k Z i h ^ b k p b i e b g _

I _ j _ q _ g v b k i h e v a m _ f u o b g n h j f Z p b h g g u o k b k l _ f k l Z \ e _ g \ l Z [e b p 11.

L Z [e b p 7 Z ± I _ j _ q _ g v b g n h j f Z p b h g g u o k b k l _ f

‹ i i	G Z b f _ g h \ Z g b _

	G_ ij_^mkfhlj_gh

9. FZl_jbZelv_gdhgbq_kdZy [ZaZ

KhklZ\fZl_jbZelv_gdhgbq_kdhc, gZ[uohhbf^ey hkms_kl\e_g h[jZah\Zl_evgh]h ijhp_kkZ, ijh_^kblZp\e_gbq.

LZ[ebp 2 ± KhklZ\ fZl_jbZelv_gdhgbq_kdhc [Zau

‹ i i	GZbf_gh\ Zgk l_Z\ghc qZklb fZl_jbZelv_gdhgbq_kdhc [Zau	Ghf_j Zm^blh ijb g_h[oh^bf
1	**Учебная аудитории для проведения занятий лекционного типа** ±mdhfie_dlhk\iZgpZ Zebabjh mq_[ghcf_[_evx gZ[hjhf^_fhgkljZpbh h[hjm^h\Zgby mq_[gZ]ey^gufbhkh[by h[_ki_qb\Zxsbfbl_fZlbq_kdb_beexkljZp khhl_lkl\mxsbf mq_[giuh]jZffZ^fbkpbiebhg^me_c	
2	**Учебная аудитория для проведения практических занятий** – mdhfie_dlhZ\ ki_pbZebabjh\Zgghc f_[_evx hkgZs_gbdhfivxl_jghc_ogbdhk \hafh`ghklvik^dexq_gbyk_lb Bgl_jg_lb h[_ki_q_gh ^hklmvie f_dljhgbgmxhjfZpb-h h[jZah\Zl_ekvjg^mxj]ZgbaZpbb	
3	**Учебная аудитория для групповых и индивидуальных консультаций** - mdhfie_dlh ki_pbZebabjh\Zgghc fm[q_e[vgxh_cogbq_k kj_^kl\Zfb h[mqkegmb`yZsbf^eyij_^klZ\e_ mq_[ghcgcnhjfZpbb	
4	**Учебная аудитория для текущего контроля и промежуточной аттестации** ± mdhfie_dlh\ ki_pbZebabjh\Zgghc mq_[ghc f_[_e kj_^kl\Zfb[mq_gbkyem`Zsbf^eyij_^klZ\e_ mq_[ghcgcnhjfZpbb	

10. Hp_ghqgju^kl\Z ^ey ijh_^_gby ijhf_`mlhqghc Zll_kl

10.1. KhklZ\ hp_ghqguo^ekyjjh^\kl^_gbyhf_`mlhqghc ZlbkZ h[mqZxsboky ih ^bikjbbie bg_\ lZ[3ebp_

LZ[ebp 3 ± KhklZ\ hp_ghqguo^ekyjjh^\kl^_gbyhf_`mlhqghc Zll_klZpbb

<b^ ijhf_`mlhqghc Zll_k	l_j_q_bgv_ghqguo kj_^k
WdaZf_g	Kibkhd \hijhkh\ d wdaZf_gm AZ^Zqb

10.2. < dZq_kl_ djbh_pjbgdb mjh\gy knhjfbjh\Zgghklb dhfi_l_gpbc h[mqZxsbfbky ijZfe_gvyg_Zkyrd ZeZ hp_gdb knhjfbj dhfi_l_gpbc dhlhjZy\iljZb\e_h^gZ< l_q_gb_ k_f_kljZ fh`_l bkihe 100-[ZeevgZy rdZeZ -jfhc^hbeyhhc kbkl_bu_jkldg_lZ ijZ\be bkihevah\Zgby dhlhjhc mklZgh\e_gu khhl_lkl\mxsbf ehdZe =M:J

LZ[ebp 4 ± Djbl_jbb hp_gdb mjh\gy knhjfbjh\Zgghklb dhfi_l_gpb

Hp_gdZ dhfi_l	OZjZdl_jbklbdZ knhjfbjh\Zgguo dhfi_
5-[ZeevgZy rd	

Hp_gdZ dhfi_l 5-[ZeevgZy rc	OZjZdl_jbklbdZ knhjfbjh\Zgguo dhfi_
©hlegdhq ª ©aZql_gh ª	±h[mqZxsbckv jkm[hdh b \k_klhjhgg_ mk\hb fZl_jbZe ±m_j_ggh eh]bqgh ihke_^h\Zl_evgh b] ±hibjZykv gZ agZgby hkgh\ghc b ^hiheg l_kgh ijb\yau\Z_l mk\h_ggu_ gZmqgu_ kidh ^_yl_evghklvx gZijZ\e_gby ±mf_eh h[hkgh\u\Z_l b Zj]mf_glbjm_l \u^\ ±^_eZ_l \u\h^u b h[h[s_gby ±k\h[h^gh \eZ^__l kbkl_fhc ki_pbZebabjh
©ohjhrh ª ©aZql_gh ª	±h[mqZxsbckv jk^h mk\hbe ijh]jZffguc fZl_jb ih kms_kl\m baeZ]Z_l _]h hibjZykv ebl_jZlmju ±g_ ^himkdZ_l kms_kl_gguo g_lhqghkl_c ±m\yau\Z_l mk\h_ggu_ agZgby k ijZdlb gZijZ\e_gby ±Zj]mf_glbjm_l gZmqgu_ iheh`_gby ±^_eZ_l \u\h^u b h[h[s_gby ±\eZ^__l kbkl_fhc ki_pbZebabjh\Zgguo ihgylbc
©m^h\e_l\hjbl ©aZql_gh ª	±h[mqZxsbmkv mk\hbe lhevdh hkgh\ghc ijh]jZ ih kms_kl\m baeZ]Z_l _]h hibjZykv gZ ebl_jZlmju ± ^himkdZ_l g_kms_kl_ggu_ hrb[db b g_l ±bkiulu\Z_aZljm^g_gby \ ijZdlbq_kdhf ijb gZijZ\e_gby ±keZ[h Zj]mf_glbjm_l gZmqgu_ iheh`_gby ±aZljm^gy_lky \ nhjfmebjh\Zgbb \u\h^h\ b ±qZklbqgh \eZ^__l kbkl_fhc ki_pbZebabjh
©g_m^h\e_l\hj ©g_ aZql_g	±h[mqZxsbvg_ mk\hbe agZqbl_evghc qZk fZl_jbZeZ ±^himkdZ_l kms_kl_ggu_ hrb[db b jZkkfhlj_gbb ijh[e_f \ dhgdj_lghf gZijZ\e_ ±bkiulu\Z_l ljm^ghklb \ ijZdlbq_kdhf ijbf_ ±g_ fh`_l Zj]mf_glbjh\Zlv gZmqgu_ iheh`_ ±g_ nhjfmebjm_l \u\h^h\ b h[h[s_gbc

10.3. Lbih\u_ dhgjhe aZ^Zgby beb bgu_ fZl_jbZeu
<hijhku aZ^Zqb ^ey wdaZf_gZ ij_15.klZ\e_gu \ lZ[ebp_
LZ[ebp5Z±<hijhku aZ^Zqb ^ey wdaZf_gZ

‹ i i	l_j_q_gv \hijhkh\ aZ^Zq ^ey	Dh^ bg^bdZ
1	KlZh\e_gb_ wdhghfbq_kdhc l_hjbb <deZ^ D :jbklhl_ey Wdhghfbq_kdb_ \haaj_gby kj_^	MĐ A
2	Wdhghfbq_kdb_ mq_gby f_jdZglbebklh\ b n	MĐ <
3	Wdhghfbq_kdZy l_hjby :^ZfZ KfblZ GhjfZl wdhghZbd	MĐ A
4	H[t_dl wdhghfbq_kdhc gZmdb _]h khf_bjZhg fZdjhwdhghlfbgyZb_ \hkijhba\h^kl\Z	MĐ M
5	F_lh^ wdhghfbq_kdhc l_hjbb ljbgpbi jZpbl Wdhghfbq_kdb_ b k\h[h^gu_ [eZ]Z	MĐ <
6	=jZgbpZ ijhb\a\hg^kb \hafh`ghkl_c	MĐ A
7	Hkgh\gu_ ijh[e_fu wdhghfbdb b kihkh[u bo j wdhghfbq_kdbo kbkl_fZo	MĐ <
8	lhgylb_ jughqghc wdhghfbdb	MĐ A
9	lhgylb_ jughqghc wdhghfbdb _z ij_bfms_kl	MĐ M
10	Kijhk nhgdkijhkZ b _]h baf_g_gby AZdhg	MĐ <

	ba g_]h	
11	lj_^eh`_gb_ b nmgdpbb ij_^eh`_gby	MÐ A
12	Jughqgh_ jZ\gh_kb_ b _]h \b^u	MÐ <
13	J_]mebjh\Zgb_ jugdZ	MÐ A
14	Jughd ijh^Z\pZ b jughd ihdmiZl_ey_eBya[bah[ijhba\h^bl_ey	MÐ M
15	Ihe_aghklv b ij_^ihql_gby DZj^bgZebaf b _	MÐ <
16	Hkgh\gu_ iheh`_gby hj^bgZebafZ djb\u_ [ ghjfZ aZf_gu ;x^`_lgZy ebgby	MÐ A
17	JZ\gh_kb_ ihlj_[bl_ey \ihjyh^d_h\hf	MÐ <
18	Wnn_dl aZf_gu b wnn_dl ^hoh^Z	MÐ A
19	Bg^b\b^mZevguc b jughqguc kijhk	MÐ M
20	WeZklbqghklv kijhkZ ih p_g_ b ih ^h weZklbqghklv	MÐ <
21	DeZkkbnbdZpby lh\Zjh\ ih nZdlhjZf gbadhdZ_qgku_ ghjfZevgu_ jhkdhrb ij_^eh`_gby	MÐ A
22	Ijhba\h^kl_ggZy nmgdpby H[sbc kj_^gbc l	MÐ <
23	Bahd\ZglZ b bahdhklZ lj_^_evgZy ghjfZ l_	MÐ A
24	JZ\gh_kb_ ijhba\h^bl_ey wnn_dlh\ Mjl\ ghb]h jZkij ijhba\h^kl_gguo j_kmjkh\ b ljZ_dlhjby jZa\	MÐ M
25	Ihgylb_ aZljZl ;mo]Zel_jkdbc b wdhghfbq_	MÐ <
26	Kljmdlmj aZljZl nbjfu	MÐ A
27	AZljZlu \ dhjhldhf b ^ebl_evghfgb_cjbh^Zo iheh`bl_evguc b hljbpZl_evguc wnn_dlu fZk	MÐ <
28	P_eb ^_yl_evghklb ij_^ijbylby H[sbc kj_ ^hoh^	MÐ A
29	DeZkkbnbdZpby jughqguo kljmdlmj	MÐ M
30	Kh_jr_ggZy dhgdmj_gpbydhgdmj_gpby ij_ gZ jugd_	MÐ <
31	Nhjfbjh\Zgb_ djb\hc ij_^eh`_gby dhgdmj_g dhjhldhf b ^ebl_evghf i_jbh^Zo	MÐ A
32	Fhghiheby b ms_j[ijbghkbfuc _x JZ\gh ij_^ijbylby	MÐ <
33	<b^u fhghiheby b ms_j[u ^ey \klmie_gby \ hljZke aZdhgh^Zl_evkl\h	MÐ A
34	P_gh\Zy ^bkdjbfbgZpby b _z \b^u	MÐ M
35	Heb]hiheby _z \b^u Bg^h\ kehO_jn^g^bZ_efZgZ agZq_gb_	MÐ <
36	Fh^_ev b jZ\gh_kb_ Dmjgh ?z g_^hklZldb	MÐ A
37	Fhghihebklbq_kdZy dhgdmj_gpby b ^\mklhjh	MÐ <
38	Kijhk b ij_^eh`_gb_ wdhghfbq_kdbo j_kmjkh	MÐ A
39	WeZklbqghklv kijhkZ gZ wdhghfbq_kdb_ j_k	MÐ M
40	Kijhk b ij_^eh`_gby ljm^Z Jughd ljm^ gkh_jr_gghc dhgdmj_gpbb	MÐ <
41	P_gZ kijhkZ b p_gZ ij_^eh`_gby dZi >bkdhglbjh\ZggZy klhbfhklv	MÐ A
42	KljZl_]by ijbgylby nbjfhc bg_klbpbhggh]h ij_^eh`_gb_ dZiblZevguo lh\Zjh\	MÐ <
43	Ij_^_evgZy wnn_dlh\ bg_klbpbc b dZiblZeZ	MÐ A
44	Jughd a_feb b a_f_evgZy j_glZ :j_g^gZy i	MÐ M
45	Ihgylb_ \g_rgbo wnn_dlh\ Iheh`bl_evgu_ \g_rgb_ wnn_dlu	MÐ <
46	P_eb wdhghfbq_kdhc iheblbdb wnn_dlb\ghk	MÐ A
47	Mkeh\by I-Zhjl_bhfZevgh]h khklhygby wdhghfb	MÐ <
48	H[s__ jZ\gh_kb_-hbilbZfjZ_ehghklv	MÐ A

49	H[s_kl_ggu_ [eZ]Z b bo \b^u l_j_]jm`Z g_^hklhcgu_ [eZ]Z	МД М
50	KijZ_^eb\h_ jZkij_^_e_gl h_a^ghZoh_^ghb_ b djbl	МД <
	Перечень примерных задач для экзамена.	
51	**ЗАДАЧИ** 1. Ijh]jZffbkl I_ljh\Z aZjZ[Zlu\Z_l \ ?Zkfv gZjr i_gkbb < fZ]Zabg_ aZ]hmy[ZZ d]ihgm`gh klh]h\y^bghc ih jm[hqaZ_^bdg_l Ijb dZdhf h[t jZpbhgZevgh ijbh[j_l_gb_ [he__ ^_rz\hc]h\y I_ljh\hc" ?z fZI_jb"	МД <
52	2. >ZgZ nmgdpby Q_D=ijh?kZ J]^ Q_D ² h[t_f kijhkZ rl P ² p_gZ jm[Hbilv_^_e dhwnnbpb_gl ijyfh weZklbqghklb kijhkZ ih p_g_ _keb p_gZ	МД А
53	3. AZihegbl_ijhimkdb \ke_^mxs_c lZ[ebp_ H[t_f ijbf_g_gby i_j_f_ggh] j_kmjkZ H[sbc \uimkd ijh^mdpb Q rl Ij_^_evguc ijh^mdl i_j_f_ggh]h j_kmjkZ Kj_^gbc ijh^mdl i_j_f_ggh] j_kmjkZ 3 — 90 — 10 — … 4 — … — … — … 5 — 110 — … — … 6 — … — … — 18,5 7 — 115,5 — … — …	МД М
54	4 Ij_^ijbybgbZ_oh^bl kmykeh\byo kh_jr_gjg_lgpbdhg AZ\bkbfhk[svbaZljZl hl \uimkdZ ijh^mdl\eb_gZj_\ lZ[ebp_ < uimkd^bg_bpm \j_ Q, rl H[sb_ aZljZ, jm[0 — 10 1 — 14 2 — 12 3 — 16 4 — 22 5 — 30 ?keb p_gZ lh\ZjZ dZ dhf e_hc[t_f ijhba\h^kl\Z k \u[jZlv" Gb`h]hmZ dy ^he`gZ kgbablvky p_gZ ij_djZlbehkv ijhba\h^kl\h"	МД <
55	5. >ZgZ nmgdpby h[sbo aZljZl Q_D=12-4P kZ nmgdpby h[sbo aZljZl TC=2+6Q+Q^2Z Hij_^_eblv p_gm ijb dhlhfjhgchijhe[ukeZ\kZ fZdkbfZev\g_ebqbgm ijb[ueb	МД А
56	6.Ijb ijhba\h^kl_ d]:ejkbagby^kil\h d_jZfbq_ khdjZlbehkv gZ rl DZdhc kblmZpbb Z [Продукт — А — Б — В — Г Алюминий кг — 5 — 7 — 6 — 5 — 3 — 4 — 1 — 2 Керамические вазы — 10 — 20 — 20 — 30 — 10 — 20 — 30 — 10	МД <
57	7. >ZgZ nmgdpby Q_D=ijh?kZ J]^ Q_D ² h[t_f kijhkZ fe P g² p_gZ jm[dZdhc jughqghc p_g_ dhwnnbpb_gl ijyfhc weZklbq jZ_²g0,5?	МД А
58	8. AZihegbl_ ijhimkdb b ke_^mxs_c lZ[ebp_ H[t_f ijbf_g_gby i_j_f_ggh] j_kmjkZ H[sbc \uimkd ijh^mdl Q rl Ij_^_evguc ijh^mdl i_j_f_ggh] j_kmjkZ Kj_^gbc ijh^mdl i_j_f_ggh] j_kmjkZ 3 — … — 10 — 20 4 — … — 5 — … 5 — 100 — … — …	МД М

6	…	…	…	
7	…		10,5	

59 — МД <

9. Ij_^ijbylhgZoh^b\lhkykeh\byo kh_jr_gjg_hgpbdbhg AZ\bkbfhkfsvbaZljZl hl \dZmijh^mdpkbZ\je_^gZ \ lZ[ebp_

<uimkd _^bgbpmQ,\ rl	H[sb_ aZljZlu TC jm[
0	9
1	11
2	15
3	21
4	29
5	39

?keb p_gZ lh\ZjZ dZjmhfe_hc[t_f ijhba\h^kl\Z k \u[jZlv" Gb`h]hmZ\hgy ^he`gZ kgbablvky p_gZ ij_djZlehkv ijhba\h^kl\h"

60 — МД A

10. BgnhjfZpby h nmgdpbb kijhkZ gZ kjhZ^mdj h[sbolaZZlZo ijb_^_gZ \ljZ[ebZp\ufimkd_ fhghi fZdkbfbabjmb_luev" DZdmx pg_Zgmg Zhgbl"

<uimkd ijh^mdd Q, rl	P_gZ jm[e_	H[sb_ aZljZlu TC jm[
1	12	30
2	11	31
3	10	32
4	9	33
5	8	36
6	7	40
7	5	45
8	3	52

61 — МД <

11. lhklZ\ объём ijhba\h^kl\Z kfZjlnhgh\E\ <lZ[ebp

Смартфоны	29	27	22	16	?	0
Компьютеры	0	3	6	9	12	15

62 — МД A

12. >ZgZ nmgdpby kijhkZ gZ lh\Zj $Q_{D_x} = 8 - P_X + 0{,}2P_y$,]^_ Q_{D_x} h[t_f kijhkZ gxZ lh\Zj P_x, P_y - p_gZ lh\Zjh\jm[aZ _^ Hij_^eblv dhwnnbpb_gl ijyfhc weZklbqghklb $P_x = 4$, $P_y = 5$.

63 — МД M

13. AZihegbl_ ijhimkdb \ ke_^mxs_c lZ[ebp_

H[t_f ijbf_g_gby i_j_f_ggh] j_kmjXk Z	H[sbc \uimkd ijh^mdpb Q rl	Ij_^_evgudc ijh^mdl i_j_f_ggh] j_kmjVkPZ	Kj_^gbc ijh^mdl i_j_f_ggh] j_kmjAPZ
3	…	20	30
4	…	…	…
5	130	5	…
6	…	…	…
7	…		19,5

64 — МД <

14. Ij_^ijbylhgZoh^b\lhkykeh\byo kh_jr_gjg_hgpbdbhg AZ\bkbfhkfsvbaZljZl hl \uimkdZ ijh^mkdZ\be_^gjZ_^\ lZ[ebp_

<uimkd _^bgbpmQ,\ rl	H[sb_ aZljZlu TC jm[
0	4
1	8
2	14
3	16
4	20
5	26

	?keb p_gZ lh\ZjZ dZ[ihe_hc[t_f ijhba\h^kl\Z k \u[jZlv" Gb`h]hmZ[hgy ^he`gZ kgbablvky p_gZ hklZgh\behkv ijhba\h^kl\h"	
65	15. Bgnhjf Zpbnymgdpkbjhkl Z fhghihebklZ b _]h aZljZlZo ijb_\^lZ[gZbp_ ljb dZdhf \uimkdl_ f fZdkbfbabjm_l ijb[uev" DZdmx p_gm hg gZa <table><tr><th><uimkd ijh^m Q, rl</th><th>P_gZ jm[e_c PZ</th><th>H[sb_ aZljZlu TC jm[</th></tr><tr><td>1</td><td>10</td><td>20</td></tr><tr><td>2</td><td>9</td><td>21</td></tr><tr><td>3</td><td>8</td><td>22</td></tr><tr><td>4</td><td>7</td><td>23</td></tr><tr><td>5</td><td>6</td><td>24</td></tr><tr><td>6</td><td>5</td><td>26</td></tr><tr><td>7</td><td>4</td><td>29</td></tr><tr><td>8</td><td>3</td><td>32</td></tr></table>	MĐ A
66	16. < wdhghfbd_ ijhba\h^blky ^\Z ijh^mdlZ d r_klv jZ[hqbo H[t_f dZiblZeZ y\ey_lky nbdk fh`_l i_j_f_sZlvky ba h^ghc hljZkeb \ ^jm]m fh`_l i_j_oh^blv ba h^ghjc mhjZkebb ba ^\h^kl_ nmgdpbb ^ey ^\mo lh\Zjh\ \ djZldhkjhqghf i lZ[ebp_ <table><tr><th>Dhebq_kl jZ[hqbo</th><th>ljhba\h^k oe_[Z _^ g_^_ex</th><th>ljhba\h^k]Zeehgu^ g_^_ex</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>120</td><td>180</td></tr><tr><td>2</td><td>220</td><td>330</td></tr><tr><td>a</td><td>300</td><td>450</td></tr><tr><td>4</td><td>360</td><td>540</td></tr><tr><td>k</td><td>400</td><td>600</td></tr><tr><td>6</td><td>420</td><td>630</td></tr></table> GZq_jlbl_ ebgbx ijhba\h^kl_gguo \hafh`ghk	MĐ <
67	17. >ZgZ nmgdpby kijhkZ $Q_{D_x} = 14 - 2P_x + 0,1P_y$ P_gZ lhxZjZjm[p_gZ lh\Zjm[Hij_^_eblv dhwnnbpb_glu ijyfhc b i_j_dj_klghc weZklbc x.	MĐ A
68	18. AZihegbl_ ijhimkdb \ ke_^mxs_c lZ[ebp_ <table><tr><th>H[t_f ijbf_g_gby i_j_f_ggh] j_kmjxZ</th><th>H[sbc \uimkd ijh^mdpb Q rl</th><th>lj_^_evguc ijh^mdl i_j_f_ggh] j_kmjxZ</th><th>Kj_^gbc ijh^mdl i_j_f_ggh] j_kmjxZ</th></tr><tr><td>3</td><td>90</td><td rowspan="4">30 … ….</td><td>…</td></tr><tr><td>4</td><td>…</td><td>…</td></tr><tr><td>5</td><td>140</td><td>…</td></tr><tr><td>6</td><td>…</td><td>25</td></tr></table>	MĐ M
69	19. lj_^ijbylhgZoh^blhky keh\byo kh_jr_gjg_lgo pbdh g AZ\bkbfhk[svbaZjZl hl \uimkdZ ijh^mkdZ\bb_ gjZ_^\ lZ[ebp_ <table><tr><th><uimkd \ _^bgbpmQ,\ rl</th><th>H[sb_ aZljZlu TC jm[</th></tr><tr><td>0</td><td>16</td></tr><tr><td>1</td><td>24</td></tr><tr><td>2</td><td>34</td></tr><tr><td>3</td><td>46</td></tr><tr><td>4</td><td>60</td></tr><tr><td>5</td><td>76</td></tr></table> ?keb p_gZ lhmZ[jeZ_dZdhc h[t_f ijhba\h^kl\Z k \u[jZlv" Gb`h]hmZ[hgy ^he`gZ kgbablvky p_gZ hklZgh\behkv ijhba\h^kl\h"	MĐ <

70	20. Bgnhjf Zpbnymbgdpkbjhkl Z gZ ijh^mdpbxkfZgb _]h h[sbaZljZlZjb_^_gZ \ lZ[ebp_	MÐ A

<uimkd ijh^mdpb *Q*, rl	P_gZ *P*, jm[e_	H[sb_ aZljZl *TC* jm
1	10	20
2	9	21
3	8	22
4	7	23
5	6	24
6	5	25
7	4	27
8	3	30

ljb dZdhf \uimkd_ebfhlghZ\ldkbfbabjm_l ijb[ue p_gm hg gZagZqbl"

<hijhku aZ^Zqb ^ebynaZZq_lZZ_^klZ\e_gu \ lZ[ebp_ LZ[eb16Z=<hijhku aZ^Zqb ^ebynaZZq_lZZ

‹ i i	l_j_q_gv \hijhkh\ aZ^Zq^bmeyZaqZ_lZ	Dh^ bg^bdZ
	Mq_[guf ieZghf g_ ij_^mkfhlj_gh	

l_j_q_gv l^_efydmjkh\h]h ijhjh\dZgby \uiheg_ghbyc dmjkh\hc ij_^klZ\e_gu \ lZ[ebp_
LZ[eb17Z=l_j_q_gvf^eymjkh\h]h ijhjh\dZgby \uiheg_gby dmjkh\hc

‹ i i	ljbf_jguc_ji_q_gv l_dm^ey\h]h ijhjh\dZgby \uihe dmjkh\hc jZ[hlu
	Mq_[guf ieZghf g_ ij_^mkfhlj_gh

<hijhkuey^ ijh_^y_gjbf_`mlhqghc Zll_\klZ\b^b_klbjh\yZgb ij_^klZ\e_gu \ lZ[ebp_

LZ[eb18Z=ljbf_jguc i_j_qhigvkh\ ^ey l_klh\

‹ i i	ljbf_jguc i_j_qhigvkh\ ^ey l_klh\	Dh^ bg^bdZ
	Mq_[guf ieZghf g_ ij_^mkfhlj_gh	

l_j_q_gv lhgfljehvgoujZ[hlh ^bkpbiebgm qZxsboky aZhqghc h[mq_gby^klZ\e_gu \ lZ[ebp_

LZ[eb19Z=l_j_q_gvgljhevjZu[hl

‹ i i	l_j_q_gvgljhevjZu[hl
	G_ ij_^mkfhlj_gh

10.4. F_lh^bq_kdb_ fZl_jbZeu hij_^_eyxsb_ ijhp_^m bg^bdZlhjh\Zdlo_Zbamxsbo wlZiu nhjfbjh\Zgby dhfi_l_gpbc ehdZevguo ghjfZlb\guo ZdlZo =M:l j_]eZf_glbjmxsbo ih ijh_^_glbydmjshdhgljhvmki_\Z_fhklb b ijhf_`mlhqghc mZqlZxslbZopkbyb =M:l

11. F_lh^bq_kdb_ mdZaZgby ^ehy hk[\mq_Zbxsb^bkypbiebgu

(Ниже приводятся рекомендации по составлению данного раздела)

11.1. F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsboky ih hk
fZl_jbZeZ *(если предусмотрено учебным планом по данной дисциплине).*

Hkgh\ghc_ gZagZq_gb_ e_dpbZ\ehl]hq_fZl_jbZeZ ihcgh_ kbk
]em[hdh_ b ykgh_ baeh`_gb_ mq_[gh]h fZl_jbZeZ GZagZq
jZfdZo ^bkpbiebgu g_ \ lhf qlh[u ihemqblv \kx bgnhjfZpbx
nmg^Zf_glZevguo ^jhk[e_bfebgu f_lh^h\ gZmqgh]h jhmagZrbby
^hklb`_gbc gZmqghc fukeb < mq_[ghf ijhp_kk_ e_dpby \ui
hj]ZgbaZpbhggmx b bgnhjfZpbhggmx nmgdpbb E_dpby jZkd
dhgdj_lghc h[eZklb agZgby _z ijh[e_fu ^Z_l p_evgh_ ij_
ihdZ\aZu_l \aZbfhk\yav k ^jm]bfb ^bkpbiebgZfb

leZgbjm_fu amevlZlu ijb hk\h_gbbky[mqZxsbgh]h fZl_jbZ

– ihemq_gb_ kh\j_f_gguo p_ehklguo \aZbfhk\yaZgg
dhlhjuo hij_^_ey_lky p_e_\hc mklZgh\dhc d dZ`^hc dhgdj_lg

– ihemq_gb_ lhl\hjq_kdhc jZ[hlu kh\f_klgh k ij_ih^Z\Zl_e

– jZa\blb_ ijhn_kk_h^gZevgh dZq_kl\ ex[\b d ij_^
kZfhklhyl_evgh]h l\hjq_kdh]h fure_gby

– ihy\e_gb_ g_h[oh^bfh]h bgl_j_kZ g_h[oh^bfh]h ^ey kZ

– ihemq_gb_ agZgbc h mhjh\f_gjZf\blby gZmdb b l_o
ijh]gha_ bo jZa\blby gZ [eb`Zcrb_]h^u

– gZmqky f_lh^bq_kdb h[jZ[Zlu\Zlv fZl_jbZe \u^_eylv
iheh`_gby ijboh^blv d dhgdj_lguf \u\h^Zf ih\lhjylv
nhjfmebjh\dZo

– ihemq_gb_ lhqgh]hy i\hkgbfZgh[oh^bfuo l_jfbgh\ b ihgylb

E_dpbhggfuZd_jbZeh`_l khijh\h`^Zlvky ^_fhgkljZpb_c k
bkihevah\Zgb_f jZa^Zlhqgh]h fZl_jbZeZ ijb ijh_^_gbb d
hkh[_gghklyo ijbf_g_gby hl^_evguo l_fZlbd ih ^bkpbiebg_

Kljmdlmj Z ij_^hgkbZ\ee_dpbhggh]h fZl_jbZeZ dZpbb ij_^klZ\e_g
ij_a_glZpbb jZaf_szgghc \ ebqghf dZ[bg_l_ ij_ih^Z\Zl_ey

11.2. F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsbjZdlbq_kdh_ mqZ
aZgylbby

Hkgh\ghc p^_eyvxh[mqZxsy\ehykylky kbkl_fZlbaZpbyaZgylbc
ih bamqZ_fhc l_f_ jZa^_em nhjfbjh\Zgb_ mf_gby jZ[hl
bklhqgbdZfb bgnhjfZpbb khihklZ\eylv b kjZ\gb\Zlv lhqdb
ijhqblZggh_ \ukdZau\Zlv k\hx lhqdm aj_gby b l i < kl
^b^Zdlbq_kdhckhp^_ejvxZgb_f k_fbgZjkdbo aZgylbc y\eyxlky m
ljm^gu_ ^ey ihgbfZgby b mk\h_gby l_fu jZa^_eu ^bkpbieb
nhjfu aZgylbc y\ey_lky kh\f_klgZy jZ[hl
ihklZ\e_gghc ijh[e_fu Z ijhbkd_l\ jgkhljhblky gZ hkgh_ q
bg^b\b^mZevghc b dhee_dlb\ghc ^_yl_evghklb

Ijb ih^]hlh\d ijZdlbq_kdhaZgylbx ih l_f_ ijhkemrZgghc
g_h[oh^bfh hagZdhfblvky k ieZghf _]h ijh_^_gby k eb
im[ebdZpbyfb ijhZdlbq_kdhko aZgylbc

F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsboky ih ijhoh`^_gb

IjZdlbq_kdh_ aZgylbky cba hkgh\guo nhjf hj]ZgbaZpbb
ijhp_kkZ aZdexqZxsZykyh\[mqZxsb fbky jmdh\h^kl\hf ij_ih^Z\Z
dhfie_dkZ[gmqp aZ^Zgbc k p_evx m-k\hjglbyq_kZdmqghkgh\ m
^bkpbiebgu ijbh[j_l_gby mf_gbc b gZ\udh\ hiulZ l\hjq_kdhc

P_evijZdlbq_kdh]h aZgylbx mqZxs_]hkyijb\eylbl[mqZxsky
mf_gbc b gZ\udh\ ijZdlbq_kdhch ^bamqZvfhc ^bkpbiebg_

leZgbjm_fu_ j_amevlZlu ijb hk\h_gbbky[mqZxsbo aZgylbc

– aZdj_ie_gb_ m]em[e_gb_ jZkrbj_gb_ b ^_lZebaZpb
dhgdj_lguo aZ^Zq
– jZa\blb_ ihagZ\Zl_evguo kihkh[ghkl_c kZfhklhyl_
l\hjq_kdhc Zdlb\ghklb
– h\eZ^_gb_ gh\ufb f_lh^Zfb b f_lh^bdZfb bamq_gby
^bkpbiebgu
– \ujZ[hldZ kihkh[ghklb eh]bq_kdh]h hkfuke_gby ihem
\uiheg_gby aZ^Zgbc
– h[_ki_q_gb_ jZpbhgZevgh]h khq_lZgby dhee_mhjghc
h[mq_gby
Lj_[h\Zgby d ijh_^_gbx ijZdlbq_kdbo aZgylbc
:dlb\ghmqZklb_ h[mqZxsboky \ h[km`^_gbb ihklZ\e_ggu
^_fhgkljZpbb g_ lhevdh j_amevlZlh\ ih^]hlh\db b mk\h_gl
k\h_]h kh[kl_ggh]h fg_gby ihdhlhjh_aZhgybyujZ[hlZeb \ j_a
kZfhklhyl_evghc jZ[hlu ijb ih^]hlh\d_ d ijZdlbq_kdbf aZgylb

11.3. F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsboky ihklhyl_evghc
jZ[hlu
< oh^_ \uiheg_gby kZfhklhyl_evghc jZ[hlu h[mqZxsboky ihegly jZ[hlm
aZ^Zgbx b ijb f_lh^bq_kdhf jmdh\h^kl_ ij_ih^Z\Zl_ey gh [_
mqZklby
>ey h[mqZxsboky ih aZhqghc nhjf_ h[mq_gby kZfhklh
\dexqZlv \ k_[y dhgljhevgmx jZ[hlm
< ijhp_kk_ \uiheg_gby kZfhklhyl_evghc jZ[hlu jhjfbmjm[hkq
p_e_khh[jZagh_ ieZgbjh\Zgb_ jZ[hlqjh\ ieybfgZa\b\Zlv mf_gb
b gZ\udb \ mk\h_gbb b kbkl_fZlbaZpbb ijbh[j_lZl\fukhdabgcZg
mjh_gv mki_\Z_fhklb \ i_jbhh^fhlZ_mhqemqybv gZ\udb ih\ur_
ijhn_kkbhgZevgh]h mjh\gy
F_lh^bq_kdbfb fZl_jbZeZfb gZijZ\eyxsbfb kZfhklhy
h[mqZxsboky yokyxlky
– mq_[ghlh^bq_kdbfb fZl_jbZe ih ^bkpbiebg_ jZaf_sgguc
f_lh^bq_kdbo ihkh[byo ijhn_kkhjZ ? F Bevbgkdhc ©Fbdjhwd
JhfZgh\hc b K G F_^_^_\hc ©Wdhghfbd Z Fbdjhwdhghfb
ij_ih^Z\Zl_ey _^ms_]h ijZdlbq_kdb_ aZgylby

11.4. F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsbolkydmish_]hjh
dhgljhey mki_\Z_fhklb
L_dmsbc dhgljhev mki_\Z_fhklb ijgl^jhkvZldZ\qZ_kl\Zdhag
h[mqZxsboky hkms_kl\ey_fh]h \ l_q_gb_ k_f_kljZ k p_evx
^bkpbiebgu dhgljhev dZq_kl\Z agZgbc h[mqZxsboky hkms_kl\ey
gZ \hijhku ij_ih^Z\Zl_ey _^ms_]h ijZdlbq_kdb_ aZgylby ms
ijZdlbq_kdbo aZ^Zgbc

11.5. F_lh^bq_kdb_ mdZaZgby ^ey h[mqZxsboky ihfh_]hjh
Zll_klZpbb
ljhf_`mlhqgZy Zll_klZpby h[mqZxsboky \ h_gb\Zgb_
ijhf_`mlhqguo b hdhgqZlvZ\hu\oh[mqmqby ih ^bkpbiebgu Hg
k_[y
– wdaZf_g nhjfZ hp_gdb agZgbc h[mqZxsboky ijhp_kk_
bamq_gby \k_c ^bkpbiebgu beb __ qZklb gZ\udh\ kZfhklhyl
ijbf_gylv bo ^ey j_r_gby ijZdlbq_kdbo aZ^Zq WdaZf_g d

i_jbh^ wdaZf_gm ih ggZhc k_kkbb b aZ_jrZ_lky Zll_klZpbhgghc
©ohjhrhª ©m^h\e_l\hjbl_evghª ©g_m^h\e_l\hjbl_evghª

D wdaZf_gm ih ij_^f_lm ^himkdZxlky \k_ klm^_glu ih ki
wdaZf_g \uklZ\ey_lky kh]eZkgh djble_jb_f ik mqzbh1LZ[[hgmk
ihk_sZ_fhklv aZgylbc b \uiheg_gby dhgljhevguo jZ[hl \ o
ihk_s_gby e_dpbc b ihk_s_gby ijZdlbq_kdbo aZgylbc \
[hgmku mqblu\Z_fuo ijb ih^kqzl_ ijZ\bevguo hl_lh\ ih k^Zg

Ebk \g_k_gby baf_g_gbc \ jZ[hqmx ijh.]jZffm ^bkpbie

>ZlZ \g_k_ baf_g_gbc ^hiheg_gb lh^ibkv \g_k baf_g_gb	Kh^_j`Zgb_ baf_g_gbc b ^l	>ZlZ b ijhlhdhe aZk_^Zg dZn_^ju	lh^ibk aZ\ dZn_^j