

30LQLPXP 'RZQWLPH

ÖL YBL +Ë WKÖQJ Wë SKkQ SKÖL Yj yLÄX
FXQJ F©S QKóQJ EÝ SK±Q Fk NKtWbáL KR»
FKÍQK SKéF Yé FKR QKLÄX QJjQK F{QJ QJ

- ‡ 1JjQK KyD FK©W
- ‡ 1JjQK GmçF SK-P
- ‡ 1JjQK KjQJ KŞL
- ‡ 1JjQK KyD G«X
- ‡ 1JjQK [k\ GõQJ
- ‡ &iF WU¥P Q QJ OmçQJ
- ‡ &iF QKj Pi\ JL©\
- ‡ &iF QKj Pi\ [ñ Oê QmBF WKŞL
- ‡ &{QJ QJKLËS { W{
- ‡ &{QJ QJKLËS NKDL NKRIQJ
- ‡ 1JjQK Q QJ OmçQJ
- ‡ 7UXQJ WkP Gó OLËX
- ‡ &DR ÖF WKmkQJ P¥L
- ‡ '«X NKt
- ‡ &k Vã K¥ W«QJ

\$17 6ZLWFKERDUGV FXQJ F©S FiF OR¥L 7ë
YBL QKLÄX F©X KuQK yD G¥QJ iQK•KéS JFK

- ‡ .LÇX FÖ yïQK
- ‡ .LÇX O³S UiS
- ‡ .LÇX QJ Q NpR
- ‡ .LÇX F³P WUõF WLÃS
- ‡ .LÇX WKDR WiF SKtD WUmBF
- ‡ .LÇX WKDR WiF SKtD VDX

7KH SULPDU\ GHPDQG LQ WRGD\¶V VRFLHW\$QLWRS\$UOJRODOF «XDMHWQ ZXUÁW WURQJ [m
2PHJD 6ZLWFKJHDUV DQG &RQWUROJHDU 6V W KIPQDSFKÓH YHj W\AKHNKLÇQ FëD FK~QJ W
KLJKHVW VDIHW\ VWDQGDUGV QK©W YÁ PÍF ýÝ DQ WRjQ

‡ 7\SH 7HVW DFF ,(&
‡ ,QWHUQDO \$UF 7HVW DFF ,(&
‡ 6HFWLRQ \$UF 3URWHFWLRQ %DUULHUV
‡ 8QLW \$UF 3URWHFWLRQ
‡ 7KHUPRJUDSKLF LQVSHFWLRQ DUHDV
‡ 0HFKDQLFDO VDIHW\ LQWHUORFNV
‡ ,3 LQWHUQDO SURWHFWLRQ

‡ 7Kñ QJKLĚP 7\SH 7HVW WKHR WLrX FK
‡ 7Kñ QJKLĚP SKyQJ Kx TXDQJ WKHR W
‡ &y FiF YiFK QJ Q Kx TXDQJ O³S WKHR
WiQJ QJ Q Wë
‡ %§R YĚ SKyQJ Kx TXDQJ FKR WiQJ QJ
‡ +Ě WKŌQJ FŞP ELĂQ ýx KR¥ JLip ViW
‡ .KyD Fk Nkt OLrQ ýÝQJ DQ WRjQ
‡ &©S EŞR YĚ ErQ WURQJ Oj ,3

2XU 2PHJD IUDPHZRUN DQG FODGGLQJ V\WĚHWKSURJNKHQJWKH PjRVWFK QJ Q FëD Wë
UREXVW ÁH[LEOH V\WHP DYDLODEOH YóQJ FK³F Yj OLQK KR¥W QK©W

‡ +LJK VWUHQQJWK EHQG SUR¿OH
‡ PP \$OX]LQF PDWHULDO
‡ 0RGXODU LQ D[HV
‡ 'RRUV LQ PP RU PP
‡ ,3 VWDQGDUG ,3 RSWLRQDO
‡ 6SHFLDO FRORXUV DYDLODEOH
‡ &XVWRPLVHG FXW RXW¶V

‡ .KXQJ Wë FmáQJ ýÝ FDR YBL WKLĂW N
‡ 9±W OLĚX EmQJ KçS NLP QK{P NÁP Gjy
‡ .KXQJ Wë YBL NLÇX O³S Uis WLrX FKX
‡ &ñD Gj\ PP KR»F PP
‡ &©S EŞR YĚ ,3 KR»F ,3
‡ 6kQ WKHR WKHR PjX NKiFK KjQJ \rX F
‡ &³W FñD Yj FiF FKL WLĂW WKHR \rX F

3 3HUVRQDO 6DIHW\
\$Q WRjQ '

7KH EXVEDU V\ VWHP IRUPV WKH PDLQ SRZ+HJ VGLŃWJ MBXWQR DiZIGWŃLQJ DQQ ErQ WUR	‡ 7KDQK FiL Fy WKÇ O³S WURQ QyF Wë h
DVVHPEO\ DQG LV RQH RI WKH FULWLFDO QHQPHWJQB HMKHQPLXÁWJ WŃK PíF ýÝ WL	‡ KR»F WKDQK FiL WURQ SKD Or
DVVHPEO\ V RSHUDWLRQDO UHOLDELOLWŃDŃ VDFHWŃQŃHNDWŃKŃVWR FŃDKŃĚ WKDQK	‡ &©S EŞR YĚ ,3
2PHJD 6\ VWHP LQFOXGH	‡ 7KDQK FiL SKkQ SKŃL OrQ ýĂQ \$
‡)LWWHG WR WRS RU ERWWRP RI SDQHO	‡ 9iFK QJ Q Kx TXDQJ ErQ WURQJ W•\ F
‡ RU EDU V\ VWHPV XS WR \$	
‡ ,3 SURWHFWLRQ	
‡ 'LVWULEXWLRQ EDUV XS WR \$	
‡ ,QWHUQDO DUF EDUULHUV RSWLRQDO	

+Ë WKÕQJ Wë SKkQ SKÕL Yj ÿLÄX NKLÇQ WLRX FKX-Q FXQJ F©S ÿD G#QJ QKLÄX NLÇ

)L[HG

.LÇX FÕ ÿiQK

‡ 6WHHO FRPSDUWPHQWDWLRQ XS WR)RUP	‡ 7L\$HQJ Q FKíF Q QJ OÃQ ÿÃQ)RUP
‡ \$GMXVWDEOH GHSWK PRXQWLQJ SODWHV	‡ &iF W©P J³Q WKLÄW Eï Fy WKÇ KLËX F
‡ 1RQ IHUURXV JODQG SODWHV	‡ 7©P OXxQ FiS EµQJ Y±W OLËX NK{QJ V
‡ 0HWDO RU SODVWLF FDEOH ER[‡ +ÝS QÕL FiS EµQJ NLP OR#L KR»F EµC
‡ 6L]HV ZLGWKV KHLJKWV GHSWKV	‡ .tFK WKmBF UÝQJ [FDIWURQ VkXP{ÿXC

5HPRYDEOH 8QLWV 7\SH

.LÇX O³S U³S

‡ +LJK SURWHFWLRQ DJDLQVW FRQWDFW	‡ 0íF ÿÝ DQ WRjQ FDR FKÕQJ WLÄS [-F
‡ 5DWLQJ XS WR \$ N: 9	‡ /rQ ÿÃQ \$ N: 9
‡)L[HG RU KLQJHG IURQW SDQHO	‡ 0»W WUmBF J³Q FÕ ÿiQK KR»F Vñ GéQ
‡ &RGLQJ V\VWHP	‡ +Ë WKÕQJ NKRI EµQJ Pm VÕ
‡ 8QLTXH VDIHW\ LQWHUORFNLQJ PHFKDQJ	‡ VPK F©X NKyD OLRQ ÿÝQJ DQ WRjQ
‡)XOO\ UH FRQ¿JXUDEOH ZKLOH OLYH	‡ 'É GjQJ WKD\ ÿÛL WRjQ EÝ F©X KuQK
‡ \$FFRPPRGDWHV FRPSRQHQWV IURP PDQJ	‡ PDSXNDFWXKULÄW Eï FëD QKLÄX QKj vS
‡ 6L]HV ; < ò ò ò ò	‡ .tFK WKmBF ; < ò ò ò
‡ 8S WR XQLWV SHU VHFwLRQ	‡ /rQ WBL QJ Q FKíF Q QJ WURQ PÝW

35HOLDELOLW\ 7LQ F±\'

0LQL ZLWKGUDZDEOH

.LÇX QJ Q NpR QKÓ

‡ +LJK SHUVRQDO SURWHFWLRQ	‡ 0íF ŷŷ DQ WRjQ FDR
‡ 5DWLQJ XS WR \$ N: 9	‡ /rQ ŷĂQ \$ N: 9
‡ \$X[LOLDU\ FRQWUROV XS WR FRQWUROV	‡ ŷ«X QŌL Gk\ ŷLĂX NKLÇQ WURQ
‡)URQW RU UH DU DFFHV V	‡ 7KDR WiF SKtD WUmBF KR»F SKtD VDX
‡ 5HPRYDEOH LQWHUIDFH ER[‡ +ŷS QŌL FiS Fy WKÇ WKiR UáL
‡ ,QWHUIDFH ER[FDQ EH SUH ZLUHG	‡ +ŷS QŌL FiS Fy WKÇ ŷmçF ŷ©X Gk\ V.Q
‡)XOO\ UH FRQ¿JXUDEOH ZKLOH OLY#	‡ 'É GjQJ WKD\ ŷÛL WRjQ Eŷ F©X KuQK FiF
‡ &RGLQJ V\ VWHP	‡ +Ë WKŌQJ NKRI EµQJ Pm VŌ
‡ 'HYLFH1HW 3UR¿%XV FRPSDWLEOH	‡ .ĂW QŌL 'HYLFH1HW Yj 3UR¿%XV
‡ 6L]HV ; ò <	‡ .tFK WKmBF ; ò WtQK P{ŷXQ
‡ 8S WR XQLWV SHU VHFWRQ	‡ /rQ ŷĂQ QJ Q FKíF Q QJ WURQ PŷW FKLĂ

J EŞQ OĂ

FiF QJ Q FKíF Q QJ
Q [X©W NKiF QKDX
ò [PRŷXQ
FKLĂX FDR

:LWKGUDZDEOH 8QLWV

.LÇX QJ Q NpR

‡ +LJK RSHUDWLRQDO VDIHW\	‡ 0iF ýÝ DQ WRjQ Y±Q KjqK FDR
‡ 5DWLQJ XS WR \$ N: 9	‡ /rQ ýĂQ \$ N: 9
‡ \$X[LOLDU\ FRQWUROV XS WR FRQWUROV	‡ ý«X QŌL Gk\ ýLĂX NKLÇQ WUR
‡)XOO\ UH FRQ¿JXUDEOH ZKLOH OLYH†	‡ 'É GjQJ WKD\ ýÛL WRjQ EÝ F©X KuQK FiP
‡ &RGLQJ V\VWHP	‡ +É WKŌQJ NKri EpQJ Pm VŌ
‡ 6DIH RSHUDWLRQ ,3 SURWHFWLRQ	‡ L\$QDWRjS RVLQK RQV ,3 W≠L W©W F§ FiF Y
‡)L[HG RU KLQJHG IURQW SDQHO	‡ 0»W WUmBF J³Q FŌ ýİQK KR»F Vñ GéQJ E
‡ 'HYLFH1HW 3UR¿%XV FRPSDWLEOH	‡ NĂW QŌL 'HYLFH1HW Yj 3UR¿%XV
‡ \$FFRPPRGDWHV FRPSRQHQWV IURP PDQSPDQF	‡ DWFLĂUWHİ FëD QKLĂX QKj V§Q [
‡ 6L]HV ; < ò ò ò ò	‡ NtFK WKmBF ; < ò òWtQrQ òP
‡ 8S WR XQLWV SHU VHFWRQ	‡ /rQ ýĂQ QJ Q FKíF Q QJ WURQ PÝW FKL

3) OH[LELOLW\ /LQK KRŷW´

,QOLQH 8QLWV

.LÇX F³P WUõF WLÃS

‡ \$FFHSWV \$%% 6OLPOLQH 3URGXFVW	‡ 3K• KçS YBL VŞQ SK-P \$%% 6OLPOLQH
‡ \$FFHSWV -HDQ 0XOOHU 6DVLO 3URGXFVW	‡ 3K• KçS YBL VŞQ SK-P -HDQ 0XOOHU 6
‡ 5DWLQJ \$	‡ /rQ ŷÃQ \$
‡)XOO\ UH FRQ¿JXUDEOH ZKLOH OLYH	‡ 'É GjQJ WKD\ ŷÛL WRjQ EÝ F©X KuQK
‡ 0RGXODU GHVLJQ	‡ 7KLÃW NÃ GŷQJ P{ ŷXQ
‡ (DV\ LQVWDOODWLRQ	‡ /³S ŷ»W GÉ GjQJ
‡ +LJK RSHUDWLRQDO VDIHW\	‡ 0íF ŷÝ DQ WRjQ Y±Q KjQK FDR
‡ +LJK SURWHFWLRQ DJDLQVW FRQWDFW	‡ %ŞR YË FKÕQJ WLÃS [-F
‡ +LJK EUHDNLQJ FDSDFLW\	‡ .KŞ Q QJ ŷyQJ F³W F{QJ VX©W OßQ
‡ +LJK VKRUW FLUFXLW VWUHQJWK	‡ .KŞ Q QJ FKÏX GzQJ QJ³Q PŷFK FDR
‡ 8S WR XQLWV SHU VWDFN	‡ /rQ ŷÃQ QJ Q FKíF Q QJ WURQ PÝW

37HFKQLFDO ,QIRUPDWLRQ 7K{QJ WLQ NŪ

5HIHUHQFH 7\SH WHVWHG 6ZLWFKJHDU ,DQ &RQWUROJHD
 6WDQG DUGV %6 (1
 (1 ,(&
 ,(& ,(&
 &6\$ & 1R
 ',1 9'(SDUW ',1
 6KLSV &ODVVL¿FDWLRQV 6RF

7LrX FKX-Q 7ë SKkQ SKÖL Yj ŷLÅX NLÇQ (Wm WKñ QJKLĒP
 WKDP FKLÅX ŷLÇQ KuQK 7\SH WHVWHG %6 (1
 (1 ,(&
 ,(& ,(&
 &6\$ & 1R
 ',1 9'(SDUW ',1
 6KLSV &ODVVL¿FDWLRQV 6RF

(OHFWULFDŵDWHG 9ROWDJHŵDWHG LPSXOVH ZLWKŷWDQG NROWDJH 8
 'DWD 5DWHG LQVXODŷLRQ YROWDŵDWHG 8
 5DWHG RSHUDŷLRQDO YROWDŵDWHG 8

7K{QJ VŌ LĒQ is ŷĪQK PĪF LĒQ is FKĪX [XQJ ŷĪQK PĪF 8 N9 N9
 ŷLĒQ LĒQ is FiFK ŷLĒQ ŷĪQK PĪF 1000V
 LĒQ is Y±Q KĵQK ŷĪQK PĪF 8 9

0DLQ +RUL]RQWDO %XVEDUV
 5DWHG &XUUHQW 5DWHG FŷUUHQW , XS WR \$
 5DWHG 3HDN ZLWKŷWDQG FKSUHQW , N\$
 6KRUW WLPH ZLWKŷWDQG FKSUHQW , N\$ VHF
 9HUWLFDO %XVEDUV)L[HG 6\WVHP
 5DWHG FŷUUHQW , XS WR \$
 5DWHG 3HDN ZLWKŷWDQG FKSUHQW , N\$
 6KRUW WLPH ZLWKŷWDQG FKSUHQW , N\$ VHF
 9HUWLFDO %XVEDUV
 5HPRYDEOH :LWKGUDZDEOH 6\WVHP
 5DWHG FŷUUHQW , XS WR \$
 5DWHG 3HDN ZLWKŷWDQG FKSUHQW , N\$
 5DWHG 6KRUW WLPH ZLWKŷWDQG FKSUHQW , N\$ VHF
 +Ē WKŌQJ WKDQK FiL FKtQK O³S QJDQJ
 'zQJ ŷLĒQ ŷĪQK PĪF , OrQ ŷĀQ \$
 'zQJ ŷLĒQ [XQJ ŷĪQK PĪF FrQ, ŷĀQ N\$
 NKŶ Q QJ FKĪX ŷŏQJ GzQJ QŏQ FĀQK FĕD N\$ VHF
 WLÅS ŷwÇP ,
 7KDQK FiL SKkQ SKÖL O³S WKHR FKLÅX GñF
 'zQJ ŷLĒQ ŷĪQK PĪF , OrQ ŷĀQ \$
 'zQJ ŷLĒQ [XQJ ŷĪQK PĪF FrQ, ŷĀQ N\$
 NKŶ Q QJ FKĪX ŷŏQJ GzQJ QŏQ FĀQK FĕD N\$ VHF
 WLÅS ŷwÇP ,
 7KDQK FiL SKkQ SKÖL O³S WKHR FKLÅX GñF
 %rQ WURQJ WŷDQJ O³S Yj QJ Q NpR
 'zQJ ŷLĒQ ŷĪQK PĪF , OrQ ŷĀQ \$
 'zQJ ŷLĒQ [XQJ ŷĪQK PĪF FrQ, ŷĀQ N\$
 NKŶ Q QJ FKĪX ŷŏQJ GzQJ QŏQ FĀQK FĕD N\$ V
 FĕD WLÅS ŷwÇP ,
 .KŶ Q QJ FKĪX ŷŏQJ ŷLÅX NLĒQ ŷĀQ N\$ V

37HFKQLFDO ,QIRUPDWLRQ 7K{QJ WLQ NŪ

0HFKDQLFD, QWHUQDO 6HSDU(&WLRQ	6HFWLRQ)RUP WR \$ DO
'DWD %6 (1	1& 7\SH WR
7K{QJ VŪ 9iFK QJ Q WURQJ, (&)RUP ŷĂQ \$ Yj %
Fk NKt %6 (1	1& 7\SH ŷĂQ

'HJUHH RI 3URWH(&WLRQ	,3 ; XS WR ,3 ,3 RSWLRQD
&@S EŞR YĔ , (&	&@S EŞR YĔ ,3 ; OrQ ŷĂQ ,3

0DWHULDOV	'RRUV 3ODWHV	3DLQWHG 6WHHO PP RU P
)UDPHZRUN	3DLQWHG 6WHHO RU \$OX]LQF
	3OLQWK	3DLQWHG 'RFDO <3 PP
	ORXQWLQJ 3ODWHV	\$OX]LQF PP
	,QWHUQDO 3ODWHV	\$OX]LQF PP PP
	6WDLQOHVV 6WHHO RSWLRQD	\$RFDO
	5HDU 3ODWHV	\$OX]LQF PP
	7RS 3ODWHV	3DLQWHG 6WHHO PP RU P
		\$OX]LQF PP

9±W OLĔX	&ñD FiF W@P YiFK	7KpS Vkk W-QK ŷLĔQ PP RU
	.KXQJ WĔ	3DLQWHG
	&KkQ ŷĂ WĔ	7KpS Vkk W-QK ŷLĔQ KR»F Kç
	7@P O³S WKLĂW EĪ	NĂP PP
	7@P ErQ WURQJ	7KpS FmáQJ ŷÝ FDR Vkk W-QK
	7KpS NK{QJ UĪ 7•\ FKŃQ	YBL OBS Vkk 0DJQHOLV
	7@P OmQJ WĔ	+çS NLP QK{P NĂP PP
		+çS NLP QK{P NĂP WĪ PP
		\$16,
		+çS NLP QK{P NĂP PP
		6³W NK{QJ UĪ PP KR»F PP
		+çS NLP QK{P NĂP PP
	7@P QyF WĔ	

&RORXU	'RRUV 3ODWHV	5\$/)LQH 6WUXFWXUH
	3OLQWK	5\$/)LQH 6WUXFWXUH
0jX V³F	&ñD Yj FiF W@P YiFK	9Ō WĔ Vkk PjX 5\$/ WLQK V
	&KkQ ŷĂ WĔ	9Ō WĔ Vkk PjX WLQK WĂ

'LPHQVLRQV PP:LWK ĀDW SODWHV \$*3	+HLJKW
	:LGWK
	'HSWK
.tFK WKmBF PP 9BL W@P YiFK SK·QJ \$*3	&DR
	5ÝQJ
	6kX

6HUYLEFH &RQGLMstRQ	,QGRRU
\$PELHQW 7HPSHUDWXUH	f& WR f&
5HODWLYH +XPLGLW\	0D[DW f&
\$OWLWXGH	" P
LĂX NLĔQ SKéF OĪ WUmáQJ O³S ŷ»W	%rQ WURQJ
1KLĔW ŷÝ P{L WUmáQJ [XQJ	J&DĪQ f&
Ý -P WmkQJ ŷŌL	7ŌL ŷD ā f&
Ý FDR	" P

