

>Y`Ybh_YnÅg A chj 1Wj g`Yj Å`

A chj 1Wj g`Yj Å`! ? YnXÅg
_cfYUJ

dcfhi [½
DfYnUXc`GYb\cfž
7 Ufc`GYb\cfž

< j Uu cgž ZÅFZ] VĚa nYtž]ga YfYhYb`bÅj

DfYnUXU`GYb\cfUž
7 UFU`GYb\cfUž

< j Uu cgž b] VĚa nYtž]ga YfYhYb`bÅj

DfYnUXcfUĚ`GYb\cfFUž
7 UfcFUĚ`GYb\cfFUž

< j Uu cgž VĚa nYthbYj Y`Åg`bYa Y`]ga YfYhYb

()

DfYnUXcgjGYb\cfYgž
7 UfcgjGYb\cfYgž

< j Uu cgž hÒW`VĚa nYth

()

5`ei Ya `dcggU`]bhYfYggUfž

< j Uu cgž VĚa nYthY`_bYj Y`Åg`bYa Y`hY`YgYb`]ga YfYhYb

DfYnUXc`Gf"G]j Už
7 Ufc`Gf"G]j Už

< j Uu cgž ZÅFZ] VĚa nYtž]ga YfhibÅj

DfYnUXU`Gf}"G]j Už
7 UFU`Gf}"G]j Už

< j Uu cgž b] VĚa nYtž\½Už]ga YfhibÅj

DfYnUXU`Gfh}"G]j Už
7 UFU`Gfh}"G]j Už

< j Uu cgž b] VĚa nYtžY[mYXØ ½Ě Ě]ga YfhibÅj

DfYnUXU`Gf}"G]j Už
7 UFU`Gf}"G]j Už

< j Uu cgž b] VĚa nYtž]ga YfhibÅj ž]ga YfYhYb`WgU ½] ½`Udch

>Y Ybh_YnÅg A chj 1Wj g`Yj Å



DfYnUXc`J ěřcf`G]j UĚ
7Ufc`J ěřcf`G]j UĚ

? Yj ÅgVÅ`lj Uu cgža 1Ě fÅ[YWV`I HUj Ub`Ŕn`YH`_UdVgc`Uh

... . 9i `[cgHUF]UXY`WbX]XUHUF!a YUc`WF[c`XY""ei YZc]
Ubi bV]UXc`Ya `#bc`#U""Ya ""

GHubXUFX`Zcfa i `UY[mic`mub`1/2`1/2]fUĚUa YntbY`_U\]fXYHÅgÅhY[mİÖg]1/2Vubj U[mia U[Uh]bVUb`1/2HUX

... . 9gVYj c`Ya `fYgdcg]Uc`UbÖbV]c`di V]UXc`Ya `#bc`#U""

GHubXUFX`Zcfa i `UY[mcb`]bY`\]fXYHĤh1/2`1/2]fUj 1/2Ugnc`1/2]cf

...() ... F YZ]fcl`a YUc`gři `UbÖbV]c`Ya `#bc`#U""XUHUXc`XY""

GHubXUFX`Zcfa i `U`UbbU`_Ya U[mUf1/2]1/2]UĚ`c[m`lc``H`1/2HUX`Ua Y[\]fXYHĤh1/2`1/2]gh

...() ... 9i ``]c`gři `UbÖbV]c`gcVfYi` a fUĚ""Yi dYf]YbhY""bcfUĚ""
YX]Āc`XY""žYHb\c`[fUbXY]bhYfYgg]bUj U[U`

GHubXUFX`Zcfa i `UY[mic`mub`1/2`1/2]fU`Y`Ybh_YnÅg_cfZ`Ua YmĤhY[mia U[Uh]bVUb]j U[m\`Yh`UdVUb`1/2]1/2

... . J Yb\czdcf`a Y]c`XYgHĚ`WbX]XUHUF!a Y`1/2dcg]Āc`
Ubi bV]UXĚVta`c""

GHubXUFX`Zcfa i `U`1/2`1/2]Y`Ybh_YnÅg_cf

... . 9i `[cgHUF]UXY`WbX]HUHUF!a YUc`WF[c`XY""

GHubXUFX`Zcfa i `U`1/2`1/2]Y`Ybh_YnÅg_cf

... , 5h Ua YbhY`fUMU`\c`dUFU""Y`gci `fYgdcbg]1/2Y`dcf`""

Bnjři `a cbXUh_Åbh`Ugnb1/2`1/2`_U`Y`Yb`Y[.]`Zc[`U`_cn]1/2]1/2]Udch`YĚf]1/2]U

A chj 1Wj g`Yj Å! ¥fj YÅg

_cfYU]

dcfhi [1/2

... , . 9gci `dUFh]W`Ufa YbhY]bhYfYgg]UXc`bYghY`fUMU`\c`#MF[cž
Vta`c""

5bbU`_Ua Y[a U[mUf1/2]1/2]UĚ`c[mia]ĀfhgnYfYhbÅX`Uh`UXchĤia i b_1/2

... , . 9i `[cgHUF]UXY`fUMU`\UF`dUFU""fbca Y`XU`Ya dfYgUĚU
Zja`XY""

5bbU`_Ua Y[a U[mUf1/2]1/2]UĚ`c[mia]ĀfhgnYfYhbÅX`Uh`UXchĤia i b_1/2

A Yi gdcbhcgZcfHYgg;c'''

5 ``Y[ZcbhcgUW`h `UXcbg]UjX`YÉf]U_cf

9i `X]f]U`ei Y`U`a]b\U`Öb]W]ZUei YnU`Å#Ugja]b\Ug]Öb]W]g
ZUei YnUg]g;c''''''7 cbh XczYg]ci `hYb]UbXc`a Y\cfUf
bYghYf]g:Ugd]W]c]f]g'

I HU]g]U[mYb[YgÅ[Y]XFYZXY`UbbU`_a i HU]g]U`Z\c[m]gnYfYbÅ` YnY`_Yb`U`hYfØYh`_Yb`ZY^ Xb]

5WfX]hc`ei Y`gci `]bX]W]Xc`dUfU`c`hfUU\`c`dc]g'''

5 bbU`_`YÉf]g]U`Z\c[ma]h`_`j U[m]f`_`Y`Ybh`_Yn`_`U`a i b_]U

9a VcfU`Yi `b;c`hYb\U`Yi dYf]U]U`b]hYf]cf`Ya`_`''''Z`Yi`_`h]j`Y`
''''

5 a]_cf`a`Å[`bYa`_`Xc`[c]n]h`z`Uh`UXc]h]hYfØYh]b`z`XY`gnYfYbÅX`VYa i HU]b]`_`U`a`_`g]hYfØYh`_`Yb`_`gnYfnYh]h]UdUgn]U`U]XU]h

A]b\Ug]ei U]Z]W]Å]Yg]V]a`dYh]U]Ug]dfc]Z]gg]cb]U]g
dUfY]W]a`_`Yg]Uf`_`XY`U]U]f`Xc`V]a`_`Ug]b]W]W]g]XU]Yg]XU]g]U`
Ya`df]Yg]U`

5 bbU`_`U`_`YÉf]g]U`Z\c[ma]`mYb`_`_`ÄdYggÅ[Y`_`hYgnbY`_`U`_`U`a`_`Ugg]U]`a i b_]U

8i fUb]h`_`a`Yi`_`h`Ya`_`dc`V]a`_`c`''''Z`Yi`_`UdYf]Z]Å]c]Y]`#Udfc]Z]`bXY]
#Yg]h]b]X]`#a`Yi`_`V]b\`W]j]a`Yb]hc`_`Ya`_`''''

9[m]UXc]h]hYfØYh]b`_`gnYfnYh]h]UdUgn]U`U]h]VYa i HU]g]U`Äg]U`_`ÄdYggÅ[`Ö`_`ÄdYggÅ[Y`_`#i`X]g]gnYfnÅgÅfY

A]b\U`_`Y`YU`XY`Ygd]W]U]n]U]Ä;c`_`Ä`''''#Gci`_`Ygd]W]U]n]UXcf]U`
Ya`_`''''

5 bbU`_`YÉf]g]U`Z\c[ma Ym]`_`hYfØYh]b]j`_`UbbU`_`U`_`Y[bU[n]c]W`_`YfYXa`_`Åbm]Y]X]z]h]UdUgn]U`U]X

5dYg]Uf`_`XY`hYfUUU\`Uf`_`Ya`_`#]a`_`''''Z`hcf]b]Y]!`_`a`_`Y`
Yi`_`hY`_`Ua`_`Yb]h]V]a`_`dYh]b]h]Y`_`Ya`_`''''

9[m]UXc]h]hYfØYh]b`_`gnYfnYh]h]UdUgn]U`U]h]VYa i HU]g]U`Äg]U`_`ÄdYggÅ[`Ö`_`ÄdYggÅ[Y`_`#i`X]g]gnYfnÅgÅfY

5]bXU`_`ei`_`Y`hYfUUU\`UbXc`_`Ya`_`f]h]a`_`c`_`UW`_`YfU]Xcz]Yi`_`b;c`_`gci`
bY[]`[Yb]h]Y`_`hYfUUU\`c`_`V]a`_`df]Y]g]g]cz]g]b]Xcz]dcf]h]U]b]h]cz`
UX]Yei`_`UXc`_`dUfU`_`Ug]XYa`_`UbXUg]Xc`_`hYfUUU\`c`_`V]a`_`c`_`''''''

5 bbU`_`Ya`_`U[m]Uf]h]h]UdUgn]U`Z\c[ma]Åf]h`_`YbbÅ`_`_`f`_`_`U`h]z]g]U`_`cf]W]V]`_`a i b_]UdUgn]U`U]X`_`U`Ud]Yb

>Y Ybh_ YnÅg A chj 1Wj g`Yj Å



가 , Gci 'WdUh'XY'a Ubhf i a 'Uhc'dUXf_c'XY'fUMU\cz
a Yga c'gcV'dfYgg_c"

5 bbU_ÅfnÅ_Y'HyÅgÅfYz\c[mi_ÅdYgj U[mia U[Ug][ÅbnY_YhHÅ UgnH' _ÖfbmYnYH'Yb'Xc'[cnb]

, 8YgU'Zcfa UYi 'hf]U'U'cdcfh b]XUXY'XY'WtbV]U'f'cg
a Yi g]bh'fYggYg'Wta 'YgU'W'c'WÅ_c"

5 bbU_ VYa i HU'g]W'Å\c[mignYa Å'mYgYb']g'bU[ncb'ÅfXY_` Xgn'U'a i b_U]f'YbH

... , 9i 'Hb\c'YgdW]U]bh'fYggY'Ya #bc#bU'''Y[cgU'f]U'h'f'U
cdcfh b]XUXY#W'UbW'XY'Ua d'U'f'a Yi g'Wtb\W]Å Yohcgz
fU'U'\UbXc'Ya #bc#bU'''fbca YXU'Ya dfYgU'J'

5 bbU_ VYa i HU'g]W'Å\c[mignYa Å'mYgYb']g'bU[ncb'ÅfXY_` Xgn'U'a i b_U]f'YbH

, 가가 7ca c'dcXY'g'f'c'Vg'fj Uxc'bc'a Yi 'WffÉW'c'UbYI czU
a]b\UYI dYf]ÅV]U'Y'ei U]Z]W'Å'Ng'W'ffYg'dcbXYa 'Ucg
fYei]g]hcgXYgU'dcg]Å_c"

5 n'ÖbÅ'YfU'ncX_] \Ub[gÖncn]gU_cf'Åg'UbbU_ÅfnÅ_Y'HyÅgÅfYz\c[mia Ybbn]fY]'`YbY'\cmn]X'Yn'U'a i b_U

... , A]b\U'dcg]Å_c'U'i U'Wta c'''XY'#Xc'#bU'''za Y
dfcdcfV]cbci 'U'cdcfh b]XUXY'XY'fUMU\U'f'Ya 'i a
Ua V]Ybh'XY[fi dc'XY'U'fU'dfYgg_cz'cbXY'Å'YggYbV]U'g'f'
WdUh'XY'fUMU\U'f'Wta 'W'f'Y[Ugz'U'Z]a 'XY'W'a df]f
dfU'ncg"

5 bbU_`YÉf]g]W'Å\c[mia]'mYb'h'X'g]gU'W'Å'fch]½'Y'U'Y'Yb'Y[]'a i b_]X'gcf'Yb

... , ... 5`Åa 'XY'a]b\U'g'f'Yg'dcbgU]]XUXY'g'Wta c''''zYi 'H'Ua VÅa
XY'gYbj c'j]\UW]]XUXY'g'Wta dYh'ÅV]U'g'Ya ''''

9i fU_ÅdYg'ÅgY_#i X]g`YÉf]g]U'Å'La]_Yh'U'Y'Yb'Y[]'½'½'gcXcb_'YfYgn'Ø'gU'W'Å'fch]½'Y'Åg'Ua]_b'Ya 'ZY'hÅh'Yb'Ø'ZØ[[bY_
ÖgnY'gncfcg'Ub'U'Zc[`U_cn]g]`dcnÉV]i XXU

A chj 1Wj g`Yj Å ! ? ÅdYggÅ[Y_#_ÅgngÅ[Y_ _cfYU]

... , ...

dcfh [½

A]b\U'df]a Y]fU`Éb[i UÅ''''za Ug'h'Ua VÅa 'Z]c''''

5 n'U'bn'U'bn'Y'j YX'Åg'U'h'Y[nÅV'Zc' mÅ_c'b'm'ub'V'Ygn'Å'h'b'n'Y'j Y_`YÉf]g]W'Å

... , 9i 'Z]c''''Wta 'Zi ÅV]U'
Gci 'Zi Ybh'Ya ''''

B'Ya 'U'bn'U'bn'Y'j]z'XY'a U[Ug]gn]bh'Yb'V'Ygn'Å'h'b'n'Y'j Y_`YÉf]g]U

>Y Ybh_ YnÅg
A chj 1Wj g`Yj Å`



...

9i 'hYb\c Vtb\Wja Ybhc`]bhYfa YX]1E]c'XY'''

B Ya 'UbntubmY'j]'Åg_`ÇnÅdgn]bhYb`YVgnÅ`hibmY'j Y_`YÉf]gU

... ..

9i 'hYb\c''''UbcgXY'YI dYf]45V]U'XY'fU'U\`c'Ya '#Wta c''''

9[miUXc]hiÇh`Yh]`hYfØ`YhYb`'gnYfnY'hihUdUgnhU`U'U]X`YÉf]gU]U

...

9i 'hYb\c'YI dYf]45V]U'Ya '#Wta ''''

Gn1a Éhí [ÅdYg'gncZj Yf`]ga YfYh_`VYa i hU]gU

가

9i 'UWYX]hc`hYf`U'Wta V]bUÅ_ç`UXYeI UXU'XY''''Y''''''

5 bbU_`YÉf]gU]U\`c[mia Ybbm]fY`_]Y[mYbgÖ`ncnc]hU_`U_`ÅdYggÅ[Y]X

9i W`Ybh'\UW`]XUXY'XY'Wta i b]WÅ_ç`c

=bZcfa 1Wj`_`a Y[cgnh]gU'Åg`V]ncbmcg'Xc`[c_`Ya U[nUf]h]gU`U_`c`Å[1/2bU_

F U]cV]b]c'XYXi hj`c

6]ncbmcg'Xc`[c_`a Y[ÅfhÅg'`Åg]`ncf'g'Åg`\U'hÅ`cbmY'a U[nUf]h]gU

DYbg]a Ybhc`i []Wt

5 n`Y_`ÅdnY`ÅgY_`#ÇhYhY_`dfV]h`Åg`'f`'1q[cbXc`'ha`i`Xcb]j`U`i`gnYf_`YgnhÅgYz`ÇggYfU_`1gU

< UW`]XUXYg'UbUÉh]Wg

? ÅngÅ[`U'Xc`[c_`fÅgn`YhYg'ÅfhÅ`Y`ÅgÅfY

6ca`fYU]cbUa Ybhc`]bhYf`dYggcU

5`_c`Å[1/2_`U`j`U`i`\U'hÅ`cbmY[mØha`_`ÖXÅg'Åg`_ca`a`i`b]_1Wj`fU]j`U`i`_`ÅngÅ[

< UW`]XUXYg'XY'bY[cV]UÅ_ç`c

A`1g]j`1/2`U`Uhc`_`U`j`U`i`\U'hÅ`cbmØh`YhY`Åg]`_`ÅngÅ[`

< UW`]XUXYg'XY'Wta i b]WÅ_ç`c

5`_`ÅngÅ[`z`c[m]gc_`Ya`VYf`Y`h`i_`ÅdYg`\U'hÅ`cbntub`Y`UXb]`Uh`Çh`YhY]h

A chj 1Wj g`Yj Å`!@Yn1E1g
_cfYU]

dcfh [1/2

>Y Ybh_YnÅg A chj 1Wj g`Yj Å`



가

9gci 'a i]hc'a chj UXc`YUbg]c'dYc'hfUMU\c
Xlj Yfg]WUXc'ei Yi a Wf[c'byghUYa dfYgUdfcdcfV]cbU'

@Yn1/2a Y[]ga Åh'j Yz\c[mia Ybbr]fY'gnYfYbÅ`Uj 1/2U'UtbU_`Xc`[cnb]

9i 'j Y'c'Ugbcj UgUhf]Vi]ÅÑYg#YgUdcdg]c'Wta ci a
Yi WYbh'XYg]c"

@Yn1/2a Y[]ga Åh'j Yz\c[mia Ybbr]fY'gnYfYbÅ`Uj 1/2U'UtbU_`Xc`[cnb]

가

9i '[cgUf]UXY'hf'Ucdcfh b]XUXYXYX]gM]hf'a U]g
XYU\Yg]cVfYUj U[U'dYggcUa Ybh'"

@Yn1/2a Y[]ga Åh'j Yz\c[mia Ybbr]fY'gnYfYbÅ`Uj 1/2U'UtbU_`Xc`[cnb]

A Yi WffEW'c'YbWbfU.g'UbYi c'dUfU'g U'UdfY]U]c"

GHubXUF'Zcfa i `U'UbbU_`Yf]Uz\c[miU'7J 'U'UgUrc'a 1/2m'Ubj Ub

9i 'dggc'ZcfbWf'fYZf]Ug]g'byWgg]c"

GHubXUF'Zcfa i `U'UffUz\c[mibr]hchj U[miFYZYfYbV]1/2'UX1/2U

F YZf]Ug]dcXYa 'gyf'gc']M]UXUg]4Uc""

5 bbU_`Yf]Uz\c[mihi Xgn\c[nb]'fYZfYbV]1/2'Åg'z\c[m_]h_YfYggYbY_`ÅfY

9gci 'X]gcb]Y 'dUfU'YbfYj]gUYa ""

5 bbU_`Uhi Xca 1/2'UX1/2Uz\c[mgnUMUX'j U[miY[m]bhYf'ÖfU

가

C Vf][UXc'dcf'gmi 'hYa dc`YWbg]XYfU]c"5[i UfXc'U
cdcfh b]XUXYXYX]gM]hf'dYggcUa Ybh'Ug]fU'hÑYgdYUg
ei U]g]ci 'Udfcdf]UXc'dUfU'Yg]Udcdg]c"Dcf'Z] cf'YbfY
Ya 'Wb]Urc'Wta][c]j]U""

5 'dfYZf]1/2h'Y'Åf\Yh gÅ[Y_`a Y[UX1/21/2'Åg'U`Y'Ybh_YnÅg'1/2bÅnÅgÅfha Y[_ÖgnÖbÅgY_cf'\Ugnb]1/2Uhcg

... ()

7 cfX]Ua Ybh'z

<]j Uu'cg]V]a nYthibYj Y]ga YfYhYb

... ()

5 h]bV]cg]a Ybh'z

<]j Uu'cg]gnÅ'Yg_ÖfYb'\Ugnb]1/2z]ga YfhV]a nYth

>Y`Ybh_YnÅg
A chj 1Wj g`Yj Å`



... , ... ()
<]j Uu cgž bYa kÖ`Y`hF`YXlž]ga YfhVā nYth

7 ca`Y`Yj UXU`Yg]a Už

.
B Ya `]j Uu cgž Øn`Yh]`dUfhbYfY_`_`Ön`ÖtžU_]_`hY[Yn XbY_`

@Ya VfUbÃUgž