

# 7ci fgY<sup>-</sup>Cj Yfj ]Yk

#### GHJZ7cbHJWh8YHJ]`g

### 7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cWUhjcb	D\cbY
9`U]bY`N\Uc	₫b["n\Uc4 i bgk"YXi"Ui	Hi YgXUm ).'\$!*.'\$da" D`YUgY'Ya U]`Zcf Ub`Uddc]bha Ybh'	FcVYfh KYVghYf &'%8	\$&-',),\$* *

# GWXcc`7cbHJWhi±bZcfa Uhjcb

GWVcc``cZfVY`5flg`UbX`AYX]U

Fcca " ‰ž@Yj Y`" žFcVYfhK YVghYf'6i ]`X]b[ fl %(Ł

D\cbY.'f\$&Ł'-',)'(,)\*

9a U]`. 'gUa 4 i bgk "YXi "Ui

K YVg]hY. k k k "Ufhg"i bgk "YXi "Ui #gUa

#### 5W\_bck `YX[ Ya YbhcZ7ci bhfm

I BGK '5frgž8Yg][ b'UbX'5fW,]hYWi fY'? Ybg]b[ hcb'UbX'DUXX]b[ hcb'Wa di gYg'UfY'Vi ]'hcb'5Vcf][ ]bU`@UbXg"'K Y'dUmci f'fYgdYWg'hc'h,Y'6]X'][ U''UbX'; UX][ U''dYcd'Yg'k \c'UfY'h,Y'7 i ghcX]Ubg'cZh,YgY'`UbXg" K Y'UW\_bck `YX[ Y'h,Y'5Vcf][ ]bU`'UbX'HcffYg'GhfU]h=g`UbXYf'dYcd'Ygž'h,Y': ]fghi5i ghfU`]Ubgžk \cgY'`UbXgž k ]bXg'UbX'k UhYfg'k Y'U``'bck 'g\UfYž'UbX'dUmfYgdYWhc'h,Y]f'i b]ei Y'j U'i Ygž'UbX'h,Y]f'Wbh]bi ]b[ 'UbX YbXi f]b[ 'W' h fYg'k \]W. XYYYdYb'UbX'Ybf]W. h,Y'`]ZY'cZci f'bUh]cb'UbX'Wca a i b]h]Yg"''

 $\label{eq:continuous} \begin{array}{ll} \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'``cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'```cf' = bX][Ybci g'] \\ \text{$:$} = \text{$U[Y'Wc$ if} \text{$fhYgmcZh}, Y'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY!7 \setminus UbWY'C$ $Z_jWY'cZh}, Y'Dfc'J ]WY'C$ $Z_jWY'CAL}, Y$ 

## 7ci fgY 8YHJ] g

#### $I b hg c Z 7 f Y X h^*$

#### Gi a a UfmcZh\Y 7ci fgY

H\]g`Wci fgY`ZcW gYg`cb`j Uf]ci g`Zcfa g`cZcb`]bY`UbX`a cV]`Y`a YX]Užh\Y]f`UZZcfXUbW`g`UbX`WcbglfU]blgžh\Y i gY`UbX`bcb!i gY`Vma i `h]d`Y`di V`]WgžUbX`h\Y`]a dUWicb`WcbhYa dcfUfm`Wca a i b]WUl]cb`UbX`W``hi fU` dfcXi Wf]cb"'=hdfcj ]XYg`cddcfhi b]h]Yg`Zcf`ghi XYblg`hc`Yb[ U[ Y`Wf]h]WU``mik ]h\`bYk 'a YX]U`h\YcfmžUbX`hc fYZYWicb`h\Y]f`ck b`cVgYfj Uh]cbg`UbX`Yl dYf]YbWYg"'

Hcd]\Wg`\Wcj YfYX`]b`h\]g`\Wci fgY`]b\Wi XY`h\Y`Yj c`i h]cb`cZcb`]bY`UbX`a cV]`Y`hY\W.bc`c[ ]\Ygž'a i `h]d`Y d\YfgdY\Wfg\ Yg`cb`X][ ]\HU``Ui X]\Yb\Wfg\ g\ g\fgž'b\Yh\ cf\_\_Y\ZY\Wfg\\*h\Y`k\ Umg`h\Uh\Wca a i b]\WJh]cb'dfcZ\Ygg]cbU`g Ya d`cmcb`]bY`UbX`a cV]`Y`a YX]\Už'h\Y`h\Ybg]cbg`Ufci bX`d`Uh\Zcfa `dc`]h]\\\gž'\\cdYb`gci f\\\ dfcXi \Wf]cbž'UbX`i gY`cZXUHU"

#### 7 ci fgY @YUfb]b[ Ci hWca Yg

- %" 8 Ya cbghfUhY 'h\Y 'UV]`]hmhc '\M]h]\WJ``m'UggYgg'j Uf]ci g'Zcfa g'cZcb`]bY 'UbX'a cV]`Y'a YX]Už'UbX'hc ]XYbh]Zm'UbX 'Wca dfY\YbX'h\Y'X]j YfgY'di V`]\\Mg'h\Uhi gY'UbX'UW\Ygg'cb`]bY'a YX]U"'
- &" 7 cbW/dh U`]gY`h\Y`]a dUWhcZcb`]bY`UbX`a cV]`Y`a YX]U`cb`WcbhYa dcfUfmiWca a i b]WUh]cb`UbX W`hi fU``dfcXi Whcb"
- '" 7 f]h]WU``mYj U`i UhY`UbX`UbU`mgY`UWUXYa ]WUbX`]bXi ghfm`]hYfUhi fY`]b`fY`Uh]cb`hc`a cV]`Y`UbX`cb`]bY a YX]U"
- ("5dd`mfY`Yj Ubhh\YcfYhW\_bck `YX[Y UbX`g\_]``g Ug Wa a i b]WUh]cb gdYWJU`]ghg"

#### HYUWX]b[ 'GhfUhY[]Yg'

H\Y`Wci fgY`k]```VY`HJi [\hZJWY!hc!ZJWY`]b`U``YWfi fY`d`i g`gYa]bUf`Ybj]fcbaYbhhc`YbWci fU[Y`Wfcgg!dc``]bUhcb`cZ[XYUq`UbX`\_bck`YX[Y"

H\fci [\'Vch\']b!WUgg'UbX'ci HcZWUgg'UWhj ]h]Ygžghi XYbhg'k]``'VY'YbWti fU[YX'hc'Wtbg]XYf'h\Y``]b\_g VYhk YYb'Wta a i b]\Whjcb'h\Ycfm'UbX'cb`]bY'UbX'a cV]'Y'a YX]U'dfUWhJW'''

 $Ghi \ XYbhg'k\ ]```VY'Yl\ dYWYX'hc'Yl\ dYf]a\ Ybhik\ ]h\ 'j\ Uf]ci\ g'cb`]bY'UbX'a\ cV]'Y'a\ YX]U'ci\ hg]XY'cZWUgg']b\ dfYdUfUh]cb'Zcf'h\Y]f'Ugg][\ ba\ Ybhg''$ 

# 5ggYgga Ybh

D`YUgY`fYZYf`hc`XYHU]`YX`UggYgga~Ybh[i~]XY`]bYg`UbX`gi~ddcfhfYgci~fWYg`cb`A~ccX`Y''

5ggYgga Ybh'tUg_	K Y][ \h	8iY'8UHY	7 ci fgY @YUfb]b[ Ci hWca Yg 5ggYggYX

#### 5XX]h]cbU`XYhJ]`g

# 5 hmy b X Ub WY F Yei ] f Ya Yb hg

 $\hbox{Ghi XYbhg'UfY'ghfcb[`m'YbWc'i fU[YX'hc'UhhYbX'U```WUggYg'UbX'fYj]Yk'``YWhi fY'fYWc'fX]b[g''' } \\$ 

# 7ci fgY'GWXYXi `Y

J]Yk 'WUgg'ha YhUV'Y

# H]a YtUV`Y

8 UhY	HmdY	7 cbhYbh	
K YY_"%"% "GYdhYa VYf !"%+"GYdhYa VYf	Hcd]W	±blfcXi WgcbihciGcWjUiA YX]Ui7 Ua dU][b]b[	
K YY_"&."&\$"GYdhYa VYf !"&("GYdhYa VYf	Hcd]W	I bXYfgHJbX]b[ 'GcW]U``A YX]U'UbX'GcW]U``A YX]U I gYfg	
K YY_" ."&+"GYdhYa VYf !"%'C WcVYf	Hcd]W	7 i fUŊb[ '7 cb\Ybh'UbX'9b[ U[ Ya Ybh	
K YY_'(.'('CWcVYf'!', CWcVYf	Hcd]W	K cf_]b[ 'k ]h\ '±bZi YbWYfg	
K YY_")."%%"C WhcVYf"! %)"C WhcVYf	Hcd]W	BUj][Uh]b['5`[cf]h\a]W7i`hifY	
K YY_'*.'% 'C WhcVYf'! &&'C WhcVYf	Hcd]W	B c '7 'Ugg'! 'F YUX]b[ 'K YY_	
K YY_"+."&) "C WhcVYf"! &- "C WhcVYf	Hcd]W	I hj`]g]b[ '8 UhU 'UbX'A YUgi f]b[ 'GcW]U`'A YX]U DYfZcfa UbWfg	
K YY_', .'%Bcj Ya VYf'! ) Bcj Ya VYf	Hcd]W	BUj][Uhjb['D`Uhzcfa'7i`hifYg'UbX'Dc`]hjWg	
K YY_'', 'Bcj Ya VYf'! ‰'Bcj Ya VYf	Hcd]W	5XXfYgg]b[ '9h\]WU`'UbX'FY[i `Uhcfm'=ggi Yg	
K YY_'%\$.'%) 'Bcj Ya VYf !'% 'Bcj Ya VYf	Hcd]W	@cc_]b[ 'fick UfXg'f\Y': i fi fY	

## Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

### Hi fb]h]b Gi Va ]gg]cb

Image: Ybwei bhyfu'dfcv'ya k \yb'uhhya dhjb[ 'hc'gi va ]hmci f'Ugg][ ba Ybhh\fci [ \ 'Hi fb]h]bž'd'YUgY

Hy'Yd\cby'9| hy'fbu''Gi ddcfhcb'-', ) '' ' ' %cf'Ya U]''h\Ya 'cb'Y! hy'fbu'hy'hgi ddcfh4 i bgk "YXi "Ui "''Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY\_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY\_YbXg'fl \*) 'XUmg'U'mYUft'''=Z'mci
UfY'i bUV'Y'hc'gi va ]hmci f'Ugg][ ba YbhXi Y'hc'U'ZJi 'hk ]h\ 'Hi fb]h]b'mci 'a Um'Udd'mZcf'Ub'Y! hy'bg]cbž'Vi hmci
a i ghfYhJ]b'mci f'h]W\_Yhbi a VYf'Zfca '9! hy'fbU''Gi ddcfhfU'cb[ 'k ]h\ 'Ubmch\Yf'fy'Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj ]XYbW' hc'gi ddcfhmci f'Y! hy'bg]cb'Udd']WUh]cb"'=Zmci 'Ya U]''9! hy'fbU''Gi ddcfhmci 'k ]'`
Ui hca Uh]WJ'`mfYW']j Y'U'h]W\_Yhbi a VYfZ'Vi h]Zmci 'hY'Yd\cbY'mci 'k ]``bYYX'hc'gdYW]Z]WJ'`mUg\_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj ]XYg'i dXUhy'g'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hyf''

; YbYfU`mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\WJ``mij ]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k ]h\U`hYfbUh]j Y'gi Va ]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va ]hUgg][ ba Ybha ccXiY

## 5 WUXYa ]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga `]g`i g]b[ 'h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX'dfYgYbh]b[ 'h\Ya 'Ug`mci f`ck b"'=h\Wb'hU\_Y`a Ubm Zcfa qžZfca 'XY`]VYfUhY'W\YUh|b[ 'hc`UWW]XYbhU`mWcdm]b[ 'Zfca 'U'gci fW'k ]h\ci h'UW\_bck 'YX[ Ya Ybh'

IBGK [fcidgdu[]Uf]ga ]bhch\YZc``ck]b[WUhY[cf]Yg.

7 cdm]b[. `I g]b[ 'h\Y'gUa Y'cf'j Yfmg]a ]`Uf'k cfXg'hc'h\Y'cf][ ]bU`'hYl hcf']XYU'k ]h\ci hUW\_bck `YX[ ]b[ 'h\Y gci fW' cf'i g]b[ 'ei chUh]cb'a Uf\_g"'H\]g']bWi XYg'Wcdm]b[ 'a UhYf]U`gž']XYUg'cf'WcbW'dhg'Zfca 'U'Vcc\_ž'Ufh]WYž fYdcfhcf'ch\Yf'k f]hhYb XcW a Ybhz'dfYgYbhUh]cbž'Wca dcg]h]cbž'Uffk cf\_ž'XYg][ bž'XfUk ]b[ ž'WfW ]hfmž'Wca di hYf dfc[ fUa 'cf'gcZk UfYž'k YVg]hYž']bhYfbYhz'ch\Yf'Y`YWfcb]WfYgci fW'z'cf'Ubch\Yf'dYfgcbfg'Ugg][ ba Ybhk ]h\ci h Uddfcdf]UhY'UW\_bck `YX[ Ya Ybh''

**buddfcdf]UhY dufud\fug]b**[...7\ub[]b[...12\k...k.cfXg.UbX.d\fugYg.k.\]Y a cghmfYhJ]b]b[...h\Y.cf][]bU`]bZcfa UhJcbžghfi Wh fY UbX#cfdfc[fYgg]cb.cZ]XYUg.cZh\Y.cf][]bU`k]h\ci hUW\_bck `YX[Ya Ybh'.h\]g.U`gc Udd`]Yg.]b.dfYgYbhJhJcbg.k.\YfY.gca YcbY.dUfUd\fUgYg.Ubch\Yf'g.]XYUg.cf.k.cfXg.k.]h\ci hWfYX]h\UbX.hc d]YWJb[...hc[Yh\Yf.ei chYg.UbX.dUfUd\fUgYg.]bhc.U.bYk.k.\c`Yžk]h\ci h\Uddfcdf]UhY.fYZfYbWJb[...

7 c``i g]cb. K cf\_]b[[kk]jhhcbhhfgfgiVidhighghg]bc[Zb\Z'hh\dfk'dg\_UUbyfGd\fgd\fgd\x] j\ji]b\Xk' cf\_k'] c``i zf]ca'U`gc ]bWi XYg'dfcj ]X]b['mci f'k cf\_'hc'Ubch\Yf'ghi XYbhZcf'h\Y'di fdcgY'cZh\Ya 'd`U[]Uf]g]b['zdUm]b['Ubch\Yf'ghi XYbhZcf'h\Y'di fdcgY'cZh\Ya 'd`U[]Uf]g]b['zdUm]b['Ubch\Yf'ghi XYbhZcf'h\Y'di fdcgY'cZh\Ya 'd`U[]Uf]g]b['zdUm]b['Ubch\Yf'dYfgcb'g'UWUXYa]Wk cf\_'UbX'Wcdm]b['bz'cZYf]b['hc'Wca d`YhY'Ubch\Yf'dYfgcb'g'k cf\_'cf'gYY\_]b['dUma YbhZcf'Wca d`Yh]b['UWUXYa]Wk cf\_''

**buddfcdf]uhr Wjhuhjcb.** 7 jhjb[ 'gci fwrg'k \]ww\uj Y'bchVYYb'fYUXžk jh\ci huw\_bck `YX[ ]b[ 'h\Y "gYwbbXufm" gci fwr Zfca 'k \]ww\\_bck `YX[ Y'cZh\Ya \ug'VYYb'cVhJ]bYX"

7 cffYWhfYZY& W Yj \$

5 WUXYa]W±bZcfa Uhjcb