

#### 8]Y'VY`]YVhYghYb'GdfUWXYbž'X]Y'Ui Z'XYf [UbnYb'K Y`h'[Y`Yfbh'k YfXYb

6Y] '5h'Ug' Ua d'Ua d'Gcchg'\UVYb'k] f'8i c`]b[c']b'ZUgh'U``Yb i bgYfYb'GdfUW\VY]hfÀ[Yb'Yfk À\bhž'gY]Yb'Yg'9I dYfhYbh]ddg ni a '9f`YfbYb'a Y\fYfYf'GdfUW\Yb'cXYf'Hcc`g'ZØf'ZUi `Y@YfbYf''K]f'g]bX'[fc»Y': Ubg'XYf'5dd'i bX'k UfYb'ZUgn]b]Yfh j cb'XYb'Øb[ghYb'9f\_Ybbhb]ggYb'ni 'XYb'VY`]YVhYghYb GdfUW\Ybž'X]Y'k Y`hk Y]h'[Y`Yfbh'k YfXYb''8 Ug'HYUa '\Uh']a@Ui ZY'j cb'XfY]'A cbUhYb'8 UhYb'Ui g'U``Yb'@ÀbXYfb'XYf'K Y`h[Yg]W\hYhž'i a 'X]Y'VY`]YVhYghYb'GdfUW\Yb'ni ']XYbh]Z]n]YfYbž X]Y'j cb'gY]bYb'%&\$'A]``]cbYb'6Ybi hnYfb'[Y'Yfbh'k YfXYb'' 8]Y'9f[YVb]ggY'g]bX'ZUgn]b]YfYbX'''6Yj cf'k]f'i bg'X]Y ]bhYfYggUbhYghYb'9f[YVb]ggY'UbgY\Ybž'gc``hYb'k]f Yfk À\bYbž'XUgg'8i c`]b[c'XYfnY]h'%-'GdfUW\Yb'UbV]YhYhž j cb'XYbYb'b]W\h'U``Y']b'/ Ua d\Y\``]d/

8 UgʻHYUa `\Uhʻ]a '@Ui ZYʻj cbʻXfY]`A cbUhYbʻ8 UhYbʻUi gʻU``Yb @AbXYfb`XYfʻK Y`hʻ[ Yg]W\hYhžʻi a 'X]Y`VY`]YVhYghYbʻGdfUW\Ybʻni ]XYbh]Z]n]YfYbžʻX]Yʻj cbʻgY]bYbʻ%&\$`A]``]cbYbʻ6Ybi hnYfbʻ[ Y`Yfbh k YfXYb"`8]Yʻ9f[ YVb]ggYʻg]bX`ZUgn]b]YfYbX"

6Yj cf'k ]f'i bg'X]Y']bhYfYggUbhYghYb'9f[YVb]ggY'UbgY\Ybž'gc``hYbk ]f'Yfk À\bYbž'XUgg'8i c`]b[c'XYfnY]h'%- 'GdfUW\Yb'UbV]YhYhž'j cb XYbYb'b]W\h'U``Y']b''YXY'UbXYfY'GdfUW\Y'ØVYfgYhnVUf'g]bX"'5`g gc`W\Yg'[]Vh'Yg'Y]bY'[Yk]ggY'bUhØf`]W\Y'JYfnYffi b[']b'XYb'8UhYbž

#### 9b[`]gW\']gh'a ]h'5VghUbX'X]Y'VY`]YVhYghY GdfUW\Y

9b[`]gW\']gh']b`XfY]a U``gc'j ]Y`Yb`@\bXYfb`X]Y`GdfUW\Y`YfghYf`K U\`k]Y`X]Y`nk Y]hVY`]YVhYghY`GdfUW\Y"`9b[`]gW\']gh'Y]bY`XYf`VY]XYb
VY`]YVhYghYb`GdfUW\Yb']b`nk Y]`8f]hhY`b`U``Yf`@\bXYf`i bX`k]fXž
ØVYf`U``Y`@\bXYf`ni gUa a Yb[YZUgghžj cb')'`ı `U``Yf`8i c`]b[c!
6Ybi hnYf`[Y`Yfbh"

'U`h1 ? UfhY 'XYf'VY`]YVhYghYb 'GdfUWXYb 28ic`]b[c

#### : fUbnÒg]gW\`]gh`X]Y`nk Y]hVY`]YVhYghY GdfUW\Y

: fUbnOg]gW ']gh'Ui g'nk Y]'DYfgdY\_h]j Yb'X]Y'nk Y]hVY`]YVhYghY GdfUW\Y"

- 9g']gh'X]Y'nk Y]hVY`]YVhYghY'GdfUWXY'YfghYf'K U\`'fl)
   @AbXYf']a 'JYf[`Y]WX'ni '9b[`]gWX'a ]h'%%\* Ł
- $9g^{-1}gh^{-1}X^{-1}Y^{-1}$

'U`h1 28ic`]b[c

8]Yg'VYghÀh][h'i bgYfY'6Y\Ui dhi b[ž'XUgg': fUbnÒg]gW\'X]Y'VYghYGdfUW\Y'ni a '@YfbYb'ZØf'X]Y'Yb][Yb']ghž'X]Y'VYfY]hg'9b[`]gW\gdfYW\Yb"'9g'gc``hY''YXcW\'[YgU[h'k YfXYbž'XUgg': fUbnÒg]gW\']bYb[Yf'?cb\_i ffYbn'ni 'GdUb]gW\'ghY\h"'CVk c\``Yg']b'), 'I 'U``Yf@\AbXYf'Y]bY'XYf'nk Y]'VY`]YVhYghYb'GdfUW\Yb']ghž'j Yf[`]W\Yb'a]hGdUb]gW\']b'(\*'I ž'`YfbYb'bi f'%%'I 'U``Yf'8i c`]b[c!6Ybi hnYf: fUbnÒg]gW\'z'j Yf[`]W\Yb'a]h'%+'I ž'X]Y'GdUb]gW\'`YfbYb''

GWk YX]gWk ']gh'X]Y 'VY`]YVhYghY Ghi X]YbgdfUWkY ']b 'GWk YXYb 8]YgY'5bca U`]Y']gh']b'XYf'cV][Yb'?UfhY'g]W\Yf`]W\ W\UfU\_hYf]gh]gW\"'G]bX'X]Y'G\_UbX]bUj ]Yf'gW\`]Y»`]W\'b]W\h gdfUW\VY[UVh3

8i c`]b[c`\Uh'Y]bY'9f\_`Àfi b['XUZØfž'k Ufi a '&+'i 'U``Yf'6Ybi hnYf']b GWk XYXYb'GWk YX]gWk'`YfbYb.' 8]Y'9]bk UbXYfi b['bUWk GWk YXYb']gh']b'XYb'`YhnhYb'\\\fYb'gdfi b[\UZh'Ub[Ygh]Y[Yb. 9]bYf'j cb'gYWkg'gWk YX]gWkYb'9]bk c\bYfb']a '\\\f'&\\$%) 'k i fXY Ui »Yf\U`V'GWk YXYbg'[YVcfYb"'8]Y'Ua 'gWkbY``ghYb'k UWkgYbXYb]a '5i g`UbX'[YVcfYbYb'; fi ddYb'ghUa a Yb'Ui g'Gmf]Yb'i bX 5Z[\Ub]ghUb\(\fi'k\) Ug'Y]bYb'\Øb[ghYb'5bgh]Y['XYf: `ØWkh`]b[gVYj O`\_Yfi b['k]XYfgd]Y[Y`h"

## 9b[`]gW\']gh'X]Y'nk Y]hVY`]YVhYghY Ghi X]YbgdfUW\Y']b'XYb'l G5

 $9b[\ ]gW\ ]ghX]Y\ nk\ Y]hVY\ ]YVhYghY\ GdfUWXY \ ZX]Y\ ]b\ XYb\ I\ G5\ [\ Y\ Yfbh\ k\ ]fX\ fk\% i\ U\ Yf\ 6Ybi\ hnYft''\ Y\ b\ ]WX\ k\ ]Y\ ]b\ GWX\ k\ YXYb\ _Ubb\ X]Yg$  Xi\ fWX\ 9]bk\ UbXYfi\ b[\ Yf\_\Afh'k\ YfXYb''

8 Yf'9]bk UbXYfYfUbhY]`'Ub'XYf'[YgUa hYb'l G!6Yj Ò`\_Yfi b[ ``]Y[h VY]'ØVYf'%' 'ı 'i bX'ØVYf'&) 'A]``]cbYb'A YbgW\Yb'[YVYb'Ubžk Yb][Yf'U`g' gY\f'[i h '9b[`]gW\'ni 'gdfYW\Ybž'k Ug'k U\fgW\Y]b`]W\Yf\_`Àfhž'k Ufi a 'gc'j ]Y`Y'8i c`]b[c'j Yfk YbXYbž'i a '9b[`]gW\'ni `YfbYb"

### 9]b][Y'9]b\Y]a ]gW\Y'gdfYW\Yb']\fY 5a hggdfUW\Y'b]W\h

5V[YgY\Yb'jcb'XYf'9]bk UbXYfib['\_ObbYb'Y]b][Y'9]b\Y]a]gW\Y]\fY'5a hggdfUW\Y'b]W\higdfYW\Yb"'\D'\DX]Yb'nia'6Y]gd]Y`']gh
9b[`]gW\Y]bY'cZZ]n]Y``Y'GdfUW\Y'fhigUaaYb'a]h'<]bX]\EZ'UVYf'bif
%\$'\L'XYf'\DXYf'gdfYW\Yb'YgZ'k Ug'Yf\_`Afhz'k Ufia'Yg'X]Y
VY`]YVhYghY'GdfUW\Y']ghz'X]Y'[Y`Yfbh'k]fX"

 $5\g'Y\Ya\U'][Y'dcfhi []Yg]gWXY'?c`cb]Yb'VY\U`hYb'5b[c`U'i bX A cgUa V]_'Dcfhi []Yg]gWX'U`g'Y]bn][Y'5a hggdfUWXY'VY]"'HfchnXYa$ 

gdfYWXYb'(\$'i 'Vnk'')\$'i 'XYf'9]b\Y]a ]gWXYb'X]Y'GdfUWXY''8Ua ]h ]gh'Yg'bUWX'9b[`]gWX'X]Y'nk Y]hVY`]YVhYghY'@YfbgdfUWXYž'k Ug k ]YXYfi a 'J cfUi ggYhni b['ZØf'XUg'9f`YfbYb'j cb'Dcfhi [ ]Yg]gWX']gh''

## =a ; Y[YbgUhn'ni gY]bYb'BUW\VUfb``Yfbh 5f[Ybh]b]Yb'=hU`]Yb]gW\

#U`]Yb]gW\`]gh'X]Y`nk Y]hVY`]YVhYghY`GdfUW\Yž'X]Y`]b`5f[Ybh]b]Yb
[Y`Yfbh'k]fX`fbUW\`9b[`]gW\\L''8]Yg`]gh'Y]bY`5fh'5bca U`]Yž'XU
#U`]Yb]gW\`b]f[YbXk c`gcbgh'Ui Z'XYa '?cbh]bYbh'i bhYf'XYb`YfghYb
VY]XYb`YfgW\Y]bh''

8 Yf'; fi bX'k ]fX'\_`Ufž'k Ybb'a Ub'YfZÀ\fhž'XUgg'\*' i 'XYf
5f[Ybh]b]Yf'Ui Z[fi bX'XYf'[fc»Yb'9]bk UbXYfi b[gk Y``Yb']a '%-"
i bX'&\$"'\\J\f\i bXYfh']hU`]Yb]gW\Yg'6`i h'\UVYb"

# =a '; Y[YbgUhn'ni 'gY]bYb'BUW\VUfb'`Yfbh ; i mUbU'\_Y]b'9b[`]gW\

a ; Y[YbgUhn'ni a 'FYgh'GØXUa Yf]\_Ug']gh'; i mUbU'b]W\h'XUg 9b[`]gW\`YfbYb'U`g'Y]bY'XYf'VY]XYb'VYghYb'K U\`a Ò[`]W\\_Y]hYbž gcbXYfb'YbhgW\Y]XYh'g]W\'ghUhhXYggYb'ZØf'GdUb]gW\'i bX Dcfhi [ ]Yq]gW\"

#### 8 Yi hgWX ']gh'X]Y 'VY`]Y VhYghY 'Ghi X]Y b gd f U WX Y |b 'B Ua |V|U

: Øf`X]YYb][Ybž`X]Y`a]h`XYf`?c`cb]U`[YgWX]WXhY`BUa]V]Ug`b]WXh jYfhfUi h`g]bXž`aU[`Yg`ØVYffUgWXYbž`XUgg`8Yi hgWX`X]Y`VY`]YVhYghY GdfUWXY`]ghž`X]Y`Xcfh`[Y`Yfbh`k]fX"

`U`h1 2; Ya Y]bZfY]`\dagger BUa ]V]U`]gh`8Yi hgW\`X]Y`VY`]YVhYghY Ghi X]YbgdfUW\Y

±b BUa ]V]U ]gh 8 Yi hgW X]Y VY`]Y VhYghY Ghi X]Y bgd fUW Y fb]`X. Di V`]W8 ca U]bŁ

HUhgàWX`]WX`]gh`Yg`k U\fgWXY]b`]WX`Y]b`9f[YVb]g`XYf`XYi hgWXYb < YffgWXUZhži bhYf`X]Y`BUa ]V]U`%, , ( 'Z]Y`"`8Yi hgWX`k Uf`V]g`%--\$ Y]bY`XYf`5a hggdfUWXYb`XYg`@UbXYg`i bX`k]fX`XYfnY]h'j cb'' &`i XYf`kY]»Yb`6Yj Ò`\_Yfi b[`BUa]V]Ug`[YgdfcWXYb"

#### 6Ub[`UXYgW\``Yfbh'\_Y]b'9b[`]gW\

 $GdUb]gWX `]gh'X]Y `VY`]YVhYghY `GdfUWX Yž'X]Y `]b `6Ub[``UXYgWX `[ Y`Yfbhk ]fXž'[YZc`[h'jcb': fUbnÒg]gWX "`9g'gWXY]bh'gY`hgUa ž'XUgg'9b[`]gWX b]WXh'VY`]YVhYf']gh'' @]Y[h'XUg'Ub'XYb'6Ya Ø\ib[Yb'XYf VUb[`UXYgWX]gWXYb': Ø\fYfž'X]Y `9b[`AbXYf'bUWX'XYf IbUV\Ab[][_Y]h'kYb][Yf'ni 'VYhcbYb3'? ObbhY'Yg'Ub'Y]bYa 'fY`Uh]ja]bXYfkYfh][Yb'6Yb[U`]!9b[`]gWX'8ic`]b[c!?ifg'`]Y[Yb3'<UVYb6Yb[U`Yb'Y]bY'5ZZ]b]hAh'ni 'GdUb]Ybž'jcb'XYf'k]f'bcWX'b]WXhgk]ggYb3'K]f'ZfYiYb'ibg'ØVYf': U_hYb'cXYf'H\Ycf]Ybž'X]Y'nif?`Afib['VY]hfU[Yb'_ObbYb'$ 

@Y]hV]`X.`8fYUagh]aY

## 6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY