

# $5XY^{'}J^{'}b^{'}A^{'}ØbW^{'}Yb^{'}8Ug^{'}[Y^{'}Y^{'}]a^{'}@Y^{'}Yb^{'}XYf^{'}Dcd!=_cbY^{'}nk^{'}gW^{'}Yb^{'}XYb^{'}?cbnYfhYb^{'}$

5XY`Y`gW\kY][h`]b`A ØbW\Yb.`?Y]b`?cbhU\_h`ni`: Ubgž`\_Y]bY 5i Zhf]hhY"`K c`j YfghYW\_h`g]W\`XYf`Gi dYfghUf`nk ]gW\Yb`]\fYb ?cbnYfhYb3

± XYf'VUmYf]gWXYb'@UbXYg\Ui dhghUXh']gh'X]Y'K Y`h\_`UggY!GÀb[Yf]b 5XY`Y'Y]b'VY`]YVhYg'; YgdfÀWXgh\Ya Už'YXcWX'V`Y]Vh'g]Y'ZØf'j]Y`Y : Ubg'Y]b'FÀhgY`"KÀ\fYbX']\fYg'U\_hi Y``Yb'5i ZYbh\U`hg']b'A ØbWXYb]gh'g]Y'\_Ui a 'g]WXhVUfž'k Ug': fU[Yb'ni ']\fYf'8]g\_fYh]cb'i bX'XYa I a [Ub['a]h'6YfØ\ah\Y]hYb'Ui Zk]fZh"

## 8]YIbg]W\hVUf\_Y]hXYgGhUfg

5XY`Y`]gh'a ca YbhUb`]b`A ØbWXYb`i bX`[]Vh'?cbnYfhY`]b`XYf
Hcb<U``Y`]b`F]Ya ž'XcWX`UVgY]hg`XYf`6Ø\bYbUi Zhf]hhY`ZY\`h`YXY
Gdi f'j cb`]\f''K À\fYbX`UbXYfY`?Øbgh`Yfž'k]Y`A]WXUY``\JW\_gcb
cXYf`9X`G\YYfUbž'[YfbY`NY]h'a]h']\fYb`: Ubg`j YfVf]b[Ybž'hfY]Vh
g]WX`5XY`Y`b]WXh'i bhYf`XYb`A YbgWXYba UggYb`\Yfi a "`\=\fY
5Vk YgYb\Y]h'j cb``OZZYbh`]WXYb`HfYZZdi b\_hYb`k]fX`j cb`j ]Y`Yb`U`g
Y][YbUfh][`Ya dZ bXYbž'XU`g]Y`a]h']\fYa `Gh]``i bX`]\fYf`A i g]\_`gc
Yb[`j Yfk cVYb`]gh''\\D`Y]bYa `ghUf\_`Ui Z\_ca a YbXYb`HfYbX`XYf
Dfca]bYbhYbž'5bcbma]h\Ah`ni `k U\fYbž'\_\ObbhY`X]Yg`X]Y`bYi Y`Bcfa
ZØf`j ]Y`Y`GhUfg`XUfghY``Yb''

## $8]Y: fU[Y'bUWX'5XY`Yg'5iZYbh\U`hgcfh$

 $6Yf]WXhYb^niZc^[Y^kc\bh^X]Y^Vf]h]gWXY^GAb[Yf]b^n]a^nYl_^ig]jYb < chY^FcgYkccX^n]b^nA ØbWXYb^n5b[YghY^hY^XYg^<chY^g^VYf]WXhYb jcb^n_ifnYb^6Y[Y[bib[Ybž^VY]^XYbYb^5XY^Y^UbgWXY]bYbX^n:Ubg nik]b_hYž^XcWX^6YkY]gY^n]b^ncfa^jcb^nchcg^ZY\^Yb^n;YfØWXhY$ 

VYgU[Ybž:XUgg:g]Y:Ua :GcbbhU[:a]h:Y]bYa :[YdUbnYfhYb:AYfWXYg!:U\fnYi[:XUg:;YVÀiXY:jYf:UggYb:\UVYb:gc::"K]Y:[YbUi::5XY:Y:]bXYf:GhUXh:dfÀgYbh:]ghž:V:Y]Vh:ib\_:Uf":9]b:Y\Ya U:][YfDYfgcbYbgWX@hnYf:Yf\_:\Afhž:XUgg:g]Y:XifWXUig:]b\_c[b]hcibhYfk:Y[g:gY]b:\_\ObbhY::[YhUfbh:a]h:GcbbYbVf]:`Y:ibX:6UgYVU::!7Udž:\_\ObbhY:g]Y:ibVYaYf\_h:ibhYf:X]Y:@YihY:a]gWXYb"

## 8Yb GWXi hn XYf Df]j Uhgd \ ÀfY k U\fYb

8]Y'6YXYi hi b['j cb'Df]j Uhgd\ÀfY'i bX'G]WXYf\Y]h']gh'ZØf\cW\_UfÀh][Y'? Øbgh'Yf'k]Y'5XY'Y'j cb'YbhgWXY]XYbXYf'6YXYi hi b["9g']gh'VY\_Ubbhž'XUgg'j]Y\Y'6YfØ\a h\Y]hYb'gdYn]Y\Y'Y'HYWXb]\_YbUbk YbXYbži a 'i bVYa Yf\_h'ni 'V'Y]VYb"'Gc'\_ÒbbhY'5XY'YVY]gd]Y`gk Y]gY'XYb'Hf]W\_'bi hnYbž'[UbnY'FYghUi fUbhg'ZØf'Y]b][YGhi bXYb'ni 'Vi WXYbži a 'U'\Y]bY'ni 'gdY]gYb"'8]YgY'A U» bU\a Ybg]bX'b]WXh'bi f'ZØf']\fY'G]WXYf\Y]h'k]WXh][ž'gcbXYfb'nY][Yb'Ui WXžk]Y']b'XYf'\Yi h][Yb'NY]h'XYf'I a [Ub['a]h'6YfØ\a h\Y]hYb'bYi[YghU`hYh'k]fXži a 'ÒZZYbh`]WXY'<mghYf]Y'i bX'i bYfk ØbgWXhY

## 9]b HfYbX ni f 5bcbma ]hÀh3

 $8 ] YgYf'Bchk YbX][\_Y]hž'Ubcbma 'ni 'V`Y]VYbž'\_ObbhY'g]Wk'Ui Wk'Ui ZUbXYfY'Dfca ]bYbhY'Ui gk ]f_Ybž'X]Y'j ]Y``Y]WkhY]bYb'A\b`]WkYb KY['Y]bgWk`U[Yb'i bX'XUa ]h'XYb'9fk Ufhi b[Yb'XYf'^2 ZZYbh`]Wk_Y]h i bX'XYf'A YX]Yb'VY[Y[bYb'']=a a Yf'a Y\f'GhUfg'gWkY]bYb; Y\Y]a b]g_fAa YfY]'ni 'VYj cfni [Ybž'i a 'g]Wk'j cf'XYa '8 fi W_ž ghAbX][']a 'F Ua dYb`]Wkh'ghY\Yb'ni 'a ØggYbž'ni 'gWk ØhnYb'''5XY`Yg fi \][Y'5fhž'Ui g'XYa 'OZZYbh`]WkYb'@YVYb'ni 'j YfgWkk]bXYbž'_Ubb U`g'Y]b'6Y]qd]Y`'ZØf'X]YgY'k UWkgYbXY'HYbXYbn'[YgY\Yb'k YfXYb''$ 

## GWX`i ggZc`[Yfi b[

 $C\ Vk\ c\ ``:\ Ubg'j\ cb'5XY`Y'bUWX'XYf'GÅb[\ Yf]b'gi\ WXYbž'V`Y]Vh'g]Y'Y]b \\ D\ Ubhca']b'A\ \emptyset bWXYb''' \Rightarrow fY'[\ Y\ Y]a\ b]gj\ c``Y'DfÅgYbn'_ObbhY'Y]b \\ NY]WXYb'Z\emptysetf'Y]bYb'bYi\ Yb'HfYbX'i\ bhYf'Dfca\ ]bYbhYb'gY]bž'XYb \\ 8\ fi\ W_'XYg'Fi\ \ a\ g'Xi\ fWX'[\ Yn]Y`hY'5bcbma\ ]hÅh'UVni `Y\ bYb''$ 

K  $\lambda fybX'X]Y'GhUXh'Ui Z'X]Y'b\lambdaWXghY'DYfZcfa UbWY'k UfhYhz'V'Y]VhX]Y': fU[Y.'=gh'XUg'XYf'bYi Y'K Y[z'k]Y'GhUfg'a]h']\fYa'Fi\aia [Y\Yb3$ 

8 Y hU]`q

6Ygi WXYb G]Y i bg Ui Z b!U[ "XY