

## JUb 'xifbU'K cWXY'%). '8Yf'HUf\_]bY

I bgYfY 'Hci f'Xi fW 'HUga Ub]Yb 'k Uf'b]W h'X]Y '\_cbj Ybh]cbY ``ghY" '9g k Uf'Ui W 'b]W h'XUg'dfU\_h]gW ghYž'a ]h'j ]Y `Yb '< ]b! 'i bX < YfVYk Y[i b[Yb 'Ui Z'XYf'[UbnYb '\degY` 'Ui Z[fi bX 'a Y\fYfYf 6Ygi W Yfž'K YhhYfi a gW k Øb[Y 'i bX 'Y]b 'dUUf'DUbbYb 'a ]h'XYf ?Ua YfUUi gfØghi b["'K]Y 'Ui W ']a a Yfž'Yg'k Uf'Ui Z'YXYb : U```Y]bY [fc» Ufh][Y : U\fhž'i bX']W 'k ØfXY ']a a Yf'bc W 'b]W hg'ÀbXYfb"

Gc ]gh Yg a Ub Wa U ž k Yb b a Ub i bh Yfk Y [g ]gh F Y ]g Yfc i h Y b Ab X Yfb g ] Wa i b X D `Ab Y g W Y ]h Yfb ž UV Yf k ]f `Af [Yfb ii bg b ] Wa h X Uf Ø V Yf " 5a '9 b X Y k ]f X `X Yf `G Wa Yh Yf `]b [g Y ZZ Y \_h ž X ] Y \_ `Y ]b Y b Ÿ b X Yfi b [Yb ž X ] Y k ]f 'j c f b Y \a Yb ž X ] Y 8 ca ]b c g h Y ]b Y `Ui Z Y ]b Y b j Ò ` `] [b Y i Yb K Y [g W ] W Yb "6 Y j c f `G ] Y `Y g k ]g g Y b ž g ]b X `G ] Y Ø V Yf Yh k Ug B Y i Yg [Yg h c `d Yfh ž \ UV Y b b Y i Y : f Y i b X Y [Yh f c ZZ Y b c X Y f Y ]b Y 9 f Z U \ f i b [ Ya U W h ž X ] Y g c b g h b ] Wa h d Ugg ] Yfh k Âf Y "8 ] Y A Yb g W Yb b Y ] [Yb b ] Wa h k ] f ` ] W X Uni ž X U f Ø V Y f b U W ni X Y b \_ Y b ž k ] Y g ] W ` \_ `Y ] b Y 9 b h g W Y ] X i b [Yb ] a ` [fc \* Yb `G W Ya U `X Y f `8 ] b [Y U i g k ] f \_ Y b ž i b X `Y g `] g h Z U g h i b a Ò [`] W ž X ] Y g Y b ` \_ `Y ] b Y b 9 h g W Y ] X i b [Yb T a g h À b X Y `ni ni g W X f Y ] V Y b " G h U h X Y g g Y b ` Z ] I ] Y f h

g]WX 'XYf'a YbgWX`]WXY`Ni ghUbX'i bVYk i ggh'Ui Z'XUg'BY[Uh]j Y/XUg A ]ggj YfghÀbXb]gž'XUgg'XYf'i fgdfØb[`]WXY'D`Ub'b]WXh'gc Zi b\_h]cb]Yfh'\UhhYž'k ]Y'k ]f'Yg'[Yd`Ubh'\UhhYb"

8 Ugʻ@YVYbʻ]bʻXYfʻ; Y[Ybk Ufhʻ\UhʻXYbʻ9ZZY\_hž'X]YgYʻ8 Yb\_k Y]gY ni fØW\_ni gYhnYb"ʻ9gʻ[Y\hʻXUfi a ž'a]hʻXYaʻGhfcaʻni `[Y\Ybʻi bX JYfÀbXYfi b[Ybʻi bXʻGdcbhUbY]hÀhʻUbni bY\aYb" U`h1 5 I GHF 5@-5 B'J 5 Bʻ@+ 9 H5 GA 5 B-9 B 2

# 8Yf'HUf\_]bY

GWX`]Y»`]WX`k Uf`Yg`ZØf`i bg`Ub`XYf`NY]hž'bUWX`HUf\_]bY`]b
HUga Ub]Yb`ni `ZU\fYb` `X]Y`[fÒ» hY`5i gXY\bi b[ `XYg`\_Ø\`Yb
hfcd]gWXYb`FY[Ybk U`XYg`]b`5i ghfU`]Yb`i bX`X]Y`nk Y]h[fÒ» hY`XYf
K Y`h"`C Vk c\``X]YgY`i b[`Ui V`]WX`fY]WXY`@UbXgWXUZh`<Y]a Uh`Y]bYf
J]Y`nU\``gY`hYbYfž'[YgWX@hnhYf`i bX`[YZÀ\fXYhYf': `cfU`i bX`: Ui bU
]ghž'k i fXY`g]Y`b]WX h`U`g`bUh]cbU`Yf`i bX`[`cVU`Yf`GWXUhn`UbYf\_Ubbh"

8 Ug: Y\`Yb`Y]bYfcZZ]n]Y``Yb`5i gk Y]gi b['U`g'B Uh]cbU`dUf\_'\Uh
XUni '[YZØ\fhž:XUgg'XYf'HUf\_]bY'VYXfc\h'k Uf'i bX'k Y]hYf\]b']gh"

; fc» Y'HY]`Y'XYg'FY[Ybk U`XYg'k i fXYb'VYfY]hg'ZØf'XYb

<c`nY]bgW\`U['i bX'XYb'6Yf[VUi 'UV[Y\c`nh"'5VYf'k]Y'G]Y

j ]Y``Y]W\h'VYfY]hg'k ]ggYbž'[]Vh'Yg'Y]bY'h]YZ'j Yfk i fnY`hY'?`i Zh']b'XYf

\_i `hi fY``Yb'9fn\\`i b[ž'X]Y'Y]bn][Ufh][']b'HUga Ub]Yb']gh"'8]Yg'\Uh
ni 'Y]bYa 'gW\fYW\_`]W\Yb'Ni gUa a Ybghc» 'Ub'j cfXYfghYf': fcbh
nk ]gW\Yb'5\_h]j ]ghYb'i bX'<c`nZ\\^`Yfb'[YZØ\fhž'XYf'gY]h'\J\fnY\bhYb
VYghY\h"'5`g'5i »YbghY\YbXYf']gh'Yg'k ]W\h][ž'X]Y'G]hi Uh]cb'Ui g
Y]bYf'i bj cfY]b[Ybca a YbYb'DYfgdY\_h]j Y'ni 'VYhfUW\hYb"'\J\\
j YfghY\Yž'XUgg'j ]Y`Y'HUga Ub]Yf'Ui Z'5V\c`ni b['i bX'6Yf[VUi
Ub[Yk]YgYb'g]bXž'i a ']\fY': Ua ]`]Yb'ni 'Yfb\\\\fYb'"'Gc'k]Y'Yg'\Yi hY
Ui gg]Y\hž'k ØfXYb'j ]Y`Y'`\AbX`]W\Y'; Ya Y]bXYb'c\bY'X]Y'\D\Xi ghf]Yž
X]Y'g]Y'ØVYf'K UggYf'\\\A`hž'Y]bZUW\'b]W\hYI]gh]YfYb''

9]bYgʻ]ghʻYXcW\ʻg]W\YfžʻY[U``Ui Zʻk Y`W\YfʻGY]hYʻXYgʻNUi bgʻG]Yʻg]W\VYZ]bXYbžʻa Ubʻa i ggʻYf\_YbbYbžʻXUggʻXUgʻZcfh[YgYhnhYʻ: À``Ybʻi bXFcXYbʻX]YgYfʻ@UbXgW\UZhʻb]W\h'bUW\\U`h][ʻ]gh"ʻ\W`V]bʻZYghʻXUj cb
ØVYfnYi [hžʻXUggʻX]Yʻ5bhk cfhʻ\_`UfʻgY]bʻk]fXžʻgcVU`XʻYa UbXʻX]Y
i fU`hYʻGW\Òb\Y]hʻXYgʻHUf\_]bYʻgY`VghʻYf`YVh`\Uh"`<c`nY]bgW\`U[ʻi bX

=bZfUghfi \_hi fYbhk ]W\_`i b[ 'g]bX'i bX'\_ObbYb'b]WXh'X]Y'Ni \_i bZh'gY]b"
5VYf'k ]Y'\_ObbYb'X]YgY'GhÀXhY'c\bY'g]Y'ØVYf`YVYb3

⇒W [`Ui VYž'XUgg'XYf'Hci f]ga i g'XUni 'VY]hfU[Yb'\_Ubbž'X]YgY @W\_Y'ni 'ZØ``Yb"

I bhYb ']gh'Y]b 'J ]XYc 'Ui g 'DUhU[ cb]Ybž'XUg'XYb 'U\_hi Y ``Yb '? Ua dZ i a fY]» hž'a ]h'XYa 'X]Y 'HUf\_]bY '\_cbZfcbh]Yfh'g]bX/'Y]b '[ Yd`UbhYf HU]`]b[ g'8 Ua 'XYg'WX]bYg]gWXYb '6Yf[ VUi i bhYfbY\a Ybg'A A; "

## 9f\_i bXi b[ BcfXhUga Ub]Ybg

6Yj cf'k ]f'ni a 'HUf\_]bY'Ui ZVfUW\Ybž'j YfVfUW\hYb'k ]f'Y]b'dUUf HU[Y'XUa]hž'Y]b][Y'XYf'K UggYfZÀ``Y'j cb'Bcfh\Yfb'HUgg]Y'ni Yf\_i bXYb"'BUW\Zc`[YbX'Y]b][Y'<][\`][\hg'a]h': chcg"

- DfYqhcb:: U``q
- :  $\emptyset \setminus fYf'ZA``h$
- C`XU\_Yf': U``g
- 8 ]d: U``gK ]f'a UW\hYb'i bg'Ui W\`Ui Z'XYb'K Y['ni a '@Yj Yb 7 Ubmcbži a 'XYb'A cbhU['a ]h'Y]bYa '5i gg]W\hgdi b\_h'VY]
   GcbbYbUi Z[ Ub['ni 'VY[ ]bbYb"'8]Yg'k Uf'V]g\Yf'Y]bYf
   a Y]bYf'@]YV`]b[ gUi gg]W\hgdi b\_hY']b'HUga Ub]Yb'i bX'Yf']gh
   i b[ `Ui V`]W\'ni [ Ab[ `]W\"
- 'U`h1 K 5GG9F: Y@@9' → BCF89B'H5GA5B → BG 2
- 'U`h1 K 5GG9F: Y@9' = A 'BCF89B'H5GA5B=9BG2
- 'U`h1 @9J9B'75BMCB!5| G6@=7? 'H5GA 5B=9B 2
- 'U`h1 @9J9B'G7<@ 7<H2

#### GhUb`YmibX'X]Y'Bigg

6Yj cf'k ]f'Ui Z'XYb'VYfØ\a hYb' HUf\_]bY'8f]j Y '\_Ua Ybž'\]Y`hYb'k ]f ]b'GhUb`Ym'Ubž'i a ' H\Y'Bi h 'ZØf'XYb'GcbbYbi bhYf[ Ub[ 'ni Yf\_`]a a Yb"'8]YgYg'Y]bn][ Ufh][ Y'[ Yc`c[ ]gW\Y'A Yf\_a U`']gh'Y]bY < Ui dhUhhfU\_h]cb']b'BcfXhUga Ub]Yb"'9g'g]bX'X]Y', VYffYghY'Y]bYg U`hYb'Ji`\_UbdZfcdZYbg'a ]h'Y]bYf'[ fc» Ybž'Z'UW\Yb'Gd]hnYž'X]Y'G]Y

Ybhk YXYf'a ]h'Y]bYa 'GYggY``]Zh'\]bUi ZZU\fYb'cXYf'ni ':i »
i a fi bXYb'\_ÒbbYb"

- 'U'h1 J5B'@= 9'GH5B@9MH5GA5B=9B 2
- 'U`h1 8 = 9 'B | GG'GH5 B @ 9 M 2

### $8 Yf HUf_]b Y! 5bhf]YV$

9bX`]W\`k Uf`Yg`Ub`XYf`NY]hž`]b`XYb`HUf\_]bY`ni``[Y\Yb"`8]YgY
FY[]cb`]gh'bchcf]gW\`k]`X`i bX`Yg`[]Vh'k]f\_`]W\`b]W\hij]Y`Y

\diz\Zcfa Uh]cbYb`cb`]bY`]b`6Yni [`Ui Z`K UbXYfi b[Yb`i bX
K UbXYfk Y[Y"`8Ug``]Y[h'XUfUbž'XUgg`Y]b`; fc\hy]``XUj cb`]b
ni \_\@bZh][Y`5V\c`ni b[g!`cXYf`9bhk]\W\_`i b[gncbYb`Z\hi``h"`5`gc
Ybhg\W\]YXYb`k]f'i bgž'XYb` HUf\_]bY`8f]j Y `ni 'bY\a Yb`i bX
Y]bZUW\``cgni ZU\fYb`i bX`ni 'j Yfgi \W\Ybž'Y]b][Y`g\W\\ObY`CfhY`i bX
j YfghY\W\_hY`\hi\k\Yb`ni 'Z]bXYbž'k c`k]f'\_cbbhYb"

K ]Y 'Yg ']b 'HUga Ub]Yb 'ni 'X]YgYf '\J\fYgnY]h'ØV `]W\ ']ghž 'k Uf 'XUg K YhhYf 'b]W\ h'Ui Z'i bgYfYf 'GY]hY ž'U `g 'k ]f 'i bg 'YbhgW\ ]Y XYb ž'i bg 'Ui Z XYb 'K Y[ 'ni a 'HUf\_]bY 'ni 'a UW\ Yb "FY[ Yb 'i bX 'K ]bX 'bU\a Yb 'k ]f 'YXc W\ 'U`g 'GY[ Ybž XYf 'Yg 'i bg 'Yfa Ò[ `]W\ hYž X]YgYb 'k ]`XYb 'C fh']b gY]bYa 'k U\fYb '9`Ya Ybh'ni 'Yf`YVYb" '< ]Yf 'g]bX 'Y]b 'dUUf': chcg'j cb i bgYfYf 'NY]hž U`g 'k ]f 'XYb 'HUf\_]bY 'Yf\_i bXYh'\UVYb"

 $K Y]hYfYgYb."8 Ug"HUf_]bY!@Ui~Zk~Yf_"~Y]b"j~c``ghAbX][~Yf'@Y]hZUXYb$ 

• 'U`h1 HFCK | HH5'5F7< 'H5GA 5B=9B 2

- 'U`h1 H5F? -B9'F9; 9BK 5@8'H5GA 5B-9B 2
- 'U`h1 H5F? \$9'F9; 9BK 5@8'H5GA 5B \$9B 2
- $U h1 ^2 GH@=7 < 9 E I C@@ H5GA 5B=9B 2$
- 'U'h1 : 9: @97? H9 'E | C @@'H5 GA 5 B = 9 B 2
- 'U'h1 J5B'H5GA5B=9B2
- 'U`h1 89F'H5F? B9'F9; 9BK 5@8'B'H5GA 5B B 2
- 'U`h1 8=9'H5F? = B9'H5GA 5B=9B 2
- 'U`h1 8 = 9 'H5F? = 19 2
- 'U`h1 F9: 9BK 5@8 'H5GA 5B=9B 2
- 'U`h1 F9: 9BK 5@86ŸLA9" B 'H5GA 5B = 9B 2
- 'U`h1 J5B!@969B'\B'\H5GA5B\PB 2

#### FUbX'XYf'K Y`h

K ]f'V`]YVYb'gW\`]Y»`]W\`Ub'XYf'?ØghYži a 'YXY'BUW\h'ni 'gW\`UZYb"
9]bYf'XYf'Gdchg'k Uf'XUg' 9X[Y'cZh\Y'K cf'X ž'Y]b'VYfØ\a hYf
Di b\_h'Ub'XYf'K Ygh\_ØghY'a ]h'Y]bYa 'hc``Yb'5i gg]W\hgdi b\_h''8Yf
K ]bX'k Uf'\YZh]['i bX'X]Y'K Y``Yb'gW\`i [Yb'a ]h'VÒgUfh][Yf'5Vg]W\h
Ub'X]Y'a ]h': `YW\hYb'VYXYW\_hYb': Y`gYb' 'Y]bY'h]YZY'9f]bbYfi b[
XUfUbž'XUgg'k]f'i bg'k]f\_`]W\`Ua' FUbX'XYf'K Y`h 'VYZUbXYb''
K Ybb'k]f'X]fY\_h'bUW\'K YghYb'gW\Ui Ybž'k ØfXY'g]W\'i bgYfY
G]W\h`]b]Y'k Y]h']b'XYb' < cf]ncbh'YfghfYW\_Yb'''K Ybb'i bgYfY'G]W\h
\_Y]bY'd\mg]gW\Y'; fYbnY'\AhhYž'k ØfXYb'k]f'gW\`]Y»`]W\'Y]bY
@UbXi b['Ub'XYf'Cgh\_ØghY'5f[Ybh]b]Ybg'fi bX'i a 'XYb'; `cVi g
YbhXYW\_Yb''

U`h1 89F'F5B8'89F'K 9@H 2

п

8YhU]`g