

>Y'Ybh_YnÅg A chj 1Wj g`Yj Å`



A chj 1Wj g`Yj Å`! ? YnXÅg

bÅa Yh

GY\f'[Y\fhYf' < Yffž

<]j Uu cgž ZÅfZ] VĚa nYhtž]ga YfYhYb`bÅj

fca 1b

Għa UY'8ca bž

GY\f'[Y\fhY': fu ž

<]j Uu cgžb] VĚa nYhtž]ga YfYhYb`bÅj

Għa UrB'8cUa bžž

GY\f'[Y\fhY'8La Yb`i bX' < YffYbž

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

Għa UY'8ca b#8cUa bžž

GY\f'[Y\fhY'8La Yb`i bX' < YffYbž

<]j Uu cgž hÖW VĚa nYht

Għa U]'8ca b]ž

GY\f'[Y\fhY'8La Yb`i bX' < YffYbž

<]j Uu cgž VĚa nYhtY_`bYj Y`Åg`bYa Y`hY`YgYb`]ga YfYhYb

ab`Uhb]UW]`YghY`bhYfYgUžž

GY\f'[Y\fhYf' < Yff`GWA]Xžž

<]j Uu cgž ZÅfZ] VĚa nYhtž]ga YfhibÅj

Għa UY'8ca bi`YDcdYgMžž

GY\f'[Y\fhY': fu`GWA]Xžž

<]j Uu cgžb] VĚa nYhtž`½Ugž]ga YfhibÅj

Għa UrB'8cUa bB'DcdYgMžž

GY\f'[Y\fhY': fu`GWA]Xžž

<]j Uu cgžb] VĚa nYhtžY[mYXØ ½`ı ž]ga YfhibÅj

Għa UrB'8ca b] cUfB'DcdYgMžž

GY\f'[Y\fhY': fu`GWA]Xžž

<]j Uu cgžb] VĚa nYhtž]ga YfhibÅj ž]ga YfYhYb`WgU ½] ½`Udch

Għa UrB'8cUa bB'DcdYgMžž

@]YVf' < Yff`GWA]Xžž

? Yj ÅgVÅ`]j Uu cgža ½ fÅ[YW`ı HUj Ub`Øn`Yh`_UdVg`Uh

8fU[B'5bXfY]DcdYgMžž

<]Yfa]hVYk YfVY`]W`a]W`i a`X]Y`GHY`Y`Ug`""žX]Y

G]Y]b`""j ca`""U g[YgMf]YVyb` \UWYb"

GħubXUFX`Zcfa i`UY[mc`mlub`½ ½ gUzUa YntbY_`U`]fXYhÅgÅhY[mÖg]½ VUb j U[ma U[Uh]bVUb` ½ hUx

8cfYgMgB`Ud`]WdYbhf i`dcgh`XY`""dcghXYWfYUa`i`U`U

Wbc h]b B`df]b`]bhYfa YX]i`""Ěb`XUfYXY`""

6Yni [bY\ a YbX`U Z`⇒fY'5bnY][Y`U Z`""gMfY]VY`]W

⇒bYb`""

GħubXUFX`Zcfa i`UY[mcb`]bY`\]fXYhYht i`½ ½ gUj ½ Ugnc`½ cf

J B`gM]i`Ěb`Y[B]i fB`W`Ubi b i`dcgUhdY`""

>Y Ybh_YnĀg A chj Wj g`Yj Ā`



6Yni [bY\ a YbX`U Z`≡fY`5 bnY][Y`]b`"j ca`" : UWFYZf]fY`U Ubi b i` `8j g`X]b`"X]b`XU U`XY`"
GHubXUF`Zcfa i` `U`UbbU_`Y a U[nUf`1/2]1/2U`Z`c[m\c` `hU`1/2hX`U`a Y[\]fXYh`h`1/2`1/2h

A]h[fc»Ya `≡bhYfYgg` \ UY`]W` ≡fY`5 bnY][Y`Z`f`X]Y Dcg]h]cb`Y]bYg`YfZ`U`fYbYb`"j]b`XYf`5 i` g[UY`"j ca`" [Y`YgYb`"
5a `V]h]hUbi b i` `8j g`df]b`WfY`V` HU]i` b`ca` `W` Yl`dYf]Yb`β`β`Xca`Yb]i` `β`bi` a`βfi` `U`di` V`]W`]Y`"W` a`UFY`]bhYfYg`"
GHubXUF`Zcfa i` `U`Y[mic`mub`1/2`1/2]U`Y`Ybh_YnĀg_cf`Z`U`a Y`mYhY[mia`U[Uh]bVUb`j`U[m`Yh]`UdVUb`1/2`1/2

5 i`ZXUg]j`cb`≡bYb`U`g[YgWf]YVYbY`GH`YbUb[Y`ch`VYk`YfVY`]W`a`]W` [YfbY`Z`k`Y`"j`"
7i`XYcg]V]h]bhYfYgUd`]WdYbfi`d`c`g]i` `XY`"g`U`g`U`V`b`W`f`g`"
GHubXUF`Zcfa i` `U`1/2`1/2]Y`Ybh_YnĀg_cf`

≡W`VYk`YfVY`a`]W`i`a` `X]Y`GH`Y`U`g`"j`"
5 `Xcf]`g`β`Ud`]WdYbfi`d`cn`]U`XY`"j`"
GHubXUF`Zcfa i` `U`1/2`1/2]Y`Ybh_YnĀg_cf`

8YfnY]h]UfVY]h`Y`]W`Z`f`"Ni` `a`Y]bYb`5`i`Z`U`WYb`n`A` `Yb`"j`"
a`b`df`YnYb`h`i` V`Yn`d`Yb`fi` ` `]`f`Y`g`d`c`b`g`U`]h`β`]Y`a`Y`Y`]b`W`X`"j`"
B`n]h`i` `a`cbXU`h`Ā`bh` \`U`gnb`1/2`1/2`U`Y`Yb`Y`[]`Zc[`U`_`cn]g]`1/2`Udch`Y`f`1/2]U`

A chj Wj g`Yj Ā`!`≡fj`Y`Āg`

bĀa`Yh` fca`1b`
8]Y`GH`Y`Y]g]i`Z`f`a`]W`j`cb` [fc»Ya `≡bhYfYggY`Z`k`Y`"j`"j`"
Gi`bh]bhYfYgU`h`β`a`c`X`g`d`V]U` `XY`U`W`g`id`c`g]i`XY`c`U`f`Y`W`"j`"
5`bbU`_`U`a`Y`[a`U[nUf`1/2]1/2U`Z`c[mia`]Ā`h`gn`Y`f`Y`b`Ā`X`U`h`U`X`c`h`i`a`i`b`_`1b`

;`YfbY`k`f`XY`]W`Z`f`G]Y`U`f`VY]h`b`zi`a`"j`"
5 `Xcf]`g`β`i` V`Yn`d`Yb`fi` `V`a`d`Ub`]U`8`j`g`"XY`c`U`f`Y`W`"j`"
5`bbU`_`U`a`Y`[a`U[nUf`1/2]1/2U`Z`c[mia`]Ā`h`gn`Y`f`Y`b`Ā`X`U`h`U`X`c`h`i`a`i`b`_`1b`

Ni` `a`Y]bYb`G`h`f`_`Yb`n`A` `Yb`"j`"
Di`b`V`Y`a`Y`Y`Z`c`f`h`Y`g`b`h`"j`"
5`Y`[Z`c`b`h`c`g`U`W`h` `U`X`c`b`g]1/2]U`X`Y`f`1/2]U`_`cf`

≡W`XYb`_`Y`z`ni` `a`Y]bYb`G`W`k`Ā`W`Yb`n`A` `Yb`"j`"j`"5`VYf`]W`U`f`VY]h`X`U`f`U`b`z`a`]W`]b`X]Y`g`Y`a` `6`Y`f`Y`]W`#`X]Y`g`Y`b` 6`Y`f`Y`]W`Y`b`ni` `j`Y`f`Y`g`Y`f`b`"
5`g`d]i`b`Y`V`β`g]b[i`fi` `#]b[i`f`Y`Y`a`Y`Y`di`b`V`g]U`W`#`di`b`V`Y`g]U`Y`Y`g`h`#`j`b`h`"j`"8`U`f`]b`h`Y`b`]cb`Y`n`g`β`Ē`a`Vi`b`β`β`Y`g`U`]U`W`g`#`U`W`g`h`Y`U`g`d`V`W`#`U`g`d`V`W`h`"
I`hU`1/2]U`[mYb[Y`g`Ā`Y]X`f`Y`Z`XY`U`bbU`_`a`i`hU`1/2]U`Z`c[m`gn`Y`f`Y`b`Ā`Y`n`Y`_`Yb`U`h`f`f`Ø`Y`h`_`Yb`Z`Y`^`X`b]

≡W`Y][bY`a`]W`Z`f`X]Y`g`Y`Dcg]h]cb`z`k`Y`"j`"j`"
5`Z`]d`Y`f`g`c`U`b`U`d`c`h`f`j`]h`β`d`Yb`fi` `U`W`g`h`d`c`g]i`XY`c`U`f`Y`W`"j`"
5`bbU`_`Y`f`1/2]U`Z`c[mia`]h` `j`U[m`i`f` `Y`Ybh_Yn`_`U`a`i`b`_`1b`

A chj Wj g`Yj Å

Nk Uf`_Ubb`jW`_Y]bY`9fZUfi b[`]b`j cfk Y]gYb/
XUZf`_UY`jW`j

ab`V] XUZUhi `i] Vb`bi `Ua `c`Yi dYf]Yb B`Ubhf]cUfB`Eb
Xca Yb]i `z`Ua `Uj i hchj]`j

5a]_cf`a Å[`bYa `Xc`[cni½`Uh`UXchihYfØ`YHbž`XY`gnYfYbÅX`VYa i HUhb]`Ua ½g`hYfØ`YH`_Yb`gnYfnYHhUdUgnU`UH]XU

A Y]bY`VYfi Z]WYb`E i U]Z`_U]cbYb`YbhdF`WYb`XYb
5 bZcfXYfi b[Yb`≠`fYgI` bhYfb`Y`a Ybg`

7 U]Z`VbF]`Y#5 V]`]Hb]Y`a Y`Y`dfcZ]g]cbUY`gY`Xcj`YXYg`WU]Z
dchf]j]hY`Wf]b`Ycf`W`a dUb]Y]`8j`g`

5 bbU`_U`Yf`½g`hYfØ`_c[`mia]`mYb`_ÅdYggÅ[`Y`_hYgnbY`_U`_Ua Ugg]`U`a i b`_½U

K Å`fYbX`a Y]bYf`NY]hUg`j`_UY`jW`a Y]bY
? Ybbh]ggY`]b`j YfVYggYfh`#Yfk Y]hYfh`#j Yfh]YZH`

DY`dYf]cUXU`W`Ua `i`V`UhW`j`za`]!`Ua
Êa Vi bB`B]hÊa Vc[B]h# H]bgW`bc`H]b`Y`Y`Ê`Xca Yb]i `j`

9[mUXchihYfØ`YHb`gnYfnYHhUdUgnU`UH`VYa i HU½g`U`Åg`U`_ÅdYggÅ[`Ö`_ÅdYggÅ[`Y`_#i X½g`gnYfnÅgÅfY

A Y]b`]: UWX`[`W]Yh]g`j`

8ca Yb]i `a`Yi`XY`V`Uh`B`YgY`j`

5 bbU`_`Yf`½g`hYfØ`_c[`mia`Y`m]`_`hYfØ`YHb`j` UbbU`_U`Y[`bU[`m`c`W`YfYXa`Å`bmY]X`z`hUdUgnU`UH]X

K Å`fYbX`a Y]bYf`5`fVY]hVY]`j`b`]W`]b`j`g`Y`f`
gUW`_i`bX][`[`Yk`cfXYb`j`

7i`h`c`U`Y`V`B`Ua` `i`V`Uh`Ê`B`Xca Yb]i `j`Ua`V`B`d`B`h`U
W`bc`H]b`Y`U]`U`bg`U`H`]`Ê`j`

9[mUXchihYfØ`YHb`gnYfnYHhUdUgnU`UH`VYa i HU½g`U`Åg`U`_ÅdYggÅ[`Ö`_ÅdYggÅ[`Y`_#i X½g`gnYfnÅgÅfY

5i`W`]b`g`f`Ygg][`Yb`G]h`U]cbYb`j`YfbUW`Å`gg][`Y]W`
b]W`h`Gcf[`ZU`hi`bX`];`YbU`][`_Y]h`8`U`Y`f`k`Å`fY`jW`
VYgcbXYfg[`YY][`bYh`Z`f`X]Y`5`bZcfXYfi`b[`Yb`U`g`j`

7`U`f`]`U`h`b`V`W`X`i`V`Y`n`Ê`h`f`!`i`b`f`]h`a`U`Y`f`h`b`i`b`Y[`]`Y`n`
U`W`f`U`Y`Y`U`a`i`b`V]`]`d`f`]b`i`fa`U`f`Y`V`b`g]X`Y`f`V`B`U`
d`Y`f`g`c`U`b`d`c`f`]j`]H`B`d`Y`b`f`i`d`c`g`i` `XY`j`

5 bbU`_Y`a`U[`m`U`f`½g`hYfØ`_c[`mia`]`Å`f`h`Y`b`b`Å` `i` `U`h`½`½g`U`U`_cf`½`V]`a`i`b`_U`hUdUgnU`UH]X`U`U`d`½`b`

5i`W`i`b`h`f`6`Y`U`g`h`b[`V`U`U`H`]W`_`c`Y`
E`i`U`]h`Å`gg`U`b`X`U`f`X`g`VY]`

7`U`f`]`V`W`X`i`V`Y`n`g`V`d`f`Y`g`i`b`Y`d`c`h`a`Y`b`]b`Y`
g`U`b`X`U`f`X`Y`Y`a`i`b`V]`Z`c`U`f`h`f`]X]W`H`

5 bbU`_Å`fn`Å`_Y`h`h`Å`g`Å`f`Y`z`_c[`m`_Å`d`Y`g`j`U[`mia`U[`U`g`][`Å`bm`Y`_Y`h`h`a`U`gn`h`_`Ö`f`bm`Y`n`Y`H`Y`b`X`c`[`c`nb`]

Gca`]h`k`Ø`f`X`Y`g]W`Z`f`a`]W`X]Y`;`Y`Y[`Y`b`Y]h`
Yf[`Y`Y`b`z`a`Y]b`Y`≠`h`Y`f`Y`g`Y`b`a`]h`X]Y`g`Y`f`D`c`g]h`c`b`n`i`
j`Y`f`_b`Ø`d`Z`Y`b`"

Df]b`i`fa`U`f`Y`U`_`U`j`Y`U`c`W`h]U`g`B`W`a`V]b`Xca`Yb]j]Y`a`Y`Y`X`Y`
]b`h`f`Y`g`W`U`W`g`h`c`V`X`Y`a`i`b`V`B`"

5 bbU`_V`Ya`i`HU½g`hYfØ`_c[`m`gn`Ya`Å`m`Y`g`Y`b`]g`b`U[`m`c`b`Å`f`X`Y`_`X`gn`U`a`i`b`_U]f`½`h`

≠`W`]b`h`Y`f`Y`gg]Y`f`Y`a`]W`[`U`b`n`V`Y`g`c`b`X`Y`f`g`Z`f`X]Y`g`Y`
G`h`Y`i`b`X`k`Ø`f`X`Y`a`]W`g`Y`f`Ø`Y`f`X]Y`;`Y`Y[`Y`b`Y]h`
Z`f`Y`Y`b`z`]b`X`Y`f`N`i`g`U`a`Y`b`U`f`V`Y]h`a`]h`≠`b`Y`b`a`Y]b`
K`]gg`Y`b`n`i`Y`f`k`Y]h`Y`f`b`"

5a`i`b`f`Y`U`]b`h`Y`f`Y`g`Ê`j`U`U`d`f`W]U`Z`c`U`f`h`Y`a`i`h`
c`d`c`f`h`b]H`U`Y`#`U`b`g`U`X`Y`U`Êa`]`B`f[]W`bc`H]b`Y`Y`i`V`B`b`X`
d`Y`b`f`i`W`a`d`U`b]U`8`j`g`

5 bbU`_V`Ya`i`HU½g`hYfØ`_c[`m`gn`Ya`Å`m`Y`g`Y`b`]g`b`U[`m`c`b`Å`f`X`Y`_`X`gn`U`a`i`b`_U]f`½`h`

A chj 1Wj g`Yj Å

K]Y'G]Y'a Y]bYa `VY[YZØ hYb@VYVbgU Z
Ybfb\A Yb`_ÖbbYbžYbhfdfVWYb'a Y]bY'9fZUfi b[
i bX'a Y]bY'E i U]Z]_U]cbYb`XYb`5 bZcfXYfi b[Yb
X]YgYf'Dcg]h]cb"

8i dßW/a `fY]YgY']X]b`7J !i `UJU UřZY dYf]Yb U']
W]Z]Vßf]Y'a YY'gY'dcf]j Yg]WVf]b Ycf'dcgi `i]"

5 n`ÖbÅ YfU'ncX`_] \Ub[gÖncn]gU`cf`Åg]UbbU`_ÄfnÅ`Y`HnÅg`ÄY`Z`c[ma Ybbm]fY]'`YbY`cn]X`Yn`U'a i b_U

A Y]bY'XYfnY]h[Y'Dcg]h]cb`Ug`""V]YH`ha]f`X]Y
; Y]Y[Yb\Y]ž]b`Y]bYa`_Ubgdfi Wg]c`Yb`i`a`Z`X`ni
UfVY]Hbžk`c`X]Y`Yb[Y`Ni`g]a`a`YbUfVY]ha]ha Y]bYb
?`c`Y[Yb`i`bj`Yfn]W]hUf`]gž`i`a`j`YfY]bVUfH':`f]g]Yb
Y]bni`_U`H`b`"

Dcgi `XY""cWdUh`U""a]!UcZf]hcdcfh b]H]YU`XY`U
`i`W]U`Ébf!i`b`a`YX]i`_gc`]M]Hb]Éb`W]fY`gY'di`bYU`UW]bhi`
dY`i`V]i`_É`W]W]dß`a`YX]i`_i`bXY`YgY`YgYb`]U`gß`i`V]Yn]
YZ]M]b]Éb`W]W]dß`dYb]f`i`_U`Z]W`Z]B`H]f`a`YbY`cf!`]a`]Hß`"

5 bbU`_`YÉf]g]U]Z`c[ma]`mYb`h`X]g]g]V]f]h]Z`Y`U`Y`Yb`Y[]`a`i`b`_`X`gc]f]b`

Ni`g`Än`]W`ni`_a`Y]bYb`J`YfU]b]k`cfh]W`_Y]H`b`U`g`""
_U]Y]W`_U`W`:_`Ä\][`_Y]H`b`]b`""`Yf`c`f`V`b`"

DY`_`3]b[`B`f`Yg]dcb]g]M]`]Hß`]Y'a`Y`Y`W`""`Z`Ua`_V]dß]h]XY
Ug]a`YbYU`_]`U]`]Hß`]`É`Xca`Yb]i`_`""`

9i`HfU`_ÄdYg]ÄgY`_#i`X]g]`YÉf]g]U]Z`Ua`_]`YhU`Y`Yb`Y[]`]`½`]gc`Xcb`_`YfYgn]Ø`_g]Y]f]h]h]Z`Y`_`Äg]Z`Ua`_]`_`b`Ya`_`Z`Y`h`Ä`h`YbØ`_ZØ[]`bY`_`
Ögg]Y`gnc]fc]g]ub`_U`Zc[]`_U`_cn]g]i`_dcn]É]Yi`_XXU`

A chj 1Wj g`Yj Å ! ? ÄdYggÄ[Y_#_ÄgngÄ[Y_ bÄa Yh

fca]b`

"""]g]ha Y]bY`A`i`H]Yf]g]d]U]W]Y`/XUfØVYf`\]b]U`g`g]d]f]W]W]Y`
]W`""`"

@]a`VU`a`YU`b]U]h]j`B`Yg]Y`""`Z`XUf`j`cf`V]Yg]V]Z`i`Yb]i`_`""`

5 n`U]b]t]b]m`Y`j`YX`_Äg]`L]h`Y[]`n`ÄV`Zc`_m`Ä`_cb]m]ub`_V]Ygn`Ä`h]b]m`Y`j`Y`_`YÉf]g]U]Z`

ÄW`j`YfZØ[Y`ØVYf`g]V]f`[]`i`H`Y`?`Yb]b]h]g]g]Y`]b`""`"

G]Hßd`3]b]Yg]V]Zc]Uf]H`V]b]Y`""`"

B`Ya`_U]b]t]b]m`Y`j`]ž`XY`a`U[]`U]g]gn]b]h]Yb`_V]Ygn`Ä`h]b]m`Y`j`Y`_`YÉf]g]U]Z`

ÄW`V]Yg]h]m]Y`gc`]XY`;`fi`bX`_Yb]b]h]g]g]Y`]b`""`"

7i`bcg]W]U]b]j`Y`_a`YX]i`_`""`"

B`Ya`_U]b]t]b]m`Y`j`]`_Äg`_Ön`Äd]gn]b]h]Yb`_V]Ygn`Ä`h]b]m`Y`j`Y`_`YÉf]g]U]Z`

ÄW`j`YfZØ[Y`ØVYf`""`_>]U]f]Y`9f]Z]U]fi`b[]`_U`g`""`"

5a`""`U]b]`XY`Yi`dYf]Yb`B`É`Xca`Yb]i`_`""`"

9[]`m]U]X]c]h]i]ž`h`Y]h`_H]f]Ø`Y]H]b`_`gn]Yfn]Y]h]i]U]d]U]gn]U]U]U]X`_`YÉf]g]U]Z`

ÄW`j`YfZØ[Y`ØVYf`[]`i`H`Y`?`Yb]b]h]g]g]Y`]b`""`"

G]i`b]h]i`b`i`h`]`n]U]h]cf`_Yi`dYf]`a`Yb]H]h]XY`""`"

G]n]½`_Éi`[]`ÄdYg]g]nc]Z]j`Yf`]g]a`Yf]Y]H`_`V]Ya`i`H]h]g]U]Z`

ÄW`XYb`_Y`z`X]U]gg]W`_ØVYf`X]Y[]`Y]Y[]`b]Y]H`?`ca`V]b]U]h]cb`
U`g`""`i`bX`""`j`YfZØ[]`Y`"

7`cb]g]X]Yf`_V]ß`XY`]b`_V]W]a`_V]b]U`]U`]X]Y]U`B`_Ébf`Y`""`_`]`""`"

5 bbU`_`YÉf]g]U]Z`c[ma Ybbm]fY`_]Y[]`mYbgÖncn]h]U`_U`_ÄdYg]g]Ä[]`Y]X`

>Y Ybh_ YnÅg A chj 1Wj g`Yj Å`



U g[YnY]WbYHY? ca a i b[_U]hcbgZÅ\[_Y]HYb 5V]]Hb]XYVta i b]WfYi W`YbHY"
-bZcfa 1Wj _'a Y[cgnh]U'Åg'V]ncbncg'Xc`[c_`Y'a U[nUF'ha]U'U_c`Å[½bU_

gM`i ggZc`[YfbXYg'8 Yb_Yb ; 3bX]fY'XYXi Wdj B"
6]ncbncg'Xc`[c_`a Y[ÅfhÅg'Åg'] ncf'g'Åg'\U'hÅ_cbmY'a U[nUF'ha]U

`c[]gMYg'8 Yb_Yb ; 3bX]fY`c[]MB"
5n_Y_ÅdnY_ÅgY_#ChYHY_`dfV]h'Åg'`'`h[cbXc`hia ĩ Xcbj Uĭ `gnYf_YgnhÅgYz`OggYfU_`gU

UbU nfh]gMY: Å\[_Y]HYb 5V]]Hb]`UbU]HjW"
? ÅngÅ[`U'Xc`[c_`fÅgn`YHYg'ÅfhÅ_Y_ÅgÅfY

\c\Y'gcn]U'Y? ca dYHYbn 5V]]Hb]]bhYf dYfgcbU'Y'Vi bY"
5`c`Å[½_U'j Uĭ '\U'hÅ_cbmY[n0tha _OXÅg'Åg'_ca a i b]_1Wj fUj Uĭ `ÅngÅ[

J Yf\UbX'i b[g[YgM]W 5V]]Hb] XYbY[c]WfY
A 1g] ½U'Uhc__U'j Uĭ '\U'hÅ_cbm]0h`YHY_Åg]'_ÅngÅ[`

DfÅgYbhU]hcbgZÅ\[_Y]HYb 5V]]Hb] ěb`UXfYgUfYU'Vb'fY'i b'di V]WUf["
5`_ÅngÅ[z`c[m]gc_`Ya VYf`Y` hti_ÅdYg'\U'hÅ_cbnub`Y` UXb]'U'h`ChYHY]h

A chj 1Wj g`Yj Å`! @Yn1E1g bÅa Yh

⇒W`V]b`cW'a chj]Yfhi bX`ZYi Y'a]W`U`ZX]Y
j]Y`gY]H[]YHÅH[_Y]hX]Y'a]f`Y]bY`Dcg]h]cb`]b`⇒fYa
l bhYfbY\`a Yb`V]YHYb`k`ØFY"
@Yn1E1g]½'a Y[]ga Åh`j`Yz`c[mia Ybbr]fY`gnYfYbÅ`Uj ½U'UhbU_`Xc`[cnb]

fca 1b
Gi bhZcUFHY'a chj Uhi]`Ubh]V]dYn'W`d`BWFY`UM]j]HUYU
j Uf]UHb`dY`WfY'i b'dcgh]b`Vta dUb]U'8j`g'a]!Uf`cZYf]!c"

⇒W`g\Y`X]Y`bYi Yb`5i z[UWyb`#X]YgY`Dcg]h]cb`U'g
k]`_ca a YbY`< YfU`gZcfXYfi b[žU`ZX]Y`]W`a]W`
ZYi Y"
@Yn1E1g]½'a Y[]ga Åh`j`Yz`c[mia Ybbr]fY`gnYfYbÅ`Uj ½U'UhbU_`Xc`[cnb]

J BX`bc]Y`gUfV]b]#UW]gh]dcgh]W`dY`c`dfcj`cWfY`dY`WfY`c
Ubh]V]dYn'W`d`BWFY"

⇒W`k`ØFY'a]W`g\Y`ØYf`X]Y'; Y`Y[Yb\Y]hZYi Ybž
k Y]hYfY`8`YHU]`g`ni`XYf`Dcg]h]cb`a]h`⇒bYb
dYfgCb`]W`ni`VYgdfVWYb"
@Yn1E1g]½`ZY`j]`Ubh]ub] Y[m`Y`YhgÅ[Yg]bhYf`Ch

5 ěbh]a d]bU'W`Vi Wf]Y`dcg]V]]HUYU`XY`UX]gW`HU`W`
8j`g`dYf`gcbU`XYHU]]`Y`Y[UH`XY`dcgh`

>Y Ybh_YnÅg A chj 1Wj g`Yj Å`



5 bVY]Yf\U Hrb'G]Y'a Y]bYb'@WYbgU Z'
GHubXUX'Zcfa i `U'UbbU_`Yf'g]lUz\c[mU'7J 'U'VgUrc`a 1bmVubj Ub

5 HU UhgW]gcf]] di HY]'fY[Bg] 7J !i `a Yi "
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

5 i ZK i bgW'gybXY]W\ ðbYb [YfbY'X]Y'NYi [b]ggY
j cb`""ni "
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

J B'dchiZ fb]nU'fYZf] Y'XY`U`""XUMB'g bhbYWgJfY"
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

NYi [b]ggY`_CbYb'VY]`""Ub[YZcfXYfhk YfXYb"
5 bbU_`Yf'g]lUz\c[mih Xgn\cnb]'fYZfYbW]1/2`UX1g]lU

F YZf]b Y'Y'dchiZ'gc`J]fUY'XY`U`"
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

: Ø'Y]b'J cfdY`i b[g] YgdfÅW'gh\Y]W'Ua `""ni f
J YfZØ]i b["
5 bbU_`U'hi Xca 1g] `UX1g]lUz\c[mignUUX'j U[miY[m]bhYf'ØfU

Gi bhX]gclcb]M]'dYbfi `i b]bhYf]ji `dY`"
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

J]Y'Yb'8 Ub_`ZØf ðf' ðbhYfYggY" ðW'k ØFY'a]W'g\Λf
ØVf'X]Y'; Y'Y[Yb\Y]hZYi YbZ'G]Y]b'Y]bYa
dYfgCb]W'Yb'; YgdfÅW'XUj cb'ni `ØVfnYi [YbZ'XUgg
]W'XYf [Y] [bYH'? UbX]XUhZØf'X]Yg' Dcgl]cb'V]b"
6]hY`_cbU_h]YfYb'G]Y'a]W'dYf`"
5 'dfYZfY'1/2hY Åf\Yh gÅ [Y_`a Y [UX1g]1/2b1/2 ÅgU`Y'Ybh_YnÅg 1/2bÅnÅgÅfthia Y [_ØgnCbÅgY`cf`\Ugnb1/2Uhcg

J B'a i ` i a YgWdYbfi `h]a di `UMfXUh]'dYbfi V]hfyU
Ud]W]Y]"5 hYdhW]bhYfYgdcg]V]]fUY'XY'Uj B'Yi di bY
dYfgcbU`a chj Y'Y'dYbfi WfY'Vb]X]Yf V]g' bhidYfgcUbU
dchf]j]hB'dYbfi `UMg]dcg]'J B'fc [`gB'a B'Vb]hU]]
df]b`"
GHubXUX'Zcfa i `U'UfflUz\c[mibnj]rcthj U[mifYZfYbW]1/2`UX1g]lU

A]hZYi bX]WYb'; fØYb
<]j Uu'cgz'V]a nYthbY] Y]ga YfYhYb

7i `g]a Bz

A]hZYi bX]WYb'; fØYb
<]j Uu'cgz'gnÅ Yg_ØfVYb`\Ugnb1/2z]ga YfhV]a nYth

7i `g]bWf]fUhz

< cVWUW'h b[g] c`
<]j Uu'cgz'bYa `Ø`Y'hYf'YX]z]ga YfhV]a nYth

7i `fYgdWkz

< Yfn]WY'; fØY
B Ya `]j Uu'cgz'Øn'Yh]`dUfthYfY`_`ØnØhZ'U_]`hY[Yn XbY_

HcU'WYVi bYz