

: `cf]gh]_`i bX`GWa i W_`j YfY]bh. `? fYUh]j Y
HfYbXg`]b`@Y]dn][`YbhXYW_Yb

8]Y`A YggY`75895I L`i bX`A`8CF5`]b`@Y]dn][`Vf]b[hij ca`+ "
V]g`- "GYdhYa VYf`&\$&(`Y]b`Ui ZfY[YbXYg`bYi Yg`?cbnYdh`Ui Z
X]Y`6Ø\bY. `Y]b`:`cf]gh]_!`i bX`GWa i W_`J`]`U[Yž`XUg
: UWVYgi WYf`ni `Y]bYf`Y]bn][Ufh][Yb`9f_i bXi b[gfY]gY
Y]b`ÅXh`8]Y`J YfgW`a Y`ni b[`j cb`ZcfU`Yb`?i bghk Yf_Yb`i bX
Y]bXfi W_gj c``Yb`GWa i W_XYg][bg`j Yfgdf]W`hž`Y]bY
VYgcbXYfY`9fZU\fi b[`ni `Yf[ÅbnYb`"I bhYf`XYf`@Y]hi b[`XYg
7\Ya b]hnYf`:`cf]gha Y]ghYfg`8Uj]X`; Y\f]gW`

8]Y`A YggY`75895I L`i bX`A`8CF5`]b`@Y]dn][`Vf]b[hij ca`+ "V]g`- "
GYdhYa VYf`&\$&(`Y]b`Ui ZfY[YbXYg`bYi Yg`?cbnYdh`Ui ZX]Y`6Ø\bY.
Y]b`:`cf]gh]_!`i bX`GWa i W_`J`]`U[Yž`XUg: UWVYgi WYf`ni `Y]bYf
Y]bn][Ufh][Yb`9f_i bXi b[gfY]gY`Y]b`ÅXh`8]Y`J YfgW`a Y`ni b[`j cb
ZcfU`Yb`?i bghk Yf_Yb`i bX`Y]bXfi W_gj c``Yb`GWa i W_XYg][bg
j Yfgdf]W`hž`Y]bY`VYgcbXYfY`9fZU\fi b[`ni `Yf[ÅbnYb`"I bhYf`XYf
@Y]hi b[`XYg`7\Ya b]hnYf`:`cf]gha Y]ghYfg`8Uj]X`; Y\f]gW`k]fX
X]YgYg`9j Ybh`b]W`h`bi f`X]Y`5i [Yb`XYf`6Ygi WYf`YfZfYi Ybž
gcbXYfb`Ui W`U_hi Y``Y`A cXY!`i bX`: YghU[g]HfYbXg`dfÅgYbh]YfYb`"

8]Y`GcbXYfgW`Ui Ybž`X]Y`Ub`X]YgYb`XfY]`HU[Yb`ghUhhZ]bXYbž`g]bX
VYa Yf_Ybgk YfhY`<Ø\Ydi b_hY`XYf`J YfUbghU`hi b["]; Y\f]gW`k]fX
nk Y]nYbhfU`Y`5i gghY``i b[Yb`Y]hYbž`X]Y`gck c``X]Y`?fÅZhY`XYf
BUhi f`U`g`Ui W`X]Y`?i bghZYfh][_Y]h`XYf`GWa i W_[YghU`hi b[
nY`YVf]YfYb`"æ`F U\`a Yb`X]YgYf`DfÅgYbhUh]cbYb`n]Y`h`X]Y`A YggY
XUfUi Z`UVž: UWVYgi WYf`ni `]bgdf]YfYb`i bX`bYi Y`DYfgdY_h]j Yb
Ui ZX]Y`DfcXi _hY`ni `YfÖZbYb`"

: Ygh`]W`Y`:`cf]gh]_`i bX`_fYUh]j Y`Gma V]cgY

8]Y`YfghY`GcbXYfgW`Ui ž`ž`k Y`fm`a Y`Yhg`:`cf]ghfm ž`Yb`h\Ø`hž`k]Y

?i bghi bX`BUhi f`\Ufa cb]gW\ j YfgW\ a Y`nYb`_ÖbbYb"; Y\f]gW\
ca V]b]Yfh`YX`Yb`GW\ a i W`a]h`bUhØf`]W\Yb`A UhYf]U`]Ybž`i bhYf
UbXYfYa `fi gh]_U`Yb`6]f`_Ybgh\A a Ybž`k Ug`Y]bYb`ZUgn]b]YfYbXYb
?cbhfUgh`nk]gW\Yb`XYf`F Ui \Y]h`XYg`<c`nYg`i bX`XYf`NUfh\Y]h`XYg
GW\ a i W_g`\Yf] cfVf]b[h`5b[Yg]W\hg`XYf`VYj cfghY\YbXYb
<YfVghgU]gcb`ØVYfUfVY]hYh`X]YgY`Df\AgYbhUh]cb`U_hi Y`Y
: UfVhfYbXg`i bX`]bhY[f]Yfh`YV\UZhY`HÖbY`k]Y`F chž`6cfXYUi l`i bX
?\U_]`b`XUg`ZcfU`Y`8Yg][b"

8]YgY`]bbcj Uh]j Y`Df\AgYbhUh]cb`_`AXh`X]Y`6Ygi W\Yf`XUni `Y]bž
GW\ a i W_]`b`Y]bYa `bYi Yb`@]W\h`ni `gY\Yb`i bX`]b`Y]bYa
VYY]bXfi W_YbXYb`F U\ a Yb`ni `Yf`YVYb""8]Y`?ca V]bUh]cb`j cb
GW\ a i W_`i bX`ZcfU`Yb`9`Ya YbhYb`gc``b]W\h`bi f`X]Y`G]bbY
UbgdfYW\Ybž`gcbXYfb`Ui W\`X]Y`?cbgi a `i gh`UbFY[Yb` `Y]b`; fi bXž
g]W\`XYb`9j Ybh`b]W\h`Ybh[Y\Yb`ni `UggYb"

K Y]\bUW\ hgnY]h`]a `J cfXYf[fi bX.`<ca Y`cZ
7\f]gha Ug

⊕`Y]bYf`k Y]hYfYb`GcbXYfG\W\Ui `a]h`XYa `H]hY` `<ca Y`cZ
7\f]gha Ug `k]fX`XYf`: c_i g`Ui Z`X]Y`HfYbXg`XYf`K Y]\bUW\ hgZcf]gh]_
[Y`Y[h`]; Y\f]gW\`nY][h`\]Yfž`k Y`W\Y`8Y`_cfUh]cbgY`Ya YbhY`i bX
: UfVh\Ya Yb`]a `5Xj Ybh`&\$&(`]a `HfYbX``]Y[Yb""8]Y`hfUX]h]cbY`Y
K Y]\bUW\ hgZcf]gh]_`Yfn]Y`h`a]h`A UhYf]U`]Yb`k]Y`B UXY`[Y\Ö`nYbž
NUdZYbž`B ØggYbž`F]bXYbž`K c``Yž`6YfYb`i bX`: fØW\hYb`Y]bY
bUW\`U`h][Y`i bX`U_hi Y`Y`Df\AgYbhUh]cb"

8]Y`J Yfk YbXi b[`_cbhfUghfY]W\Yf`A UhYf]U`]Yb`i bX`j YfgW\]YXYbYf
6`i a YbUfhYbž`XUfi bhYf`5a Ufm``g`i bX`K Y]\bUW\ hgghYfbYž`gW\ UZh
Y]bY`ZYgh]W\Y`5ha cgd`\ÅfYž`X]Y`XYb`; Y]gh`XYf`GU]gcb`Y]bZ\Ab[h`
8]Yg`]gh`Y]bY`[fc» Ufh][Y`; Y`Y[Yb\Y]h`ZØf`: UW\ VYgi W\Yfž`bYi Y
⊕gd]fUh]cb`ZØf`gU]gcbU`XY`_cf]YfhY`DfcXi `_hY`Ui Zni Zf]gW\Yb`i bX`]b
]\fYf`Y][YbYb`_fYUh]j Yb`5fVY]h`A U» bU\ a Yb`ni `]bhY[f]YfYb"

DUFU`Y`XUni `ÖZbYh`X]Y`A`8CF5`@Y]dn][`]\fY`HcfY""8]YgY`A YggY
a Uf_]Yfh`Y]bYb`k]W\h][Yb`A ca Ybh`ZØf`X]Y`i \fYb!`i bX
GW\ a i W_VfUbw\Y`i bX`V]YhYh: UW\ VYgi W\Yfb`X]Y`A Ö[`]W\`_Y]hž`X]Y
bYi YghYb`?c``Y`_h]cbYb`ni `Yf`YVYb""8]Y`gmbYf[]gh]gW\Y`J YfV]bXi b[

nk]gW\Yb`75895l L`i bX`A`8CF5`k]fX`Yg`Yfa` Ò[`]W\Ybž`XUg
5b[YVch`Z0f`X]Y`6Ygi W\Yf`Yf\YV`]W\`ni`Yfk`Y]hYfb"

A]h`Y]bYa`j]Y`gY]h][Yb` : UW\dfc[fUa`a`gc``X]Y`J`Yfb`Yhni`b[
]bb`Yf\U`V`XYf`6fUb`W\Y`[Ygh`Àf`_h`k`YfXYb``8`UVY]`dfc`Z]h]YfYb`X]Y
HY]`b`Y\`a`Yf`b]W\h`bi`f`j`cb`b`Yi`Yb`→YYb`ni`f`9]`Ybh[Ygh`U`hi`b[ž
gcb`XYfb`Ui`W\`j`cb`k`Yfhj`c``Yb`DUf`hb`Yfg`W`U`Zh`Ybž`X]Y`X`UVY]`\`Y`ZYbž
X]Y` ; YgW\`À`Zhgh`À`h][_Y]hYb`ni`Yfk`Y]hYfb"

6Ygi W\Yf`_`Òbb`Yb`g]W\`ni`XYa`Ui`Z]bhYfYggUbhY`J`c`fhf`À[Y`]a
: `cf]gh]_!`i`bX`GW\`a`i`W`_`J`]`U[Y`Z`FYi`Ybž`X]Y`j`cb`Yf`ZU`f`Yb`Yb
6fUb`W\Yb`j`Yfhf`YhYfb`[Y`Y]hYh`k`YfXYb``H\`Ya`Yb`k`]Y
; c`X`gW\`a`]Y`XYf`Yd`Uf`Uhi`f`Ybž`X]Y` ; Y\`Y]a`b]ggY`Yf`Zc`[fY]W\Yb
J`Yf`_`Ui`Zg`i`b`X`X`Ug`K`]ggYb`Ø`VYf`gmb`h`Yh]g`W\Y`G`hY]b`Y`_`ca`a`Yb`]b
XYb`j`Yfg`W\]Y`XYb`Yb`J`c`fhf`À[Yb`ni`f`Gdf`U`W\Y``8`]Yg`Yg`V`fY]hY
Dfc[fUa`a`gc`f[h`Z0f`Y]b`Y`i`a`ZUgg`Yb`XY`K`Y]hYfV]`Xi`b[`i`b`X`Z0f`XYfh
XYb`5i`gh`Ui`g`W\`j`cb`k`]ggYb"

9]bgh]Y[`ni`a`<`ÀbX`YfHU`_`]a` :`c`_`i`g

9]bYf`XYf`V`Ya`Yf`_`Yb`gk`Yfh`Ygh`Yb`Di`b`_`hY`X]YgYf`A`YggY`k`]fX`Ua` ; "G
YdhYa`VYf`&\$&(`XYf`YfghY`<`ÀbX`YfHU`_`gY]bž`XYf`Y]b`b`Yi`Yg
: cfi`a`ni`f`Gh`Àf`_i`b[`XYg`c`_`U`Yb`<`Ub`XY`g`V]YhYh``<]Yf`k`YfXYb
Ghf`UhY[]Yb`V`Yg`dfc`W\Ybž`k`]Y`→b`Yb`gh`À`X`hY`ni`U`h`f`U`_`h]j`YfYb
9f`Y`Vb]gc`fhYb`Z0f`9]b`\Y]a`]g`W\Y`i`b`X`H`ci`f]ghYb`[Ygh`U`h`Yh`k`YfXYb
`Òbb`Yb``8]Y`H\`Ya`Yb`g]b`X`U``hi`Y``i`b`X`fY]W\Yb`j`cb`i`f`V`Ub]h`À`h`V]g
\]b`ni`A`Uf`_`Yh]b[!?`Ua`d`U[b`Yb`Y`Y]b`Y`A`Ò[`]W\`_`Y]h`Z0f
: UW\`VYgi`W\Yf`ž`b`Yi`Y`DYf`gdY`_`h]j`Yb`i`b`X`?`cbn`YdhY`ni`Yf`Ub[Yb"

8]Y`A`YggY`\`Uh]`cb`-`" `\$`V]g`%`,"`\$\$`i`\`f`Ua`i`+``i`b`X` ; "GYdhYa`VYf`
gck`]Y`j`cb`-`" `\$`V]g`%`+`\$\$`i`\`f`Ua`i`-`"GYdhYa`VYf`[Y`Ò`Z`Z`b`Yh``8`Yf`
9]b`hf]h`i]gh`_`c`ghYb`Z`FY]ž`U`Y`fX]b[g`]gh`Y]b`Y`@Y[]h]a`Uh]cb`U`g
: UW\`VYgi`W\Yf`Yf`Zc`f`XYf`]W\`ž`i`a`X]Y`E`i`U`]h`À`h`XYg`9]Y`b`hg`ni
g]W\Yfb``a`J`c`f`Ui`g`_`Òbb`Yb`H]W`_`Y`hg`c`b`]b`Y`[YVi`W\h`k`YfXYbž`i`a
Y]b`Yb`fY]Vi`b[g`c`g`Yb`Ni`[Ub[`ni`[Uf`Ub]h]YfYb"

8]YgY` :`i`g]cb`Ui`g` :`cf]gh]_`i`bX`GW\`a`i`W`_`V]YhYh`b]W\h`bi`f`Y]bY
D`U`h`Zc`fa`Z0f`]b`X]j`]Xi`Y``Y`?`fY`Uh]j`]h`À`h`ž`gcb`XYfb`ghY`\`h`Ui`W\`Z0f`

U_hi Y`Y`HfYbXg'i bX`9bhk]W_`i b[Yb`]b`XYf`6fUbWXY"
A YggYVYgi WXYf`UVYb`X]Y`A Ò[`]W_X]hž`]b`Y]bYf`Y]bn][Ufh][Yb
5ha cgd`ÀfY`bYi Y`a di `gY`ni `[Yk]bbYb`i bX`g]W_X`]bgd]f]YfYb`ni
`UggYb"

<]bhYf[fi bX`XYf` : `cf]gh]_!`i bX GWX a i W_VfUbWXY

8]Y` : `cf]gh]_!`i bX`GWX a i W_VfUbWXY` \Uh]g]W_X`]b`XYb`Y`hnhYb`>\fYb
Yf`YV`]W_X`]j Yf`ÀbXYfh`9]b`k UW_XgYbXYg`6Yk i gghgY]b`ZØf
BUW_X`U`h][_Y]hi bX`i a k Y`hVYk i gghgY]b` \Uh]]Y`Y` : `cf]ghYb`XUni
j YfUb`Ugghž`Ui Z`c`_U`i bX`gU]gcbU`j YfZØ[VUfY`A UhYf]U`]Yb`ni
gYhnYb`8Yf`HfYbX`ni`i a k Y`hžfYi bX`]WXYf` : `cf]gh]_`]gh`Yb[
j YfVi bXYb`a]h`XYa`K i bgW_X`XYf`J YfVfUi WXYfž`X]Y`<Yf_i bZh`i bX
X]Y`<YfghY`i b[gdfcnYggY`j cb`DfcXi _hYb`VYggYf`ni`j YfghY`Yb`"
8]Yg`ZØfXYfh`b]W_X`h`bi f`XUg`c`_U`Y`<UbXk Yf`ž`gcbXYfb`i bhYfghØhnh
Ui W_X]Y`F`YXi n]Yfi b[`XYg`Ò`c`c[]gWXYb` : i »UVXfi W_g"

a`6YfY]W_X`GWX a i W`_g]bX`hYW_Xbc`c[]gWXY`>bcj Uh]cbYbž
]bgVYgcbXYfY`ja`6YfY]W_X`XYf`<YfghY`i b[]j cb`gmb`h`Yh]gWXYb
GhY]bYbž`j cb`[fc»Yf`6YXYi hi b[" `@UvcfX]Ua UbhYb`i bX`UbXYfY
gmb`h`Yh]gWXY`9XY`ghY]bY`[Yk]bbYb`Ub`Dcdi`Uf]h`hž`XU`g]Y`cZh
_cgYb[Øbgh][Yf`g]bX`i bX`k Yb][Yf`i a k Y`hgW_X`X`]WXY
5i gk]f_i b[Yb` \UVYb`8]Y`J YfVfUi WXYf`Y[Yb`ni bY`a YbX`K Yfh
XUfUi Zž`k c`Yf`]\fY`GWX a i W`_ghØW`Y`ghUa`a Yb`i bX`i bhYf`k Y`WXYb
6YX]b[i b[Yb`g]Y` \Yf[YghY`h`k i fXYbž`k Ug`XYb`A Uf`_h`ZØf
bUW_X`U`h][Yb`GWX a i W`_Yf`YV`]W_X`Yfk Y]hYfh"

GhUh]gh]_Yb`ni f`6fUbWXY

5_hi Y`Y`Ghi`X]Yb`nY][Ybž`XUgg`XYf`A Uf`_h`ZØf`bUW_X`U`h][Y` : `cf]gh]_
]a`>\f`&\$&`k Y`hk Y]h`Y]bYb`K Yfh]j cb`Yhk U`) `A]`]UfXYb`9i fc
YffY]W_X`h`Uhi bX`V]g`&\$&, `Ui Z`ØVYf`, \$`A]`]UfXYb`9i fc`k UW_XgYb
_ØbbhYž`k Ug`Y]bYa`>\f`]WXYb`K UW_Xghi`a`j cb`WU",`i`Yb`hgd]f]W_X`h`
fG]Y`Y`GhUh]ghU`"

a`GWX a i W`_gY`_hc`f`nY][Yb`9f`YV`i b[Ybž`XUgg`fi bX`) +`i`XYf`

J YfVfUi W\Yf`VYfY]hg]bXž'a Y\`f`ZØf`GWa i W`ni`nU\`Ybž`XYf`Ui g
Yh\]gW\Yb`i bX`bUW\`U`h][Yb`E i Y`Yb`ghUa a h`8]Yg`gd]Y[Y`h`Y]b
k UW\gYbXYg`≠hYfYggY`Ub`j YfUbhk cfhi b[gVYk i gghYb
?cbgi a j Yf\`U`hYb`k]XYf`i bX`ZØfXYfh`Y]bYb`K UbXY`]b`XYf
6fUbW\Y`8Yf`HfYbX`ni`gmbh\Yh]gW\Yb`8]Ua UbhYb`i bX`UbXYfYa
bUW\`U`h][`dfcXi n]YfhYb`GWa i W`U`h`ni`Y]bYa `5bgh]Y[`XYg
5bhY]`g`gc`W\Yf`DfcXi`_hY`Ui`ZXYa`A Uf`h`[YZØ\fhž`XYf`a`]h`Yfk`Y]`Y
ØVYf`%\$`i`VYhfÅ[hž`a`]h`Y]bYf`Dfc[bcy`ZØf`k`Y]hYfY`Ni`k`ÅW\gY`]b
XYb`_ca`a`YbXYb`≠\fYb`fj [``A W?]bgYm/ `7ca`dUmŁ"

<]ghcf]gW\Y`DUfU``Y`Yb`]a`K UbXY``XYf`
6fUbW\Y`

9]b`]bhYfYggUbhYf`J Yf[`Y]W\`Àggh`g]W\`nk`]gW\Yb`XYf`U`_hi`Y`Yb
G]hi`Uh]cb`]b`XYf`:`cf]gh]_!`i`bX`GWa`i`W`VfUbW\Y`i`bX`XYb
J YfÅbXYfi`b[Yb`]b`XYf`A`cXY]bXi`ghf]Y`n]Y\`Ybž`X]Y`]b`XYb`Y`hnhYb
nk`Y]`≠\fnY\`bhYb`a`Ugg]j`Y`HfUbgZcfa`Uh]cbYb`Xi`fW\`Ui`ZYb`\`Uh`≠
XYb`%-`-\$Yf`≠\fYb`gYhnhY`g]W\`XYf`HfYbX`ni`:`Ugh`:`Ug\]cb`Xi`fW\ž
k`Ug`ni`Y]bYa`5bgh]Y[`XYf`B`UW`ZfU[Y`bUW`A`cXY`ZØ\fhYž`UVYf
Ui`W`_f]h]gW\Y`Gh]a`a`Yb`VYnØ[`]W\`XYf`5fVY]hgVYX]b[i`b[Yb`i`bX
XYf`i`a`k`Y`hUi`gk`]f`_i`b[Yb`Ui`hik`YfXYb``]Y»`"8]YgY
< YfUi`gZcfXYfi`b[Yb`ZØ\fhYb`ni`f`9bhghY\`i`b[`j`cb`6Yk`Y[i`b[Yb`k`]Y
bUW\`U`h][Yf`A`cXY`i`bX`G`ck`:`Ug\]cbž`X]Y`\`Yi`hY`ghUf`_
bUW\`[YZfU[h`k`YfXYb`"

Y`b`]W\`ghY\`h`X]Y`:`cf]gh]_!`i`bX`GWa`i`W`VfUbW\Y`Ub`Y]bYa
K`YbXYdi`b`_hž`Ub`XYa`XUg`6Yk`i`gghgY]b`ZØf`Yh\]gW\Y`DfU`_h]_Yb
i`bX`bUW\`U`h][Y`A`UhYf]U`]Yb`]a`A`]hY`di`b`_h`ghY\`h`K`Å\`fYbX`]b
XYf`A`cXYVfUbW\Y`]a`a`Yf`k`]YXYf`8YVUhYb`ØVYf`XUg`f]W\h][Y`A`U»
Ub`B`UW\`U`h][_Y]hi`bX`?cbgi`a`j`Yf\`U`hYb`[YZØ\fhik`YfXYbž`n]Y\`h
X]Y`:`cf]gh]_VfUbW\Y`Ui`g`X]YgYb`@Y`_h]cbYb`k`Yfhj`c``Y`9]bg]W\hYbž
i`a`g]W\`bUW\`U`h][`i`bX`]bbcj`Uh]j`k`Y]hYfni`Yb`hk`]W`Y`b`"

6Ygi W\Yb`G]Y`i bg`Ui Z.`b!U["XY