

8 Ub]Y`U`? f]Ybg`bYi Y`DYfgdY_h]j Yb`Ui Z
HfUi Yf`i bX`BYi UbZUb[`]b`@Y]dn][

8 Ub]Y`U`? f]Yb`gdf]W`h`ja `7UZÅ`<i [YbXi VY``]b`@Y]dn][`ØVYf
HfUi Yfž`GW`fY]VYb`i bX`]\fYb`bYi Yb`Fca Ub`/ ei ch/A Y]b
Xf]hhYg`@VYb`/ ei ch"

⇒ `<YfnYb`j cb`@Y]dn][ž`ja `[Ya Øh]W`Yb`7UZÅ`XYf`6i W`\UbX`i b[
<i [YbXi VY`ž`j YfVf]b[h`X]Y`5i hc f]b`8 Ub]Y`U`? f]Yb`j]Y`NY]h`8]YgYf
C fh]gh`ZØf`g]Y`a Y`f`U`g`bi f`Y]b`7UZÅ`/Yg`]gh`]\f`nk Y]hYg
K c\bn]a a Yf ž`]b`XYa`g]Y`Y]bY`VYXYi hYbXY`Dcfh]cb`]\fYg
bYi YghYb`Fca Ubg` A Y]b`Xf]hhYg`@VYb` `j YfZUggh`Uh`"≠`]\fYa
U_hi Y`Yb`K Yf`_h]YZ]b`X]Y`a YbgW`\]W`Y`DgmW`Y`Y]bhUi W`YbXž
YfnÅ`\h`g]Y`X]Y`hfU[]gW`Y` ; YgW`]W`hY`Y]bYf` : fUi ž`X]Y`XYb`J Yf`i gh
]\fYf`HcW`hYf`Xi fW`Y]bYb`Zi fW`hVUFYb`I bZU``Yf`Y]XYb`a i gghY"
8]YgY`V]hYfY`F YU`]hÅh`ZØ\fh`X]Y`DfchU[cb]gh]b`Xi fW`X]Y
_ca d`YI Yb`D\UgYb`XYf`HfUi Yf`i bX`XYb`a Ø\gUa Yb`DfcnYgg`XYg
K]YXYfZ]bXYbg`Y]bYg`@VYbg`a]h`bYi Yb`DYfgdY_h]j Yb"

?f]Ybž`X]Y`ja `š]\f`%- +) `[YVcfYb`k i fXY`i bX`gY]h`Y]b][Yb`š]\fYb`]b
@Y]dn][``YVhž`nY]W`bYh`Y]b`Y]bZØ`\`gUa Yg`6]`X`XYf
HfUi YfVYk Å`h][i b[`i bX`XYf`]bbYfYb`GhÅf`_Yž`X]Y`A YbgW`Yb`]b
?f]gYbnY]hYb`Yb`k]W`_Y`b`_ØbbYb`"≠`]\fYf`9fnÅ`\`i b[`VYhfUW`hYh
g]Y`b]W`h`bi f`X]Y`Ya ch]cbU`Yb`< Ø\Yb`i bX`H]YZYbž`gcbXYfb`Ui W`
X]Y`Y]gYbž`_fUZhgdYbXYbXYb`A ca YbhYž`X]Y`XUg`GW`fY]VYb`a]h
g]W`Vf]b[Yb`_Ubb`"⇒ fY`9f`YVb]ggY`U`g`5i hc f]b`ghÅf`_Yb`]\fYb
; `Ui VYb`Ub`X]Y`hfUbgZcfa Uh]j Y`? fUZh`XYf`@]hYfUhi f"

9]b` ; YgdfÅW`ØVYf`9]bgUa _Y]h`i bX`G]bb

⇒ `FU\`a Yb`Y]bYf`8]g_i gg]cb`a]h`5bbY!8cfY`?fc`bž`j cf`XYf
VYY]bXfi W`_YbXYb`?i`]ggY`XYf`H\ca Ug_]fW`Yž`fYZY_h]YfYb`X]Y

VY]XYb'ØVYf'X]Y'7\UfU_hYfY']b'?f]YbYg'6i Wž'X]Y'Xi fW']\fY
]bX]j]Xi Y''Yb'<YfUi gZcfXYfi b[Yb''YfbYbž'gY'VghghÀbX]['ni
k YfXYb''9g']gh'Y]b'h]YZ[fØbX][Yg'; Ygd fÀW'ØVYf'XUg'GhfYVYb'bUW
G]bb'ja '@VYb'i bX'X]Y': fU[Yž'k Ug'i bg''YhnhYbX'W]a' ch]j]Yfh"
8UVY]'b]a' a' h'XUg'GWfY]VYb'gY'Vgh'Y]b'Y'nYbhfU'Y'F c''Y'Y]bž']bXYa
Yg'Y]bY'5fh?Uh\Ufg]g'V]YhYhi bX'Yg'Yfa' Ò['W]hž'dYfgÒb'W]Y
HfUi a' UhU'ni 'j YfUfVY]hYb"

?f]Ybž'X]Y'VYfY]hg'a]h]\fYa' 8YVØh' f[YbXk Ubb'k YfXYb'k]f'i bg
U''Yg'YfnÀ\Yb']a' ð\lf'&\$%%[fc»Y'9fZc'[Y'ZY]YfhY'i bX'XYggYb
JYfZ]'a' i b['b]W]h''Ub[Y'Ui Z'g]W]k UfhYb''Y»ž'\Uh'g]W]Y]bYb'D'Uhn
]b'XYf'XYi hgW]Yb'@]hYfUhi f'UbXgW]UZh'YfUfVY]hYh'' ÆfY'K Yf_Y'k]Y
A' i 'XYbHU' 'i bX' 8]Y'@]VYV]ja' '9fbghZU'' 'nY][Yb'ghYhg']\fY
Ui g[YdfÀ[hY': À\][_Y]hž'Ya' ch]cbU'Y'H]YZY'a']hZYggY'bXYa
9fnÀ\Yb'ni 'j YfV]bXYb''8Ug'_Øfn'W]YfgW]YbYbY' A'Y]b'Xf]hhYg
@VYb']gh'Y]bY': cfhgYhni b['X]YgYf'8Yb_k Y]gY'i bX'V]YhYh'Y]bYb
Ya' ch]cbU'Yb'Ni [Ub['ni' i b]j YfgY''Yb'H\Ya' Yb'k]Y'J'Yf'i ghi bX
<cZbi b["

8]Y'6YghgY''YfUi hcf]b'\Uh'g]W]Ui W'U'g'?f]h]_Yf]b'UbXYfYf
5i hcf]bbYb'Y]bYb'B'Ua' Yb'[Ya' UW]h''Gc'Ya' dZ]Y'\h'g]Y']\fYb'@YgYfb
FcVYfh'GdUYa' Ubb'g' A'cfU']gW]Y'; fi bXVY[f]ZZY'ž'Y]b'6i Wž'XUg
X]Y'Yh\]gW]Yb': fU[Yb'XYg'@VYVbg'Ui Z[fY]Zhi bX'XYb'@YgYfb'bYi Y
DYfgdY_h]j Yb'UbV]YhYb'_Ubb''; 'Y]W]nY]h]['hY]'h'5bbY!8cfY'?fc\b
\fY'Y][YbYb'@YgYYa' dZY\i b[Ybž'k]Y'I'f]_Y'8fUYgbYfg
ca' a' YbXYg'K Yf' ni ''YVYb'ž'XUg]ja' 'GYdhYa' VYf'&\$&(YfgW]Y]bYb'gc''i bX'X]Y'@YgYf'a']h'H]YZY'i bX'?ca' d'Yi]hÀh
ØVYffUgW]Yb'_ØbbhY"

8 Yf' C fh'XYf' ðgd]fUh]c b

8Ug'7UZÀ'<i [YbXi VY''b'XYf'DYhYfgghf''%&!%('[]'h'b]W]h'bi f'U'g
']hYfUf]gW]Yf'F ØW_ni [gcfh'ZØf'8Ub]Y'U'?f]Ybž'gcbXYfb'Ui W'U'g
ðgd]fUh]cbgei Y''Yž'X]Y'j]Y'Y'_fYUh]j Y'; YXUb_Yb'ZØfXYfh''Gc'W]Y
Cfh'g]bX'ZØf'j]Y'Y'5i hcfYb'k]W]h][ž'XU'g]Y'Y]bY'5ha' cgd\ÀfY
gW]UZZYbž']b'XYf'GWfY]VYb'i bX'8Yb_Yb'ZfY]'Z]Y»Yb'_ØbbYb''8]Y
'?fYUh]j]hÀhž'X]Y'Ub'gc'W]Yb'Gdc'hg'gdfi XY'hž'_ØbbhY'Ui W'X]Y
@]hYfUhi f'XYg'bÀW]ghYb'ð\fnY\bhg'dfÀ[Yb"

8 Ub]Y`U`?f]Ybg`?ca V]bUh]cb`Ui g`dYfgOb`]W`Yf`9fZU\fi b[`i bX
`hYfUf]gW`Yf` :]_h]cb`nY][hžk]Y` ; YgW`W`hYb`i bg`Y`ZYb`_ObbYbž
i bgYfY`Y][YbYb`?Àa dZY`ni`j YfghY\Yb`i bX`ni`j YfUfVY]hYb`"I bX`gc
k]fX`XUg`7UZ`<i [YbXi VY`ni`Y]bYa`Gma Vc`Z0f`XYb`_fYUh]j Yb
5i ghUi gW`ž`XYf`]b`XYf` ; Ya Y]bgW`UZh`XYf`@YgYf`i bX`GW`f]ZhghY`Yf
ghUhhZ]bXYh`9]b`gh`ÀbX][Yf`Nm`_i g`XYf` ðgd]fUh]cbž`XYf`b]W`h`bi f`X]Y
?i bgh`XYg`GW`fY]VYbg`Z0f`XYfhž`gcbXYfb`Ui W`X`Ug`Y][YbYb`@YVYb
VYfY]W`Yfh`

9]bV`]W`_]b`XYb`F ca Ub` A Y]b`Xf]hhYg`@YVYb

ð` A Y]b`Xf]hhYg`@YVYb`n]Y\h`8 Ub]Y`U`?f]Yb`XYb`@YgYf`]b`X]Y
Ya ch]cbU`Y`K`Y`h`Y]bYf` : fUi ž`X]Y`bUW`XYa`J`Yf`i gh]`fYf`HcW`hYf
`Yfbhž`a]h`XYf`HfUi Yf`i a ni [Y\Yb`"8]Y`DfchU[cb]gh]b`Xi fW`Ài Zh
j YfgW`]YXYb`Y`D\UgYb`XYg`HfUi Yfbgž`X]Y`j cb`XYf`J`Yf`Yi [bi b[
0VYf`X]Y`K`i`h`V]g`\]b`ni`f`5`_nYdhUbn`fY]W`Yb`"8]YgY`D\UgY`_Ubb
Z0f`j]Y`Y`9`hYfbž`X]Y`À`b`]W`Yg`Yf`YVh`\UVYbž`VYgcbXYfg
Y]bXf0W`_]W`i`bX`bUW`j`c`n]Y\`VUf`gY]b`"?f]Ybg`GW`fY]Vgh]ž`XYf`cZh
dcYh]gW`Y`N0[Y`hfÀ[hžj Yf`Y]\h`XYb`9a`ch]cbYb`Y]bY`[fY]ZVUfY
H]YZY`i bX`À`Xh`X]Y`@YgYf`Y]bž`g]W`a`]h`XYb`]bbYfYb`?cbZ]_hYb`XYf
:][i fYb`Ui`gY]bUbXYfni`gYhnYb`"

9g`k]fX`Ui W`g]W`hVUfž`k]Y`XUg`GW`fY]VYb`gY`Vgh`Y]bY`5fh
_Uh\Ufh]gW`Yf`DfcnYgg`Z0f`X]Y`5i hcf]b`k`Uf`"?f]Yb`VYgW`fY]Vh`XUg
GW`fY]VYb`U`g`_fUZhgdYbXYbXY`9bYf[]Yei Y`Yž`X]Y`b]W`h`bi f`XYb
7\UfU`_hYfYbž`gcbXYfb`Ui W`]f`gY`Vgh`\]Zhž`a]h`XYf`HfUi Yf
i a ni [Y\Yb`"ðXYa`X]Y`DfchU[cb]gh]b`]fY`9f`YVb]ggY`Xi fW`XUg
GW`fY]VYb`j YfUfVY]hYb`_Ubbž`Yf0ZbYh`g]W`Y]b`F`Ui`a`Z0f`<Y]i b[
i bX`FYZYI]cb`"

; YgY`gW`UZh`]W`Y`F`Y`Yj`Ubn`i`bX
HfUi`YfVYk`À`h][i b[

8Yf`I`a`[Ub[`a`]h`HfUi`Yf`i`bX`J`Yf`i`gh]`gh]`b`i`bgYfYf` ; YgY`gW`UZh`
cZh`Y]b`HUVi`h`Ya`U`"J]Y`Y`A`YbgW`Yb`\UVYb`GW`k`]Yf][`_Y]hYbž`]W`Y
; YZ0`Y`Ui`gni`Xf0W`Yb`c`XYf`I`bhYfgh0hni`b[`ni`gi`W`Yb`"ð`X]YgYa
?cbhYI`h`_ObbhY`?f]Ybg`F`ca`Ub`U`g`k`]W`h][Yf`6Y]hfU[`VYhfUW`hYh`

k YfXYbž i a 'XUg'6Yk i gghgY]b'Z0f'HfUi YfVYk À'h][i b['ni 'gWÀfZYb"
Ghi X]Yb'nY][YbžXUgg'XUg'HY]Yb'j cb'9fZU\fi b[Yb'i bX'XUg
5b[YVch'j cb'i bhYfgh0hni b['b'XYf'; Ya Y]bgWÀUZh'YggYbh]Y''Y
5gdY_hY'XYf'HfUi YfVYk À'h][i b['g]bX''

9]b'k]W h][Yf'5bgUhm']b'?f]Ybg'9fnÀ\i b['gh'X]Y'≠YYž'XUgg'HfUi Yf
b]W h'']bYUf'j Yf'Ài Zh''8]Y'J c fghY''i b[ž'XUgg'<Y]'i b['NY]h'VYb0h][h
i bX'j cb'DYfgcb'ni'DYfgcb'i bhYfgW]YX'W]ghž'hfÀ[h'XUni 'VY]ž'Y]b
fYU'g]g]gW YfYg'6]'X'j ca 'HfUi Yfb'ni'nY]W bYb''8]Yg'_Ubb'FUi a
Z0f'J YfghÀbXb]g'i bX'9a dUh\]Y'i bhYf'@YgYfb'gW UZZYbž'X]Y'gY'Vgh
À\b'W Y'9fZU\fi b[Yb'[Ya UW h'\UVYb'cXYf'A YbgW Yb'']b'\fYf
I a [YVi b['i bhYfgh0hnyb'a 0W hYb''

6]c[fUZ]gW Y '<]bhYf[f0bXY'XYf'5i hcf]b

8Ub]Y'U'?f]Ybž'X]Y'%-+) 'b'XYf'BÀ\Y'j cb'@]dn]['[YVcfYb'k i fXYž
Vf]b[h'Y]bY': 0''Y'j cb'9fZU\fi b[Yb'j]b'\fY'@]hYfUhi f'Y]b''G]Y'\Uh
gY'Vgh'j YfgW]YXYbY'Fc''Yb'j]b'\fYa '@VYb'0VYfbca a Ybž'gY]'Yg
U'g'A i hYfž'GW f]ZhghY''Yf]b'cXYf'U'g'HY]'Y]bYf'_i'hi fY''i bX
dc'h]gW 'VYk Y[hYb'; YgY''gW UZh]b'8Yi hgW 'UbX''≠fY'VYfi Z]W Y
@Ui ZVU\b'VY[Ubb'a]h'XYa 'GW fY]VYb'j cb'8fY\V0W Yfb'i bX
9ggUmgž'VYj cf'g]Y'9fZc'['U'g'Fca UbUi hcf]b'ZUbX''

?f]Ybg'K Yf_Y'fYZY_h]YfYb'cZh'X]Y'<YfUi gZcfXYfi b[Yb'i bX
: UW'hYb'XYg'a cXYfbYb'@VYbgž']bgVYgcbXYfY'j]b'6Yni ['Ui Z
nk]gW Yba YbgW 'W Y'6Yn]Y\i b[Yb''A]h'Y]bYf'A]gW i b['Ui g
:]_h]cb'i bX'Ui hcf]c[fUZ]gW Yb'9'Ya YbhYb'[Y'j]b[h'Yg']\fž'XYb
@YgYfb'VYXYi hYbXY'9]bg]W hYb'j]b'X]Y'a YbgW 'W Y'DgmW Y'i bX
XUg'GhfYVYb'bUW 'G]bb\UZh][_Y]h'ni '[YVYb''8]Yg'nY][h'g]W 'Ui W
]b' A Y]b'Xf]hYg'@VYb ž'k c'X]Y'Gi W Y'bUW 'Y]bYa 'bYi Yb'D'Uhn
]a '@VYb'bUW 'Y]bYa 'gW k YfYb'jYf'i gh']a 'NYbhfi a 'ghY'h''

8]Y'5i hcf]b'bi hnh'\fY'Y][YbYb'<YfUi gZcfXYfi b[Yb'i bX'9fZc'[Yž
i a 'Y]bY'J YfV]bXi b['ni '\fYb'@YgYfb'\Yfni ghY''Ybž'k Ug'XUni
VY]hfÀ[hž'XUgg']\fY'; YgW]W hYb'Ui h\Ybh]gW 'i bX'ni [Àb['W
YfgW Y]bYb''

6Ygi W\Yb`G]Y`i bg`Ui Z.`X]Y!bUW\ f]W\ hYb"bYh