

9]bVfØWY`ja` ; Yk YfVY[YV]Yh'8 Òfh\ .
Dc`]nY]`V]hhYh'i a`NYi [Yb\]bk Y]gY

⊕'8 Òfh\ [UV`Yg'9]bVfØWY`]b` ; Yk YfVY[YVÀi XY" `HÀhYf
Ybhk YbXYhYb'6Uf[Y`X" `NYi [Yb`k YfXYb`ni f`A]h\]`ZY
Ui Z[Yfi ZYb"

J cb`Y]bYf'i bUV\Àb[] [Yb`FYXU_h]cb

⊕`XYb`b`ÀW`h]W`Yb`Ghi bXYb`j ca`' `Ui ZXYb`&("5i [i gh\Uh`X]Y
Dc`]nY]`]b`XYf`FY []cb`?cV`Ybn`j cb`Y]bYa` `VYgcf[b]gYffY [YbXYb
J cfZU``]a` `⊕Xi ghf]Y [YV]Yh'8 Òfh\ `YfZU\ fYb" `I bVY`UbbhY`HÀhYf
VfUW`Yb`]b`a` Y\ fYfY` ; Yk YfVY[YVÀi XY`Y]b" `8]Y`9]bVfØWY
YfY [bYhYb`g]W`]b`XYf` ; U`gW`Y]XYf`GhfU`Yž`i bX`cV`k c\`X]Y`HUhYb
fY`Uh]j`gW`bY``VYa` Yf_h`k i fXYbž`\]bhYf`]Y» Yb`g]Y`]\fY`Gdi fYb"

8]Y`HÀhYf`a` UW`hYb`g]W` `b]W`h`X]Y`A` Ø\Yž`\Y]a` `]W` `j`cfni [Y\Yb" `G]Y
\YVY`hYb`gck c\`HØfYb`U`g`Ui W` : YbghYf`Ui Zž`i a` `Ni [Ub[`ni`XYb
F`Ài a` `]W`_Y]hYb`ni`Yf`Ub [Yb" `X`bYž`X]Y`]b`X]Y` ; YVÀi XY
Y]bXfUb [Ybž`YbhbU\`a` Yb`6Uf [Y`X" : Ø`f`X]Y`Dc`]nY]`ghY``h`g]W` `bi`b
X]Y` : fU [Yž`cV`Yg`NYi [Yb` []Vhž`X]Y` <]bk Y]gY`Ui`Z`X]Y
j`Yfa` Y]bh]W`Yb`9]bVfYW`Yf` [YVYb`_`ÒbbYb"

5i Zfi Z`ni f`A]h\]`ZY

8]Y`Dc`]nY]`]bgdY_h]cb`6cddUfX`\Uh]bnk`]gW`Yb`X]Y`² ZYbh]W`_Y]h
Ui Z[Yfi ZYbž`g]W` `ni`a` Y`XYb" `9g`k]fX`XUfi a` [YVYhYbž`Y [`]W`Y
⊕Zcfa`Uh]cbYbž`X]Y`ni`f`5i`Z`_`Àfi`b [`XYf`9]bVfØWY`VY]hfU [Yb
_`ÒbbhYbž`ni`hY]`Yb" `8]Y`ni`gh`ÀbX] [Yb`6YUa`hYb`g]bX`hY`YZcb]gW`
i`bhYf`XYf`Bi`a`a`Yf`\$`*`+`(`&`,`\$`-`!`\$`cXYf`dYf`9!A`U]`YffY]W`VUf`i`bhYf
d]VcddUfX4`dc`]nY]`f`d`"XY" `X`XYf`<]bk Y]g`_`ÒbbhY`\`]ZFY]W`gY]bž`i`a
X]Y`HÀhYf`ni`Z]bXYb`i`bX`k`Y]hYfY`9]bVfØWY`]b`XYf`FY []cb`ni

j Yf\]bXYfb"

9]b`gc`WXYf`J cfZU``\Uh`b]Wkh`bi f`fYWX`h]WXY`?cbgYei YbnYb`ZØf`X]Y
HÅhYfž`gcbXYfb`k]fZh`Ui Wk` : fU[Yb`ni a` `G]WXYf\Y]hg[YZØ\`XYf
l bhYfbY\`a Yb`gck]Y`XYf`5bk c\`bYf`Ui Z`8]Y` ; Yk YfVYhfY]VYbXYb
]b`8Øfh\`_ØbbhYb`g]W`Gcf[Yb`i a` `X]Y`G]WXYf\Y]h`]\fYf`6Yhf]YVY
a UWXYb`i bX`Yg`k]fX`XYi`h]W`ž`XUgg`9]bVfØWXY`k]Y`X]YgY
j Yf\YfYbXY`5i`gk]f`_i`b[Yb`Ui Z`XUg`J YfhfUi Yb`]b`X]Y`6Y\ØfXYb
\UVYb`_ØbbYb"

Hfchn`XYf`gW`bY`Yb`F`YU`_h]cb`XYf`Dc`nY]ž`X]Y`i`a` [Y\YbX`XYb
J cfZU``YfZUgghY`i`bX`9fa`]h`i`b[Yb`Y]b`Y]hYhYž`V`Y]Vh`X]Y`5b[gh]j`cf
k Y]hYfYb`Å\`b`]WXYb`HUhYb`]b`XYf`@`Zh`8]Y`J cfZÅ`Y`k YfZYb`Ui Wk
Y]bYb`GW`UhhYb`Ui Z`X]Y`U``[Ya`Y]bY`G]WXYf\Y]hg`U[Y`]b`XYf`F`Y`]cbž
X]Y`]a`a`Yf`k]YXYf`j`cb`gc`WXYb`GhfUZhUhYb`VYhf`c`ZYb`]gh"

- K Ug`hi`h`X]Y`Dc`nY]ž`i`a` `X]Y`G]WXYf\Y]h`ni`Yf\Ø\Yb`3
- K]Y`_ØbbYb`l`bhYfbY\`a`Yb`]\fY`G]WXYf\Y]hg]j`cf`_Y\fi`b[Yb`
j`YfVYggYfb`3
- K Y`WXY`fYWX`h]WXYb`GW`f]hhY`Zc`[Yb`Ui Z`X]Y`9]bVfØWXY`3

8]Y`J cfZÅ`Y`]b`8Øfh\`g]bX`b]W`h`ni`ZÅ``["G]Y`ghY\Yb`]a` `?cbhYl`h
Y]bYf`VYgc`f[b]gYffY[YbXYb`9bhk]W`_i`b[`]b`j`]Y`Yb`ÅbX`]WXYb
F`Y`]cbYbž`]b`XYbYb`a`Ub`j`cb`Yf\Ø\hYb`9]bVfi`W`gnU\`Yb`gdf]W`h"
: U`_hc`fYb`k]Y`k]fhgW`UZh]WXY`B`ch`U[Yb`i`bX`Y]bY`U``[Ya`Y]bY
l`bfi`Y`_ØbbhYb`X`Uni`ZØ\`fYbž`XUgg`?`f]a`]bU`]hÅh`]b`X]YgYb
; YV]YhYb`UbghY][`h`K`Å\`fYbX`X]Y`Dc`nY]`]\fY`9fa`]h`i`b[Yb
]bhYbg]j`]Yfž`]gh`Ui Wk`X]Y`l`bhYfghØ`hni`b[`Xi`fW`X]Y
N]j`]VYj`Ø`_Yfi`b[`i`bYf`Ågg`]W`"

⇒a`F`U\`a`Yb`XYf`J`cfVYi`[`i`b[`]gh`Yg`fUhgUa`ž`XUgg`l`bhYfbY\`a`Yb
i`bX`5bk`c\`bYf`[`Y]WXYfa`U»`Yb`]f`G]WXYf\Y]hgVYk`i`gghgY]b
gW`ÅfZYb`"A`U»`bU\`a`Yb`k`]Y`X]Y`bghU``Uh]cb`j`cb
,`VYfk`UW`i`b[`g`_Ua`YfUg`c`XYf`X]Y`6]Xi`b[`j`cb
B`UW`VUfgW`UZh`gk`UWXYb`_ØbbhYb`b]W`h`bi`f`UV`gW`fYW`_YbX`k`]f`_Ybž
gcbXYfb`Ui Wk`X`Uni`VY]hfU[Ybž`X]Y` ; Ya`Y]bgW`UZh`Yb[Yf
ni`gUa`a`Ybni`Vf]b[Yb`"9g`[]Vh`Ui Wk`HYW`bc`c`[]Ybž`X]Y`Y`Y`ZYb
_ØbbYbž`9]bVfØWXY`ni`j`Yf\]bXYfbž`k`cVY]`gW`bY`Y`F`YU`_h]cbYb`Ui`Z

j YfXÅW h][Y'5_hj]hÅhYb'Yb hgW Y]XYbX'g]bX"

8]Y'F Y`Yj Ubn'XYf'J cfZÅ`Y

8]Y'9]bVfØW Y`]b'8 Òfh\`i bhYfghfY]W Yb'X]Y'Bchk YbX][_Y]hž'g]W
a]h': fU[Yb'XYf'G]W Yf\Y]h'Ui gY]bUbXYfni gYhnYb"8]Y'F Y[]cbYb
a ØggYb'ni gUa a YbUfVY]hYbž'i a`YZZY_hj] Y`@Øgi b[Yb'ni`Z]bXYbž
X]Y`b]W h'bi f`_i fnZf]gh][Y'G]W Yf\Y]h'V]YhYbž'gcbXYfb'Ui W`XUg
J YfhfUi Yb']b'X]Y`c_U`Yb'G]W Yf\Y]hg_fÅZhY`ghÅf_Yb`_ØbbYb"
8]YgYg'J YfhfUi Yb']gh'Yb hgW Y]XYbXž'XUa]h'X]Y`B UW VUfgW UZh'g]W
g]W Yf'ZØ\`h'i bX'gY`Vgh'U_hj`k YfXYb`_Ubbž'i a`[Ya Y]bgUa`[Y[Yb
?f]a]bU`]hÅhj cfn[Y\Yb"

⇒b`NY]hYbž']b'XYbYb'G]W Yf\Y]hgZfU[Yb']a a Yf'a Y\`f']b'XYb': c_i g
fØW_Ybž'[]`h'Ygž'XUgg'X]Y`6Øf[Yf']\fYb'HY]'ni`X]YgYa`H\Ya U
VY]hfU[Ybž'i a`ni`_ØbZh][`gc`W Y`J cfZÅ`Y`ni`j Yf\]bXYfb"

8 YhU]`g`ni`XYb`9]bVfØW Yb`]a

⇒bXi ghf]Y[YV]Yh'8 Òfh\

⇒b'XYf'B UW hij ca`&'`"Ui Z'XYb`&("5i [i gh'k i fXYb`]a
⇒bXi ghf]Y[YV]Yh'8 Òfh\`nk Y]'9]bVfØW Y`j YfnY]W bYh"8]Y'Dc`]nY]
VYf]W hYhž'XUgg'X]Y`HÅhYf'Xi fW`5i Z\YVY`b`j cb`HØfYb`i bX
: YbghYfb`]b'X]Y`; Yk YfVY[YVÅi XY`[Y`Ub[hYb"6Y]`X]YgYb
9]bVfØW Yb`k i fXY`6Uf[Y`X`Yb h'k YbXYhž'k Ug`Ui Z]Y]bY`[Yn]Y`hY
Gi W`Y`b UW`Z]bUb n]Y`Yb`A]hY`b`\]bXYi hYh"8]Y`[YbUi Y`< Ò\Y`XYg
GW UXYbg`]gh'XYfnY]h'bcW`i b`_Uf`i bX`k]fX`j cb'XYb`9fa]h'Yfb
ZYgh[YghY`h"

8]Y'Dc`]nY]'V]hYhi a`NYi [Yb\]bk Y]gY`i bX`ZcfXYfh'5bk c\bYf'cXYf
DYfgcbYbž'X]Y`g]W`ni f`HUhnY]h`]a`6YfY]W`; U`gW Y]XYf`GhfU» Y
Ui Z[Y\U`hYb`\UVYbž'ni f`A]h\]ZY`Ui Z`Gc`W Y`<]bk Y]gY`g]bX`ZØf`X]Y
5i Z`_Åfi b[`XYf`HUhYb`i bj Yfn]W hVUf"8]Y`Òfh]W Y
Dc`]nY]]bgdY_h]cb`]b`6cddUfX`\Uh'X]Y`9fa]h'i b[Yb`Ui Z[Ybca a Yb
i bX`i bhYfgi W`h'a Ò[`]W Y`, VYfk UW i b[gUi ZbU\ a Yb`gck]Y
UbXYfY`6Yk Y]ga]hY`ž`X]Y`ni f`X`Ybh]Z]n]Yfi b[`XYf`HÅhYf`ZØ\`fYb
_ØbbhYb"

8 Yf' ? cbhYI h'j cb '9]bVfØW X Yb ']b

; Yk YfVY [YV]YhYb

9]bVfØW X Y']b'; Yk YfVY [YV]YhYb 'g]bX']b' 8Yi hgW X' UbX' Y']b
k]YXYf_Y \fYbXYg'D\Åbca Yb" '6YgcbXYfg']b']bXi ghf]Y'' [YdfÅ [hYb
FY []cbYb' _ca a hYg' \Åi Z[' j cfžXUgg' ? f]a]bY'' Y' [Yn]Y' h'6Yhf]YVY
Ui Zgi W X Ybž' i a ' \cW X k Yfh] [Y'; ØhYf' cXYf'']ei]XY' A]hY'' ni ' ghY \ ' Yb"
@Ui h'Y]bYf' GhUh]gh]_ XYg' 6i bXYg_ f]a]bU' Ua hYg' f6? 5E']gh' X]Y' NU \ '
XYf' 9]bVfØW X Y']b'; Yk YfVY [YV Åi XYb']a ' \f' & \$ & &]a ' J Yf [' Y]W X
ni a ' J cf' \f' ' Y]W X h' Ub [Ygh]Y [Yb''

8]Y'; fØbXY' ZØf' X]YgY' 9bhk]W_ i b [' g]bX' j]Y' ZÅ' h] ['' 9]bY' Yf \ Ø \ hY
5bnU \ ' j cb ' YfYb' i bX' i bVYk UW X hYb'; YV Åi XYb']b' Y]b] [Yb
; YV]YhYb' _ØbbhY' Y]bY' F c'' Y' gd]Y' Ybž' YVYbgc' k]Y' X]Y' k UW X gYbXY
? f]a]bU']hÅh']a ' X] []hU' Yb' 6YfY]W X ž' k c' ? f]a]bY'' Y' Ui W X' Ui g' XYf
: YfbY' Ni [Ub [' ni ' gYbg]V' Yb' 8UhYb']b' i bhYfbY \ a Yb' gi W X Yb'' 8]YgY
HfYbXg' a UW X Yb' Yg' ZØf' i bhYfbY \ a Yb' i bX' G]W X Yf \ Y]hgVY \ ØfXYb
Xf]b [YbXYf' XYbb' Yž' dfÅj Ybh]j Y' A U» bU \ a Yb' ni ' Yf [fY]ZYb''

DfÅj Ybh]c bga U» bU \ a Yb' [Y [Yb' 9]bVfØW X Y

I a ' 9]bVfØW X Y']b'; Yk YfVY [YV]YhYb' ni ' j Yf \]bXYfbž' Ya dZY \ ' Yb
: UW X ' Yi hY' j YfgW X]YXYbY' G]W X Yf \ Y]hgghfUhY []Yb'' 8Uni ' nÅ \ ' Yb
i bhYf' UbXYfYa .

- D \ mg]gW X Y' G]W X Yf \ Y]h. ' 8]Y' ðghU'' Uh]cb' j cb' fcVi ghYb
GW X ' ØggYfbž' G]W X Yf \ Y]hg_ Ua YfUg' i bX' 5' Ufa Ub' U [Yb' _Ubb
dchYbn]Y'' Y' HÅhYf' UVgW X fYW_ Yb''
- I a [YVi b [gXYg] [b. ' 9]bY' [i hY' 6Y' Yi W X hi b [' i bX' X]Y
6YgY]h] [i b [' j cb' g]W X hVUfYb' J YfghYW_ Yb']b' XYf' BÅ \ Y' j cb
; YV Åi XYb' Yf \ Ø \ Yb' X]Y' G]W X Yf \ Y]h''
- Ni gUa a YbUfVY]h' a]h' XYf' Dc']nY]. ' FY [Y' a Å»] [Y
G]W X Yf \ Y]hgVYfUhi b [Yb' i bX' X]Y' Ni gUa a YbUfVY]h' a]h
' c_ U' Yb' Dc']nY]X]YbghghY'' Yb' _Ubb' \ Y' ZYbž' 9]bVfØW X Y
ZfØ \ nY]h] [' ni ' Yf_ YbbYb' i bX' ni ' a Y' XYb''

8 i fW X ' gc' W X ' dfÅj Ybh]j Y' A U» bU \ a Yb' _ØbbYb' i bhYfbY \ a Yb' b]W X h

bi f']\fY'd\mg]gWYb'K YfhY'g]WYfbž'gcbXYfb'Ui W'XUg'F]g]_c'j cb
k]fhgWUZh]WYb'J Yf'i ghYb'Xi fW'8]YVghU\`'j Yff]b[Yfb"8]Y'Dc`]nY]
fÀhž'ghYhg'k UWgUa`ni`gY]b'i bX'j YfXÀW h][Y'5_h]j]hÀhYb'gc Zc fh'ni
a Y'XYbž'i a`X]Y`ÒZYbh]WY'G]WYf\Y]h'ni`[Yk À\f`Y]ghYb"

8YhU]`g

6Ygi WYb'G]Y'i bg'Ui Z.'b!U["XY