

NYi [Yb [Ygi Wk h. '@_k !I bZU``]b ; YYgh`UbX
V`Y]Vh`c\ bY`HÅhYf

I bVY_UbbhYf`@_k !: U\ fYf`ZØWk hYh`bUWk `J Yf_Y\ fgi bZU``
nk]gWk Yb `8 fUb[ghYXh`i bX`6UX`6YXYf_YgU``Dc`nY]`gi Wk h
NYi [Yb"

7i l \Uj Yb`fchgl` `9]b`J cfZU``Ui ZXYf`@%&\$`nk]gWk Yb`8 fUb[ghYXh
i bX`6UX`6YXYf_YgU`VYgWk ÅZh][h`XYfnY]h`X]Y`Dc`nY] ; YYgh`UbX`5a
&*`5i [i gh&\$&(ž[Y[Yb`%&.&) `l \fž`_Ua `Yg`Xcfh`ni `Y]bYf
J Yf_Y\ fgi bZU``Zi Wk hž`X]Y`Y]b][Yg`Ub`5i Za Yf_gUa _Y]h`YffY[h`\Uh"
9]b`V]g\Yf`i bVY_UbbhYf`@_k !: U\ fYf`VYZ `f`X]Y`GhfU» Y`]b`F]Wk hi b[
6UX`6YXYf_YgU``K Å\ fYbX`Y]bYf`?i fj Y`[Yf]Yh`gY]b : U\ fnYi [`Ui Z
X]Y`Ybh[Y[Yb_ca a YbXY : U\ fVU\ bž`k Ug`ni `Y]bYa
Ni gUa a Ybghc» `XYf``]b_Yb`5i » Ybgd]Y[Y`a]h`Y]bYa `GUhY`ni [
ZØ\ fhY"

8Yf : U\ fYf`XYg`GUhY`ni [g`VYf]Wk hYhYž`XUgg`XUg`UbXYfY : U\ fnYi [
Ui ZgY]bYf`GY]hY`XYf`GhfU» Y`k Ufž`U`g`XYf`l bZU``dUgg]YfhY" Hfchn
XYg`GWk UXYbgž`XYf`Ub`VY]XYb`Gd]Y[Y`b`YbhghUbXYb`]ghž`Y» `XYf
J Yfi fgUWk Yf`gY]bY : U\ fh`i b[Y\]bXYfh`ZcfhgYhnYb`"8]Yg`\]bhYf`Åggh
b]Wk h`bi f`Y]bY`i b`_UfY`G]hi Uh]cb`ZØ`X]Y`Dc`nY]ž`gcbXYfb`Ui Wk `ZØf
U`Y`6YhY]] [hYbž`X]Y`a Ò[`]Wk Yfk Y]gY`NYi [Yb`XYg`J cfZU``g`k UfYb"

K]Wk h][Y`8YhU]`g`ni a `J cfZU``

6]g\Yf`[]Vh`Yg`_Y]bY`_cb_fYhYb`≠Zcfa Uh]cbYb`ni a `[Ygi Wk hYb
: U\ fnYi [ž`YXcWk`k]fX`Ub[Ybca a Ybž`XUgg`Yg`YVYbZU``g`Ua
`]b_Yb`5i » Ybgd]Y[Y`VYgWk ÅX][h`k cfXYb`]gh`8]Y`Dc`nY]`\Uh`XUg
Di V`_i a `i a `A]h`]Z`[YVYhYb`"NYi [Ybž`X]Y`XYb`l bZU``
VYcVUWk hYh`\UVYb`cXYf`≠Zcfa Uh]cbYb`VYnØ[`]Wk`XYg`[Ygi Wk hYb
@_k `VYg]hnYbž`k YfXYb`Xf]b[YbX`[YVYhYbž`g]Wk `ni `a `Y`XYb"

⊕gVYgcbXYfY`_ÒbbhY`Y]bY`6YgWfY]Vi b[`XYg': U\fnYi [g`cXYf`XYf : U\fk Y]gY`gY`f`]\`ZfY]W`gY]b"

- C fhgVYgWfY]Vi b[.`@%&\$`nk]gWYb`8fUb[ghYXh`i bX`6UX 6YXYf_YgU
- 8Uhi a `XYg`J cfZU``g.`&*"5i [i gh`&\$&(
- I \fnY]h.`%&.&)`i \f
- GW UXYb.`6YgW`AX][hYf`5i »Ybgd]Y[Y`Ua `GUhY`ni [`i bX Ua `JYfi fgUWYfZU\fnYi [
- Dc`]nY]; YYgh`UbX.`HY`YZcb`\$+(` ` - & , \$

8Yf`J cfZU``nY][hž`k]Y`k]W`h][`Yg]ghž`X]Y`J YfUbhk cfhi b[`]a GhfU»Ybj Yf_Y\`f`ni `ØVYfbY`a Yb"J Yf_Y\`fgi bZU``Zi W`hYb`g]bX b]W`h`bi f`]`Y[U`ž`gcbXYfb`_ÒbbYb`Ui W`k Y]hfY]W`YbXY` : c`[Yb`ZØf X]Y` ; YgW`AX][hYb` \UVYb"8]Y`Dc`]nY]`gYhnh`U`Yg`XUfUbž`XYb` : U` Ui Zni _`ĀfYb`i bX`\cZ`h`Ui Z`X]Y`I bhYfghØ`hni b[`Ui g`XYf 6Yj Ò`_Yfi b["9g]gh`b]W`h`bi f`Y]bY` : fU[Y`XYg`F YW`hgž`gcbXYfb Ui W`XYg`5bghUbXgž`]b`gc`W`Yb`G]hi Uh]cbYb`ni `fYU[]YfYb`i bX ghY`Ybni V`Y]VYb"

: Øf`X]Y`Dc`]nY][bgdY_h]cb`7i I \Uj Yb`]gh`X]Yg`Y]bY` ; Y`Y[Yb`Y]hž XYb`9]bgUh`ni f`DfĀj Ybh]cb`j cb`J Yf_Y\`fgi bZĀ``Yb`ni `VYhcbYb" ✕XYf`J Yf_Y\`fghY`]bY`a Yf`gc`hY`g]W`gY]bYf`J YfUbhk cfhi b[VYk i ggh`gY]b`i bX`]a `9fbghZU``\UbXYb"8]Yg`_ÒbbhY`VYXYi hYbž b]W`h`bi f`XYb`Y][YbYb`GW UXYb`ni `a Y`XYbž`gcbXYfb`Ui W`g]W` i a `UbXYfY`6YhY][hY`ni `_Øa a Yfb"

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

8]Y`Dc`]nY]`\Uh`Y]bY`X]fY`_hY`?cbhU`_ha Ò[`]W`_Y]h`VYfY]h[YghY`hž`i a X]Y`?ca a i b]_Uh]cb`ni `Yf`Y]W`hYfb"NYi [Yb`cXYf`DYfgcbYbž`X]Y a Ò[`]W`Yfk Y]gY`⊕Zcfa Uh]cbYb` \UVYbž`_ÒbbYb`g]W` `YXYfnY]h`Ub X]Y`Dc`]nY]; YYgh`UbX`k YbXYb"5`Y`<]bk Y]gY`g]bX`k]W`h][`i bX _ÒbbhYb`ni f`5i Z`Āfi b[`XYg`GUW`j Yf`U`hg`VY]hfU[Yb"

8]Y`Dc`]nY][bgdY_h]cb`7i I \Uj Yb`]gh`hĀ[`]W` `YffY]W`VUf`i bX Xf]b[YbX`Ui Z`X]Y`A]h\]`ZY`XYf`6Yj Ò`_Yfi b[`Ub[Yk]YgYbž`i a gc`W`Y`J cfZĀ``Y`]b`Ni _i bZ`ini `j Yfa Y]XYb`i bX`fUgW` `Ui Z`ĀfYb`ni

_ÖbbYb"8]Yg]gh'bi]W h'bi f'Y]bY': fU[Y'XYf'; YfYW h][_Y]hž'gcbXYfb
Ui W'XYg'FYgdY_hg]a'Ni gUa a Yb`YVYb`Ui Zi bgYfYb`GhfU» Yb"

F ØW_ZfU[Yb`V]hhY`Ub.

Dc`]nY]]bgdY_h]cb`7i l \Uj Yb
DfYggY!`i bX`^ ZZYbh]W_X]hgUfVY]h
GhYd\Ub`<Yfhn
HY`YZcb.`\$(+&%!)+'!%\$(
9!A U]`.dfYggYghY`Y4 d]!W l "dc`]nY]"b]YXYfgUW gYb"XY

J YfUbhk cfhi b[gj c`Yg`J Yf\U`hYb`]a`GhfU» Ybj Yf_Y`f`]gh
i bYf`Ägg]W`"»XYf`j cb`i bg`_Ubb`Y]bYb`l bhYfgW]YX`a UWYbž
]bXYa`k]f`i bg`Ub`X]Y`J Yf_Y`f`gY[Y`b`\U`hYb`i bX`]a`BchZU`
\UbXY`b"': U`fYfž`X]Y`i bUW hgUa`g]bX`cXYf`g]Y`[Y[Yb`X]Y'; YgYhnY
j Yfghc» Ybž`hfU[Yb`ni f`l bg]W Yf\Y]h]a`J Yf_Y`f`VY]i bX`a ØggYb
YbhgdYfW YbX`ni f`J YfUbhk cfhi b[`] Ync[Yb`k YfXYb"

6Y]`J Yf_Y`f`gi bZ`Y`b`X]YgYf`5fh]gh`Yg`c Zh'gW k]Yf][ž`XYb
J Yfi fgUW Yf`ni`Yfa`]hhY`bž]bgVYgcbXYfY`k Ybb`_Y]bY`NYi [Yb
Ubk YgYbX`g]bX`i bX`XYf`l bZU`ZØW h][Y`X]Y`GnYbY`j Yf`Ägg" `b
8Yi hgW`UbX`g]bX`gc`W`Y`J cfZ`Y`b]W h`Y]bn][Ufh][ž`i bX`X]Y
; YgYhn[YVi b[`g]Y`h`_UfY`FY[Y`i b[Yb`ZØf`XYb`l a [Ub[`a`]h
i bYf`Ui VhYa`9bhZYfbYb`j ca`l bZU`c`fh`j cf"8]YgY'; YgYhn[YVi b[
]gh'gck c`l`]a`GhfU» Ybj Yf_Y`f`g[YgYhn`U`g`Ui W`]a
GhfUZ[YgYhnVi W`j YfUb_Yfhž`i a`g]W Yfni ghY`Ybž`XUgg`X]Y
J YfUbhk cfhi]W Yb`ni f`FYW YbgW UZh[Ync[Yb`k YfXYb"

; YgYhn`]W Y`F Y[Y`i b[Yb`]a`XYi hgW Yb
GhfU» Ybj Yf_Y`f`

@Ui h`z`%(&`Gh`6`fGhfUZ[YgYhnVi W`l`a UW h`g]W`ghfUZVUfž`k Yf`g]W
bUW`Y]bYa`J Yf_Y`f`gi bZU`j ca`l bZU`c`fh`YbhZYfbhž`c`bY`gY]bY
DYfgcbU]Yb`i bX`X]Y`5fh`gY]bYf`6YhY]]i b[`Ubni [YVYb"8]YgY
J cf`gW f]Zh`X]Ybh`XUni ž`X]Y`CdZYf`j cb`J Yf_Y`f`gi bZ`Y`b`ni
gW ØhnYb`i bX`g]W Yfni ghY`Ybž`XUgg`6Yhfc ZYbY`X]Y`b`Øh][Yb
bZcfa Uh]cbYb`ZØf`X]Y`GW UXYbgfY[i`]Yfi b[`Yf\U`hYb"8]Y`GhfUZY
_Ubb`Y`bUW`GW k YfY`XYg`J cfZU`g`j Uf]]YfYbž`k cVY]]b`gW k YfYb

: Å`Yb`Ui W` : fY]\Y]hgghfUZyb`j Yf\Åb[h`k YfXYb`_ÖbbYb"

Ni gÅh`]W`ni`XYb`fYW`h]W`Yb` : c`[Yb`_ÖbbYb`J Yf_Y\ fghY]`bY\ a Yf
Ui W`a`]h`n]j`fYW`h]W`Yb`5bgdfØW`Yb`_cbZfcbh]Yfh`k YfXYb`"8 Ug
VYXYi hYh`XUgg` ; YgW`ÅX][hYž`k]Y`ja`j cf`Y[YbXYb` : U`XYf` : U\ fYf
XYg`GUhY`ni [Ygž`GW`UXYbgYfgUhmZcfXYfi b[Yb`Ub`XYb`gW`i`X][Yb
: U\ fYf`ghY`Yb`_ÖbbYb`"8]Y`J Yfg]W`Yfi b[`XYg`J Yfi fgUW`Yfg
_ÖbbhY`ZØf`X]Y`? cghYb`XYf`GW`ÅXYb`Ui Z_ca` a Ybž`k Ybb`XYf` : U\ fYf
Yfa]hY`h`k YfXYb`_Ubb"

8]Y`F c`Y`j cb`NYi [Yb`i bX VYfk UW`i b[ghYW`bc`c []Yb

⇒ G]hi Uh]cbYb`k]Y`XYa` VYgW`f]YVYbYb`J cfZU`_Ubb`XYf`6Y]hfU[
j cb`NYi [Yb`Yf\YV`]W`ni f`5i Z_`Åfi b[`XYg` : U`g`VY]hfU[Yb`"
A YbgW`Ybž`X]Y`XYb`J cfZU`VYcVUW`hYh`\ UVYbž`VYZ]bXYb`g]W`c`Zi]b
XYf`VYghYb`Dcg]h]cbž`i a`k]W`h][Y`8YhU]`g`ØVYf`XUg`ZØW`h][Y
: U\ fnYi [`ni`]YZYfbž`gY]Yb`Yg`? YbbnY]W`Yb`cXYf`gdYn]Z]gW`Y
A Yf_a` U`Y`XYg` : U\ fnYi [g`"8]Yg`_Ubb`]bgVYgcbXYfY`]b`ÅbX`]W`Yb
; YV]YhYb`gW`k]Yf][`gY]bž`k c`k Yb][Yf`J Yf_Y\ fghY]`bY\ a Yf
i bhYfk Y[g`g]bX`i bX`NYi [YbUi ggU[Yb`fUf`g]bX`"8]Y`Dc`nY]
UddY`]Yfh`XU\Yf`\Åi Z][`Ub`X]Y`² ZYbh]W`_Y]hž`g]W`ni`a`Y`XYbž
k Ybb`g]Y`Yhk Ug`[YgY\Yb`\Uh"

8 UfØVYf`\]bUi g`[Yk]bbYb` , VYfk UW`i b[ghYW`bc`c []Yb
ni bY\ a YbX`Ub`6YXYi hi b[ž`i a`gc`W`Y`J cfZÅ`Y`Ui Zni`_ÅfYb`"
? Ua YfUg`Ub`6cfX`j cb`J Yf_Y\ fga]hY`b`k]Y`6i ggYb`cXYf`]b`XYf
B UW`VUfgW`UZh`_ÖbbYb`k]W`h][Y`6Yk Y]gY`]YZYfb`"9VYbgc`_ÖbbYb
8 Ug\ W`a`g`]b` : U\ fnYi [Yb`X]Y`9fY][b]ggY`fi bX`i a`Y]bYb`i bZU`
Ui ZnY]W`bYbž`gcXUgg`]a`B UW`\]bY]b`?`Uf\Y]h`XUfØVYf`\YffgW`hž
k Yf`X]Y`J YfUbhk cfhi b[`hfi ["8]YgY`HYW`bc`c []Yb`_ÖbbYb`Ui W`
XUni`VY]hfU[Ybž`X]Y`G]W`Yf\Y]h]a`GhfU`Ybj Yf_Y\ f`ni`Yf\Ø\Ybž`XU
a`Ö[`]W`Y`J Yfi fgUW`Yf`j cb`i bZÅ`Yb`g]W`a`Ö[`]W`Yfk Y]gY`Y\Yf`Ub
X]Y`J Yf_Y\ fgfY[Y`b`\U`hYbž`k Ybb`g]Y`k]ggYbž`XUgg`g]Y`ØVYfk UW`h
k YfXYb"

⇒ XYf`8]g`i gg]cb`i a`X]Y`J YfVYggYfi b[`XYf`J Yf_Y\ fgg]W`Yf\Y]h
i bX`XYb`i a` [Ub[`a`]h]J Yf_Y\ fgi bZÅ`Yb`k]fX`XYf`9]bgUhm

a cXYfbYf'HYW\bc`c[]Yb'i bX'X]Y': ÒfXYfi b['j cb'NYi [YbUi ggU[Yb
ni bY\ a YbX']b'XYb': c_i g'[YfØW_h" '8Yf'J cfZU``']b'; YYgh'UbX'nY][hž
k]Y'k]W\h]['Y]bY'Yb[U[]YfhY'N]j]'[YgY``gW\UZh'i bX'hYW\bc`c[]gW\Y
<]'Zga]hhY``ZØf'X]Y'5i Z_`Àfi b['j cb'l bZU``i fgUW\Yb'g]bX"

K Y]hYfY' ðZcfa Uh]cbYb'i bX'U_hi Y``Y'9bhk]W_`i b[Yb'ni 'X]YgYa
H\Ya U'Z]bXYb'G]Y'Ui Z'XYf'K YVgY]hY'XYf'Dc`]nY]'B]YXYfgUW\gYb"

8YhU]`g

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