



⊖·XYf'DgmWk c`c []Y`k]fX`X]Y`DYfgÖb`]Wk_Y]h`Y]bYg`⊖X]j]Xi i a g`U`g
Y]b`_ca d`Yl Yg`Ni gUa a Ybgd]Y`j YfgWk]YXYbYf`A Yf_a U`Y`i bX
9][YbgWk UZhYb`VYhfUWk hYhž`X]Y`XUg`J Yf`U`hYbž`X]Y` ; YXUb_Yb`i bX
X]Y`9a ch]cbYb`Y]bYf`DYfgcb`dfÄ [Yb``8]YgYf`5fh`_Y`k]Xa Yh`g]Wk
XYf`5bU`mgY`i bX`9fZc fgWk i b [`XYf`DYfgÖb`]Wk_Y]h`Y]bYg`↑ b [Yb
A UbbYg`Xi fWk `]bhYfYggUbhY` : fU [Ybž`X]Y`9]bV`]W_Y`]b`gY]b
⊖bYfghYg` [Yk Ä`fYb``8 UfØVYf`f`]bUi g`k YfXYb`h]YZ [fØbX][Y` : fU [Yb
ni f`@YVYbgd`]`cgc d`Y]Y`i bX`Ni _i bZhg]g]cbYb`XYg`↑ b [Yb`A UbbYg

[YghY`hzi a`gY]bY`DYfgdY_hj] Yb`i bX`N]Y`Y`VYggYf`ni`j YfghY`Yb`
5VgW`jY» YbX`k YfXYb`Ui W`i gh][Y`i bX`YbhgdUbbhY
; YgdF`Wgh`Ya Yb`j cf[YghY`hziX]Y`Y]bY`cW`YfY`Gh]a`a`i`b[
gW`UZZYb`i bX`Y]bYb`9]bV`]W`_]b`X]Y`i a`cfj`c`Y`GY]hY`gY]bYf
DYfg`Ob`]W`_Y]h`V]YhYb`"

⇒b hYfYggUb hY` : fU[Yb`ni`f`DYfg`Ob`]W`_Y]h`XYg
> b[Yb

8]Y`DYfg`Ob`]W`_Y]h`Y]bYg`> b[Yb`_Ubb`gY`f`ZUgn]b]YfYbX`gY]b`i`bX
Yg`[]Vh`j]Y`Y`]b hYfYggUb hY` : fU[Yb`žX]Y`XUVY]`Y`ZYb`_`ObbYb`ž`g]Y
VYggYf`ni`j YfghY`Yb`"9]bY`X]YgYf` : fU[Yb`_`Obb hY`gY]b.`K`Y`W`Y
K`YfhY`g]bX`X]f`VYgcbXYfg`k`]W`h][`]a`i`@VYb`3`8]YgY` : fU[Y`_`Ubb
5i`ZgW`i`gg`XUf`ØVYf`[YVYb`ž`k`Y`W`Y`Df]bn]d]Yb`XYf`> b[Y`j`Yfhf]hh
i`bX`k`]Y`Yf`gY]bY`<`UbX`i`b[Yb`i`bX`9bhgW`Y]Xi`b[Yb`XUbUW`
Ui`gf]W`hYh`"

9]bY`k`Y]hYfY`gdUbbYbXY` : fU[Y`_`Obb hY`gY]b.`K`Y`W`Y`<`cVVmg`cXYf
⇒hYfYggYb`VY[Y]ghYfb`X]W`_Ua`i`a`Y]ghYb`3`8]Y`5b`hk`c`fh`Ui`ZX]YgY
: fU[Y`_`Ubb`nY][Yb`ž`k`Y`W`Y`@Y]XYbgW`UZhYb`XYf`> b[Y`i`Uh`i`bX`k`]Y
Yf`gY]bY` : fY]nY]h`[YghU`hYh`"8Uf`ØVYf`i`]bUi`g`_`Obb hY`i`a`Ub`ZfU[Yb.
K`Y`W`Y`<`YfUi`gZc`XYfi`b[Yb`i`Ugh`Xi`i`VYfY]hg`[Ya`Y]ghYfhi`bX`k`Ug
i`Ugh`Xi`i`XUfUi`g`[Y`Yfb`h`3`8]YgY` : fU[Y`_`Ubb`9]bV`]W`_Y]b`X]Y
@VYb`gYfZU`fi`b[Yb`XYg`> b[Yb`[YVYb`i`bX`nY][Yb`ž`k`]Y`Yf`a`]h
GW`k`]Yf][`_Y]hYb`i`a`[Y`h`"

9]b`i]b hYfYggUb hYg`H`Ya`U`ni`f`DYfg`Ob`]W`_Y]h`_`Obb hY`Ui`W`X]Y
: fU[Y`b`UW`X`Yb`dYfg`Ob`]W`Yb`Gh`f`_Yb`i`bX`GW`k`A`W`Yb`gY]b`"Ni`a
6Y]gd]Y`.`K`Ug`g]bX`XY]bY`[f`Ø»`hYb`Gh`f`_Yb`i`bX`k`]Y`gYhnh`Xi`g]Y
Y]b`3`8]YgY` : fU[Y`_`Ubb`XUVY]`Y`ZYb`ni`j YfghY`Yb`ž`k`cf]b`XYf
> b[Y`[i`h]ghi`bX`k`]Y`Yf`gY]bY` : A`][`_Y]hYb`bi`hnh`"9VYbgc`_`Obb hY
a`Ub`ZfU[Yb.`5b`k`Y`W`Yb`9][YbgW`UZhYb`a`ØW`hYgh`Xi`i`bcW`
UfVY]hYb`i`bX`k`Ufi`a`3`8]YgY` : fU[Y`_`Ubb`nY][Yb`ž`Ub`k`Y`W`Yb
6YfY]W`Yb`XYf`> b[Y`bcW`k`UW`gYb`a`ØW`hY`i`bX`k`Y`W`Y`N]Y`Y`Yf
g]W`gYhnh`"

Ni`g`Ah`i]W`_`Obb hY`i`a`Ub`XYb`> b[Yb`ZfU[Yb.`K`Y`W`Y`F`c`Y`gd]Y`Yb
: fYi`bXY`i`bX` : Ua`j]Y`j]b`XY]bYa`i`@VYb`3`8]YgY` : fU[Y`_`Ubb`nY][Yb`ž

k]Y'k]W h['gc n]U'Y'6Yn]Y\i b[Yb'ZØf'\b'g]bX'i bX'k]Y'Yf'g]Y
dZY[h'Ni`Yhnh_ØbbhY'a Ub'Ui W' bUW'XYb'Ni _i bZhgj]g]cbYb'XYg
đ b[Yb'ZfU[Yb.'K c'g]Y\gh'Xi 'X]W']b'ZØbZ'đ\ fYb'i bX'k Ug
a ØW'hYgh'Xi 'V]g'XU\]b'YffY]W'h\UVYb3'8]YgY': fU[Y'_Ubb
5i ZgW' i gg'XUfØVYf'[YVYbž'k Y'W'Y'N]Y'Y'i bX'HfÅi a Y'XYf'đ b[Y
\Uh'i bX'k Y'W'Y'D`ÀbY'Yf'ZØf'X]Y'Ni _i bZh'gW'a]YXYh"

H]YZ[fØbX][Y': fU[Yb'ni f'@YVYbgd\]`cgc d\]Y
i bX'Ni _i bZh'gj]g]cbYb

K Ybb'k]f'ØVYf'@YVYbgd\]`cgc d\]Y'gd fYW'Ybž'[Y\h'Yg'XUfi a ž'k]Y
k]f'X]Y'K Y'h'i bX'i bgYf'8 UgY]b'XUf]b'j YfghY\Yb"'đXYf'A YbgW'\Uh
gY]bY'Y][YbY'D\]`cgc d\]Yž'X]Y'j cb'gY]bYb'9fZU\fi b[Ybž
, VYfnYi [i b[Yb'i bX'K YfhYb'[YdfÅ[h']gh"9g']gh'ZUgn]b]YfYbXž'g]W
XUfØVYf'Ui gni hUi gW'Yb'i bX'X]Y'j YfgW]YXYbYb'DYfgdY_h]j Yb
_YbbYbni`YfbYb"

9]b'k]W h[Yf'5gdY_h'XYf'@YVYbgd\]`cgc d\]Y'gh'X]Y': fU[Y'bUW
XYa`G]bb'XYg'@YVYbg"J]Y'Y'D\]`cgc d\ Yb'i bX'8Yb_Yf'\UVYb'g]W
]a`@Ui ZY'XYf'; YgW]W'hY'XUa]h'Ui gY]bUbXYf[YgYhnh'i bX
i bhYfgW]YX'W'Y'5bhk cfhYb'[YZi bXYb"' : Øf'Y]b][Y''Y[h'XYf'G]bb
XYg'@YVYbg']b'XYf'9fZØ'i b['j cb'dYfgØb`]W'Yb'N]Y'Ybž'ZØf'UbXYfY
]b'XYf'J YfV]bXi b['ni`UbXYfYb'A YbgW'Yb'cXYf']b'XYf'Gi W'Y'bUW
;`ØW_"

9]b'k Y]hYfYg'h]YZ[fØbX][Yg'H\Ya U']gh'X]Y': fU[Y'bUW'XYf
dYfgØb`]W'Yb'đXYbh]hÅh'i bX'XYa`GY'Vgh"K Yf'g]bX'k]f'k]f_`]W' i bX
k]Y'XYZ]b]YfYb'k]f'i bg'gY'Vgh3'8]YgY': fU[Yb'_ØbbYb'Y]bYb
ghUf_Yb'9]bZi gg'Ui Zi bgYf'GY'Vghj YfghÅbXb]g'i bX'i bgYfY
@YVYbgYb'hgW'Y]Xi b[Yb'\UVYb"

Ni _i bZh'gj]g]cbYb'g]bX'YVYbZU`g'Y]b']bhYfYggUbhYf'6YfY]W'ž'i a
g]W'; YXUb_Yb'ØVYf'X]Y'; YghU`hi b['i bgYfYg'Y][YbYb'@YVYbg'ni
a UW'Yb"'K c'gY\Yb'k]f'i bg']b'ZØbZ'cXYf'nY\ b'đ\ fYb3'K Y'W'Y
N]Y'Y'a ØW'hYb'k]f'YffY]W'Yb'i bX'k Y'W'Y'GW'f]hY'a ØggYb'k]f
XUZØf'i bhYfbY\ a Yb3'9g']gh'k]W h[ž'g]W'VYk i ggh'a]h'gY]bYf
Ni _i bZh'Ui gY]bUbXYfni gYhYb'i bX'X]Y'Y][YbYb'HfÅi a Y'i bX
5a V]h]cbYb'ni`fYZY_h]YfYb"

9]b`k Y]hYfYf`k]W`h[Yf`5gdY_h`XYf`@VYbgd\`]cgcd\]Y`]gh`X]Y
: fU[Y`bUW`XYa`i`a` [Ub[`a`]h`<YfUi`gZcfXYfi`b[Yb`i`bX`?`f]gYb`
K]Y`[Y`Yb`k`]f`a`]h`gW`k`]Yf][Yb`G]hi`Uh]cbYb`i`a`i`bX`k`Y`W`Y
@VYbgghfUhY[]Yb`Y`ZYb`i`bgž[YghAf`_h`XUfUi`g`Y`fj`cfni` [Y`Yb`3
8]YgY` : fU[Yb`_`ÖbbYb`i`bg`XUni`Vf]b[Ybž`ØVYf`i`bgYfY`Y][YbYb
Fyg`]Ybn`i`bX`6Yk`À`h][i`b[ga`YW`Ub]ga`Yb`bUW`ni`XYb`_Yb`"

8]Y`5i`gY]bUbXYfgYhni`b[`a`]h`@VYbgd\`]cgcd\]Y`i`bX
Ni`_i`bZhgj`]g]cbYb`_`Ubb`i`bg`XUVY`]Y`ZYbž`i`bg`gY`Vgh`VYggYf`ni
j`YfghY`Yb`i`bX`i`bgYfY`@VYbg]Y`Y`_`UfYf`ni`XYZ]b]YfYb`"9g`]gh
Y]bY`c`bYbXY`FY]gYž`X]Y`i`bg`XUni`UbYf[hž`ØVYf`XYb`Y][YbYb
HY`YffUbX`\]bUi`gni`V`]W`Yb`i`bX`bYi`Y`DYfgdY`_hj]Yb`ni`Yb`hXYW`_Yb`"

@i`gh][Y`i`bX`Yb`hgd`Ubb`hY` ; Ygd`f`À`W`gh`Y`a`Yb
ZØf`c`W`_YfY`Gh]a`a`i`b[

I`a`Y]bY`c`W`_YfY`Gh]a`a`i`b[`ni`gW`UZZYbž`g]bX`i`gh][Y`i`bX
Yb`hgd`Ubb`hY` ; Ygd`f`À`W`gh`Y`a`Yb`j`cb`Yb`hgW`Y]XYbXYf`6YXY`i`hi`b["
9]b`[i`hYf`K`]hn`_`Ubb`c`Zi`X]Y`Gd`Ubbi`b[``ÖgYb`i`bX`XUg`9]g`VfYW`Yb`
<]Yf`g]bX`Y]b][Y`H`Y`a`Ybž`X]Y`ZØf`Y]bY`i`b[Ynk`i`b[YbY
5ha`cgd`À`fY`gcf[Yb`_`ÖbbYb`.

- `@i`gh][Y`5bY`_XchYb`Ui`g`XYa`5`hU[.`X`XYf`\`Uh`i`gh][Y
 ; YgW`]W`hYb`Ui`g`gY]bYa`@VYb`ni`Yfn`À`Yb`"8]YgY
_`Y]bYb`5bY`_XchYb`_`ÖbbYb`c`Zi`ZØf`[fc»Y`@UW`Yf`gcf[Yb
i`bX`X]Y`Gh]a`a`i`b[`Ui`Zc`W`_Yfb`"
- `K`]hnY`i`bX`K`cfhgd]Y`Y`<i`a`cf`]gh`Y]bY`i`b]j`YfgY`Y
GdfUW`Yž`X]Y`A`YbgW`Yb`j`YfV]bXYh`K`]hnY`i`bX`K`cfhgd]Y`Y
g]bX`Y]bY`[fc»Ufh][Y`A`Ö[`]W`_Y]hž`i`a`[Ya`Y]bgUa`ni
`UW`Yb`i`bX`GdU»`ni`UVYb`"
- `@i`gh][Y`J]XYcg`cXYf`A`Ya`Yg`8Ug`HY]Yb`j`cb`i`gh][Yb
J]XYcg`cXYf`A`Ya`Yg`_`Ubb`ZØf`j`Y` ; Y`À`W`hYf`gcf[Yb`i`bX
X]Y`5ha`cgd`À`fY`Ui`Zc`W`_Yfb`"9]b`[Ya`Y]bgUa`Yf`@UW`Yf
gW`UZh`c`Zi`Y]bY`h]YZYfY`J`YfV]bXi`b["
"
- `<c`VVmg`i`bX`@Y]XYbgW`UZhYb`G]W`ØVYf`[Ya`Y]bgUa`Y
<c`VVmg`cXYf`@Y]XYbgW`UZhYb`Ui`gni`hUi`gW`Yb`_`Ubb
YVYbZU`g`ZØf`Y]bY`c`W`_YfY`Gh]a`a`i`b[`gcf[Yb`"9g`]gh]a`a`Yf
gW`Öbž`g]W`a`]h`A`YbgW`Yb`ni`j`YfV]bXYbž`X]Y`À`b`]W`Y`"

hYfYggYb`hY]`Yb"

9g]gh`k]W h][ž`XUgg`X]Y` ; YgdfÅW gh\Ya Yb`ZØf`U`Y`6YhY`][hYb
Ub[YbY`a`g]bX`i`bX`b]Ya UbXYb`j Yf`YhnYb`cXYf`VY`Y]X][Yb`9]b
[i hYf`G]bb`ZØf`<i`a`cf`]gh`XUVY]`YbhgW`Y]XYbX`<]Yf`g]bX`Y]b][Y
H]ddgž`i`a`Y]bY`cW`YfY`Gh]a`a`i`b[`ni`gW`UZZYb.

- `GY]`Ui`h\Ybh]gW. `GY]`Y]bZUW`Xi`gY`Vgh`i`bX`nY][Y`XY]bY
Y][YbY`DYfgØb`]W`_Y]h`5i`h\Ybh]n]hÅ`h`k`]fX`c`Zi`[YgW`Åmh
i`bX`_Ubb`ZØf`Y]bY`YbhgdUbbhY`5ha`cgd`ÅfY`gcf[Yb"
- `6`Y]VY`dcg]h]j` . J`Yfa`Y]XY`bY[Uh]j`Y`H\Ya`Yb`cXYf`
_c`bhfc]`YfgY`8]g`_i`gg]cbYb`"?`cbnYbhf]YfY`X]W`Ui`ZXUg
Dcg]h]j`Y`i`bX`j`Yfgi`W`Yž`Y]bY`cd]h]a`]gh]gW`Y`Gh]a`a`i`b[`ni
gW`UZZYb"
- `@W`Y`ØVYf`X]W`gY`Vgh`G]W`gY`Vgh`b]W`h`ni`Yfbgh`ni
bY`a`Yb`i`bX`ØVYf`g]W`gY`Vgh`UW`Yb`ni`_ØbbYbž`_Ubb`X]Y
GdUbbi`b[``ØgYb`i`bX`ZØf`Y]bY`YbhgdUbbhY`5ha`cgd`ÅfY
gcf[Yb"

hG[YgUa`h]gh`Yg`k]W h][ž`XUgg`U`Y`6YhY`][hYb`g]W`k`c`\`i`bX
YbhgdUbbh`ZØ`Yb`"@`gh][Y`i`bX`YbhgdUbbhY` ; YgdfÅW gh\Ya Yb
_ØbbYb`XUVY]`Y`ZYbž`Y]bY`cW`YfY`Gh]a`a`i`b[`ni`gW`UZZYb`i`bX`ZØf`
Y]bY`i`bhYf`U`hgUa`Y`NY]h`ni`gUa`a`Yb`ni`gcf[Yb"

GW`i`ggZc`[Yfi`b[

h`X]YgYa`5fh]_Y`\UVYb`k`]f`j`YfgW`YXYbY` ; YgdfÅW`g]XYYb
j`cf[YghY`hž`X]Y` Æ`bYb`\Y`ZYb`_ØbbYbž`]bhYfYggUbhY`i`bX
h]YZ[fØbX][Y` ; YgdfÅW`Y`a`]h`Y]bYa` `ž`b[Yb`ni`ZØ`fYb`" Æ`XYa`G]Y
: fU[Yb`ni`gY]bYf`DYfgØb`]W`_Y]hž`@YVYbgd`\]`cgcd`\]Y`i`bX
Ni`_i`bZhg]`j]g]cbYb`ghY`Ybž`_ØbbYb`G]Y`]b`VYggYf`_YbbYb`YfbYb
i`bX`Y]bY`h]YZYfY`J`YfV]bXi`b[`Ui`ZVUi`Yb`K`]f`\UVYb`Ui`W`Y]b][Y
`i`gh][Y`i`bX`YbhgdUbbhY` ; YgdfÅW gh\Ya Yb`Ya`dZc`\Ybž`i`a`Y]bY
`cW`YfY`Gh]a`a`i`b[`ni`gW`UZZYb`" Æ`XYa`G]Y`X]YgY` ; YgdfÅW`g]XYYb
]b` Æ`fY`8UhYg`]bhY[f]YfYbž`_ØbbYb`G]Y`]bhYfYggUbhY`i`bX
VYXYi`hi`b[gj`c`Y` ; YgdfÅW`Y`ZØ`fYbž`X]Y`gck`c`\`i`bhYf`U`hgUa`U`g
Ui`W`VYfY]W`YfbX`g]bX`K`]f`k`ØbgW`Yb` Æ`bYb`j`]Y`9fZc`[`VY]` Æ`fYb
8UhYg`

8YhU]`g

6Ygi W\Yb`G]Y`i bg`Ui Z.`Y]bY!fY]gY"XY