

&%]bhYfYggUbhY': U_hYb'ØVYf'?c`i a V]Yb

I bgYfY`_i fUh]YfhY`@]ghY`XYf`]bhYfYggUbhYghYb': U_hYb'ØVYf
?c`i a V]YbžX]Y`k]f`k Å\FYbX`i bgYfYg`6Ygi W`g`YfZU\FYb
\UVYb`K]f`\UhhYb`b]W`h]j cfž`Y]bYb`A cbUh]b`?c`i a V]Yb`ni
V`Y]VYb"B UW`XYa`k]f`Åb[Yf`U`g`[Yd`Ubh]a`GØXdUn]Z]_
j YfVfUW`h`\UhhYbž`k UfYb`k]f`VYgcf[hž`XUgg`k]f`bi f`gYW`g
A cbUhY`ZØf`Y]b`; YV]Yh`\UhhYbž`XUg`j]Y`[fØ» Yf`k Uf`U`g`XUgž
k Ug`k]f`V]g\FYf`[YgY`Yb`\UhhYb"B UhØf`]W`k Uf`i bgYfY`F Y]gY
Xi fW`7UfhU[YbUž`GUbhU`A UfhUž`HU[Ub[Už`A YXY``]bž
; i UhUdÅž`DcdUm½`i bX`GUb`5[i ghÉ`a Y\F`U`g`X]Y`nk Y]
K cW`Ybž`X]Y`k]f`[Yd`Ubh`\UhhYb" I bgYfY': fYi bXY`i bX
: Ua`]]Y`k UfYb`VYgcf[hž`XUgg`k]f`]b`X]YgYa` \]ghcf]gW`
i bVYghÅbX][Yb`@UbX`V`Y]VYb`k ØfXYbž`UVYf`k]f`ZUbXYb`Y]b
/ Ua`d^Y``]d/

I bgYfY`_i fUh]YfhY`@]ghY`XYf`]bhYfYggUbhYghYb': U_hYb'ØVYf
?c`i a V]YbžX]Y`k]f`k Å\FYbX`i bgYfYg`6Ygi W`g`YfZU\FYb`\UVYb

K]f`\UhhYb`b]W`h]j cfž`Y]bYb`A cbUh]b`?c`i a V]Yb`ni`V`Y]VYb"
B UW`XYa`k]f`Åb[Yf`U`g`[Yd`Ubh]a`GØXdUn]Z]_j YfVfUW`h`\UhhYbž
k UfYb`k]f`VYgcf[hž`XUgg`k]f`bi f`gYW`g`A cbUhY`ZØf`Y]b`; YV]Yh
\UhhYbž`XUg`j]Y`[fØ» Yf`k Uf`U`g`XUgž`k Ug`k]f`V]g\FYf`[YgY`Yb
\UhhYb"

B UhØf`]W`k Uf`i bgYfY`F Y]gY`Xi fW`7UfhU[YbUž`GUbhU`A UfhUž
HU[Ub[Už`A YXY``]bž; i UhUdÅž`DcdUm½`i bX`GUb`5[i ghÉ`a Y\F`U`g`
X]Y`nk Y]`K cW`Ybž`X]Y`k]f`[Yd`Ubh`\UhhYb"

I bgYfY': fYi bXY`i bX': Ua`]]Y`k UfYb`VYgcf[hž`XUgg`k]f`]b`X]YgYa
\]ghcf]gW`i bVYghÅbX][Yb`@UbX`V`Y]VYb`k ØfXYbž`UVYf`k]f`ZUbXYb
Y]b`VYbX][Yg`i bX`ZUgn]b]YfYbXYg`@UbX`j cfž`XUg`[YbUi`gc
ZUgn]b]YfYbX`k Uf`k]Y`gY]bY`ghÅf`_Yf`ZFYei Ybh]YfhYb`B UW`VUfb"

5i ZXYa`K Y[`\UVYb`k]f`j]Y`Y`]bhYfYggUbhY` : U_hYb`ØVYf`
?c`i a V]Yb`[`Y`Yfbh`i`k]f`hY`]Yb`i bgYfY` : Uj cf]hYb`i bhYb`"

⇒bhYfYggUbhY` : U_hYb`ØVYf`? c`i a V]Yb`

% " 6Yf]W`hYb`ni Zc`[`Y`Vch`XYf`VYfØW`h][`hY`8fc`[`YbVcgg`DUV`c`
9gW`cVUf`Ubž`?c`i a V]Ybg`GhUUhgW`i`XYb`]b`<Ø`Y`j cb`%\$`
A`]]UfXYb`8c`Uf`ni`VY`[`Y`]W`Ybž`i a`gY`]bYb`Fi`Zni`
j YfVYggYfb`i bX`XYa` : UXYb`_fYi`n`XYf`đ`gh`n`ni`
Ybh`_ca`a`Yb`fE`i`Y`Y`?`]]b`[`DUV`c`j cb`A`Uf`_`6ck`XYbž`
&\$`\$`%`Ł`

&" ?c`i a V]Ybg`i`nk`Y]hY`GhUXh`i`A`YXY`]]b`k`Uf`Y`]bgh`X]Y`
A`cfX`U`i`dhghUXh`XYf`K`Y`h`i`a`]h`%+`A`cfXYb`dfc`HU`[`i`]a`i`đ`U`f`
%-`-`%"`GY`]hXYa`i`U`h`g`]Y`Y`]bY`F`YbU`]ggUbW`Y`f`YVh`i`bX`]gh`
Y`i`hY`Y`]bYg`XYf`k`]W`h`[`ghYb`_`i`h`i`fY`Y`b`NYbhfYb`XYg`
@UbXYg`fE`i`Y`Y`i`H`Y` ;`i`UfX]Ubž`&\$`%`(`Ł`

U`h1`]bhYfYggUbhY` : U_hYb`ØVYf`?c`i a V]Yb` 2`5`h`Ug`/`_`6`c`chg`
6`chYfcg`J`Ò`[`Y`]]b`A`YXY`]]b`

% " ?c`i a V]Ybg`B`Uh]cbU`gdcfh`]gh`HY`c`"8`UVY`]k`YfXYb`
A`YhU`^`di`W`_`g`c`XYf`!`gW`Y`]VYb`fhY`c`Ł`[`Yk`cfZYbž`X]Y`
GW`]Y`»`di`j`Yf`Yb`h`U`hYb`i`bX`VY`]a`i`5i`ZdfU`Y`i`d`c`X`]YfYb`"
8`Ug`Gd`]Y`Y`b`hghUbX`j`cf`fi`bX`i`)\$`\$`đ`U`f`Yb`i`bhYf`]bX`][`YbYb`
;`fi`ddYb`i`bX`k`i`fXY`]a`i`đ`U`f`&\$`\$`[`YgYh`n`]W`i`ni`a`
B`Uh]cbU`gdcfh`Yf`_`À`fh`fE`i`Y`Y`i`7`B`B`Ł`

&" ?c`i a V]Yb`]]h`i`bhYf`Y`]bYa`i`)&!`À`U`f`][`Yb`?`cbZ`_`h`nk`]gW`Yb`
XYf`F`Y`[`]Yfi`b`[`i`bX`XYb`]]b`_`Yb`F`YVY`Y`b`XYf` :`UfW`
nk`]gW`Yb`XYf`F`Y`[`]Yfi`b`[`i`bX`XYb`]]b`_`Yb`F`YVY`Y`b`XYf`
 :`UfW`&\$`\$`*`k`i`fXY`Y`]b`_`[`ghc`f`]gW`Yg` :`f`]YXYbgUV`_`ca`a`Yb`
i`bhYfnY`W`b`Yh`"9`]b`[`Y`K`c`W`Yb`gd`À`hYf`Y`Y`b`Yb`X`]Y`K`À`Y`f`
XYb`8`Y`U`Y`X`c`W`]b`Y`]bYa`i`b`Uh]cbU`Yb`F`YZfYbXi`a`i`UVž`
i`bX`Y`]b`b`Yi`Yg`5`V`_`ca`a`Yb`a`i`gg`Ui`g`[`YUfVY`]hYh`k`YfXYb`"
fE`i`Y`Y`i`6`6`7`Ł`

'`" ?c`i a V]Yb`]gh`X`Ug`@`UbX`i`a`]h`XYf`nk`Y]h`f`Ò`»`hYb`
6`]cX`]j`Yfg`]h`À`h`XYf`K`Y`hž`bi`f`b`UW`_`6`f`Ug`]Ybž`X`Ug`n`Y`b`a`U`
gc`[`fc`»`]gh`"9`g`]gh`Y`]bYg`j`cb`bi`f`%+`i`a`Y`[`UX`]j`YfgYb`

@AbXYfb'XYf'K Y'h"FE i Y`Y. 'K cf'X'FYgci fW'g'`bgh]hi hYž
&\$%' Ł

5h'Ug/ '6cchg'8]Y']bY]bUbXYf[fY]ZYbXYb'GYyb'j cb'; i UhUdÅ

% " 5fUWUhuWUž'XYf'; YVi fhgcfh'XYg'5i hcfg'; UVf]Y`; UfWĚU
A ½fei Ynž'\]Y'h'Y]bgh'Y]b'FYZYfYbXi a 'UVž'i a 'X]Y'GhUXh
bUW'XYf'Z]_h]j Yb'GhUXh'A UWŁbXc'Ui g'gY]bYa 'VYfØ\ a hYb
6i W' < i bXYfh'Δ\ fY'9]bgUa _Y]h 'j]b' 5fUWUhuWU!
A UWŁbXc' i a ni VYbYbbYb"@Y]XYf'gW'Y]hYfhY'XUg
FYZYfYbXi a 'Ub'XYf'[Yf]b[Yb'K U\`VYhY]] [i b["fE i Y`Y.
667ž'&\$*\$' Ł

& " ?c'i a V]Yb'k Uf'X]Y'`bgd]fUh]cb'ZØf'i bgYf'9!6cc_'8cb h
C ZYf'DUdUmU. '\$%'H]dg'Zcf'Mci f':]fgh'H]a Y'5fci bX'h\Y
K cf'X"'8Yf'GUhn' _Y]bY'DUdUmU'UbV]YhYb']gh'Y]bY'XYf
GhfU»YbfY[Y'b'i bX'k Ufbh'XUj cfž'XUgg'Ya UbX'g]Y
a]hbY\ a Yb'k]fXž'k Ybb'G]Y'Δ fY'K YfhgUW'Yb'fi DUdUmU Ł
]b'Y]bYf'[YZÅ\ fXYhYb'Dcg]h]cb'`UggYb"fE i Y`Y. '5h'Ug/
6cchgŁ

' " <UfXWcfY!Dcfbcg'k YfXYb'Ub'GhfU»Ybgh'AbXYb'j Yf_Ui Zhž
U`gc'k i bXYfY'X]W' b]W'hž'k Ybb'Xi 'VY]a 'K UfhYb'Ub'XYf
5a dY'a]h'g]bb']W'Yb'9gY'!Dcfbcg'_cbZfcbh]Yfh
k]fgh"fE i Y`Y. '9fa ž'9fZU\ fi b[Yb'Ui g'YfghYf'< UbXŁ

(" ?c'i a V]Ub]gW'Y': fUi Yb'nØ[Yfb'b]W'hž']\ fYb'? ØfdYf'ni
j Yf'AbXYfbž'k Ybb'g]Y'i bni Zf]YXYb'g]bX"'8 Ug'@UbX']gh
XYfnY]h'XUg'ZØbZhVY']YVhYghY'NYbhfi a 'ZØf'_cga Yh]gW'Y
7\]fi f[]Y"fE i Y`Y. '9WŁbca]ghž'&\$%' Ł

) " 5b_bØdZYbX'Ub'XUg'cVYb'; YgU[hY'\UVYb
GW'Ui ZYbghYfdi ddYb'j]b'; YgW'ÅZhYb'f]Yg][Y'6fØghYž'k Ug
X]Y'Jcf']YVY'XYg'@UbXYg'ZØf'?i fj Yb'k]XYfgd]Y[Y'h"

8Yf'\i b[f][Y'JY[UbYf'GW'Ui ZYbghYfdi ddYb'gd]Y[Y'b'X]Y'5fVY]h
XYf'_c'i a V]Ub]gW'Yb'GW'Øb\Y]hgW']fi f[Yb'k]XYf

% " ?c'i a V]Yb']gh'HY]'XYg': Yi Yff]b[gž'Y]bYf'; fi ddY'j cb
@AbXYfb']a 'DUn]Z]gW'Yb'c nYUbž'X]Y'UbZÅ''['ZØf'9fXVYVYb

i bX`Ji`_UbUi`gVfØWXY`g]bX"fE`i`Y`Y.`B`Uh]cbU`";`Yc`[`fUd`\\]WŁ

&"`?`c`i`a`V]Yb`^]Y`[`h`Ui`Z`XYa``ÿ`ei`U`hcf`ž`U`gc`Y`fk`U`fhYb`G]Y`j`]Y`
<]hnY`i`bX`G`cbbY`fE`i`Y`Y.`;`cc`[`YA`UdgŁ

'`" `?`c`i`a`V]Yb`^]gh`X]Y`<`Y]a`U`h`XYg`V]nUffYb`ž`UVYf`i`b`[`Ui`V`]WŁ
gWŁ`Ö`b`Yb`7`U`Í`c`7`f]ghU`Yg`^`Y]b`Yg`Z`UfVYb`Z`fc`\\Yb`;`Yk`Å`gg`Y`fg`ž
X`Ug`U`g`8`Yf`:`i`gg`XYf`Z`Ø`b`Z`:`UfVYb`^`c`XYf`8`Yf`Z`Ø`gg][`Y
F`Y`[`Yb`Vc`[`Yb`^`VY`_`Ubbh`]gh`"8]Y`a`Y`\\f`Z`UfV][`Y`K`U`gg`Y`f`gh`f`U`»`Y
]gh`Y]b`Y`F`Y`\\Y`j`cb`:`Ø`gg`Yb`ž`K`U`gg`Y`f`Z`Å`Yb`i`bX`6`Å`W`Yb
]bb`Y`f`\\U`V`X`Yg`D`U`f`ei`Y`B`U`W]cbU`B`U`h`i`f`U`G]Y`ff`U`X`Y`@`U
A`U`W]f`Yb`U`"fE`i`Y`Y.`@`cb`Y`m`D`U`b`Y`hŁ

J`U`fb`U`?`#`G`\\i`h`h`Y`f`g`h`c`W`_`7`U`Í`c`7`f]ghU`Yg`]gh`U`g`^`:`i`gg`XYf`Z`Ø`b`Z
:`UfVYb`^`VY`_`Ubbh`"

%`" `@`c`_`U`Y`F`Y`[`]Yfi`b`[`Yb`j`Yf`\\`Å`b`[`Yb`f`Y`[`Y`a`Å`»][`Y]b
h`fc`W`_`Yb`Yg`^;`Yg`Y`h`m`k`Å`\\f`Yb`X`^;`fc`»`j`Y`f`U`b`g`h`U`h`i`b`[`Yb`k`]Y
K`Y`h`a`Y`]gh`Y`f`g`W`U`Z`h`g`g`d]Y`Yb`i`bX`K`U`\\`Yb`ž`X]Y`X`Yb
5`_`c`\\c`_`cbgi`a`j`Y`f`V]Y`h`Yb`ž`i`a`^`Ö`Z`Y`b`h`]W`X`Y`^;`Yk`U`h
Y]b`ni`X`Å`a`a`Yb`"fE`i`Y`Y.`?`c`i`a`V]Yb`!6`Y`f]W`h`ž`&`\$`%(`Ł

&"`5`d`f`c`d`c`g`K`Y`h`a`Y`]gh`Y`f`g`W`U`Z`h`ž`X]Y`?`c`i`a`V]U`b`Y`f`\\`U`V`Y`b
i`b`g`Y`f`Y`<`Y`f`n`Y`b`V`Y]a`^`H`i`f`b]Y`f`&`\$`%(`^`[`Y`g`h`c`\\`Y`b`"

'`" `6`c`[`c`h`U`\\`U`h`G`Ø`X`U`a`Y`f]_`U`g`:[`f`Ö`»`h`Y`g`^;`U`\\`f`f`U`X`f`c`i`h`Y`b`b`Y`h`n`.
Ø`V`Y`f`"```\$\$`_`a`^`Y`f`g`h`f`Y`W`_`Y`b`^]g]W`X`j`cb`G`i`a`[`Y`V]Y`h`Y`b`i`b`X
J`c`f`c`f`h`Y`b`V]g`]b`g`G`h`U`X`h`n`Y`b`h`f`i`a`"fE`i`Y`Y.`8`Å`b]g`W`X`Y`g
5`f`W`X]h`Y`_`h`i`f`n`Y`b`h`f`i`a`ž`&`\$`%(`Ł

(`" `8`Y`f`B`U`a`Y`X`Y`g`@`U`b`X`Y`g`k`]f`X`7`c`!`c`!`a`V]U`U`i`g`[`Y`g`d`f`c`W`X`Y`b`ž
b]W`X`h`7`c`!`i`!`a`V]U`"J`]Y`Y`B]W`X`h`G`d`U`b]g`W`X`g`d`f`Y`W`X`Y`f`j`Y`f`g`h`Y`\\`Y`b
X`U`g`Z`U`g`W`X`"

)`" `?`c`i`a`V]Yb`^]gh`X`U`g`Y]bn][`Y`@`U`b`X`^]b`G`Ø`X`U`a`Y`f]_`U`ž`X`U`g
?`Ø`gh`Yb`g`c`k`c`\\`U`a`^`D`U`n]Z]g`W`X`Y`b`C`n`Y`U`b`U`g`U`i`W`X`U`a
?`U`f]V]g`W`X`Y`b`A`Y`Y`f`\\`U`h`"fE`i`Y`Y.`;`cc`[`YA`UdgŁ

5`h`U`g`/`^`6`c`c`h`g`H`U`[`U`b`[`U`U`a`^`?`U`f]V]g`W`X`Y`b`A`Y`Y`f`

% " 9]bY`XYf`]bhYfYggUbhYghYb`HUhgUW\Yb`ØVYf`?c`i a V]Yb`]ghž
XUgg`Yg`Ui h`XYa `; `ØW_g!`i bX`<cZbi b[gVUfca YhYf`&\$%'
i bX`&\$%(`XUg`[`ØW`]W\ghY`@UbX`XYf`K Y`h`k Uf`fE i Y`Y.
?c`i a V]Yb`!6Yf]W\hYž`&\$%(Ł

&" ?c`i a V]Yb`]gh`bUW\`XYa `9bhXYW_Yf`7\`f]ghcd\`?c`i a Vi g
VYbUbbh`fE i Y`Y. `7 5`K cf`X` : UWh`6cc_ž`&\$&&Ł

' " Hfchn`gY]bYg`F i Zg`U`g`[YZ\`f`]W\Yf`C fh`ZØf`8fc[Yb`\AbX`Yf
]gh`Yg`]b`K]f`_]W_]h`Y]bYg`XYf`gW\ÖbghYb`@AbXYf`XYf`K Y`h
a]h`Y]bYf`j]Y`Z\`h][Yb`B Uh]cbž`X]Y`\`]ZgVYfY]hž`\cZbi b[gj c``
i bX`ni h]Y Zgh``]YVYbgk Yfh`]gh"

<Ui dhV]`X.`@]g`-bUW]c`D`DfUXc`#G\i hhYfghcW_

.

8YhU]`g

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