

H]ddg'ZØf'F Y]gYb'a]h'XYa '5i hc]b'9i fcdU

6Y]'XYf'D`Ubi b[]\fYf'F Y]gYb'Xi fW'9i fcdU'a ØW\hYb'j]Y`Y
F Y]gYbXY'ni a]bXYgh'ZØf'Y]bYb'HY]']\fYf'F Y]gY`Y]b'5i hc
a]YhYbž'\UVYb'UVYf'j YfghÅbX`]W\Yfk Y]gY'6YXYb_Ybž'ni a
YfghYb'A U`]'b'9i fcdU'ni 'ZU\fyb"'@JggYb'G]Y'g]W'j cb'ÀfYb
6YXYb_Yb'b]W'h'UVgW\fyW_Yb"'5i hcZU\fyb']b'9i fcdU'\Uh
j]Y`Y'J cfhY]'YžY]bgW`Y»`]W`XYf': fY]`Y]hž'Xcfh\]b'ni 'ZU\fybž
k c'G]Y'k c`Ybž'k Ubb'G]Y'k c`Yb"' Æ'X]YgYa '5fh_Y`'\UVY`]W
Y]bY '@ghY'a]h'H]ddg'ni a '5i hcZU\fyb']b'9i fcdU
ni gUa a Yb[YghY`hž'X]Y`]W'a]h: fYi bXYb'i bX': Ua]'Y'hY]'Yž
VYj cf'g]Y'ni 'Y]bYa 'GY'VghZU\fyfi f'Ui V`]'b'9i fcdU
Ui ZVfYW\Yb"'ÆW`cZYž'g]Y'g]bX'Ui W'ZØf'G]Y`]'ZfY]W"' : Ø\fyf
ni a ': U\fyb']b'9i fcdU'8]Y'k]W'h[ghY / Ua d^Y`]d/



6Y]'XYf'D`Ubi b[]\fYf'F Y]gYb'Xi fW'9i fcdU'a ØW\hYb'j]Y`Y
F Y]gYbXY'ni a]bXYgh'ZØf'Y]bYb'HY]']\fYf'F Y]gY`Y]b'5i hc'a]YhYbž
\UVYb'UVYf'j YfghÅbX`]W\Yfk Y]gY'6YXYb_Ybž'ni a 'YfghYb'A U`]'b
9i fcdU'ni 'ZU\fyb"

@JggYb'G]Y'g]W'j cb'ÀfYb'6YXYb_Yb'b]W'h'UVgW\fyW_Yb"

5i hcZU\ fYb`]b`9i fcdU` \Uhj]Y`Y`J cfhY]`Yž`Y]bgWk`]Y»`]Wk`XYf
: fY]\Y]hž`Xcfh\]b`ni`ZU\ fYbž`k`c`G]Y`k`c`Ybž`k`Ubb`G]Y`k`c`Yb`"

⊖`X]YgYa`5fh]_Y` \UVY`]Wk`Y]bY`@]ghY`a`]h`H]ddg`ni`a`5i hcZU\ fYb
]b`9i fcdU`ni`gUa`a`Yb[YghY`hž`X]Y`]Wk`a`]h: fYi`bXYb`i`bX` : Ua`]`Y
hY]`Yž`VY]`cf`g]Y`ni`Y]bYa`GY`VghZU\ fYfi`f`Ui`V`]b`9i fcdU
Ui`ZVfYWkYb`"⊖`Wk` \c`ZYž`g]Y`g]bX`Ui`Wk`ZØf`G]Y` \`]`ZfY]Wk`"

: Ø\ fYf`ni`a` : U\ fYb`]b`9i fcdU

8]Y`k`]Wk]h[ghY` : fU[Yž`X]Y`a`]f`j`cb`XYb`Yb][Yb`[YghY`h`k`]fXž`X]Y
d`UbYbž`9i fcdU`a`]h`XYa`5i hc`ni`gY\Ybž`VYhf]Zž`X]Y`[YgYhn`]WkYb
5bZcfXYfi`b[Yb`ZØf`XUg`5i hcZU\ fYb`]b`9i fcdU`U`g`Hci`f]gh"
BUWkZc`[YbX`Z]bXYb`G]Y`Y]b][Y`F`]Wk`h]b]Yb`"

@]nYb`nUbZcfXYfi`b[Yb

9]b`j`c`gh`AbX][Yf` : Ø\ fYfgWkY]b`Ui`g`⊖`fYa`<Y]a`Uh`UbX`]gh`Y]bY`XYf
[YgYhn`]WkYb`J`cfUi`ggYhni`b[Yb`ZØf`XUg` : U\ fYb`]b`9i fcdU`"8]YgY
a`i`gg`VY]`XYf`5V\c`i`b[⊖`fYg`A`]Yhk`U[Ybg`i`bX`Ui`Z`J`Yf`Ub[Yb`XYf
Dc`]nY]j`cf[YnY][h`k`YfXYb`"

CVk`c` \`X]Yg`b]Wk`h`i`bVYX]b[h`Y]bY`5bZcfXYfi`b[`XYf
A`]Yhk`U[YbZ]fa`Yb`]ghž`k`]fX`U`Yb`B]Wk`h`9i`! : Ø\ fYfgWkY]b]b` \UVYfb
Ya`dZc` \`Ybž`Y]bYb`⊖`hYfbUh]cbU`Yb` : Ø\ fYfgWkY]b`f`B`DŁ
a`]hni`ZØ\ fYbž`k`Ybb`g]Y`]b`9i fcdU`ZU\ fYb`"

⊖`Y]b][Yb`Yi`fcd`A]gWkYb`⊖`AbXYfb`]gh`Y]b`6]bbYbj`Yfhf]YVYbYf
cV`][Uhc]f]gWk`ž`i`bX`k`Ybb`G]Y`j`cb`XYf`Dc`]nY]`Ub[Y\U`hYb`k`YfXYbž
k`YfXYb`G]Y`a`Ø[`]WkYfk`Y]gY`Ui`Z[YZcfXYfhž`Y]bYb`j`cfni`Y[Yb`"6Y]
B]Wk`hVYUWk`hi`b[`Xfc` \`h`Y]b`6i` » [Y`X`]b`<`Ø\Y`j`cb`<`i`bXYfhYb`j`cb
9i`fc`"

: U\ fYfU`hYf

⊖`XYb`a`Y]ghYb`Yi`fcd`A]gWkYb`⊖`AbXYfb`VYhf`A[h`XUg`[YgYhn`]WkY
A`]bXYghU`hYf`ZØf`XUg` : U\ fYb`fi`bVYUi`Zg]Wk`h][hŁ`%,`⊖`U\ fYž`Y`Xc`Wk`"

j Yfa]YhYb`X]Y`a Y]ghYb`A]Yhk U[Ybi bhYfbY\`a Yb`_Y]bY: U\fnYi [Y
Ub: U\fyf`i bhYf`&%`đ\fyb": Øf: U\fyf`nk]gWYb`&%`i bX`&) `đ\fyb
[Y`hYb`\`Äi Z[` \Ø\fyf`GÄhY"

A i gg`]WY`XYa`A]Yhk U[Ybi bhYfbY\`a Yb
ni gÄhn`]WY`Y: U\fyf`a]hhY`]Yb 3

⇒ XYb`a Y]ghYb: Ä`Yb`Ui hYh`X]Y`5btk cfh`U" `J]Y`Y
A]Yhk U[YbZ]fa Yb`Yf\YVYb`Y]bY: YVØ\`f`ZØf`Y]bYb`ni gÄhn`]WYb
: U\fyf`ž`ghY`Yb`G]Y`U`gc`g]WYf`ž`XUgg`X]Yg`ni a`NY]hdi b`_h`XYf
: U\fnYi [ØVYfbU\`a Y`YfZc`[h`5`Y`bca]b]YfhYb: U\fyf`a ØggYb
]\fyb`[Ø`h][Yb: Ø\fyf`gWY]b`i bX`⇒D`j cfk Y]gYb"

: Øf`X]Y`Yb][Ybž`X]Y`XUg`ghYi YfZfY]Y`@YUg]b[dfc[fUa`a`j`cb
DYi [Ychž`7]hfcYb`i bX`FYbUi`h]b`9i fcdU`i]b`5bgdfi WY`bY\`a Ybž
g]bX`ni gÄhn`]WY`Y: U\fyf`ž`X]Y`a]h`XYa`<Ui dhZU\fyf`j Yfk UbXh`g]bXž
]a`5`[Ya`Y]bYb`c\`bY`5i ZdfY]g`Yb`h\U`hYbž`UVYf`G]Y`gc`hYb`⇒fyb
J YfhfU[`ØVYfd`fØZYbž`i a`g]WYfni ghY`Ybž`XUgg`X]Yg`XYf: U`gh
: U`"

5i hcZU\fyb`]b`9i fcdU.`[Ya`Y]bgUa`Y
6YXYb`_Yb`i bX`: fU[Yb

⇒gh`Yg`Y]bZUWY`ž`]b`9i fcdU`ni`ZU\fyb 3

5i ZX]YgY: fU[Y`[]Vh`Yg`_Y]bY`Y]bZUWY`5btk cfhž`XU`YXYf: U\fyf
UbXYfg`]ghž`UVYf`gcVU`X`G]Y`g]WY`XUfUb`[Yk Ø\`bh`\UVYbž`Ui ZXyf
UbXYfYb`GY]hY`XYg`5i hcg`ni`g]hnYbž`k YfXYb`G]Y`k U\fgWY]b`]WY
ZYghghY`Ybž`XUgg`Yg`b]WYh`j]Y`UbXYfg`]gh`U`g`ni`<Ui gY`ni`ZU\fyb"

A]hY]b`dUUf`HU[Yb: U\fh`Ui ZXYa`6i W_Y`k YfXYb`G]Y
k U\fgWY]b`]WY`ZYghghY`Ybž`XUgg`XUg: U\fyb`Y]bYg`FYWYhg`Yb`_Yfg
]b`9i fcdU`n]Ya`]WY`Y]bZUWY`]gh"

Gc`hY`]WY`j Yfgi WY`Ybž`]b`Yi fcdÄ]gWY`Yb`GhÄXhYb`ni

ZU\ fYb 3

≠W\ dYfgÒb`jW\ k ØfXY`ja a Yf`j Yfgi WYbž`XUg`5i hcZU\ fYb`jb
Yi fcdÀ]gWYb`GhÀXhYb`a Ò[`]W\ gh`ni`j Yfa Y]XYbž`XU`b]W\ h`bi f`XUg
JYf_Y\fgUi Z_ca a Yb`XUg`@VYb`YfgW\k YfYb`_Ubbž`gcbXYfb`Ui W
Duf_d`ÀhnY`gW\k Yf`ni`Z]bXYb`i bX`hYi Yf`gY]b`_ÒbbYb"

9]b][Y`GhÀXhYž`k]Y`:`cfYbnž`\UVYb`6YgW\ fÀb`_i b[Yb`ZØf
: U\fnYi [Y`]a`GhUXhnYbhfi a`a`]h`6i » [Y`XYfb`ZØf`X]Y`Yb][Ybž`X]Y
X]Y`j YfVchYbYb`6YfY]W\Y`VYhfYhYb"K Ybb`G]Y`i bYfk UfhYh`ja
ZU`gWYb`HY]`XYf`GhUXh`UbXYbž`_ÒbbYb`G]Y`a`]h`ni`gÀhn`]WYb
I f`Ui Vg_cgYb`fYW\ bYb`°

Bi hnYb`G]Y`XUg`Ui g[YnY]W\ bYhY`ÒZZYbh`]W\Y`J Yf_Y\fggmghYa ž
k À\ fYbX`G]Y`@cbXcbž`DUf]gž`Fca`i`gk`"VYgi WYbž`i bX`gdUfYb`G]Y
g]W\`X]Y`5i hcj Yfa`]Yh`i b[`ZØf`F Y]gYb`nk`]gWYb`XYb`N]Y`Yb`i bX
: U\fhYb`Ui ZXYa`@UbX"

Gc`k À\`Yb`G]Y`XUg`VYghY`5i hc`Ui`gž`i`a`]b`9i fcdU \Yfi`a`ni`ZU\`fYb

6Y]`XYf`5i`gk`U\`XYg`VYghYb`5i`hc`g`ZØf`F Y]gYb`]b`9i`fcdU`a`ØggYb
G]Y`b]W\`h`bi`f`X]Y`5bnU\`XYf`DUggU[`]YfY`VYfØW_g]W\`h][`Ybž`X]Y`XUg
5i`hc`Ui`ZbY\`a`Yb`a`i`ggž`gcbXYfb`Ui`W\`X]Y`5bnU\`XYf`?cZZYf`i`bX
XYg`ni`gÀhn`]WYb`;`YdÀW_g"

K Ybb`bi`f`nk`Y]`DYfgcbYb`fY]gYbž`k`]fX`Y]b`?`Y]bk`U[`Yb
k`U\fgW\Y]b`]W\`Ui`gfY]WYbž`UVYf`k`Ybb`G]Y`U`g`:`Ua`]`]Y`cXYf`nk`Y]
DUUfY`fY]gYbž`\Uh`Y]b`a`]h`hY`[`fc`»`Yg`5i`hc`a`Ò[`]W\`Yfk`Y]gY`b]W\`h
[`Ybi`[`D`Uhn`ZØf`≠f`[`YgUa`hYg`;`YdÀW_"

5i`Z]Y]bYf`F Y]gY`bUW`9i`fcdU`a`]YhYhYb`k`]f`Y]b`-`!G]hnYf!:`U\fnYi`[
ZØf`i`bgYfY`*`!DYfgcbYb!;`fi`ddYž`\`Ui`dhgÀW\`W\`k`Y]`k`]f`b]W\`h
XUW\hYbž`XUgg`*`?cZZYf`i`bX`i`bgYfY`ni`gÀhn`]WYb`i`hYbg]`]Yb`]b`XYb
?cZZYffUi`a`Y]bYg`+!G]hnYf!5i`hc`gdUggYb`k`ØfXYb"K`À\`fYbX`XUg
: U\fnYi`[`k`Yb][`Yf`k`YbX][`i`bX`j`]Y`gW\`k`]Yf][`Yf`]b`H]YZ[`UfU[`Yb
Y]bni`ZU\`fYb`k`Uf`fH]dd.`8]YgY`DUf_a`Ò[`]W\`_Y]h`a`Ò[`]W\`gh

j Yfa Y]XYb°ŁžghY`hY`Yg'g]W`U'g'_i [Yf'GW UW ni [`YfUi g"

⇒a : cbX`k Uf'j]Y`D`Uhn`ZØf`XUg'[YgUa hY'; YdÅW_ž'i bX`X]Y
DUggU[]YfY`k i fXYb`b]W`h`Ui Z`XYb`F`ØW_g]hnYb`Y]b[Y`_Ya a hž
gcXUgg`XUg'[fØ» YfY': U\fnYi [`]b`X]YgYa : U``XUg`VYghY`5i hc`ZØf
Y]bY`9i fcdUfY]gY`k U"

A Ui h'i bX`U``[Ya Y]bY'; YVØ\ fYb

8 fcd!cZ; YVØ\ fYb`ZØf`Y]bZUW`Y': U\fhYb`g]bX`XUg
GW`fYW_[YgdYbgh`XYf`Yb][Ybž`X]Y`nk]gW`Yb`@AbXYfb`]b`9i fcdU
ZU\ fYb"8]YgY'; YVØ\ fYb`ZU``Yb`]a`'5``[Ya Y]bYb`Ubž`k Ybb`G]Y`Y]b
: U\fnYi [`]b`Y]bYa`@UbX`UV\c`Yb`i bX`]b`Y]bYa`UbXYfYb`@UbX
UV[YVYb"

8]Y`5i hcj Yfa]YhYf`VY\Ui dhYbž`XUgg`X]Y`9]bk Y[[YVØ\ f`X]Y
?cghYb`ZØf`XYb`F`ØW_hfUbgdcfh`XYg': U\fnYi [g`]b`XUg
<Yf_i bZhg`UbX`XYW_Yb`gc``ž`UVYf`cZi[YVYb`G]Y`Y]b`5i hc`UVž`XUg`]b
XYa`@UbX`ni [Y`UggYb`]ghž`]b`XUg`G]Y`Yg`ni fØW_[YVYb"8]Y`ZFU[Yb
g]W`U`gcž`cV`Yg`]a`a`Yf`Y]b`hf]Zh][Yf'; fi bX`]gh"

I a`F`ØW_[UVY[YVØ\ fYb`ni`j Yfa Y]XYbž`j Yfgi W`Yb`G]Yž`⇒f
: U\fnYi [`]b`XYa`gY`VYb`@UbX`ni fØW_ni [YVYbž`]b`XYa`G]Y`Yg
UV[Y\c`h`UVYb"8]; YbZ`ni a`6Y]gd]Y``]gh`Y]bY`GW`k Y]nYf`GhUX`h`i bX
[fYbnh`Ub': fUb_fY]W`ž`gc`XUgg`G]Y`⇒f`5i hc`]b`Y]bYa`UbXYfYb
@UbX`ni fØW_[YVYb`a`ØggYbž`k Ybb`G]Y`bi`f`Y]b`dUUF`ni gÅh`]W`Y
?]ca`YhYf`ZU\ fYb`a`ØggYb"

5 bXYfY': U\fhYb`]b`9i fcdU`_cghYb

9g'[]Vh`k Y]hYfY`?cghYbž`k]Y`J`Yfg]W`Yfi b[ž`?fUZhg`hc`Zž
A Ui h[YVØ\ fYb`i bX`J][bYhhYbž`X]Y`G]Y`VY]`⇒fYa`F`cUXhf]d`Xi`fW
9i fcdU`Y]bd`UbYb`a`ØggYb"

8 Ug`5`d`UVYh`XYf`A Ui h`ÅbXYf

8Ua]h`G]Y`g]W`gW`bY``ni`fYW`hž]bXYb`i bX`g]W`ØVYf`X]Y

A Ui h[YVØ\ fYb`Ub` ÆfYa fbŁI f`Ui VgcfhfYbŁ]bZcfa]YfYb`_ØbbYbž
 \UVYb`k]f`Y]b`A Ui h!@ÀbXYf!567`YfghY`h" <]Yf`Z]bXYb`G]Y`X]Y
 k]W.h][ghYb`Yi fcdÀ]gWYb`@ÀbXYf`a]h`YbhgdFYWYbXYb
 ÆZcfa Uh]cbYb`ni`]\fYb`A Ui hgmghYa Yb`]b`U`d\UVYh]gWYf
 FY)\YbZc`[Y"

5` `2 ghYffY]W g`A Ui hgmghYa

Æ`2 ghYffY]W`k]fX`X]Y`J][bYhhY`Ui W` D]W_Yf` `[YbUbbh"8]YgYf
 5i Z`_VYf`a`i gg`_cffY`_h`Ub[YVfUW`h`k YfXYb` `Ua` VYghYb`cVYb
 `]b_g`Ui ZXYf`K]bXgW`i hngW`Y]VY`cXYf`a]h][`]\]bhYf`XYa
 FØW_gd]Y[Y`"GY]Yb`G]Y`j cfg]W.h][`VY]a` 5bVf]b[Yb`Ui Z[YhØbhYb
 GW`Y]VYbžXU`X]Yg`X]Y`@YgVUf`_Y]h`XYf`J][bYhhY`VY]bhfÀW`h][Yb
 _Ubb"8 UfØVYf`\]bUi`g`_ØbbYb`GcbXYfa`Ui h[YVØ\ fYb`ZØf`6fØW_Ybž
 Hi`bbY`ž`5i`hcVU\`bYb`cXYf`Y`b`]W`Yg`UbZU`Yb"

DfY]gY`ZØf` : U\fnYi [Y`V]g` ž) `HcbbYb.

%"\$`HU[Y.`7U" ` -`

&`A`cbUhY.`7U" `&`*`

%"`J\`f.`7U"`,` +`

6` `A Ui h[YVØ\ fYb`]b`6cgb]Yb! < YfnY[ck]bU

Æ`6cgb]Yb! < YfnY[ck]bU`\Àb[h`X]Y` < Ø\Y`XYf`A Ui h]j`ca
 : U\fnYi [hmd`i`bX`XYf`[YZU\ fYbYb`GhfYW`_Y`UV" `G]Y`a`ØggYb`VY]
 ÆfYf`5b`_i`bZ`h`Y]b`H]W`_Y`h`n]Y\Yb`i`bX`Yg`VYnU\`Ybž`k`Ybb`G]Y`X]Y
 A Ui hghfU» Y`j`Yf`UggYb"

6` `A Ui h[YVØ\ fYb`]b`6i` `[Uf]Yb

Æ`6i` `[Uf]Yb`VYghY`h`J][bYhhYbdZ]W`h"8 UfØVYf`\]bUi`g`_ØbbYb
 GcbXYfa`Ui h[YVØ\ fYb`ZØf`6fØW_Ybž`Hi`bbY`i`bX` : À\ fYb`Yf\`cVYb

k YfXYb"

DfY]gY`ZØf': U\fnYi [Y`V]g' ž) `HcbbYb.

HU[Ygj][bYhhY. '? cghYb`cg

+`HU[Y.`7U", 9i fc

%`A cbUh`7U"%`9i fc

%`Δ\`f.`7U"`) \$9i fc

GdYn]Y`Y`A Ui hghfU» Yb`]b`6i `[Uf]Yb.

;]i f[]i` `Fi ggY

G]`]ghfU` '? U`UfUg\

K]X]b` '? U`UZUh

Cf]U\cj c` `6Y_Yh

B]_cdc`` `Hi fbi`A U[i fY`Y

7` `A Ui h[YVØ\ fYb`]b`7fcUh]Yb`f? fcUh]YbŁ

≠b`? fcUh]Yb`k YfXYb`A Ui h[YVØ\ fYb`]b`i f`VY]a`9]b!`i bX`5i gZU\ fYb
Ui Z5i hcVU\ bYb`Yf\cVYb"5`Y`UbXYfYb`GhfU» Yb`]bX`ZfY]": Øf`X]Y
6Ybi hni b[`j cb`Hi bbY`b`i bX`6fØW_Yb`_ØbbYb`YXcW\`VYgcbXYfY
A Ui h[YVØ\ fYb`Yf\cVYb`k YfXYb"8]Y`DfY]gY`j Uf]]YfYb`j cb`GhfYW_Y
ni`GhfYW_Yž`Y[Yb`UVYf`nk]gW\Yb`\$ž, \$`9i fc`fNU[fYV` `6fY[UbUŁ
i bX`%* ž&'`9i fc`fNU[fYV` `@]dcj UWŁ"

7` `A Ui h[YVØ\ fYb`]b`XYf`HgW\ YW\]gW\ Yb`F Ydi V`]_
fI7 NŁ

5i W\`HgW\YW\]Yb`\Uh`Y]bY`J][bYhYbdZ]W\h"A]h` 8 `cXYf` F
[Y_YbbnY]W\byhY`GhfU»Yb`g]bX`a Ui hdZ]W\h]["Ni gÀh`W\` []Vh`Yg
Ui ZU`Yb`a]h` A `[Y_YbbnY]W\byhYb`GhfU»Yb`Y]bY
ghfYW_YbUV\Àb [][Y`A Ui h"A Ui hZfY]Y`GhfU»Yb`k YfXYb`gYdUfUh
Ui g[Yk]YgYb"

DfY]gY`ZØf` : U\fnYi [Y`V]g` ž) `HcbbYb.

%"\$`HU[Y.`%%ž) \$`9i fc

%"A cbUh`%*ž) \$`9i fc

%">\f.`)) ž) \$`9i fc

8 ` `A Ui h[YVØ\ fYb`]b`8ÀbYa Uf_

9bhk Ufbi b[` `8ÀbYa Uf_`Uh`_Y]bY`A Ui h`cXYf
5i hcVU\b[YVØ\ fYb`°G]Y`a ØggYb`bi f`Ui ZXYb`GhcfYVUY`h!6fØW_Yb
nk]gW\Yb`XYb`b`gY`b` : ØbYb`i bX`NYY`UbX`i bX`Ui ZXYf
² fYgi bXVfØW_Y`nk]gW\Yb`?cdYb`U[Yb`i bX`A U`a Ò`VYnU\`Yb`
9]bnY`ZU\fhYb`ZØf`Y]bYb`D_k`V]g` ž) `HcbbYb`_cghYb`nk]gW\Yb` (
i bX` (, `9i fc`°9g []Vh`UVYf`Ui W\`Yfa`À»][hY`K]YXYf`c`i b[g!`i bX
>\fYg_UfhYb"

8 ` `A Ui h`]b`8Yi hgW\`UbX

?Y]bY`A Ui h[YVØ\ fYb`ZØf`F Y]gYb`Ui ZXYf`k Y`hVYfØ`a hYb
XYi hgW\Yb`5i hcVU\b`° : fY]Y` : U\fh`hY]`k Y]gY`c`bY
; YgW\k]bX][_Y]hgVY[fYbni b[°

: ` `A Ui h[YVØ\ fYb`]b` : fUb_fY]W\

≠b` : fUb_fY]W\`k YfXYb`5i hcVU\b`!`cXYf`GW\by`ghfU»Yba Ui h`VY]a
9]b!`cXYf`5i gZU\ fYb`ZÀ`]["8Yf`?]`ca YhYf`_cghYhink]gW\Yb`+`i bX
%(`7Ybh`8U`X]Y` ; YVØ\ fYb`Ui Z`6Ug]g`XYf`[YZU\ fYbYb`?]`ca YhYf

VYfYWbYh'k YfXYbž_ÖbbYb'k]f'\]Yf'_Y]bY
; YgUa h_cghYbUi ZgW`ØggY`i b['[YVYb"'5i W
GcbXYfa Ui h[YVØ\ fYb`ZØf`6fØW_Ybž`Hi bbY`cXYf`Ä\b`]WYg
_ÖbbYb`Yf\cVYb'k YfXYb"

A Ui hZfY]Y`GhfU» Yb`]b` : fUb_fY]W .

I a [Y\i b[Yb`j cb`DUf]gž`@mc bž`6cfXYUi I`i bX`A UfgY]`Y

9]b][Y`GhfYW_Yb`]b`9`gUgg#@c h\ f]b[Ybž`5i j Yf[bY`i bX`6fYhU[bY

; ` `A Ui h[YVØ\ fYb`]b`; f]YWYb`UbX

5i W`VY]a`9]b!`i bX`5i gZU\ fYb`Ui Z`5i hcVU\bYb`cXYf
GWbY`ghfU» Yb`k]fX`]b`; f]YWYb`UbX`A Ui h`Yf\cVYb": Øf`X]Y
Bi hni b[`XYf`a Y]ghYb`GhfU» YbUVgWb]hhY`a ØggYb`G]Y`(`V]g`%*
9i fc`Y]bd`UbYb"'5i W`ZØf`X]Y`6Ybi hni b[`j cb`Hi bbY`b`i bX
6fØW_Yb`a ØggYb`G]Y`Yj Ybhi Y`VYgcbXYfY`A Ui h[YVØ\ fYb
Ybhf]W hYb"

; ` `A Ui h[YVØ\ fYb`]b`; fc» Vf]hUbb]Yb

5i W`k Ybb`A Ui h[YVØ\ fYb`]b`; fc» Vf]hUbb]Yb`gY`hYb`g]bXž`a ØggYb
G]Y`Ui ZXYf`A`*`j cb`6]fa]b[\Ua`bUW`K`c`j Yf\Ua`dhcb`i bX`Ui Z
XYf`J YfV]bXi b[`bUW`K`U`Yg`VYnU\`Yb"'>`bUW`HU[YgnY]h`_cghYh
Yg`Yhk U`(`V]g`*`DZ`bX"'5bXYfYfgY]hg`[]Vh`Yg`bi`f`k Yb][Y`6fØW_Yb
i bX`Hi bbY`a`]h`A Ui h[YVØ\ fYb"

<]Yf`k]fX`Y]bY`7]hml`A Ui h`ZÄ`][.

@cbXcb

≠bYbghUXhij cb`8i f\Ua

≡ ` `f`UbX`A Ui h

A Ui h[YVØ\fyb`k YfXYb`]b`#Ubx`]b`XYf`F Y[Y`]b`VUf`Ub`XYf`
NU\`ghY`Y`VYnU\`h`5b`XYf`Y`Y`_hfc b]gW\Yb`A Ui hghU]cb`XYf`A) \$
fi bX`i`a`8i V`]b`f[YbUbbh`YHc``Ł]gh`X]Y`6YnU\`i` b[`Yfgh`bUW\`
8i fW\ZU\fh`a`Ò[`]W`"8]Y`NU\`i` b[`Ubb`h`Y`Zcb]gW\`cXYf`dYf`
#hYfb`Yh`YfZc`[Yb`"8UfØVYf`\]bUi`g`[]Vh`Yg`UbXYgk`Y]h`ØVYf`& "\$\$\$
; YgW\`Z`h`Z`X]Y`a`]h`XYa` `DUmcbY`!GW\]`X`[Y`YbbnY]W\`bYh`g]bX`Z`
k`c`G]Y`Ui`W`X]Y`A Ui h`VYnU\`Yb`_`ÒbbYb`"

A Ui hghfU» Yb #5 VgW\ b]hhY.

5i hcVU\`b`A`%`fBi V`]b` `6Y`ZUghŁ

A ` `7`cbYY!`?`Y`g`fBi V`]b` `B`cfXk`YghYbŁ

A (`?)`WcW_` `fBi V`]b` `G`][`c`cXYf`;`U`k`UmŁ

B * `;`U`k`Um` `6U`]bUg`cY

A +`#A` ,`Dc`fh`Uc]gY`fBi V`]b` `@]a`Yf]W_`i`bX`8i V`]b` `7`cf_Ł

B,` `F`Uh\`Wc`fa`UW` `;`Yfa`cmi`6mdUgg`fBi V`]b` `7`cf_Ł

B &) `K`UhYfZc`fX`7]hmi`6mdUgg`fBi V`]b` `K`UhYfZc`fXŁ

A) `\$`8i V`]b`f`hk`]gW\Yb`5i`gZU\`fh`*`i`bX`+Ł

; YVØ\fybdZ]W\h][`Y`Hi`bbY`#6fØW_Yb.

8i V`]b`Hi`bbY`fK`Å\fybX`XYf`Fi`g\!<ci`f`Yi`hfYa`hYi`Yf`Ł

@]a`Yf]W_!Hi`bbY`

DfY]gY`ZØf`:`U\`fnYi`[`Y`V]g`'`ž)`HcbbYb.

A`%`.%ž-`\$`9i`fc

A`'`.%ž`\$`9i`fc

A (. &ž- \$'9i fc

A '+ž'A ', . '%ž, \$'9i fc

A ') \$. '' '9i fc

B '* ž'B', ž'B' &) . '%ž- c'9i fc

9Ughi@]b_ 'A Ui h\vfØW_Y. '%ž+\$'9i fc

@]a Yf]W_!Hi bbY`. '%ž, \$'9i fc

=: ' ðhU`]Yb g' A Ui hgmghY a

ðhU`]Yb`Yf\YVh'A Ui h[YVØ\ fYb`VY]a '9]b!`i bX`5i gZU\ fYb`Ui Z
5i hcVU\bYb`cXYf`G\W bY`ghfU» Yb" '8Yf`?]`ca YhYf`_cghYh`Yhk U`+
7Yb h" '8UfØVYf`\]bUi g`[]Vh`Yg`gdYn]Y`Y`A Ui h[YVØ\ fYb`ZØf
6fØW_Ybž`Hi bbY`cXYf`Ä\b`]W\Yg"

7]hma Ui hdZ]W\h`VYghY\h]b.

A U]`UbX

6c`c[bU

Df]j UhY` : U\fnYi [Y`g]bX`]a ` \]ghc f]g\W Yb`NYbhfi a `j cb`F ca
j YfVchYb"

A ` 'A Ui h]b`A UnYXcb]Yb

ð`A UnYXcb]Yb`]gh`XUg`9]b!`i bX`5i gZU\ fYb`Ui Z`5i hcVU\bYb`cXYf
@]bXghfU» Yb` [YVØ\ fYbdZ]W\h][" '8Yf`?]`ca YhYf`_cghYh`Yhk U`)
7Yb h" 'B]W\h`U`Y`GhfYW_Yb`g]bX` [YVØ\ fYbdZ]W\h]["

; YVØ\ fYbdZ]W\h][Y`GhfYW_Yb`nk]g\W Yb.

?i a Ubcj U'i bX'; fUXg_c

HYhcj U'i bX'; cgh]j Uf

G_cd^Y'i bX`HYhcj U

B` `A Ui h`XYf`B]YXYf`UbXY

A Ui h[YVØ\ fYb`g]bX`]b`<c``UbX`gY`hYb`/`9g`[]Vh`bi f`nk`Y`
a`Ui`hdZ]W`h][`Y`GhfYW`Yb"

?cghYbdZ]W`h][`Y`GhfYW`Yb.

?]hi`bbY`fl`Øf`Y]b`5i`hc.`&`9i`fcŁ

K`YghYfgW`Y`XY!Hi`bbY`fl`Øf`Y]b`5i`hc.`)`9i`fcŁ

B` `B`c`f`k`Y`[`Y`b`A`U`i`h`

⊕`B`c`f`k`Y`[`Y`b`k`Y`f`X`Y`b`A`U`i`h`[`Y`V`Ø`\`f`Y`b`bi`f`a`U`b`W`a`U`Y`f`\`c`V`Y`b.
8`U`ni` `[`Y`\`Ø`f`Y`b`Y]b][`Y`G`h`f`U`»`Y`b`ž`6`f`Ø`W`_`Y`b`ž`Hi`bb`Y`i`b`X`⊕`b`Y`b`g`h`Å`X`h`Y`"
⊕`X`Y`b`a`Y]g`h`Y`b`:`Ä`Y`b`_`Ö`b`Y`b`G]Y`Y`X`c`W`b]W`h`V`U`f`V`Y`n`U`\`Y`b`"8`Y`
g`c`[`Y`b`U`b`b`h`Y` `5i`hc`D`5`G`G`!`6`c`l` `Y]b`j`c``Y`Y`_`h`f`c`b]g`W`Y`g`
A`U`i`h`g`m`g`h`Y`a` `]g`h`X`Y`f`Y]b`Z`U`W`g`h`Y`K`Y`[`X`i`f`W`X`Y`A`U`i`h`g`h`Y`Y`b"

D` `A`U`i`h`]b`D`c`Y`b`

5i`Z`Y]b][`Y`b`G`h`f`Y`W`_`Y`b`]b`D`c`Y`b`ž`k`]Y`X`Y`b`5i`hc`V`U`\`b`Y`b`5`%`ž`5`&`i`b`X`
5`(`ž`g]b`X`A`U`i`h`[`Y`V`Ø`\`f`Y`b`Z`Ä`][`"8`Y`f`D`f`Y]g`f]W`h`Y`h`g]W`b`U`W`X`Y`b`
[`Y`Z`\`f`Y`b`Y`b`?`]`ca`Y`h`Y`f`b`"G`c`_`ca`a`Y`b`i`b`h`Y`f`g`W`Y`X`]W`Y`Y`;`Y`V`Ø`\`f`Y`b`
ni`g`h`U`b`X`Y`"5`Y`⊕`Z`c`f`a`U`h]c`b`Y`b`ni`f`A`U`i`h`D`c`Y`b`Z]b`X`Y`b`G]Y`\]Y`f"

DfY]gY`ZØf` : U\fnYi [Y`V]g`' ž) `HcbbYb.

5%.8`U`bn][` `H`\`c`f`b`f`%+,` `a` Ł.`7`U`"+9i`fc

5&. 'Gk]YW_c' '?cb]b'f&* - '_a Ł '7U''%+ '9i fc

5 (. '?Uhhck]hn' '?fU_Ui 'fh+ - '_a Ł '7U'') '9i fc

8]Y'Y]bZUW\ghY'i bX'VYghY '@Ogi b['ZØf'dc`b]gWXY'A Ui hghfU»Yb`]gh
Y!Hc` " '9]bZUW`a]h'XYa ' < UbXmX]Y '5dd'5i hcdUm`UXYb`i bX
; YVØ\fyb`cb`]bYž'gW\by``i bX'g]WXYf'VYnU\`Yb"

D' '8]Y'A Ui h`]b`Dcfhi [U`

Dcfhi [U`Yf\YVh'A Ui h[YVØ\fyb`VY]a '9]b!`i bX'5i gZU\fyb`Ui Z
5i hcVU\bYb`cXYf'GW\by`ghfU»Yb" '8]Y'DfY]gY`j Uf]]Yfyb`Y`bUW\
@Àb[Y'XYf'[YZU\fybYb`GhfYW_Y`gck]Y`bUW\`5fhi bX'; fØ»Y'XYg
: U\fnYi [g" '8]Y`hYi YfghY`GhfYW_Y`]gh`@ggUVcb`' : Ufc'a]h'WU''%+
9i fc": Øf'X]Y`J YfV]bXi b['@ggUVcb`' '9ghcf]'`a ØggYb`G]Y`\]b[Y[Yb
bi f'(\$ '7Ybh'VYnU\`Yb" '8UfØVYf`\]bUi g`_ØbbYb
GcbXYfa Ui h[YVØ\fyb`ZØf'6fØW_Ybž`Hi bbY`cXYf`Y`\b`]WYg
UbZU`Yb"

F' 'F i a Àb]Ybg`A Ui h[YVØ\fyb

5i W`]b`F i a Àb]Yb`[]`h`J][bYhhYbdZ]W\h"5i »YfXYa`ZU`Yb`ZØf
Y]b][Y`6fØW_Ybž`Hi bbY`i bX`Y`\b`]WYg; YVØ\fyb`Ub"

8]Y'DfY]gY`ZØf': U\fnYi [Y`V]g'' ž) `HcbbYb`VYhfU[Yb.

+`HU[Y.`' '9i fc

%`A cbUh`+`'9i fc

'`A cbUhY.`%' '9i fc

%`J\`f.`&,'9i fc

G' '8]Y'A Ui h'XYf'GW\k Y]n

5i W\]b`XYf`GWk Y]n`VYgh\`hJ][bYhhYbdZ]W\h" `9]bY
>\fYgj][bYhhY`_`ObbYb`G]Y`U`YfX]b[g`bi f`ZØf`(\$`:`fUb`_Yb`_Ui ZYbž
X]Y`%(`A cbUhY`[Ø`h][`]gh" `8]Y`J][bYhhY`_`Ubb`Ui W\]b`8Yi hgW\`UbX
[Y`_Ui Zh`k YfXYbž`_cghYh`UVYf" , ž) \$`9i fc"

GcbXYfa Ui h.

GhfU» Ybhi bbY`Ua `; fc» Yb`Gh" `6Yfb\`UfX. `&- ž \$`9i fc`fM]bZUWXY
: U\fhŁ

Hi bbY`A i bh`@U`GWYfU. `) `9i fc`fk]b!`i bX`FØW_ZU\fhj`cb
GcbbhU[`V]g`:`fY]hU[Ł

Hi bbY`A i bh`@U`GWYfU. `(&`9i fc`fgUa`ghU[gŁ

Ni XYa `[]Vh`Yg]b`XYf`GWk Y]n`Ub`Y]b][Yb`DÀggYb`i bX`Hi bbY`b
[YVØ\`fYbdZ]W\h][Y` 7Uf`@cUXg `fBi hcg`Ui Z`NØ[Y`j Yf`UXYbŁ"

G` `A Ui h[YVØ\`fYb`]b`GYfV]Yb

GYfV]Yb`j Yf`Ub[h`A Ui h[YVØ\`fYb`VY]a `6YhfYhYb`cXYf`J Yf`UggYb
j cb`5i hcVU\`bYb`cXYf`GW`bY`ghfU» Yb" `8]Y`A Ui h`_`Ubb`VUf`]b
8]bUfž`9i fc`f`_Y]bY`6Ub`_bchYb`cXYf`A ØbnYbŁ`cXYf`dYf
?fYX]h`_UfhY`VYnU\`h`k YfXYb" `8]Y`hYi YfghY`Fci hY`_cghYh`Yhk U`*
9i fc`i bX`ZØ\`fh`ØVYf`&(\$`?)`ca`YhYf`j cb`6Y`[fUX`bUW\`B] "

G` `8]Y`A Ui h`XYf`G`ck U`_Y]

5i W`X]Y`G`ck U`_Y]\`Uh`Y]bY`J][bYhhYbdZ]W\h" `8]Y`>\fYgj][bYhhYb
[Y`hYb`j ca` `%"`>bi Uf`V]g" `%"`>bi Uf`XYg`:`c`[Y`U\`fYgž`U`gc`%
A cbUhY"

DfY]gY`ZØf`:`U\fnYi [Y`V]g" ž) `HcbbYb.

%%`HU[Y. `%%`9i fc

%A cbUh '('9i fc

%:ϫ\f. ') \$'9i fc

G' 'G`ck Yb]Ybg'A Ui h

5i W`]b`G`ck Yb]Yb`VYghY\h`J][bYhhYbdZ]W`h" `8]Y`g`ck Yb]gW`Y
Dc`]nY`]]gh`gY`f`U`_f]V]gW` i bX`_cbhfc``]Yfh`X]Y`5i hcg`fY [Y`a `À»]["

DfY]gY`ZØf': U\fnYi [Y`V]g' ž) `HcbbYb.

+`HU[Y. `%) `9i fc

%A cbUh ' \$'9i fc

%:ϫ\f. `%%\$`9i fc

G' 'GdUb]Yb`A Ui h

ϣ`GdUb]Yb`g]bX`U`Y`a]h' `5D` '[Y`_YbbnY]W`bYhYb`GhfU» Yb`VY`]`XYf
9]b!`i bX`5i gZU\fh`a Ui hdZ]W`h][" `9g` []Vh`Ui W`VYgh]a` a hY`Hi`bbY`
i bX`6fØW`_Ybž`k`c`G]Y`VYnU\`Yb`a`ØggYb" `5`Yg`]b`U`Y`a`]]gh`GdUb]Yb
]b`GUW`Yb`A`Ui`h`b]W`h`[`Ubn`[`Øbgh][ž`UVYf`X]Y`HUf]ZY`_`ÖbbYb`Y
bUW` `HU[YgnY]hj`Uf]]YfYb"

A Ui hZFY]Y`GhUXhUi hcVU\`bYb`cXYf`l`a` [Y\`i`b`[`gghfU» Yb.

J U`YbW]U

6UfW`c`b`U

A Ui hdZ]W`h][Y`GhUXhUi hcVU\`bYb.

A UXf]X

8]Y`GhfYW`_Y`j`cb`GUfU[`cggU`bUW`6`]VUc`]gh`a`]h'` &ž\$)`9i`fc`Ua
hYi`YfghYbž`k`À`fYbX`X]Y`GhfYW`_Y`j`cb`@U`7c`fi`bU`bUW`7UfVU`c`a`]h

&ž) \$'9i fc'Ua '[Øbgh][ghYb']gh"

H' 'A Ui h[YVØ\ fYb']b'XYf'HØf_Y]

8]Y'HØf_Y]\Uh'bi f'hY]'k Y]gY'A Ui h[YVØ\ fYbž'n"6"X]Y'6cgdcfi g!
6fØW_Yb']b'F]W\hi b['5g]Yb"Dfc'GhfYW_Y'a ØggYb'G]Y'a]h'Y]bYf
; YVØ\ f'nk]gW\Yb'\$ž+\$'i bX'(ž* *'9i fc'fYW\ bYb"

I ' 'I b[Ufbg'A Ui h

I b[Ufb'\Uh'Y]bY'J][bYhhYbdZ]W\hž'X]Y'b]W\h'bi f'ZØf'U''Y
5i hcVU\bYb'i bX'GW\bY''ghfU» Ybž'gcbXYfb'Ui W\ZØf'nU\ fY]W\Y
6i bXYg!'i bX': YfbghfU» Yb'[']'h''I b[Ufb'j YfZØ[h'bYVYb' Bc'fk Y[Yb
ØVYf'XUg'a cXYfbghY'A Ui hgmghYa

F cUXhf]d'Xi fW\ '9i fcdU'd`UbYb

B UWXYa 'G]Y'YbhgW]YXYb'\ UVYbž'XUgg'G]Y'VYfY]h'g]bXž']b'9i fcdU
ni 'ZU\ fYbž'VY[]bbh'XYf' 'i gh][Y'HY]'""8]Y'D`Ubi b['Y]bYf'9i fcdUhc'if
a]h'K c\ba cV]'cXYf'5i hc'a UW\h'ZUgh'gc'j]Y''GdU» 'k]Y'X]Y'F Y]gY
gY'Vgh''8]Y'D`Ubi b['XYf'F Y]gYfci hY'ZØf'Æ fYb'9i fcdU!F cUXhf]d']gh
Ui ZfY[YbXž'_Ubb'UVYf'Ui W\ 'nY]hUi Zk ÀbX]['gY]b"

9g[]Vh'gc'j]Y'Y'C fhY']b'9i fcdUž'X]Y'a Ub'[YgY\Yb'\ UVYb'a i ggž
XUgg'Yg'gW\k]Yf]['gY]b'_Ubbž'g]W\ 'ni 'YbhgW\Y]XYbž'k Y'W\Y'a Ub
VYgi W\Yb'gc''hY''8]Y'9bhZYfbi b[Yb'nk]gW\Yb'N]Y'Yb'_ØbbYb
hÀi gW\Yb' '6Yf[dÀggY'VY]gd]Y'gk Y]gY'_ØbbYb'X]Y': U\fnY]hYb'j]Y'
'Àb[Yf'a UW\Ybž'U'g'g]Y'Ui Z'XYf'? UfhY'YfgW\Y]bYb"

A]h'Y]b'k Yb]['NY]hUi Zk UbX'ZØf'X]Y'F YW\YfW\Y'j cb'F Y]gYX]ghUbnYb
_ØbbYb'Ui W\ 'G]Y'Y]bYb']XYU'Yb'F cUXhf]d'Xi fW\ '9i fcdU'd`UbYb"

; i hY': U\fh'

6Ygi W\Yb`G]Y`i bg`Ui Z.`a Y]b!VYf`]b"bYh