

## @Y]bYbdZ`]Wh'ZØf'<ibXY.'GW $\lambda$ Mhn'X]Y BUhif'k $\lambda$ fYbX'XYf'6fi hnY]h°

±0.7\Uf`chhYbVif[!K]`a YfgXcfZ'[Y`hYb'ghfYb[Y'FY[Y`b'nif@Y]bYbdZ]WXh'ZØf'<ibXY'k À\fYbX'XYf'6fih!'ibX'GYhnnY]hžia 'K]`Xh]YfY'ni 'gWXØhnYb"



7\Uf`chhYbVif[!K]`a YfgXcfZž8Yi hgWX`UbX`!`A]h`XYa `6Y[]bbXYf`6fi hl`i bX`GYhnnY]h`Ua `%"`A Àfn`k]fX`]b`j]Y`Yb`GhÀXhYb`i bX; Ya Y]bXYb`]b`8Yi hgWX`UbXž`XUfi bhYf`Ui WX`6Yf`]bžY]bYi a ZUggYbXY`5b`Y]bdZ]WXh`ZØf`<i bXY`Ui g[YkY]hYh"`8]YgYFY[Y`i b[`gc```V]g`ni a `%) "`¬i`]`[Y`hYb`i bX`\Uh`ni a `N]Y`ž`XYbBUWXki WXg`j cb`K]`Xh]YfYb`ni `gWX@hnYb"`8i fWX`X]Y`Y]bgWX`À[][YbFY[Y`i b[Yb`g]bX`<i bXYVYg]hnYf`b]WXh`bi f`XUni `j YfdZ]WXhYhž`]\fYH]YfY`Ub`X]Y`@Y]bY`ni `bY\a Ybž`gcbXYfb`Ui WX`VYgh]a a hYJYf\U`hYbgkY]gYb`]b`XYf`BUhi f`Y]bni \U`hYb"

± 6Yf`]b'[]`h'VYfY]hg'gY]h'⇒Ubi Uf'&\$%- 'Y]bY'U``[Ya Y]bY @Y]bYbdZ]W\hž'X]Y'^YXcW\'a ]h'5i gbU\a Y'j cb'[Y\_YbbnY]W\bYhYb 5i g`Ui ZZÀW\Yb'VYghY\h"'<i bXY'a ØggYb'Ui Z'; fØbZÀW\Yb'i bX']b K À`XYfb`Ub`Y]bYf`a UI ]a U``nk Y]`A YhYf``Ub[Yb`@Y]bY`[YZØ\fh k YfXYb"`@Ufg`Gi bXž`5fhYbgW\i hnfYZYfYbh`XYg`B56I ž`k Y]gh`XUfUi Z\]bž`XUgg`X]YgY`A U» bU\a Yb`]bgVYgcbXYfY`ni a `GW\i hn`j cb6cXYbVfØhYfb`k]Y`K UW\hY`bž`9bhYb`i bX`K U`XgW\bYdZYbYbhgW\Y]XYbX`g]bX"`8]Y`6fi hnY]h`]gh`Y]bY`\_f]h]gW\Y`D\UgY`ZØf`j]Y`YK]`Xh]YfYž`XU`Ui W\FY\Y`i bX`<UgYb`]\fY`\$\squareb[Yb`ni f`K Y`h`Vf]b[Yb"

## @Y]bYbdZ`]WXh'i bX'`c\_U`Y'JcfgWXf]ZhYb

8]Y @Y]bYbdZ]W\h'k À\fYbX 'XYf'6fi hl'i bX 'GYhnnY]h']gh'b]W\h'bi f Y]bY '9a dZY\`i b[ z'gcbXYfb'[ YgYhn`]W\ j cf[ YgW\f]YVYb"'GhÀXhY i bX '? ca a i bYb'\UVYb'X]Y'A Ò[`]W\\_Y]hz'Y][ YbY'J cfgW\f]ZhYb'ni Yf`UggYbz'k]Y'Yhk U'XYb'@Y]bYbnk Ub[']b'DUf\_g'i bX'; fØbUb`U[Yb" JYfghÒ» h'Y]b'<i bXYVYg]hnYf'[Y[Yb'X]YgY'FY[Y`i b[Ybz'\_ObbYb Ya dZ]bX`]W\Y'GhfUZYb'j cb'V]g'ni ') "\$\$\$'9i fc'Xfc\Yb"'8]Yg i bhYfghfY]W\h'X]Y'K]W\h][\_Y]hz'g]W\'OVYf'`c\_U`Y'J cfgW\\f]ZhYb'ni ]bZcfa ]YfYbz'XU'X]YgY'j Uf]]YfYb'\_ObbYb"

9]b ``UbXYg[YgYhn`]W.Yg'FY[Y`k Yf\_ž'XUg'gY]h'&\$\$&'VYghY\hž'fY[Y`h X]Y'5b`Y]bdZ]W.h']b'B]YXYfgUW.gYb'i bX'UbXYfYb'6i bXYg`ÀbXYfb" 8Ug'6i bXYgbUhi fgW.i hn[YgYhn'i bX'X]Y'Yk Y]`][Yb@UbXYgbUhi fgW.i hn[YgYhnY'V]`XYb'XUVY]'X]Y'fYW.h`]W.Yb; fi bX`U[Yb"'6YXfc\hY'5fhYb'\_ObbhYb'c\bY'YbhgdfYW.YbXYb GW.i hn']b']\fYf': cfhdZUbni b['[YZÀ\fXYh'gY]b"'5i g'X]YgYb; fØbXYb'Ya dZ]Y\`h'XYf'B56I ž'<i bXY'VYfY]hg'V]g'ni 'XfY]'K cW.Ybj cf'XYa''%"'5df]`'Ub'X]Y'@Y]bY'ni 'bY\aYbž'i a'Ui Z'\_`]a UVYX]b[hYJYfÀbXYfi b[Yb'ni 'fYU[]YfYbž'X]Y'X]Y'6fi hnY]h'j cfj Yf`Y[Yb\_ObbhYb"

## JYf\U`hYb ]b XYf BUhi f

<i bXYVYg]hnYf'gc``hYb'VYgcbXYfg'gYbg]VY``[Y[YbØVYf'XYf
H]Yfk Y`h'fYU[]YfYb"'\dots; YV]YhYb'a]h'j]Y`Yb'6cXYbVfØhYfb'cXYf

ib[h]YfYb']gh'Yg'fUhgUa ž'K Y[Y'b]Wkh'ni 'j Yf`UggYb"'<i bXY'XØfZYb
b]Wkh']a 'I bhYf\c`n'ghÒVYfbž'k Ug'ni gÀhn`]Wk'XUg'F]g]\_c'j cb
K]`Xi bZÀ``Yb'Yf\Ò\h"'8Yf'B56I 'k Ufbh'Ui Wk'j cf'a Ò[`]WkYb
; YZU\fYbž'X]Y'ZfY]`Ui ZYbXY'<i bXY'ZØf'K]`Xh]YfYž']bgVYgcbXYfY
Xi fWk'K]`XgWkkY]bY'a]h': f]gWk`]b[Ybž'XUfghY``Yb'\_ObbYb"'\A][Yf</pre>

g]bX'ni XYa 'VYZ [ hž'ZfY]`Ui ZYbXY'<i bXY'ni 'YfgWX]Y» Ybž'k YbbX]YgY'K ]`X'bUWXghY``Yb"'K À\fYbX'XYf'6fi h!'i bX'GYhnnY]h'\UVYbUi WX'À[Yf'a]h'ghfYb[YfYb'JcfgWXf]ZhYb'ni 'fYWXbYbž'X]Y'X]Y'\J[XUi Z'VYgh]a a hY'H]YfUfhYb'fY[Y`b"

Ni gUa a YbZUggYbX']gh'X]Y'5b`Y]bdZ']W\h'Y]b'i bj Yfn]W\hVUfYg
9`Ya Ybhži a 'XYb'GW\i hn'j cb'K ]`Xh]YfYb'i bX'XYfYb'@YVYbgfUi a
k À\fYbX'XYf'\_f]h]gW\Yb'6fi hl'i bX'GYhnnY]h'ni '[Yk À\f`Y]ghYb"
<i bXYVYg]hnYf'g]bX'Ui Z[YZcfXYfhž'FØW\_g]W\h'ni 'bY\a Yb'i bX'X]Y
[YgYhn`]W\Yb'J cf[UVYb'Y]bni \U`hYb"'K Y]hYfY' \DZcfa Uh]cbYb'i bX
9a dZY\`i b[Yb'g]bX'\Ài Z]['Ui Z'XYb'K YVgY]hYb'j cb
bUhi fgW\i hnZfYi bX`]W\Yb'Cf[Ub]gUh]cbYb'k ]Y'XYa 'B56I'i bX'XYb
ni gh\AbX][Yb'`c\_U`Yb'6Y\OfXYb'UVfi ZVUf"

: Øf`XYhU]``]YfhY` ⇒ Zcfa Uh]cbYb`ni `XYb`FY[Y`i b[Yb`]b j YfgWX]YXYbYb`6i bXYg`ÀbXYfb`i bX`ni `XYb`XUa ]h'j YfVi bXYbYb JYf\U`hYbgf]WXh`]b]Yb`\_ÒbbYb`X]Y`K YVgY]hYb'j cb`6Yf`]b`@]j Yž` B8F`i bX`6Yf[k YVYf`\_cbgi `h]Yfh`k YfXYb"

8 Y hU]`g	
Cfh	7\Uf`chhYbVif[!K]`aYfgXcfZž8YihgW\`UbX
EiY``Yb	• k k k "VYf`]b!`]j Y"XY
	• k k k "bXf"XY
	<ul><li>VYf[k YVYf"XY</li></ul>

6Ygi WXYb 'G]Y 'i bg 'Ui Z. 'a Y]b!VYf`]b "bYh