

9bhXYW_Y'X]Y'j YfghYW_hYb'ik Y`Yb. I f`Ui V']b'DUd\cgž'NmdYfb°

9bhXYW_Yb^G]Y^k Yb][Yf^VY_UbbhY^I f^Ui Vgn]Y^Y^Ua A]hhY^a YYfž^XUfi bhYf^DUd\cgž^7U^j]¼'i bX^@UfbU_U^ dYfZY_h ZØf^GcbbY^i bX^; Ybi gg^



DUd\cgžNmdYfb:!:8]Y:I f`Ui Vgd`Ubi b[:ZØf`XYb:_ca a YbXYbGca a Yf`ghY\hij cf`XYf`HØfži bX'j]Y`Y'FY]gYbXY'g]bX'Ui Z'XYfGi WXY'bUWX'k Yb][Yf'VY_UbbhYbž'UVYf`XYbbcWX'UhhfU_h]j Yb'N]Y`YbUa 'A]hhY`a YYf"'6Y`]YVhY'FY]gYn]Y`Y'k]Y'A U``cfWUž'?fYhU'i bX'X]Y7bhY'X 5ni f`g]bX'cZh'ØVYfZØ``h"'8U\Yf'\UVYb'HI =i bX'XUg'? \ddanger Hcc`DYfd`YI]hm'XfY]'gdUbbYbXY'5`hYfbUh]j Yb'YbhXYW_hž'X]Y'g]WX'dYfZY_hZØfY]bYb'YbhgdUbbhYb'Gca a Yfi f`Ui V'Y][bYb"

 $\label{thm:cg'} 5b `YfghYf'GhY``Y'ghY\h'DUd\cg']b `NmdYfb''' 8]YgY' < UZYbghUXh']gh \\ b]Wh'bi f'XYf'JYfk U`hi b[gg]hn'XYg'6Yn]f_g'DUd\cgž'gcbXYfb'V]YhYh \\ Ui WX'VYY]bXfi W_YbXY'K YhhYfVYX]b[i b[Yb'a]h'ØVYf'%% \\ GcbbYbghi bXYb'hÀ[`]WX'i bX'_Ui a `FY[Yb' 'bi f'Y]bYb'\U`VYb \\ FY[YbhU['dfc'AcbUh''A]h') & FYghUi fUbhgž'j cb'XYbYb'-) 'XYb \\ \end{tabular}$

HfUj Y``Yf g'7\c]\W'5k UfX 'Yf\U`hYb'\UVYbž']gh'DUd\cg'Y]b
[Ughfcbca]g\W\Yg'DUfUX]Yg"'8]Y'GhUXh'\Uh'g]\W\']a 'Gi bbm'GYUgcb
<]XXYb'; Ya 'FUb_]b['XYb'YfghYb'D`Uhn'[Yg]\W\Yfhž'a]h'Y]bYa
Gi bbm'GYUgcb'G\CfY'j cb'++\Z\''

Hcd!FY]gYn]Y`Y`UVgY]hg`XYf`A UggYb

5i Z'XYb'D'ÀhnYb'nk Y]'i bX'XfY]'Zc`[Yb'7U'j]'¼']b'GdUb]Yb'i bX
@UfbU_U']b'NmdYfb"'7U'j]'¼'VY_Ubbh'ZØf'gY]bY'\Yff`]W\Yb'GhfÀbXYž
V]YhYh'hÀ[`]W\'%%ž+'GcbbYbghi bXYb'i bX'nk Y]'FY[YbhU[Y']a
A cbUh"'A]h'+\$&'FYghUi fUbhgž'XUfi bhYf', \$ž'X]Y'a]h'XYa 'HfUj Y``Yf g
7\c]WY'5k UfX'Ui g[YnY]W\bYh'k i fXYbž']gh'X]Y'_i `]bUf]gW\Y'J]Y`ZU'h
\]Yf'[fc» "'@UfbU_U'k]YXYfi a 'VY[Y]ghYfh'a]h'%%ž-)
GcbbYbghi bXYb'i bX'k]YXYfi a 'bi f'Y]bYa '\U`VYb'FY[YbhU['dfc
A cbUh"'<]Yf'\UVYb'' &\$'FYghUi fUbhgž'XUfi bhYf'&('a]h'XYa
HfUj Y``Yf g'7\c]WY'5k UfXž'[YÒZZbYh"

 $8] YgY FY]gYn]Y Y k YfXYb Ui Wk '\]bg]Wkh]Wk '] \fYf'__`]a Uh]gWk Yb 6YX]b[i b[Ybž'_i `]bUf]gWk Yb '5b[YVchY ii bX 'G]Wk Yf\Y]h Ui g[Yk À\`h" BYVYb 'DUd\cgž'7U`j]\%'i bX '@UfbU_U'[]Vh'Yg'j]Y`Y k Y]hYfY 'gcbb][Y '8 Ygh]bUh]cbYbž'X]Y 'Yf_i bXYh'k YfXYb '_ObbYb" CfhY 'k]Y '7 \]cg']b'; f]YWk Yb`UbXž'GYZYf]\]gUf']b'XYf'HØf_Y]'cXYf]VYb]_']b'?fcUh]Yb'V]YhYb'À\b`]Wk Y K YhhYfVYX]b[i b[Yb'i bX'g]bX]XYU`Yg'N]Y`ZØf'FY]gYbXYž'X]Y'UVgY]hg'XYf'_`Ugg]gWk Yb' < chgd chg YbhgdUbbYb'a OWk hYb"$

?i`]bUf]gW\Y`<][\`][\hg`]b`XYb`<]XXYb; Ya g

 $8] Y'_i `] b Uf] g W Y'5 i g k U ``] b 'X] Y g Y b 'k Y b] [Y f' V Y_Ub b h Y b 'C f h Y b '] g h f Y] W V U `h] ["' + b 'D U d \ c g 'Y f k Uf h Y b 'X] Y'6 Y g i W Y f'Z f] g W Y A Y Y f Y g Z f Ø W N Y ž' < U ``c i a] 'i b X 'X Y Z h] [Y' @ Ua a [Y f] W N Y "'7 U `j] ¼ j Y f Z Ø \ f h 'a] h 'h f U X] h] c b Y ``Y b 'G d Y] g Y b 'k] Y 'D U Y ``U' i b X 'H i a V Y h ž k À \ f Y b X '] b '@ U f b U_U 'Y] b Y' J] Y `n U \ ``Ub '; Y f] W N Y b 'X] Y ; Y g W a U W_g_b c g d Y b 'Y f Z f Y i Y b "'8] Y'5 i g k U \ ``Ub 'Ui h \ Y b h] g W Y b F Y g h U i f U b h g 'h f À [h 'X U n i 'V Y] ž 'X U g '`c_U `Y' @ Y V Y b g [Y Z Ø \ `` \ U i h b U \ 'n i Y f 'Y V Y b "$

GcbbYbUbVYhYfžgcbXYfb 'Ui W\ 'ZØf'; ci fa Yhg"'8 Ug'F Ub_]b['j cb HI =nY][hž'XUgg'Y]b 'I f`Ui V 'b]W\ h']b 'ØVYf`Ui ZYbYb 'Hci f]ghYbn]Y`Yb ghUhhZ]bXYb 'a i ggž'gcbXYfb 'XUgg'Yg'j]Y`Y'j YfghYW_hY' ** k Y`Yb']a A]hhY`a YYffUi a '[]Vhž'X]Y 'Yg'ni 'YbhXYW_Yb'[]`h"'9]b 'I f`Ui V'Ub X]YgYb'CfhYb'j Yfgdf]W\ h'b]W\ h'bi f']XYU`Yg'K YhhYfž'gcbXYfb'Ui W\ Y]b 'Ui h\ Ybh]gW\ Yg'9f`YVb]g"'9bhXYW_Yb'G]Y'X]Y'J]Y`ZU`h'X]YgYf 8 Ygh]bUh]cbYb'Ua 'A]hhY`a YYf'i bX'[Yb]Y» Yb'G]Y'Y]bYb i bj Yf[Ygg`]W\ Yb'Gca a Yf"

: Øf'k Y]hYfY' +b Zcfa Uh]cbYb'ni 'XYb'VYghYb'FY]gYYa dZY\`i b[Yb'Ua A]hhY`a YYf'VYgi WXYb'G]Y'X]Y'GY]hYb'j cb'XYfk YghYb"XY'i bX'hi]"Wca "

8 YhU]`g	
Cfh	DUd\cgž [*] NmdYfb
EiY``Yb	• k k k "XYfk YghYb"XY
	• kkk"hi]"Wca

6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY