cZ di V`]WUWti bhb[.

hi XmcZdfcV'Ya cfdfcV'Ya gi gjb[ fYgYUfW hYW-b]ei Yg Y'YW]cb cZ h\Y dfcV'Ya a i gh VY Uddfcj YX Vmh\Y gh XYbfbg UXj ]gyf, ]bgffi Whcf i bXYf k \ca h\Y gi Xm]g hc VY a UXY, UbX h\Y Uddfcdf]UhY XYUb. \Y gi Xm a i gh Wbbf]Vi hY hc h\Y gi XYbfbg dfc[fla. fYdUfUn]cb cZ U gWc'Uf mdUdYf ]g fYei ]fYX UbX a Um ]bj c'j Y Ub cfU XYZYbgY. chU WYX]h Zcf Ubm Wfa V]bUn]cb cZ Ybfc'a Ybhg]b h\YgY Wfi fgYg a Umbch YI WYX gjl gya YghYf \ci fg 5 gdYW]U]nYX gh Xma Um VY gi Vghjhi hYX Zcf U fYei ]fYX Wfi fgY cb'mcbW ]b U gh XYbfbg dfc[fla. YY gYa YghYf \ci f`]a ]hg`]gh/X i bXYf ci fgY Yghf]Wh]cbg ]b h\Y YbYfU Y[i`Uh]cbg gYWh]cb.

5 ghi Xm cZ WdfdcfUhY ZjbUbWjU UWYdi bhjb[ hcd]Wgj jbWi Xjb[ jbWda Y UbX Yi dYbgY fYWd[b]hjcb, fYWdfX-jb[ cZ UggYng UbX `]UV]`]hjYg, UbX ZjbUbWjU ghUhYa Ybh dfYgYbhUhjcb.

5 i X]h]b[ h\Ycfm UbX dfcWXi fYg Ug Udd`]YX hc ZfU X dfYj Ybh]cb, XYhVM]cb, UbX ]bj Ygh][Un]cb.

5 b UXj UbWX gri Xm cZ UWti brjb[ ]bZcfa Urjcb gng-hYa g VtbWdhg Udd']VVIrjcbg UbX Vtbhfc`]ggi Yg UgY gri X]Yg k ]`` dfcj ]XY h\Y gri XYbhg Ub cddcfhi b]hm hc fY'UhY gnghYa g VtbWdhg hc h\Y UWhi U dfcV'Ya g Yb-Vti bhYfYX ]b h\Y UbUngjg XYg[ b, ]a d'Ya YbhUjcb, UbX i h]`]-nUjcb cZ Vta di hYf-VUyX ]bZcfa Urjcb gnghYa g

5b ]bX]j ]Xi U ghi Xm cZ gdYV]Z]W UWti bh]b[ hcd]Wj i h]`]n]b[ h\Y UWti bh]b[ Ui h\cf]huh]j Y `]hYfUhi fY UbX k f]hYb UbX cfU Wta a i b]Wh]cb cZ h\Y fYgi `hg cZ h\Y fYgYUfW.

5 ghi Xm cZ UXj UbWYX ZjbUbVYU UWVći bhjb[ hcd]VVj Zfca U dfUMJWi dYfgdYWJj Y k ]h\ Ya d\Ug]g cb fY'Y j Ubh dfcbci bWa Ybhy Vm dfcZYgg]cbU cf[Ub]nUh]cbg UbX [cj Yfba YbhU U[YbW]Yg

5 ghi Xm cZ UXj UbWX Ui X]hjb[ h\Ycfm, ghUbXUfXg dfUMjWg UbX dfcV'Ya g YbWi bh/fYX ]b h\Y dfUMjW  $5~\mbox{ghi XmcZ UXj UbWX U X]hjb[ h\Ycfm, dfUMj\W UbX dfcV Ya g Yb\Wi bh\YfYX ]b h\Y dfUMj\W cZ di V ]WUW \Wi bhjb[.$ 

]bZi YbWgcb UXi `h`YUfb]b[.

a Ybh ZJW`hma Ya VYf. UmVY fYdYUhYX i d hc U hchu cZ gll VfYX]h \ci fg YY gYa YghYf \ci f`]a ]hg`]ghYX i bXYf YbYfU Y[i`Uh]cbg gYMf]cb.

5 gi fj YmcZj UgW\`Uf d`Ubhg Zfca X]ZZYfYbh\UV]hUrg]b

 $\begin{tabular}{ll} $W$ cfurch | bghi Wjcb UbX \begin{tabular}{ll} $W$ cfurch | bghi Wjcb UbX \begin{tabular}{ll} $W$ cfurch | flower |$ 

5 gfi XmcZ h\Y a ]WfcgWd]WUbUfca mUbX Z bWflcb cZ W^ mdYg UbX h]ggi Yg cZ a Ua a U ]Ub cf[ Ubg

5 ghi XmcZ h\Y a ]\text{Mcg\Mcd}\W\butter mcZ \W` \text{hrd\Yg} \upsilon \text{bX \text{f}g-g} \text{ ygcZa \upsilon a \upsilon \uppil\uppilon \uppilon \uppilon \uppilon \uppilon \uppilon \uppilon \uppilon \uppilon \up

\Y ghi XmcZ h\Y Zi bXUa YbhU df]bVlyd`Yg cZ W.fca cgca U cf[Ub]nUr]cb UbX [YbY Yl dfYgg]cb, k]h\ Ya d\Ug]g cb h\Y ghfi Vhi fY UbX Zi bVhi]cb cZ bi VY]WUVJXg UbX dfchY]bg

IffU]b]b[ ci kg]XY cZ k\Y b]j Yfg]km \Y gti XYbh k ]``Zc``ck k\Y [i ]XY`]bYg k\Uh k\Y YdUfa Ybh YgtUV-`]g\YX Zcf k\Y gi dYfj ]g]cb UbX k\Y di fgi UbW cZ k\]g gti Xm Yei ]fYg Ubdfcj U cZ k\Y gti XYbhty UXj ]gYf UbX W\U]fg

Yj ]Yk g h\Y Z bW]cbg cZ h\Y j Uf]ci g cf[ Ub gnghYa g UbX h\Y]f ]bHY[ fUh]cb ]b h\Y \i a Ub VcXm Uh Ub UX-j UbWX `Yj Y`.

\]g]bhYbg]jY Wei fgY]gcf[Ub]nYX Vmh\Y Zci f a U'cf

ghi XYbhBg dfc[fla. fYdUfUh]cb cZ U gMc`Uf`mdUdYf]g fYei]fYX UbX a Ubm]bj c`j Y UbX cfU XYZYbgY. chU WfYX]h Zcf Ubm Wfa V]bUh]cb cZ Ybfc``a Ybhg]b h\YgY Wfi fgYg a UmbchYl WYYX gll gYa YghYf \ci fg 5 gdYWJU]nYX ghi Xma UmVY gi Vgh]hi hYX Zcf U fYei]fYX Wfi fgY cb cbW]b ghi XYbhBg dfc[fla.

 $\label{eq:continuous_continuous$ 

 $\label{eq:continuity} \begin{array}{lll} i \ dYfj \ ]gYX \ dfcZYgg]cbU \ Vi \ g]bYgg \ Yl \ dYf]YbW \ ]b \ U \ ZYX \ gYHjb[ . Yei ]fYX \ Wti \ fgY \ Zcf \ h_Y \ b-hYfbg\]d \ fc[ fUa . Yfa ]gg]cb \ cZ \ bhYfbg\]d \ ]fYWtcf \ UbX \ 5i \ h_Cf]nUjcb \ cZ \ h_Y \ Yg][ \ bUhYX \ Wcc \ ZZ]WU \ Yei \ ]fYX. \ i \ ghYY \ UWWdhYX \]bhc \ h_Y \ bhYfb-g\]d \ fc[ fUa \ UbX \ Ybfc \ YX \ ]b \ dfc[ fUa \ Wti \ fgYg \]$ 

i dYfj ]gYX dfcZYgg]cbU Vi g]bYgg Yl dYf]YbW ]b U ZJY'X gYffjb[. Yei ]fYX Wti fgY Zcf h\Y b-

`mh]W1 g\_]``g UbX U j U i Yg ZfUa Yk cf\_ hc UMiUg Yh\]W1 W7]a ]bU 1 gf]W dfcZYgg]cbU g

 $5\,b$  UbU ng]g cZ fYgYUfW. gfUY[]Yg Ya d`cmYX hc ghi Xm h\Y Wli gYg cZ Vf]a Y UbX h\Y gcV]YHU fYgdcbgY hc ]h

XYVJ/g]cbg h\Y ]adUMncZYaYf[]b[ Wtaaib]WUh]cb

gi Vgh]hi h/X Zcf cb`mcbY fYei ]fYX Wci fgY cf Y`YWh]j Y ]b U ghi XYbhgdfc[fUa .

\]g ghi Xmdfcj ]XYg Ub cddcfhi b]hmZcf h\Y ghi XYbhhc dYfZcfa, i bXYf gi dYfj ]g]cb, U j Uf]Yhm cZ UMfj ]h]Yg h\Uh U fY[i `Uf`mYa d`cmYX Wti bgY`cf k ci `X dYfZcfa. fUMf]Wa dfcj ]XYg Zcf h\Y XYj Y`cda YbhcZ Wti bgY`-]b[ g\_]``gi bXYf gi dYfj ]g]cb. \Y ghi XYbha i ghVta -d`YhY 100 WcW\_\ci fg ]bWi X]b[ U a ]b]a i a cZ 40\ci fg cZ X]fYWhgYfj ]W k ]h\ W]Ybhg. I dYf]YbWg UfY UWta dUb]YX Vm fY[i `Uf`m gWYXi `YX, k YY\_`m cb-Wa di g [fci d gi dYfj ]g]cb XYg][bYX hc dfcj ]XY cd-dcfhi b]hm Zcf UbU ng]g UbX Yj U'i Un]cb cZ gi dYfj ]gYX UMfj ]hm

## \lg dfUM\Wa XcYg a YYh \Vf\HYf\U \Zcf \\\ \Wboj fY.

\]g Wti fgY dfcj ]XYg gi dYfj ]gYX gWcc` VUgYX YI dYf]YbW Uh Vch\ h\Y YYa YbhUfmUbX gYWbXUfm`Yj Y`g \Y gWcc` i d hc gjl gYa YghYf \ci fg cZ ]bhYfbg\]d dYf gYa YghYf k ]h\ UXj ]gYf Uddfcj U'. UXV ghi XYbha i gh Wta d`YhY 120 \ci fg cZ X]fYVM gYfj ]W k ]h\ W]Ybhg

 $\label{eq:continuous_problem} $$ \log Wi fgY dfcj ]XYg gi dYfj ]gYX Yl dYf]YbWg ]b U fY\UY]`]Hujcb gYhjb[. \Y Yl dYf]YbW k ]`` VY UW Wta dUb]YX Vm gWYXi `YX cb Wla di g gi dYfj ]g]cb k ]h\ h\Y i b]j Yfg]lm gi dYfj ]gcf. ci fgY Yei U'g 300$ 

`\]g Wti fgY dfcj ]XYg LXj LbWX [fLXi LHY ghi XYbhg k ]h\ Zi ``-hja Y, gi dYfj ]gYX, cb-h\Y-'cV Yl dYf]YbW ]b gYhjb[g Lddfcdf]LHY hc h\Y]f UfYU cZ gdYVJU]nLhjcb. I dYf]YbWg LWta dLb]YX Vm k YY\_`m cb-VVa di g a YYhjb[g XYg][bYX hc dfcj ]XY cddcfhi b]hm Zcf LbUnng]g LbX Yj Ui Lhjcb cZ gi dYfj ]gYX LWhjj ]hm

 $\label{eq:continuity} $$ \int_{\mathbb{R}^{N}} g' dfcj ]XYg]b-XYdh \ UgjgdbW hc dfYdUfY gh XYbhg Zcf XYj Y`cda Ybh cZ fYgYUfW. Zcf, UbX dfYdUfUhjcb cZ h\YgYg cf Z]Y`X dfc^YWhdfcdcgU.$ 

 $\begin{array}{lll} 5b & ]bXYdYbXYbh ghi XmcZ U dfcV'Ya & cZ U dfWMW bUhi fY k \] W & ]g YbWi bHYfYX ]b U Z]Y'X gYhh]b[. 5 dfcdcgU Zcf h\Y ghi Xm UbX U k f]HYb fYdcfh cZ h\Y Z]bX]b[ g a i ghVY Uddfcj YX Vmh\Y ghi XYbH\g UXj ]gcfm Wa a ]HYY. \Y UXj ]gcfmWa a ]HYY k ]` UXa ]b]gHY Ub cfU YI Ua ]bUh]cb Wj Yf]b[ h\Y fYgYUfW Z]bX]b[ g$ 

YgYUfW. Zcf UbX dfYdUfUhjcb cZ U gW.c'UfmdUdYf fY'UhYX hc U Wii bgY']b[ UbX [i]XUbW dfcV'Ya cf g]hi Uhjcb i bXYf h\Y gi dYfj]g]cb cZ h\Y ghi XYbhBg UXj]-gcfmWta a]hhY.

i bWjcbU XYgWiJdhjcbg cZ h\Y a U'cf Wta dcbYbhg cZ X][]hU Wta di hYf UFW.]hYMi fYg UFY YI d'cfYX, YI d'cfYX, gi W. Ug Uf]h\a Yi]WUbX Wtbhfc`i b]hg a Ya cfm\]YfUFW.]Yg WLUbY'g UbX WUFUMYf]nUnjcbg UbX ]bhYf-UMjcbg cZ jbX]j ]Xi U a U'cf Wta dcbYbhg cZ ga U`UbX `Uf[Y Wta di hYfg 5`gc ]bWi XYX UfY a ]b]Wta di hYf UFW.]hYMi fYg gdYWJU]nYX Wta di hYf UFW.]hYMi fYg UbX X]gff]Vi hYX XUFU dfcWgg]b[ UFW.]hYMi fYg

\]g Wti fgY X]gW ggYg j Uf]ci g U [cf]h\a g h\under gc'j Y gYUfW]b[, gcfh]b[, UbX Wfndhc[fUd\]W dfcV'Ya g \YfY UfY a Ubm WbX]XUhY U [cf]h\a g hc gc'j Y gi W\underdford ffuYcZZg ]bj c'j YX k \Yb Wccg]b[ Ub U [cf]h\a UfY X]gW ggYX. cfh]b[ U [cf]h\a g gi W\underdford gi W\underdford ffy, ]bgYff]cb, ei ]W\_ UbX \YUd, gYUfW\underdford U [cf]h\a g gi W\underdford U \underdford ffy, \\underdford ffy, \\underdfor

\]g Wei fgY X]gW\ggYg k \Un cdYfUr]b[ gngrhYa g UfY, k \Unh\YmXc, \ck h\YmUfY XYg][bYX UbX cf[Ub]nYX. cd]Wg X]gW\ggYX ]bWi XY: dfcW\gg a UbU[Ya Ybh (g\WYXi`]b[, ]bhYfWa a i b]Wh]cb, gnb\Wfcb]nUf]cb, UbX XYUX`c\www. \UbX`]b[), grcfU[Y a UbU[Ya Ybh (a Ya cfma UbU[Ya Ybh UbX j]fhi U`a Ya cfma UbU[Y-a Ybh). / gnghYa g (\UfXk UfY, ]bhYfZUWg fYei Ygh-

\UbX`]b[, dYfZcfa UbW ]ggi Yg). 5dd`]Wt]cbg cZ h\YgY WtbWdtg ]b a cXYfb cdYfU]b[ gngYa g gi W Ug ]bXck g UbX b]| UY dfYgYbtYX fYfYei]g|hY: 3323

\]gWtifgY]bjc'jYgh\YghiXmcZUdfcV'Yacfdfc-V'Yagig]b[fYgYUfWthWhWb]eiYgY'YWfjcbcZUdfcV'Ya]ghcVYUddfcjYXVmh\YghiXYbhtgUXj]gcf,]bgffiWfcf,Wt'Y[YXYUb,UbXYUbcZh\YftuYUhYUkcc'.\YghiXmg\ci'XWbhf]VihYhcUghiXybhtgdfc[fUa.fYdUfUhjcbcZUgWkc'Uf`mdUdYf]gfYei]fYXUbXaUm]bjc'jYUbcfUXXYYbgY.

\]g WtifgY X]gWggYg XYg][b LbX ]ad Ya YbHufjcb ]ggi Yg LlggcWJUhYX k ]h\ fY'UfjcbU LbX cVYWh-cf]YbhYX XUHUNLgYg cd]Wg ]bWi XY - acXY^]b[, fY'UfjcbU acXY^]b[, bcfa U Zcfa g XUHU gfcfU[Y, LbX WtbWdhg cZcVYWhcf]YbhYX XUHU acXY^]b[.

\Y Zcfa U dfcdYfrjYg cZ [fla a Ufg `Yl ]WU UbX gnb-HUMJWUbU ng]g a Wfc [YbYfUncfg UbX WdXY gY`YMJcb UfY dfYgYbhYX. 5 XX]HJcbU hcd]Wg ]bWl XY \UfXk ]fY Wa d]`Yfg Yl hYbg]V]`]hm cZ `Ub[i U[Yg UbX ]a d`Ya YbHUnJcb cZ gja d`Y Wa d]`Yfg

cbWdhi U LbX dfLMf)Wi Zci bXLhjcbg cZ ]bZcfa Lhjcb dfcWgg]b[ gnghYa gĐ gi ddcfh Zcf a LbU[ Ya Ybh LbX XYV]g]cb-a U\_]b[ Zi bWijcbg LfY Yl La ]bYX. ca di hYf gnghYa dfc^YWh a LbU[ Ya Ybh YWtbca ]W LbX `Y[ U Wtbg]XYfLhjcbg cZ a LbU[ Ya Ybh ]bZcfa Lhjcb gnghYa g gnghYa g]a d'Ya YbhLjcb LbX Yj Ui Lhjcb LfY LWXJhjcbU hcd]W LfYLgWtj YfYX ]b h.]gWti fgY. fYfYei ]g|hY:

5 gnghYa g UddfcUN\ ]g Yl d`cfYX Ug ]hfY`UhYg hc i g]b[ j Uf]ci g U [ cf]h\a g hc gc`j Y X]ZZYfYbhWUggYg cZa Ub-U[ Yf]U` dfcV`Ya g k ]h\

Wi i dXUN'g U a cfY ]bh'bgY gi XmcZ hcd]Vig Wij YfYX ]b ch'\Yf Wi fgY cZYf]b[g UbX Ub ]bhfcXi Wijcb hc UXj UbWX WibWdhg gi W. Ug Ufi]Z]VijU ]bh'r`][YbW, h\YcfmcZ Wia di HU]`]hm, UbX Zcfa U`Ub[i U[Yg

5 \]ghcfmcZ h\Y h\YUffY Zfca h\Y cf][]b cZ hfU[YXm h\fci [\ b[`]g\ XfUa UcZh\Y 17h\ Wbhi fm 5 ghi Xm cZ XfUa Uh]W`]h\fUhi fY UbX Y`Ya Ybhg cZ h\Y h\YUffY XYg][bYX hc Yb\UbW h\Y ghi XYbhfig UddfYV]\Uh]cb cZ Wbh\Ya dcfUfm h\YUff]Wi dfUM]\Wg ]b h\Y ghU[]b[ cZ h\Y [\WLg]\Wg].

Widh UbU ngjg UbX XjfYWijb[ dfjbWjd'Yg k jh\ ghi XjYg jbh\YXjfYMijcb cZWbhYa dcfUrmgWbYgcbY-UMid'Ung

bXYf h\Y gi dYfj ]gjcb cZ h\Y ZJW`hmVti fgY gi dYfj ]-gcf, h\Y ghi XYbha Umdi fgi Y Ub YI hYbgjj Y ghi XmcZ U dUftj\W`Uf UfYU k \]\W. Zhg \]g\\Yf UWXYa ]\WbYYXg Vi h ]g bch Uj Uj`Uv`Y ]b h\Y fY[i`Uf Wff]\W`ia . UM dfcdcgU a i gh VY Uddfcj YX h\Y dfYWX]b[ hYfa Vm h\Y ghi XYbhtg UXj ]gcf, h\Y ZJW`hm\text{vi fgY gi dYfj ]gcf, UbX h\Y XYdUfha Ybh WkU]f dYfgcb.

\]g Wti fgY ]g XYg][bYX hc XYj Y`cd Wta a i b]Wth]cb UbX dfcV`Ya gc`j ]b[ g\_]``g fYei ]fYX Zcf YZZYWt]j Y `YUXYfg\]d cZ dYcd`Y, dfcWggYg UbX cf[Ub]nUt]cbg a d\Ug]g k ]`` VY d`UWX cb j YfVU, ]bhYfdYfgcbU, UbX k f]thYb Wta a i b]Wth]cb, [fci d XmbUa ]Wtg. Wtb-Z]WtfYgc`i t]cb UbX WtbgYbgi g Vi ]`X]b[. dWJU UthYb-

5 gi fij YmcZ j UgW`Uf d`Ubrg Zfca X]ZZYfYbh\W]rUrg]b gci h\YUgh 5`UVUa U f]bWJd`Yg cZ d`Ubh hU cbca m, ]bWi X]b[\]grcfm UbX gnghYa g cZ WUgg]ZJWJrjcb UbX bca YbWUhi fY, h\Y i gY cZ X]VW.chca ci g \_Ymg, UbX [YbYfU \YfVUf]i a hYW.b]ei Yg a d\Ug]g ]g d`UWX

UfY ]b Wta d`]UbW k ]th. ZYXYfU UbX gfUtY Ybj ]fcb-a YbfU fY[i`Uf]cbg

\]g Wti fgY ]g U Zci bXUt]cb Zcf gWYbt]Z]WXYWJg]cb-a U\_]b[ ]bj c'j ]b[ WtbtUa ]bUbtg UbX h\Y]f YZZYMfg cb V]c'c[]WT gnghYa g. h Vtj Yfg h\Y VUg]Wdf]bWJd'Yg cZ Ybj ]fcba YbHJ hcl ]Wt'c[m ]bWl X]b[ V]cUWVa i `U-H]cb, h\Y V]c'c[]VWT YZZYMfg cZ hcl ]Wbhg Zfca h\Y a c'YWTUf hc [`cVUT'Yj Y` cf cf[Ub]nUh]cb, UbX UVUg]W i bXYfgHUbX]b[ cZ h\Y f]g\_ cZ Ybj ]fcba YbHJ dc'`i-Hubtg UbX h\Y gWYbW cZ f]g\_ UggYgga Ybh

5 b Yl Ua ]bUrjcb cZh\Y UddfcUW\Yg hc fYgc`j ]b[ Ybj ]-fcba YbrU X]gdi hYg h\fci [\ UhYfbUrjj Y X]gdi hY fYgc-`i hjcb hYW\b]ei Yq

\Y ]a dUMicZ h\Y Ybj ]fcba Ybhcb \i a Ubg Ug k Y` Ug h\Y \i a Ub ]a dUMicb h\Y Ybj ]fcba Ybh gYfj Y Ug h\Y Xi U ZcWg cZ h\]g Wdi fgY. bj ]fcba YbhU U[ Ybhg cZ d\mg]Wr, W\Ya ]Wr, UbX V]c`c[]Wr bUhi fY k ]h\ UX-j YfgY YZZYVhi cb \i a Ub \YU'h\ k ]` VY Wdbg]XYfYX. \Y d\mg]c`c[]Wr, a c`YW\`Uf, W^`i `Uf, [YbYh]W UbX V]cW\Ya ]Wr a YW\Ub]ga g cZ UMijcb cZ Ybj ]fcba YbhU WUfVIjbc[Ybg hcl ]bg dc``i hUbh, UbX ch\Yf X]gYUgY-Wi g]b[ Ybj ]fcba YbhU U[ Ybhg UbX h\Y ]bhYfUMijcb cZ j Uf]ci g Ybj ]fcba YbhU U[ Ybhg k ]h\ V]c`c[]Wr gng-hYa g k ]`` VY UXXfYgpYX.

5 ghi XmcZ dc``i hjcb cZ Una cgd\YfY, gi fZJW' k UhYf, UbX gc]` UbX [fci bXk UhYf Zfca Ub]a UhY UMjj jhjYg UbX ]bUb]a UhY dfcWgg)Yg 5 Xj YfgY YZZYVMg ZLHY, UbX lfUbgdcfhcZdc``i hUbhg]b Ujf, gc]`, UbX k UhYf.

\YcfmUbX UbUnti]Wi tiYWb]ei Yg i gYX ]b Vct\ Z]Y`X UbX`UVcfUrcfmZcf ti\Y UbUntg]g cZU]f, k UtYf, UbX gc]`WbtUa ]bUbtg

5b ]blfcXi VM]cb hc `UbX i gY d`Ubb]b[ UbX `UbX i gY hcc`g ]bWi X]b[ ncb]b[ UbX Wta dfY\Ybg]j Y d`Ubb]b[. \Y Wti fgY Ugc YI Ua ]bYg h\Y ]bhYfUM]cb VYfk YYb `UbX i gY UbX Ybj ]fcba Ybhg UbX YI d`cfYg ghfUhY[]Yg hc fYXi W Ybj ]fcba YbhU ]a dUMqUbX dfchYMlbUhi fU fYqpi fWq

blfcXi Wijcb hc h\Y a ]Wic LbX a LWic LgdYWig cZYbj ]-fcba YbHJ YWibca ]Wij \Y Wi fgY k ]`` Yl d`cfY h\Y j Uf]ci g YWibca ]WLbX ]bghih hjcbU a YLbg cZ Wiblfc`-`]b[ Ybj ]fcba YbHJ dfcV`Ya g Zcf YZZYWij YbYgg YZZ]-WYbWhLbX Yei ]mm

h\undersyddig h\

X]j Yfg]lm, gi gtU]bUVY Z]g\Yf]Yg. ZcfYgh dfcXi Wtg UbX gYfj ]Wg. UbX ch\Yf ]ggi Yg

]a dUMn cZ YXi WUhjcb Zfca h\Y hja Y cZ `Unc hc h\Y

j UF]Ymm cZ ei U`]HLHjj Y ghi X]Yg UbX WebXi VM U VF]YZ ei U`]HLHjj Y fYgYUFW. dfc^YVM fYfYei ]g]HY: ci fgY ]b fYgYUFW. cf HYghg UbX a YUgi fYa Ybh

5 ghi XmcZ dfcWggYg ]bj c'j YX ]b ]XYbhjZnjb[, ZfUa - ]b[, Yj Ui Unjb[ UbUmm]b[, UbX gYY\_]b[ ]bZcfa Unjcb UVci h dfcV'Ya g a d\Ugjg ]g []j Yb hc ]bZcfa Unjcb Wt''YVMJcb UbX dfcWgg]b[. Hi XYbhg k ]'' gY'YWh UbX UbUmmY U dfcV'Ya fY'UnYX hc YUmmW]'X\ccX YXi WUnjcb cf Y'Ya YbhUmYXi WUnjcb. Yghf]VMYX hc ghi XYbhg Ybfc''YX ]b Ub Xi WUnjcb dYVWU]ghdfc[fUa.

5 gi fi YmcZ a cXYfb YWtbca ]Wh\Ycf]Yg cZ h\Y Vi gjbygg WrWY. \Y a Uh\Ya Uh]WU a Yh\cXg Ya d'cmYX ]b a UWfc UbX a ]Wfc-Zci bXUh]cbg cZ a UWfcYWtbca ]Wfk ]`` U'gc VY Wtj YfYX.

5 a Uh.Ya Uh.W UbU.ngjg cZ Wbbgi a Yf W.J.W, Zjfa dfcXi Wfjcb XYWJcjcbg. UbX a U\_Yh Yl W.Ub[Y. Uh.Y-a Uh.Yw a Yh.cXg Ya d`cmYX ]b a ]WfcYWbca ]Wg k ]``Ugc VY Wbj YfYX.

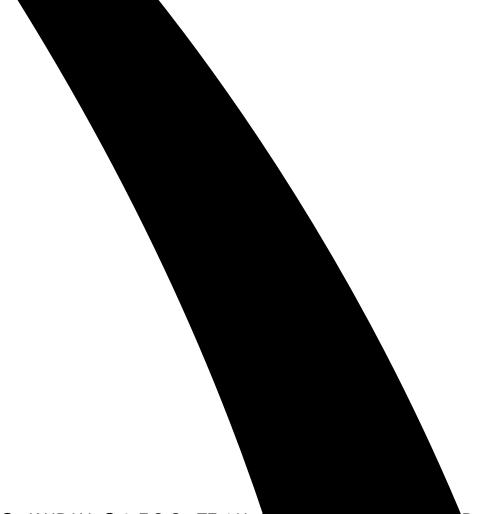
5b ]bhfcXi Whjcb hc fY[fYgg]cb UbUmg]g Ug Ya d'cmYX]b Whcgg gYWhjcbU hja Y gYf]Yg YWhbca Yhf]Whj \Y gHJhjdhW UbX dfcVUV]`]mmhcc`g fYei]fYX Zcf fY[fYgg]cb UbUmg]gk]``Ugc VY Whj YfYX.

5 gi fi YmcZ] a dcfflubh fY[fYgg]cb a cXY`g Ya d`cmYX]b Ywtbca Yff]WUbU ng]g cd]Wg k]``j UfmUWtfX]b[fc hX]bhYfYgh cZ]bgffi Wtcf, Vi h Wti `X]bWi XY ZcfY-WUgf]b[ a cXY`g dUbY` XUHU UbU ng]g.`]a]hYX XYdYbX-Ybhj Uf]UVY, UbX gdUf]U YWtbca Yff]Wg

5b]blfcXiVMjcb hcZbbXLaYblUaLhYaUq)VVbaYh\-cXgigYX]bYVVbca]WUbUngjgcjYfj]YkgcZXjZYf-YbhjUVVVijajpcjByUfU[YVfU, VVbgfUjbYXcdhja]nU-hjcb, UbXVVadUfUhjjYghUqVbj5`gc]bWiXYgUb]blfcUnU-

I Ua ]bUt]cb cZth.Y fc`Y cZa cbYm, VfYX]h, UbX Z|bUb-VJU ]bgt]ti t]cbg ]b Ub YVtbca m, UbX th.Y \]gtcfmcZ th.Y XYj Y`cda YbhcZa cbYmUbX Z|bUbVJU ]bgt]ti t]cbg

I La ]bUjcb cZ h\Y fc`Y WbgffUjbhg VYncbX Y`YWljcb cZ [cj Yfba Ybh cfa Ujj Y h\Ycf]Yg cZ Wbghjhi hjcbU WbgffUjbhg UbX Wa dUfUjj Y UbU ng]g cZ h\Y dYfZcfa UbW cZ WbgffUjbhg k ]` VY Wij YfYX. \Ycf]Yg cZ\Y \



## 

Ubx ]b-gYfj ]W hYUWYfg VYmcbx gla d'Y Wta di hYf ']hYfUWhUbx VUbj|W bXYfgtUbX]b[ cz ca di hYf UgYX bgffi WfjcbU 'YW\bc`c[]Yg h k ]` ZcWg cb a cfY Uxj UbWx YXi WUfjcbU i gY cza i 'ifja YX]U Ubx bhYfbYh \VUgYX hYW\bd'c[]Yg \Y ghi XYbjh k ]` Yl d'cfY hYW-bc`c[]Yg Ubx 'YUfb]b[ hcc`g h\UhZcghYf U a cfY 'YUfbYf WbhYfYX Wtbgffi Wfjj ]gh Ybj ]fcba Ybh k ]h\]b h\Y]f QDGWZJWhYUDXJON PhOU Hf]nWUQdd YgPURGD[WZOaH h\Y]bhY[fUfjcb cz h\YgY hYW\bc`c[]Yg gi W Ug XYj Y'-cda Ybh cz ]b UXQ fY

\]g Wti fgY ]g XYg][ bYX hc dfcj ]XY Ub ]bhYfX]gWJd']-bUfmYl dYf]YbW ]b hYUW]b[ i g]b[ Ub UddfcUW XY-g][ bYX Ufci bX Ybj ]fcba YbhU YXi Wh]cb h\Ya Yg \Y [fUXi UhY ghi XYbhg k]` VY ]a a YfgYX ]b hYUW]b[ UMfcgg h\Y Wff]W'i a i g]b[ ]ggi Yg fY'UhYX hc h\Y Ybj ]fcba Ybh \Y ZcWg k]` VY ]bhYfX]gWJd']bUfmUbX i h]`]nY \UbXg-cb `YUfb]b[ Yl dYf]YbWg k \]W k]`\Y'd hc a U\_Y`YUfb]b[ a YUb]b[Zi`UbX Ui h\Ybh]W

-

YgYUfW. Zcf LbX dfYdUfUhjcb cZ U gW.c`UfmdUdYf fY'UhYX hc U gW.cc` UXa ]b]ghfUhjcb, gi dYfj ]gjcb, LbX/cf Wff]W'i a dfcV'Ya. \Y dfc^YWhk]` VY i bXYf h\Y X]fYWhjcb cZ h\Y ghi XYbHg UXj ]gcfmWca a ]HhYY.

\]g Wti fgY dfcj ]XYg ]bhYfbg Ub cddcfhi b]hmhc XYj Y'-cd UbUmh]Wi h\]b\_]b[ g\_]``g h\fci [\ YI Ua ]b]b[ VfcUX YXi WUjcbU ]ggi Yg UbX WtbWfbg hcd]Wg cb h\Y gHUY UbX `cWi `Yj Y`g UbX h\cgY cZ dYfgcbU ]bhYfYgh \Y gWtdY cZ h\Y Wti fgY fUb[ Yg Zfca 1 j Yb]`Y`Uk, WUgofcca a UbU[ Ya Ybh, dfcZYgg]cbU ]ga, dfcZYgg]cbU XYj Y'cda Ybh Zcf hYUWYfg UbX ch\Yf Wti fgY hcd]Wt

\Y X]U[bcgh]WdfYgWf]dh]j Y Wta dcbYbh cZ hYUW]b[a Uh\Ya Uh]Wg k ]`` W ghi X]YX k ]h\ Ub Ya d\Ub]g cb h\Y]bhYfdfYhUn]cb cZX]U[bcgh]Wa UhYf]U g

\]g Wei fgY k]`` YI Ua]bY fY`Yj Ubh fYgYUFW UbX U j UF]YmcZ]bgfi Wf]cbU gfUY[]Yg Uddfcdf]UhY]b h\Y Z]Y`X cZ bUi fU gWYbW. a d\Ug]g]g d`UWX cb Uddfcdf]UHY]bgfi Wf]cb UbX a UHYf]Ug]bW X]b[ hYW-bc`c[mZcf hYUM]b[ gWYbW hc ghi XYbhg]b[fUXYg -6.

\]g Wei fgY ]g U gYa ]bUf Zcf Y`Ya YbhUfm YXi Whcfg XYgjf]b[ hc XYg][b UbX ]a d`Ya Ybh XYj Y`cda YbhU dfc[fUa g cZ `Ub[i U[Y Uftg ]bgffi W]cb ]b j ]Yk cZ fYVWbh fYgYUfW. 5b Yl Ua ]bUfcb cZ h\Y fYgYUfW. ]b h\Y `Ub[i U[Y Uftg UbX W'ffYbh dfUMjWg ]b hYUW]b[ hYW\b]ei Yg k ]`` VY di fq YX.

\]g \(\forall \)i fgY \(k\)\`` YI \(\lambda\) fyYy \(\text{Ub}\) fygY\(\text{Ub}\) \(\text{U}\) \(\text{U}\)

Z]Y'X cZ gcV]U' gV]YbW. a d\Ug]g ]g d`UWX cb Uddfcdf]UY ]bgffi W]cb UbX a UYf]U'g ]bWi X]b[ hYWbc`c[ m Zcf hYUW]b[ gcWU' gWYbW hc gfi XYbhg ]b [ fUXYg -6.

\Y di fdcgY cZ h\]g Wti fgY ]g hc Ugg]gh [fUXi UhY gi XYbhg Ug h\Ym]bj Ygh][UhY UbX Wtbgffi WhU XYYdYf i b
■/fgrUbX]b[ cZ UbX XYj Y`cd h\Wb]ei Yg hc gfYb[h\Yb
h\Y g\Mcc`-dUfYbh fY`Uh]cbg\]d k \]'Y XYj Y`cd]b[
a i hi U gi ddcfh\fg Zcf h\Y hchU XYj Y`cda Ybh cZ h\Y
mci b[ W]'X. Yfh]bYbh hcd]Wg ]bWi XY: gfYgg UbX
W]'XfYb, dUfYbhg UbX ZLa]']Yg ]b Wf]g]g UbX \Y`d]b[
W]'XfYb VtdY k ]h\ h\Y Z hi fY.

5 ghi XmcZUdfcV'Ya i g]b[ fYgYUfW hYWkb]ei Yg. Y'YWf]cb cZ dfcV'Ya a i gh W Uddfcj YX Vmh\Y dfc-ZYggcf i bXYf k \ca h\Y ghi Xm]g hc W a UXY UbX h\Y YUb cZ Xi WWf]cb. \Y ghi Xmg\ci `X Wbhf]Vi hY hc h\Y ghi XYbhBg dfc[fUa. fYdUfUf]cb cZ U gWc`Uf`m dUdYf ]g fYei ]fYX UbX a Um]bj c`j Y Ub« ]b YUb« ]b

ei ]fYX

fcca hYUWYf LbX Ui b]j Yfg|lmgi dYfj ]gcf Zcf UdYf]cX cZcbY Zi ``gYa YgfYf. fUX]b[ gngfYa ]g Llgp/ U]`.

5 ghi XmcZUdfcV'Ya i g]b[ fYgYUfW hYWb]ei Yg Y'YWf]cb cZ dfcV'Ya a i gh VY Uddfcj YX Vmh\Y dfc-ZYggcf i bXYf k \ca h\Y ghi Xm]g hc VY a UXY, UbX h\Y YUb cZ Xi Wh]cb. \Y ghi Xmg\ci 'X Wbhf]Vi hY hc h\Y ghi XYbhBy dfc[fUa. fYdUfUh]cb cZ U gWc'Ufm dUdYf ]g fYei ]fYX UbX a Um]bj c'j Y Ub cfU XYZYbgY.

\]g Wei fgY ]g XYg][ bYX Zcf h\Y UXj UbWX g]l h\ nYUFYXi WUf]cb ghi XYbh hc Yl Ua ]bY h\Y ZJW\hm\YUXYfg\]d fc`Yg cZ a Ybhcf/gi dYfj ]gcf ]b gYth]b[ g YW\-b]ei Yg UbX dfcWXi fYg k ]`` VY ]bj Ygh][ UhYX.

\]g Wti fgY ]g XYg][bYX hc Yl Ua]bY h\Y \_bck `YX[Y VUgY Zcf YZZYVh]j Y gW\cc`g hc YbUV`Y hYUW\Yf `YUXYfg hc XYj Y`cd g\_]``g]b h\Y]f ck b dfUhlj\Wg \YfY k]``VY Ya d\Ug]g h\fci [\]b-XYdh\ ghi XmcZ h\Y fYgYUFW\`]hYfUh fY cb YZZYVh]j Y gW\cc` gYh]b[g hi XYbhg k]``\\J]f\W\mY\ Ua]bY, UbUmmY, UbX Yj Ui UhY h\Y Wta dcbYbhg UbX\WUfUh\H^f]qj\VgjcZYZZYh]j Y g\Wcc` Ybj]fcba Ybhg

\Y di fdcgY cZ h\]g Wi fgY ]g hc Yl Ua ]bY h\Y `cWi, ghth, fY[]cbU, UbX bUfjcbU ghUbXUfXg UggcVJUhX k ]h\ ghXcc` UWfYX]hUfjcb. \Y UWfYX]hUfjcb dfcWgg ]b h\YgY UfYUg k ]`` VY fYj ]Yk YX UbX UbUmmYX. hi - XYbhg k ]`` Wa dUfY UbX WabhfUgh h\Y X]ZZYfYbh k Ung gMcc`g UfY UWfYX]hYX cd]Wg gi W Ug h\Y UWfYX]hUfjcb dfcWgg gMcc` gYZ-ghi Xm dfcWXi fYg j U`]XU-lfjcb/XcWa YbhUfjcb, fc`Yg cZ gMcc` dYfgcbbY, UbX WfWUfjb[ gMcc` ]a dfcj Ya Ybhd'Ubgk ]`` W ]bj Ygf][ UfXX

\Y di fdcgY cZ h\]g \Wi fgY ]g \text{ hc U`ck YXi WhichU`YUXYfg \text{ hc YI d`cfY \text{ h\Y cf[Ub]nUr]cbU` XYj Y`cda Ybh UbX a UJbhYbUbW gYfj ]Wg fYei ]fYX \Zcf YZZYWi]j Y cd-YfUr]cb cZ \text{ h\Y gWcc`g k ]h\]b \text{ h\Y `Y[U \ ZfUa Yk cf\_YgHU`]g\YX \m`cWi, gfUhY, \UbX \ZYXYfU` `Y[]g`Uh]j Y \UbX \Text{ x]WU fYei ]fYa Yb\text{ hu} \Ucf Ya d\Ug]g k ]`` \VY []j Yb \text{ hc ghi Xnib[ `Y[U ]ggi Yg \UbX gYfj ]Wg fY`UhYX \text{ hc Yi WdhicbU \W]`-

XfYb k ]`` VY WcgY`mYl Ua ]bYX. \Y XYj Y`cda YbhcZ Yth]Wf gtUbXUfXg ]bZcfa YX `Y[U XYW]g]cb a U\_]b[, UbX Ya Yf[YbWfn dfcWXi fYg Zcf Ybgi f]b[ gUZYfm Ug k Y`` Ug h\Y dc`]r]Wf ZLWfcfg k \]W ]a dUMf gWcc`g gcWYfmUbX Wfa a i b]fmfY`Uf]cbg k ]`` VY gfi X]YX.

\Y di fdcgY cZ h\]g Wti fgY ]g hc dfcj ]XY [fUXi UY ghi XYbhg k ]h\ Ub ]bhfcXi Whjcb hc ei U]hUhj Y fYgYUfW a Yh\cXc`c[m \Y \]ghcf]Wb XYj Y`cda Ybh fUhjcbUY, UbX fY`Uhjcbg\]d hc ei UbhjhUhj Y fYgYUfW k ]`` VY YI Ua ]bYX. i U]hUhj Y fYgYUfW a Yh\cXg k ]`` ]b-Wi XY dfcWXi fYg Zcf gY`YWhjcb UbX gUa d`]b[ UbX Zcf XUhU Wb``YWhjcb UbX UbU`mn]g hi XYbhg k ]`` fYUX U

5 ghi Xm cZ a U'cf UbX a ]bcf lfU[YX]Yg, k ]h\ gca Y UhYbh]cb hc bcb-XfUa UhJWdcYlfm  $\,$  ]gh cZ d'Ung a Um j Ufmk ]h\ YUW cZYf]b[ .

5 gh Xm cZ Wta YX]Yg UbX fca UbWg. ]gh cZ d`Ung a Umj Ufmk ]h\ YUW\ cZZYf]b[ .

 $\begin{array}{lll} 5 & gh \times Z \\ ghc & gh \times Z \\ ghc & gh \times Z \\ gh & g$ 

5 ghi XmcZ h\Y a U'cf `]h\fufm\Vf]h]\Vg\ UbX h\Y]f k cf\_g Zfca \W\Qg]\Wi h]a \Yg hc h\Y\ df\Yg\bh

5 ghi XmcZ ca Ubri)WdfcgY UbX dcYlfmk ]h\ Ya d\U-g]gcb h\Y k f]r]b[gcZ `U\_Y, c`Yf]X[Y, cfXgk cfh\, nfcb, YUrg UbX \Y`Ym

\]g Wei fgY ghi X]Yg gY`YVhi k cf\_g Zcf h\Y ]V`Y Zcf

5 ghi Xm cZ ] Whof] Lib `] HYfUhi fY (1837-1900) Lig ] h fYZ YWhg gcWyU, YWobca ] W dc`] HJWJ, YXi WUH] cbU, UYgh\YhJW LibX fY`] [] ci g WobWfbg hi XmcZh\Y Wc`cb]U dYf]cX Zfca i fcdYUb X]gWtj - Yfmhc h\Y YbX cZh\Y fYbW. UbX bX]Ub Uf, k]h\Ya d\Ug]g cb h\Y dc`]h]WU, YWtbca]W UbX gcWJU XY-j Y`cda Ybhg

ifjYmcZ ifcdYUb\]ghcfm]bh\Y18<sup>th</sup> Whbhfm, Yad\Ugjn]b[h\Y WhUMnga]WXYjY`cdaYbhg]bgWybhjZ]W dc`]hjW', \iaUb]HUf]Ub, UbXYWbca]Wh\ci[\h

Wei fgY Wibh/fg cb h\cgY `YUXYfg\]d UV]`]h]Yg UbX lfU]hg h\Uh dfca ch/ ghi XYbh UW]Yj Ya Ybh Zcf U` ghi XYbhg fyfei ]g]hY

fy'UnyX hc W'hi fU WWb[Y h\fci [\ a YX]U Wa a i b]-Whicb, Y]hY Ya dck Yfa Ybh UbX ck bYfg\]d cZ a YX]U UggYng h\Y WUb[]b[ bUi fY cZ ZcfY][b UbX Xca Ygh]W]bZi YbWg]b dc`]n]WgUbX h\Y fc`Y cZa YX]UhYWbc`c-

cbg|XYfg h\Y fc'Y cZ cdYfUrjcbg UbX ]bZcfa Urjcb groph'a g ]b XYZ]b]b[ Wta dYnjnj Y Vi gjbYgg grfUY[]Yg rfi Wh fU XYW]g]cbg (dfcXi WhXYg][b, a Uf\_Ynjb[, UbX Z]bUbW) Ugk Y` Ug]ggi Ygh\UhVfcgg WtfdcfUh' Vci bX-UF]Yg (grfUh'[]Yg Zcf X]grf]Vi hjcb, gi dd'ma UbU[Ya Ybh UbX ['cVU cdYfUhjcbg) UfY UXXfYggYX. I Ua ]bYg Ya Yf[]b[ ]ggi Yg gi W Ug ['cVU a Ubi ZJMh f]b[, Y-Wta a YfW, gci fWb[ grfUh'[]Yg a Ubi ZJMh f]b[ Ui hca Uhjcb UbX Ybj]fcba YbHU ]ggi Yg

\YcfYri\W' LOX dfWri\W' Lodd`]\Whichg Zcf a LoU[]b[ Wta di hYf]nYX ]bZcfa Lhich gnghYa g d`Lob]b[ LoX Wtbhfc` Zi bWflcbg cZ h\Y Zifa; Ya d\Logig ch WgY ghi X-]Yg cZ XYgi[b dfc^YWng h\Y Lodd`]\Which cZ \i a Lo LoX cf[Lb]nLhichL' ]ggi Yg cZ LoU[Ya Ybh bZcfa Lhich nghYa g ( ); WffYbh LWWXYa ]WfYgYLfW, ]bhc h\Y LoUng]g XYgi[b, LoX ]a d'Ya YbhLhich cZ Wta di hYf ]bZcfa Lhich gnghYa g

\

5 ghi XmcZh\Y V]c`c[mcZa Uf]bY j YfhYVfUhYg Ya d\U-g]n]b[ gnghYa Uh]Wg, VY\Uj ]cf, d\ng]c`c[m, UbX YWt`c-[mcZ`cWV Zcfa q.

5 [YbYfU gi fj YmcZU [UY UbX j UgW\'Uf d`Ubhg UggcV\-UhX k ]h\ h\Y a Uf]bY UbX Yghi Uf]bY Ybj ]fcba Ybh

5 [YbYfU ]blfcXi Wijcb hc h\Y d\ng]Vvj W\Ya]gffm, [Yc'c[m, UbX V]c'c[mcZh\Y cWUbq

YW.b]ei Yg ]b `]j Y Ub]a U` W`hi fY k ]h\ Ub Ya d\Ug]g cb VUg]Wdf]bWdUg h\Uh Wb VY Udd`]YX hc h\Y W`hi fY cZUbmcf[Ub]ga ZcffYgYUfW, X]gq`Um,cf Wa a YfVJU dfcZ]h

YW if Y UbX `UVcfUncfm ghi X]Yg cZ V]cYbYf[Yh]W i Wa a i b]lmgffi W i fY, dcdi `Un]cb XmbUa ]W i dfYXUjcb, Wa dYnjhjcb, UbX grWjUjcb ]b a Un]bY YWgngtYa g

5b]bHcXiWhjcb hch\YVjc`c[mcZg\Uf\_gubXfUng,k]h\gdYWjU`Yad\UgjgcbfY[]cbU`g\Uf\_ZuibUubX ZjY`XhYWbjeiYg.

5 b cj Yfj ]Yk cZ h\Y V]c`c[m UbX WtbgYfj Utjcb cZ a Uf]bY hi fh`Yg ]bWi X]b[ ]XYbfjZ]WUfjcb, X]gff]Vi tjcb, bYgfjb[ VY\Y ]cf, a ][fUtcfmVY\Y ]cf, UbX ZYYX]b[ YWtc[m

 $\label{eq:continuity} $$ Y ghi XmcZhY ghi WhifY, XYj Y`cda Ybh, d\nglc`c[m, UbX d\Ufa UMc`c[mcZhY bYfj ci g gnghYa g UbX gYbgY cf[Ubg,$ 

\]g Wti fgY ]g h\Y WtdgtcbY Wti fgY ]b h\Y 5 dfc[fla h]bhY[fluh'g h\Y g\_]`g lbX \_bck `YX[Y XY] Y`cdYX ]b YUF]Yf Wti fgYg lbX Ya d\ldg]nYg WtgY lbU ng]g
cfa i `ldjcb lbX ]a d`Ya YbhUjcb cZ gffluY[]Yg UYY
gfYggYX. \Y Wti fgY ]bWi XYg lb YbX-cZ-Wti fgY Wta dfY\Ybg]j Y YI la ]bLUjcb. 5 [fluXY cZ [ î cf VYfhYf]g
fYei ]fYX hc Wta d`YhY h\]g Wti fgY gi WYggZi `m \Y
Wti fgY a lm bch VY lflubgZYffYX ]bhc h\Y 5 dfc[fla hi XYbhg UfY fYei ]fYX hc Wta d`YhY h\Y [fluXi lhY
Xi WthjcbU Ygnjb[ Yfj]W U'cf ]Y`X Ygh lbX U
ldghcbY I la ]bUnjcb ]b h\]g Wti fgY.

Ijcb UbX a UbU[Ya Ybh cZ [ccXg UbX gYfj]]Wg ItU\_Y d'UW]b Vi g]bYgg cf[Ub]nUjcbg k]h. UthYbIjcb hc h\Y XY]bYUjcb cZ f'Yg d'UhYX Vma UbU[Ya Ybh UbX `UVcf]b WJffmjb[ ci h Vch\ dfcXi WJcb UbX gYfj]]W XY`]j Yfm, UbX Udd']WJjcb cZ gYYWhYX ei UbIjfUfjj Y hYW\b]ei Yg hc gi ddcfhl\cgY dfcWggYg

I Ua ]bUfjcb cZ Yfh.]Wi dfcV.Ya g UbX WtbZ]Wfg Yb-Wti bHYfYX Vma UbU[Yfg UffYa dfjb[ fc Zjhfh.Y]f cf[Ub]-nUfjcbg fc fh.Y 'Uf[Yf gcW]U Ybj ]fcba Ybh 5XXfYggYg Yfh.]Wfg VtXYg cZ Yfh.]Wfg gcV]U fYgdcbg]V]`]fmcZ cf[Ub]-nUfjcbg]b Xca Ygf]WUbX [`cVU Ybj ]fcba Ybfg

\Y ghi XmcZ [YbYfU Vi g]bYgg a UbU[Ya Ybh Zfca U ghi Vhi fU ghUbXdc]bh d`Ubb]b[, cf[Ub]n]b[, ghUZZ]b[, X]fYVh[b[, UbX Wtbffc``]b[.

Y ghi Xm, XYg][b, ]a d'Ya YbhUh]cb UbX cdYfUh]cb cZ U gnghYa k]h\]b h\Y cf[Ub]nUh]cb.

5 ghi XmcZ a UbU[ Ya Ybh WtbWdhg UbX dfUMjWg i gYZi ]b ]a dfcj ]b[ cf[ Ub]nUh]cbU dYfZcfa UbW. \Yc-f]Yg UbX WtbWdhg Udd`]VWYY hc a U\_]b[ cf[ Ub]nUh]cbg a cfY \cgd]hUYY hc dYcd'Y UbX a cfY dfcXi Whj Y ]b UWta d`]g\]b[ h\Y]f [cU'g UbX cVYVMj Yg UfY ]XYbh]-Z]YX UbX X]gWygYX. dYWJU UHYbh]cb ]g dU]X hc ghfUhY[]W]bhYfj Ybh]cbg UbX WUb[Y]b Vch\ df]j UhY UbX di V`]WgYMcf cf[ Ub]nUh]cbg UbX ]b h\Y [`cVU UfYbU

\Y Wti fgY YI Lla ]bYg h\Y Zci bXLhjcbU WtbWdhg cZ `YUXYfg\]d, fYj ]Yk g IfUX]hjcbU h\Ycf]Yg cZ `YUXYfg\]d, UbX ]bj Ygh][ UhYg Wf]hjWt ]ggi Yg ]b `YUXYfg\]d UbX a chjj Uhjcb Ug h\YmUdd`m]b h\Y WtbhYa dcfUfmk cf\_-d`UW. 5 dd`]Whjcbg XYj Y`cd Wf]hjWt h\]b\_]b[ g\_]``g UVci hh\Y WtbWdhg.

hi XmcZh\Y]bhY[fUt]jYZbWf]cbgcZgYb]cfaUbU[Y-aYbh]b`cb[-fUb[YgfUhY[]Wd`Ubb]b[UbXXYW]g]cbaU\_]b[hc giddcfh]ad`YaYbfUt]cb.\]g]gUWd-ghcbYWtifgYk\]Wih]nYgU`h\Yg\_]``gUbX\_bck`YX[YXYjY`cdYXYUf]Yf]bh\Ydfc[fUa.hZcWgYgcbdc']WhdfcV`YagUbXd`Ub]b[VYmcbXh\YVcibXUf]YgcZh\YZ]fa.hYad\Ug]nYgUXjUbWXWUga

\]g Wei fgY Wej Yfg X]j ]g|V]`]m; Web[fi YbWrg df]a Y bi a VYfg Yfa Urbg h\YcfYa, ]cd\Ubr]bY Yei Ur]cbg bi a VYf h\YcfYf]W2 bWr]cbg ei UXfUr]WfYV]VdfcV]/mm

Yb\UbWjUf]cigYjUiUf]cbUdd`]WUf]cbg

 $b XYf g \ dYf] \ ]g]cb \ c Z U \ Z J W \ 'ma \ Ya \ VYf, \ gh \ XYbha \ Um \ di f gi Y gh \ Xm]b \ gY \ Y W XY U Y U U U U U ' Y Y hc \ h Y d U W H W C Z bi f g]b [ k \]W \ Z hg \]g \ Yf \ U W XYa ]Wb YY X g Vi h \]g b ch U J `U `Y ]b h Y f Y [ i `U W f J W `i a .$ 

jUbWYX fUMAJWY ifgY (5).

cWgYg cb h\Y LXj LbW dfLMf]W bi fgYEg fc`Y ]b \YU h\WIY. a d\Ly]nYg h\Y h\YcfYf]W VLYg \W]f]\W fc`YLXYfg\]d ]b h\Y LXj LbWX dfLMf]W fc`Y.

`]b]WI` dfYWdhcfg\]d Wei fgY ]b h\Y UXj UbWYX dfUW

## 5 5 Zcfa Uh

fYgYbhg WtbWdhg df]bVJJd`Yg UbX a Yh\cXg cZ h\Y

cWgYg cb ]a d'Ya Ybruhicb cZ Ub Yj ]XYbW-VugYX mbrh\yg]g fc^YvMk]h\ UgnghYa g-'Yj Y' ]a dUM Zcf h\Y ]a dfcj Ya Ybh cZ bi fg]b[ dfUMjW cf dUhjYbh ci h\ta Yg k ]h\]b U gdYVJU]nYX UfYU cZ UXj UbWX dfUMjW. Yei ]fYg ]bhY[ fUhjcb cZ\_bck 'YX[ Y cZ bi fg-]b[ h\Ycfm, Yj ]XYbW-VugYX bi fg]b[ dfUMjW, d\ng]c-'c[]WUbX dUh\cd\ng]c'c[]WZci bXUhjcbg, Yh\]WU UbX 'Y[ U df]bVJd'Yg UbX \YUh\WfY gnghYa g bj c'j Yg XYj Y'cda YbhcZ XUhugYng Zcf UbU ng]g cZ nbrh\y-g]g fc^Ywh ci h\ta Yg Yei ]fYg Wa d'Yhjcb cZ U a ]b]a i a cZ 120 W]b]WU \ci fg UbX i d hc 240 W]b]-WU \ci fg

a d\uginyg h\y Yj Ui Uijcb, gmbh\ygjg UbX Wijijei Y cZ mbh\ygjg fc^YWici hWa Yg hc gi ddcfhei Ujhm Wjb]Wi cf cf[Ub]nUijcbU dfUMjWg Yei jfyg Wa d`Yijcb cZ U ZjbU dUdYf hc h\y 5 Xj ]gcfm ca a jhhY UbX dfygybhUijcb hc ZJW`hmUbX dYYfg cb-Wi XYg k jh\ fyZ YWijcb UbX Yj Ui Uijcb cZ UW.jYj Ya Ybh cZ fc`Y Wa dYhYbVWg Yei jfyg Wa d`Yhjcb cZ U a jbja i a cZ180 Wjb]Wi \ci fg UbX i d hc 240 Wjb]-Wi \ci fq

5b ]blfcXi Wijcb hc Vldj]W ldd`]YX, lbX Yj U`i Uij Y fYgYU'W a Yh\cXc`c[]Yg lbX XUHU lbU'mj]g hYWb]ei Yg hi XYbhg ldd`m h\YgY a Yh\cXc`c[]Yg hc ]ggi Yg dfc[fla g lbX fYgYUfW dfcV`Ya g]b h\Y Z]Y`X cZ 5 gfi XmUbX Udd`]Wlfjcb cZ XYVJgjcb a U\_jb[ a cXY`g k ]h\ Ya d\Ugig cb i bXYfgfUbX]b[ h\Y fc`Y UbX ]a - dcffUbW cZ gfUY[]Wd`Ubb]b[ ]b di V`]WUbX bcbdfcZ-]hcf[Ub]nUf]cbg

5 b cj Yfj] Yk czh.Y h.YcfYh] Wi Zci b Xuhjcbg Ub X hYW.-b] ei Yg cz dfc[fula Yj Ui Uh]cb ] b Wi X] b[ b YY X Ubg Ygg-a Yb hg ci h Waa Y Yj Ui Uh]cbg gi fj Ymg, dfc[fula ci h-Wa Yg, Ub X] a d Um Yj Ui Uh]cb(g).

5b Yl Ua ]bUt]cb cZ h\Y UXa ]b]gfUt]j Y, Z]gWJ, UbX `Y[U ]ggi Yg h\Uh[cj Yfb fY`Ut]cbg Ua cb[ h\Y j Ut]ci g [cj Yfba YbtU Ybt]t]Yg ]b h\Y b]HYX tUtYg

\]g Wdi fgY ]g XYg][ bYX fc \Y'd h\Y ghi XYbhi bXYfgtubX h\Y '\Lk \Lg]h\Ldd ]Yg fc h\Y a \Lb\L [Ya YbhcZ\i a \Lb fYgci fWg fg \Wg | Yf\L [Y] g \Lga YX \Lh dfYd\L]b[ h\Y a \Lb\L [Yfg cZ \i a \Lb fYgci fWg fc fWw[b]nY 'Y[ \Ld dfcV Ya g fc \\_bck h\Y 'Y '\]

5 b cj Yfj ]Yk cZ h\Y `Y[U` Ybj ]fcba Ybh cZ di V`]W UXa ]b]gffUrjcb. \Y ZcWg ]g cb h\Y dck Yfg UbX dfc-WXi fYg cZ UXa ]b]gffUrjj Y U[YbVJYg ]bWi X]b[ UXa ]b-]gffUrjj Y X]gVfYrjcb, fi `Y-a U\_]b[, ]bj Ygrj[ Urjcbg dfcgYW'rjb[, bY[ crjUrjb[ UbX gYth`Ya Ybh VUgYX cb cbgrjhi fjcbU` `Uk, grUri hcfm`Uk, Wta a cb `Uk, UbX U[YbVVna UXY `Uk UbX h\Y `]UV]`]hm cZ [ cj Yfba Ybhg UbX h\Y]f cZZJWfq

5 b cj Yfj ]Yk cZ h\Y df]bV]dYg `Y[ U UgdYVMg dfc-WggYg UbX gffLhY[ ]Yg cZ WbhfUMh a UbU[ Ya Ybh ]b di V`]W\bX bcbdfcZ]hcf[ Ub]n\Lh]cbg

5 ghi XmcZ h\Y j Uf]ci g h\YcfYt]Wi dYfgdYWf]j Yg h\Uh \Y`d hc Yl d`U]b Wta d`Yl cf[Ub]nUt]cbU VY\Uj ]cf ]b di V`]W UbX bcbdfcZ]h cf[Ub]nUt]cbg ]b h\Y [`cVU Ybj ]fcba Ybh

5b YI Lla ]bLl·]cb cZ h\Y WffYbh dfcWggYg dfcW-Xi fYg gtUbXUfXg ]ggi Yg UbX dfcV`Ya g ]b d`Ubb]b[, a UbU[]b[, Ui X]h]b[, UbX Yj U`i Ll·]b[ WcblfUMi dYfZcf-a UbW.

\]g Wei fgY ZcWgYg cb a UbU[Ya Ybh cZ h\Y cj YfU` WeblfUMbY[ch]Uhjcb dfcWgg UbX Yl Ua]bYg h\Y VUg]Wg cZ bY[ch]Uhjcb, ]bWl X]b[ h\Y dfcWXi fYg dfcWggYg dgnWc`c[m, UbX g\_]``g \YgY WeblfUMbY[ch]Uhjcb

\Y Wi fgY dfcj ]XYg U Zlu Yk cf\_ Zcf XYj Y cd]b[ UbX UbU`nm]b[ UfUb[Y cZ . . . di V]W\YUh\ dc`]WhUfYUg UbX ]ggj Yg UWi Ulbtg ghi XYbtg k ]t\ ]b\WYUg\X i bXYfgtubX]b[ cZ h\Y WbhYl hcZdi V]W\YUh\ UXa ]b]gftu]cb UbX \YUh\WfY dc`]-\Wh UbX Yl Ua ]bYg \_Ym ZuMtcfg UbX ZcfWg ]a dUMjb[ lctU di V]W\YUh\ gnghYa dYfZcfa UbWg]b h\Y b]hYx fuYg

5b Yi Lia ]bLifcb cZh\Y`Y[U LbX yt\]Wi LigdYMig cZWbHYa - dcfUfm`Y[U LbX gcV]U ]ggi Yg k ]h\]b h\Y di V`]W\YUH\ gYf-j ]WgLYa ]b]gffLifcb dfcWgg

\Y Wti fgY dfcj ]XYg Ub cj Yfj ]Yk cZ di V`]W\YU h\tig ]bj c`j Ya Ybh UbX fYgdcbgY gfUY[]Yg hc j Uf]ci g bUti fU UbX i bbUti fU Ya Yf[ YbV]Yg UbX h\Y Xca Ygf]WubX ]bhYfbUf]cbU fYgdcbgYg hc X]gUgYYfg ci hVfYU\_g UbX hi XmcZ ZLWtcfg. ZcfWg. UbX Zl bWtlcbg]b a U\_]b[ cZ5a Yf]WUb ZcfY][b dc`]Wh bWi Xyg XygWf]dt]cb UbX

5 gfi XmcZ VLg]WgfLf]gf]Wi dfcWggYg LloX a YLgi fYg i gYX ]b YXi Wlf]cb, Wti bgY]b[, LloX dgnWcc[m 5 bLi mg]g cZ Uj Uf]YhmcZ gfLloXUfX]nYX hYgfng LloX a YLg-i fYa YbhdfcWXi fYg ]bWi X]b[ Wtbgffi Wlf]cb, i gY, LloX ]bhYfdfYlLf]cb. cbgffi Wlfcb cZ hYUWYfWti bgYcfa UXY hYgfng LloX a YLgi f]b[ XYj ]Wg

О

i bXYf h\Y gi dYfj ]g]cb cZ h\Y gi XYbH\g UXj ]gcfm Wta - a ]hhYY. 5 fYgYUfW dfcdcgU UbX h\Y k f]hhYb dLdYf a i gh VY Lddfcj YX Vmh\Y gi XYbH\g UXj ]gcfm Wta a ]hhYY. \Y UXj ]gcfm Wta a ]hhYY k ]` UXa ]b]ghYf Ub cfU YI Ua ]bU-hjcb Wtj Yf]b[ h\Y fYgYUfW Z]bX]b[ g

`]g Udd`]YX Wti fgY dfcj ]XYg h\Y g\_]``g a UbU[Yfg bYYX hc UbU'mmY XUHU ei Ubh]hUh]j Y'm UbX hc a U\_Y XYW]g]cbg i gjb[ gdfYUXg\YYh a cXY`]b[ hcc`g 5g U VUg]W i bXYfgHUbX]b[ cZ gfUh]gh]Wf WtbWdhg ]g Uggi a YX, h\Y ZcWg k ]`` VY cb h\Y Udd`]Wh]cb cZ h\YgY WtbWdhg cd]Wj Wj YfYX ]bW XY dfcVUV]`]mmX]gh]-Vi h]cbg gfUh]gh]Wf ]bZYfYbW, fY[fYgg]cb UbU'mg]g h]a Y gYf]Yg UbU'mg]g UbX ZcfYWUgh]b[, ei U]hma UbU[Y-a Ybh UbX Ub ]blfcXi Wh]cb hc g]a i `Un]cb.

5 b UbU'ng]g cZ h\Y dfcVU\]`]gh]W UbX XYhYfa ]b]gh]W ei Ubh]rUh] Y hWb]ei Yg UJ U]`UV`Y hc Vi g]bYgg a UbU[ - Yfg ]bj c`j YX ]b h\Y XYV\]glcb- a U\_]b[ dfcWgg cZ h\Y a Uf\_Yhd`UW. bWi XYX ]g Ub Yj Ui Uh]cb cZ h\Y a CX-Y`g UbX dfcWggYg bck Uj U]`UV`Y Zcf dfcV`Ya -gc`j ]b[ di fdcgYg

\]g Wti fgY dfcj]XYg Ub ]bHfcXi Whob hc YZZYWhjjY dfc^YWh a UbU[Ya Ybh h\Ycfm, hcc`g. UbX hYWkb]ei Yg i gYX h\fci [\ci h h\Y YbhjfY dfc^YWh gYei YbW, Zfca dfY-dfc^YWh XYZ]b]Hjcb h\fci [\ dcghdfc^YWh Yj U i U-hjcb.

5 b Udd`] WUhjcb cZ dfc^YWh a UbU[Ya Ybh h\Ycf] Yg UbX

 $\label{eq:continuity} \mbox{dYWMU]nYX hcd]Wg bch[YbYfU`m]bWi XYX ]b \mbox{Wei fgY } cZYf]b[g$ 

VY fYei ]fYX hc `YUfb UbX dfUMJW j Uf]ci g Zcfa g cZ UggYgga YbhUbX fYgYUfW. \Y `YUfb]b[ gffi Whi fY cZh\]g Wi fgY k ]`` Wibg]gh cZ ]bhYfUMJ Y ]bg/fi Whcf dfYgYbrU-fjcbg `YUfb]b[ UMJ ]hJYg. [fci d X]gWgg]cbg ]bXYdYbX-YbhfYUX]b[ g UbX dfUMJW cZ UggYgga Ybrg UbX fYgYUfWk dfcWXi fYg.

dfcj YX Vmh\Y dfcZYggcf i bXYf k \ca h\Y gh Xm]g hc VY a UXY UbX h\Y YUb cZ h\Y fUXi UHY W\cc`. \Y gh Xm g\ci `X W\chf]\Vi hY hc h\Y gh XYbhBg dfc[fla. fYdUfUr]cb cZ U g\Wc`Ur`mdUdYf ]g fYei ]fYX UbX a Um ]bj c`j Y cfU XYZ/bgY.

5 [fUXi UhY gYa]bUf cb dfUMjWU UbX a Yh\cXc`c[]WU

## k \1W. ZcWaYa\_i\_dcb\_h\Y\_acWU

gyij jwr verigi ikarkag o areja a jihash jama jabu j butmuddyu te dycd'y jb yxi Wujcb, Vi gjbygg Wei bgy'jb[, Wija jbu 1 gjW ubx U[YbWhk cf\_, Ug k Y` Ug te h.cg/k \c k jg\ te a fh\yfh\yjfhUjbjb[ ]bgcVjc'c[ m

\Y gW.cc` ]g cbY cZ h\Y VX]YZ U[ YbV)Yg cZ gcV)U`]nUhjcb UbX U fYei ]g]hY cZ gcV)U cfXYf ]b Wta d`Yl gcV)YhjYg dYV)U Wtbg]XYfUnjcb ]g [ ]j Yb hc h\Y k cf\_g cZ Ubh\fcdc`c[ ]ghg.

cVyc`c[]Wi UbU mg]g cZ dYUW, WbZ]Wh UbX \i a Ub f][\hg, k]h\ ZcWg cb h\Y `Ugh100 mYUfg a d\Ug]g cb bcb0] jc`Ybh gffi [[`Yg Uh h\Y bUf]cb-gfUhY `Yj Y`]bhYfbUf]cbU`m, h\Y fc`Y cZ Yh\b]WUbX fY`][]ci g UZZ]`]U-fjcbg]b WffYbh k Uf UbX WbZ]WhUh \ca Y UbX UVfcUX k]`` Ugc VY Yl Ua]bYX.

b h\Y bcb-dfcZjhk cfX \( \text{Lg k Y \cdot \text{Lg b gc\y\U g\y\y\b\W fYg\Uf\w, [f\bhk f]h]b[ ]g \( \text{U} j \text{U} i \text{WY g\_j\cdot \text{hc \text{Ly\beta}} hc \text{U\text{e}i ]fY. \\ \] \( \text{V} i \text{GY \text{U} i \text{WY g\_j\cdot \text{W}} \text{Ch\y\beta} h]\text{U} \\ \text{Z bX]b[ gci f\w\g bch cb m]b h\Y gc\y\U g\\y\b\w\g \text{V} i \\ \text{U} gc \text{V} \text{U g\y\beta} \text{V} \\ \text{U} gc \text{V} \text{U g\y\beta} \text{Y i dYf]\text{YW g\y\beta} \\ \text{V} \\ \text{UbXg-cb Y i dYf]\text{Yb\w} ]b k f]h]b[ k Y\cdot \text{Y}\cdot \text{W\text{U}\text{A}\y\x\ext{Y}} \\ \delta \text{dfc-dcgUg}

bck `YX[Y, g\_]``g LbX j Ui Yg YggYbh]U hc h\Y dfcZYg-g]cbU fY`Urjcbg\]dg (]bWl X]b[ a i h U]hm, Wt``UVcfU-hjcb LbX fYgdYWhZcf h\Y W]Ybh gnghYa ) UfY XYj Y`cdYX bck `YX[Y, g\_]``g LbX j Ui Yg YggYbh]U hc ]a d `Ya YbhU-hjcb cZ U j Uf]Yhm cZ gcWJU k cf\_ fc`Yg UfY LW#i ]fYX h\fci [\ Yl La ]bUrjcb LbX LbU ng]g cZ Lddfcdf]UfY dfLW hjWr a cXY`g h\fci [\ Yl dYf]Ybh]U WLggfcca LWh]j ]hjYg LbX Wf]hlei Yg cZ WlqY dfi X]Yg

\]g Wei fgY ]g Ub ]bHfcXi Whjcb hc h\YcfmUbX dfUM\JW k ]h\ X]j YfgY [fci dg hc Ugg]gh ghi XYbhg ]b XYj Y`cd]b[ U WebhYl hi U i bXYfgHubX]b[ cZ [fci d XmbUa ]Wg cj Yf h\Y Wei fgY cZ h\Y [fci d dfcWgg ]Yk YX h\fci [\ h\Y `Ybg cZ fUW, W`hi fY, UbX [YbXYf, h\]g Wei fgY k ]`` Ya d\U-g]nY [fci d Zi bWh]cb]b[ k ]h\]b UgHYb[h\g- VUgYX, fYg]`-]YbWhZfUa Yk cf\_.

-

I d'cfyg gcV)U' k cf\_ ]bh'yfj Ybhjcbg Uhh\Y Wa a i b]lm 'Yj Y', ]bW X]b[ cf[ Ub]nUhjcb, d'Ubb]b[, UbX XYj Y'cda Ybh ]gW ggyg ghfUh'y[]Yg Zcf a cV]`]n]b[ Wa a i b]lm a Ya VYfg i g]b[ Wa a i b]lm cf[ Ub]nUhjcbg Zcfa i 'Uh]b[ WbU]hjcbg Yb[ U[]b[ ]b dUfhj\YdUhcfmd'Ubb]b[, UbX gcV)U' UbX YWbca ]WXYj Y'cda Ybh

\Y di fdcgY cZ h\]g Wti fgY ]g hc dfcj ]XY ghi XYbhg k ]h\
Ub cddcfhi b]mm hc Yl Ua ]bY UbX ]bhY[fUhY WffYbh
hYbXg ]ggi Yg UbX XmbUa ]Wg Ug h\YmfY UhY hc dfcZYgg]cbU gcVYU k cf\_ dfUMJ\W k ]h\ X]j YfgY ]bX]j ]Xi Ug
Zla ]`]Yg [fci dg UbX Wta a i b]h]Yg \Y YZZ\Whg cZ
fUW, WUgg Yh\b]\Whm U[Y, X]gUY]`]mm UbX gYl i U cf]YbhUn]cb UfY Yl Ua ]bYX Ug fY`UhYX hc ]bhYfdYfgcbU, ]bhYf[fci d, ]bhYf-[fci d, UbX ]bhYf-gnghYa dck Yf ghfi [[`Yg
UbX X]ZZYfYbWq

 $\label{eq:continuity} $$ \g XYg][bYX hc ZW]'] HWY ub i bXYfg LbX]b[UbX ubdfYV] ub cZ X]j Yfg] hm ub cb[k ca Yb i h]`]n]b[$ 

\]g UXj UbWX W]b]W' dfUMjW Wi fgY HYUW.Yg [fci d dfUMjW g\_]`` XYj Y'cda Ybh Zcf i gY Ug U df]a UfmHYUh a Ybh a cXU]hm]b W]b]W' gcVJU k cf\_ dfUMjW. \Yc-fYi]W' UbX dfUMjW df]bW]d'Yg cZ [fci d k cf\_ UY Ya -d\Ug]nYX hc Yb\UbW i bXYfgHUbX]b[ UbX i gY cZ"[fci d"

5a Yf] Wb Wt``Y[Y cZ dcftg YX] WbY (5 ) YUth ]tbYgg dYW U]gh ( ) Wff] Z] Wt]cb. \Y Wti fgY k]. `Y La ]bY th\Y dfc Wgg cZ dfY-duff] Wdu]cb \YUth gWfYb]b[ LbX f]g\_ gffu] Z] Wt]cb, LXa ]b] gffu-ficb, cZ d\ng] W Z] tbYgg Lgg Ygga Ybtg LbX ]bhYfdfYtu-ficb cZ fYgi hg LbX h\Y XYj Y cda Ybh cZ Lddfcdf] LtY YI YfV gY dfYg Wf]df]cbg i gYX ]b h\Y Yj Ui Lficb LbX |a dfcj Ya YbhcZ\i a Lb Z| tbYq

\]g Wti fgY ]g XYg][ bYX hc dfYdUfY h\Y gh XYbh Zcf h\Y UficbU hfYb[ h\ UbX cbX]hjcb]b[ 5 ggcWJtjcb ( 5) YffjZ]YX hfYb[ h\ UbX cbX]hjcb]b[ dY-WJU]gh ( ) WffjZ]WJfjcb. \Y Wti fgY YI d'cfYg VUg]WV]ca YW\Ub]W\J WtbWdhg UbX h\Y]f Udd`]WJfjcb ]b h\Y UbU`ng]g cZ gdcfhhY\Wb]ei Y Zcf [ cU cZ ]a dfcj - ]b[ Uh\`YfjWdYfZcfa UbW.

hi XmcZdfcV'Ya cfdfcV'Ya gi glb[ fYgYUfWk hYWkb]ei Y. Y'YWflcb cZdfcV'Ya a i gh VY Uddfcj YX Vm ghi XYbhg UXj ]gYf, ]bghfi Whcf i bXYf k \ca h\Y ghi Xm]g hc VY a UXY, UbX h\Y Uddfcdf]UHY ]fYWhcf cZfUXi UhY hi X]Yg \Y ghi Xmg\ci `X Wbhf]Vi hY hc h\Y ghi XYbhg dfc[fUa. fYdUfUn]cb cZ U gWkc`Uf`m dUdYf ]g fYei ]fYX UbX a Um]bj c`j Y Ub cfU` XYZ/bgY.

\]g \( \text{vi fgY k } \) \cdot \] \] \] \] \] \] \] \] \\ \text{MY X]gW \( \text{gg} \) \] \] \] \] \[ \text{LoX } \] \] \] \[ \text{loX } \] \[ \text{loX } \] \] \[ \text{loX } \] \[ \text{loX } \] \[ \text{loX } \] \[ \text{loY } \] \[ \text{loX } \] \[ \text{loY } \] \[ \text{loY } \] \[ \text{loY } \] \[ \text{loY } \] \[ \text{loX } \] \[ \text{loY } \] \[ \text{loX } \] \[ \text{loX

\]g Wti fgY ]g XYg][ bYX hc dfcj ]XY ghi XYbhg k ]h\ Ub UXj UbWX UddfYV]Ur]cb UbX i bXYfg\*UbX]b[ cZ Z]bUb-W\U h\Ycf]Yg fY`UhYX hc gdcfh a UbU[ Ya Ybh a d\Ug]g gb fYj ]Yk , fYgYUfWk, X]gW gg]cb UbX Udd`]WUr]cb cZ Z]bUbWU WQYq

\]g Wti fgY ]g XYg][bYX hc dfcj ]XY gh XYbhg k ]h\ Ub UXj UbWX UddfYV]Ur]cb UbX i bXYfgHbX]b[ cZ `Y[U fYgdcbg]V]`]h]Yg cZ gdcfha UbU[Yfg a d\Ug]g k ]`` VY cb fYgYUfW]b[ UbX fYj ]Yk ]b[ `Y[U WgYg UbX i bXYfgHbX]b[ UbX Udd`n]b[ `Y[U h\Ycf]Yg hc gY`YVNVWgYg

\]g Wei fgY ZcWgYg cb h\Y UXj UbWX fYVe[b]hjcb, X]gWgg]cb, UbX gnghYa UnjWfYj ]Yk UbX UbUngYg cZ gcWjc`c[]WU UbX Yh\]WU ]ggi Yg ]b gdcfh cd]Wg X]g-WggYX k ]``]bW XY Vi hUfY bch`]a ]hYX hc: h\Y XYj Y-cda YbhcZ gdcfhUbX h\Y gdcfhg ]bXi ghfm h\Y dc`]hjWU UbX W`hi fU g][b]Z]WUbW cZ gdcfh h\Y dUfhd`UnYX Vm gdcfh]b ]bhYfbUnjcbU fY`Unjcbg\]dg h\Y fY`Unjcbg\]d YYhk YYb gdcfh [YbXYf, WUgg UbX Yh\b]Vymm U fUb[Y cZ gdcfhg-fY`UhYX ]ggi Yg gi Wl Ug \YU'h\, Xfi [g UbX j ]c-YbW, UbX h\Y a UbU[Ya YbhcZ gdcfhg UWf]j]hjYg Vch\]b YXi WUnjcbU YgrUv`]g\a Ybhg UbX ]b h\Y k ]XYf gcW-Ymm

Which Zcf fygYUfVN ]b YXi Which. UffjVlydUbhg Udd`m