

## 7c]bVUgY. BYi YghY ? fmd hc!: ]fa U gYb\_h ? cghYb ]ba ]hhYb XYg A Uf\_hUVgW k i b[g

7c]bVUgY`]gh'XYf'bYi YghY`?fmdhc!; ][Ubhž'XYf'g]W\'XYb FY]\Yb UbXYfYf UbgW\`]Y» hžX]Y j Yfgi W\YbžX]Y 6Yhf]YVq\_cqhYb'ni 'qYb\_Yb'5`q'; fØbXY'ZØf'qY]bYb'GW\f]hh bYbbh'XYf'6ÒfgYbUbV]YhYf'a Ū\_fcÒ\_cbca ]qWXY': U\_hcfYb i bX'Y]bYb'gWkfi a dZYbXYb'?fmdhca Uf\_h'7c]bVUgY'gU[hY'Ua 8cbbYfghU[ž'XUgg'Yg'X]Y'9]bghY``ib[gVYa Ø\ib[Yb ibhYfVfYWXY'ibX'Y]bY'FY]\Y'Ub[Ybca a YbYf GhY``YbUb[YVchY'ni fØW n]Y\Yž'XU'Yg'\YfUi qZcfXYfbXY a U\_fcO\_cbca ]qWXY'6YX]b[ib[Yb'ibX'Y]bYb'5VqWXkib[ Ui Z'XYa '?fmdhca Uf\_h'Ui g[`Y]W\Y"'=b'Y]bYa ':]fa Ybdcgh  $7c]bVUgY\check{z}'jYfZUggh'jcb'7\]YZ'DYcd`Y'CZZ]WYf'@>6fcW_\check{z}'\Uh$ VYqWX`cqqYbž' qhfYb[YfY'A U»bU\a Yb 'ni 'Yf[fY]ZYbž'i a 'XUq K UW ghi a 'gY]bYf'A ]hUfVY]hYfnU\``ni 'j Yf`Ub[gUa Ybž']b'XYf < c ZZbi b[ ž'Xi fWX 'i bg]WXYfY'; Yk AggYf'ni 'bUj ][ ]YfYb"'8Yf</pre> 6 OfgYbUbV]YhYf'gWX`]Y»h'g]WX 'Y]bYf'k UWXgYbXYb'NU\`ij cb ?fmdhci bhYfbY\a Yb Ub $\check{z}$ / Ua d $\wedge$ Y``]d/

- 7c]bVUgY`]gh'XYf'bYi YghY`?fmdhc!; ][ Ubhž'XYf'g]W\`XYb FY]\Yb`UbXYfYf'UbgW\`]Y»hž'X]Y`j Yfgi W\Ybž'X]Y
   6Yhf]YVg\_cghYb'ni 'gYb\_Yb
- 5`g'; fØbXY'ZØf'gY]bYb'GW\f]hh'bYbbh'XYf'6ÒfgYbUbV]YhYf a U\_fcÒ\_cbca ]gW\Y': U\_hcfYb'i bX'Y]bYb'gW\fi a dZYbXYb ?fmdhca Uf\_h

7c]bVUgY'gU[hY'Ua'8cbbYfghU[ž'XUgg'Yg'X]Y
9]bghY``i b[gVYa Ø\i b[Yb'i bhYfVfYW\Y'i bX'Y]bY'FY]\Y
Ub[Ybca a YbYf'GhY``YbUb[YVchY'ni fØW\_n]Y\Yž'XU'Yg
\YfUi gZcfXYfbXY'a U\_fcÒ\_cbca ]gW\Y'6YX]b[i b[Yb'i bX'Y]bYb
5VgW\ki b['Ui Z'XYa'?fmdhca Uf\_h'Ui g[`Y]W\Y"

±b 'Y]bYa :: ]fa Ybdcgh'7c]bVUgYž'j YfZUggh'j cb '7\]YZ'DYcd`Y C ZZ]WYf'@>6fcW\_ž'\Uh'VYgWX`cggYbž' ghfYb[YfY'A U» bU\a Yb 'ni Yf[fY]ZYbž'i a 'XUg'K UWXghi a 'gY]bYf'A]hUfVY]hYfnU\`'ni j Yf`Ub[gUa Ybž']b 'XYf' < c ZZbi b[ž'Xi fWX'i bg]WXYfY'; Yk ÀggYf'ni bUj ][]YfYb"

8 Yf'6 OfgYbUbV]YhYf'gW\`]Y » h'g]W\'Y]bYf'k UW\gYbXYb'NU\`'j cb?fmdhci bhYfbY\a Yb'Ubž'X]Y'Ub[Yg]W\hg'gW\fi a dZYbXYf; Yk]bba Uf[Yb'i bX'gW\fi a dZYbXYf'?Ud]hU`Ub`U[Yb'À\b`]W\Y?cghYbgYb\_i b[ga U» bU\a Yb'j YfZc`[Yb"

 $BYVYb^*XYa^*9]bZf]YfYb^*ni~gA^*m^*]WXYf^*9]bghY^*i~b[~Yb^*gU[~hY^*7c]bVUgYž$ 

Yg'k YfXY'5b[YVchY'k]XYffi ZYbž'X]Y'nijcf'hU`Ybh]YfhYb A YbgWXYb '[Yk À\fh'k i fXYb'i bX'bcWX'b]WXh'VY[cbbYb'\UVYbž i bX'Y]bY' 5VZ]bXi b[gd\]`cgcd\]Y 'Ubk YbXYbž'i a 'Z]bUbn]Y``Y J Yf'i ghY'Ui gni [`Y]WXYb"

6Y]'i bgYfYf'HY`YZcb\_cbZYfYbn'ni 'XYb'9f[YVb]ggYb'XYg'YfghYbEi UfhU`g'\UVYb'k]f'VYgdfcW\Ybž'XUgg'X]Y'5bnU\`'XYf'A]hUfVY]hYfi bX'Y]bY'J]Y`nU\`'UbXYfYf'5i g[UVYb'X]Y'k]W\h][ghYbA Ò[`]W\\_Y]hYb'ZØf'i bg'g]bXž'i bgYfY'?cghYb'ni 'j Yfk U`hYb ž'gU[hY6fcW\_']b'XYf'Dcgh"' CVkc\`'k]f'i bg'X]YgY'9bhgW\Y]Xi b['b]W\h`Y]W\h'[YaUW\h'\UVYbž']gh'Yg'Ub[Yg]W\hg'XYf'AUf\_hVYX]b[i b[YbY]bY'i a g]W\h][Y'9bhgW\Y]Xi b["

8]Y: Ø\fi b[g\_fUZhigU[hY'Ui W\žXUgg'7c]bVUgYink Uf']a a Yf ki gghYžXUgg'?fmdhc'j c`Uh]`gY]b'k ØfXYžX]Y'U\_hi Y``Yb 6YX]b[i b[Yb']b'JYfV]bXi b['a]h' [fÒ»YfYb'k]fhgW\UZh`]W\Yb: U\_hcfYb 'XUg'I bhYfbY\a Yb'i bX'gY]bY'A]hUfVY]hYf'YXcW\'bcW\Ui Z'X]Y'DfcVY'ghY``Yb'\_ObbhYb"

K À\fYbX`XYf`A Uf\_hUVgWk i b[`b]Wkh'i b[Yk Ò\b`]Wk']gh` `X]Y 6fUbWkY`Yf`YVhY`ni `Yhnh`À\b`]WkY`6YX]b[i b[Yb']b`XYb`\*J\fYb &\$%, `V]g`&\$&\$` ž`\Uh`X]Y`U\_hi Y``Y`9bhgdUbbi b[`XYg`?Ud]hU`g`i bX XYf`5b`Y[Yfgh]a a i b[`X]Y`I bhYfbY\a Yb`[Ynk i b[Ybž]bYni \U`hYb`i bX`bUWk ni XYb\_Yb"

 $\label{thm:continuous} $7c]bVUgY\check{z}'gU[hY'6fcW_\check{z}'\cZZh\check{z}'XYb'Ghifa'ni'@VYfghY\Yb\check{z}']bXYa\\ Yg'Ub[Yg]WAhg'XYf'Ibg]WAYf\Y]h'ZYI]VY``ibX'k]XYfghUbXgZÀ\][ $V`Y]Vh''$ 

n · n

 $8 \ Yf'6Y] \ hfU[''7c] \ bVUgY'@UhYgh'7fmdhc':] fa'hc'7ih'7cghg'5] X \ AUf_Yh'8ckbhifb'] gh'_Y] \ bY'Z] \ bUbn] Y``Y'6YfUhib[''$