



ARTS2900

; `cVU` : Ya]b]ga g. '7 ca dYh]b[' J]g]cbgžJ Ufm]b[' <]ghcf]Yg

HYfa `Cby` ##`&\$%-

7 ci fgY'8YHJ>`g

7 fYX]hDc]bhtg`*`

Gi a a UfmicZ`h`Y'7 ci fgY

Gi V`Y`W`h`5`f`Y`U` I` a`_`W` i`e`S` V` 9`W` V`W`d`E` f`g`V`[`W`e`

H\]g`W`ci` fgY` W`Ub` U`gc` V`Y` gh` X]YX`]b` h`Y` Z`c`ck`]b[` `gd`Y`W`U`]g`U`h`c`b`g`:` [efack

H\]g`W`ci` fgY` W`cbg]XYfg` V`ch` Z`Ya`]b]gh`U`H`Ya` d`hg` h`c`f[` Ub]gY` [`c`V`U`m`i`U`W`f`c`g`g` f`U`W`U`z`Y`h`b`]W`U`b`X`b`U`h`c`b`U`
V`ci` b`X`U`f`Y`g`z`U`b`X`X`]Z`Y`f`y`b`W`g`]b` Z`Ya`]b]gh`g`h`f`U`H` []Y`g`U`b`X`j`]g]c`b`g`Z`c`f`h`Y`Z` h` f`Y`"M`c`i` k`]" `f`U`W` `h`Y`
Ya` Y`f[` Y`b`W` `U`b`X` `W`c`b`h`b`i` U`h`c`b`c`Z`h`c` `W`c`a` d`Y`h`b[`h`f`U`X`]h`c`b`g`-`f`Y`Z`c`f`a` `U`b`X`f`Y`j`c`i` h`c`b`-`Z`c`a` `U`b`U`f`W`]g`h`
k`c`a` Y`b`g`U`W`h`j`]g`h`g`h`f`c`i` [\ `h`c` `W`c`b`h`Y`a` d`c`f`U`f`m`h`f`U`b`g`b`U`h`c`b`U` `U`b`X`d`c`g`h`W`c`b`]U` `Z`Ya`]b]g`a` g`"M`c`i` k`]" `U`gc`
Y`I` U`a`]b`Y`f`Y`W`b`h`Z`Ya`]b]gh`U`W`h`j`]m`h`U`h`U`g` [`U`f`b`Y`f`Y`X` [`c`V`U` `U`H`b`h`c`b` `U`b`X` `W`c`b`f`c`j` Y`f`g`n`z`g`i` W`X`U`g`-`g`U`a`]W`
Z`Ya`]b]g`a` `U`b`X`D`i` g`g`m`F`]c`h`H`f`c`i` [\`c`i` h`k`Y` \] [\] [\ `h`c`b` [c`]b[`W`]h`e`i` Y`g`c`Z`h`Y`i` b`]j` Y`f`g`U`]g`h`W`U`]a` g`c`Z`g`c`a` Y`
Z`c`f`a` g`c`Z`Z`Ya`]b]g`a` z`]b`W`i` X`]b[`h`X`] [Y`b`c`i` g` `U`b`X`]b`h`f`g`Y`W`h`c`b`U` `W`]h`e`i` Y`g`"

7 ci fgY`@YUfb]b[`Ci` h`W`c`a` Yg

%` 8`Ya` c`b`g`h`f`U`H` `U` `V`f`c`U`X`z`W`f`c`g`g`!`W` `h` f`U`i` b`X`Y`f`g`h`U`b`X`]b[`c`Z` [`c`V`U` `Z`Ya`]b]g`a` g`
&"` X`Y`b`h`z`m`_`Y`m`h`Ya` Y`g`z`X`Y`V`U`H`g` `U`b`X` `W`c`b`W`d`h`g`]b` Z`Ya`]b]gh` \]g`h`c`f`m`U`b`X`g`W`X`c`U`f`g` \]d`"
'` " `7`c`b`g`h`f`i` W`h`U`f` [i` a` Y`b`h`g`i` g`]b[[`Y`b`X`Y`f` `U`b`X`#`c`f`Z`Ya`]b]gh`U`b`U`m`g`]g` `U`b`X`f`Y`g`Y`U`f`W` `]b`k`f`]h`Y`b` `U`b`X`#`c`f`j` Y`f`V`U`
Z`c`f`a` "
(` " `5`f`h`j`W` `U`H` `U`b`i` b`X`Y`f`g`h`U`b`X`]b[`c`Z` \ `c`k` `W`U`g`g`z`f`U`W` `U`b`X`#`c`f`g`Y`I` i` U`]m`]b`Z`c`f`a` `Z`Ya`]b]g`a` #`g` \]g`h`c`f`]W`U`m`U`b`X`
]b`h`Y`d`f`Y`g`Y`b`h`"

HYUWX`]b[`G`h`f`U`H` []Y`g`

H\]g`W`ci` fgY`k`]" `Y`d`m`c`i` `X`Y`j` Y`c`d`U` `V`f`c`U`X` \]g`h`c`f`]W`U` `U`b`X` `W`f`c`g`g`!`W` `h` f`U`i` b`X`Y`f`g`h`U`b`X`]b[`c`Z` [`c`V`U` `Z`Ya`]b]g`a` g`
U`b`X`]g`X`Y`g`] [b`Y`X`h`c`X`Y`Y`d`Y`b`m`c`i` f`g`_`]g`]b` W`]h`e`i`]b[`g`W`X`c`U`f`m`i`]h`Y`f`U`h` f`Y`z`W`c`b`g`h`f`i` W`]b[`m`c`i` f`c`k` b`U`f` [i` a` Y`b`h`g`
U`b`X` `W`c`b`X`i` W`]b[`f`Y`g`Y`U`f`W`X`" `@`Y`W`h`i` f`Y`g`k`]" `d`f`c`j`]X`Y` W`f`i` W`]U` `V`U`W`_` [f`c`i` b`X`]b`Z`c`f`a` U`h`c`b` `U`b`X`]b`h`c`X`i` W` `m`c`i` `h`c`_`Y`m`
X`Y`V`U`H`g`z`h`]b`_`Y`f`g` `U`b`X` `h`Ya` Y`g`]b` Z`Ya`]b]gh` \]g`h`c`f`m`U`b`X` [`Y`b`X`Y`f`g`h`i` X`]Y`g`" `h`i` h`c`f`]U`g`z`m`c`i` k`]" `d`U`f`h`]W`d`U`H` `]b`
X`]g`W`g`g`]c`b`c`Z`h`Y`g`W`X`c`U`f`g` \]d` `U`b`X` `Y`W`h`i` f`Y`a` U`H`f`]U`z` [i`]X`Y`X`V`m`h`i` h`c`f`]U` `e`i` Y`g`h`c`b`g`" `M`c`i` k`]" `U`gc`Z`U`W`]h`U`H`
c`b`Y`h`i` h`c`f`]U` `X`]g`W`g`g`]c`b`V`m`i`b`h`c`X`i` W`]b[`b`Y`k` `a` U`H`f`]U` `U`b`X`#`c`f`e`i` Y`g`h`c`b`g`h`c`m`c`i` f`W`U`g`g`a` U`H`g`z`h`Y`f`Y`V`m`
Y`I` h`Y`b`X`]b[`m`c`i` f`f`Y`g`Y`U`f`W`X` `U`b`X` `U`b`U`m`h`]W`U`g`_`]g`" `A` m`h`Y`U`W`X`]b[`g`h`f`U`H` [m`]g`h`c` `Y`b`W`c`i` f`U` [Y`m`c`i` f`W`]h`W`
Y`b[U` [Ya` Y`b`h`k`]h` `W`c`i` fgY`a` U`H`f`]U` `U`b`X`h`c` \ `Y`d`X`Y`j` Y`c`d`m`c`i` f`k`f`]h`Y`b` `U`b`X`j` Y`f`V`U` `W`c`a` a` i` b`]W`]h`c`b`h`f`c`i` [\
W`U`g`g`X`]g`W`g`g`]c`b` `U`b`X`k`f`]h`Y`b`f`Y`g`d`c`b`g`Y`g`h`c`g`Y`W`h`X`h`i` h`c`f`]U` `e`i` Y`g`h`c`b`g`" `H`e`i` Y`\$`

5ggYgga Ybh

F Yei]fYa Ybfg Zcf K f]hYb K cf_

Gi Va]gg]cb

Hi hcf]U`dUdYfg`UbX`fYgYUfW`YggUm`g\ci`X`VY`gi Va]hX`Y`YWfcb]W`mh`Hi fb`#`#`cb`A ccX`Y`D`YUgY`
gi Va]h`h`Y`Hi fb`#`#`dcfU`k]h`m`i`f`h`h`f`g`bUa`Y`cb`]h`

F YZYfYbW]b[

5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K Y][\h	8i Y`8UH`	Gh XYbh@YUfb]b[Ci hWta Yg`5ggYggYX
F YgYUfW`YggUm	(\$i	%) #\$(#&\$%- `\$(. \$\$`DA	&Z ž(
Hi hcf]U`F YgdcbgYg`	() i	DUfh=YbX`cZK ? `(žDUfh= YbX`cZK YY_`%\$	%ž&ž
Hi hcf]U`ZUW]`hU]cb`UbX fYZYVW]cb`	%) i	K YY_g`U`cWUHX`]b`K YY_`%	&ž

5ggYgga Ybh8YHU]`g

5ggYgga Ybh%`F YgYUfW`YggUm

GHUfhXUH`.

@Yb[h. `&\$k

Hi fb]h]b'gYH]b[. 'H\]g'Ugg][ba Ybh]g'gi Va]H]X'h'fci [\ 'Hi fb]h]b'UbX'ghi XYbhg'WUb'gYY'Hi fb]h]b'g)a]'Uf]m fYdcfng"

5ggYgga Ybh&. 'Hi hc]f]U' F YgdcbgYg

Gh]fhXUH'.

@Yb[h. '* 'l '&\$ \$'k cfXg

8YH]g. '5Wfcgg'h'Y'gYa Ygh'f'z'gh XYbhg'k]''Ubgk Yf'g]l 'ei Ygh]cbg']b'k f]H]b'Zcfa 'VUgYX'cb'h'Y]f Yb[U[Ya Ybhk]h' h' hc]f]U' fYUX]b[g'UbX'Wci fgY'Wcb'Yb'h' '9UWX' fYgdcbgY]g'Uddfc]]a UH'mi&\$ \$'k cfXg" 'Hk c UfY'Xi Y'Uh'h'Y'YbX'cZK YY_) 'f%) i 'cf'+") i 'YUWX'UbX'Zci f'UfY'Xi Y'Uh'h'Y'YbX'cZK YY_% 'fl \$i 'cf'+") i YUWX' : YYXVUW_]]U']bX]j]Xi U' Wca a Ybhg'z'fi Vf]WUbX']b!WUgg'X]gW gg]cb"

5XX]h]cbU'XYH]g.

HI HCF =5@'F 9GDCBG9G'DUfhg' =UbX' =z'hc' VY'gi Va]H]X'h'hc'Hi fb' h' h'cb' A ccX'Y Vm(da 'cb'h'Y : f]XUmcZK YY_ ('fDUfh'UbX' : f]XUmcZK YY_%\$ fDUfh&B 6 'h'YgY UfY'h'Y'Wc'ffYWh'gi Va]gg]cb XUH'g'VUgYX'cb'bYk 'h'fa "

K Y][\h'+") i 'dYf'fYgdcbgY'l '* 'l '() i

: YYXVUW_ . 'H\Y'h' hc]f]U' fYgdcbgYg'k]''VY'a Uf_YX']b'Hi fb' h' h'UbX'mci f[fUXY'UbX'ZYXVUW_ 'k]''VY Uj U]UV'Y]]U'A ccX'Y'k]h']b'h'Y'b'XUmg" 'Mci 'k]''VY'UggYggYX'cb'\ck 'gi W'W'ggZ 'mimci 'Ubgk Yf'h'Y'ei Ygh]cb fUf[i a YbhUbX'UbU'mg]g'z'gm'Y'UbX'g'f'i W'h' fY'UbX'fYgYUfW'UbX'fYZYfYbW]b['f]Y" Yb[U[Ya Ybhk]h' fY'Yj Ubha UH'f]U'UbX'Uddfc]f]UH' fYZYfYbW'g'z'

8YgW]dh]cb.

9UWX'k YY_z'ci f'h' hc]f]U'g'UfY'cf[Ub]gYX'Ufci bX'h'fY'hc'Zci f'ei Ygh]cbg'VUgYX'cb'YggYbh]U' fYUX]b[g'UbX h'Y'YWh' fY" 'H\YgY'ei Ygh]cbg'UfY'XYg][bYX'hc' Yb[U[Y'mci 'k]h' h'Y' _Ym'h'Ya Yg'cZ'h'Y'Wci fgY'UbX'ZYa]b]gh

fY`Yj Ubhlc`hY`ei Yghcb`mci`WUb`j`bW`XY`j`h`Vi`hbchUhi`hY`YI`dYbgY`cZ`hY`YggYbhU`fYUX]b[`"f5bX`U`k`Um`g`fY`ZfYbW`jZmci`XcE"

Gi`Va`jgg]cb`bchYg.H\YfY`UFY`fk`c`Xi`Y`XUHYg.`DUfh=]g`Xi`Y`cb`f]XUm`cZK`YY_(`Vm(`da`ZDUfh=Vm: f]XUm`cZK`YY_`%\$`Vm(`da`"Mci`WUb`gi`Va`]hVY`Zc`fY`hY`gY`XUHYg`jZmci`k`jg\`"

Hi`fb]h]b`gYH]b[.`H\]g`Ugg][`ba`Ybh]g`gi`Va`]hYX`h`fci`[\`Hi`fb]h]b`UbX`gh`XYbhg`Xc`bchgYY`Hi`fb]h]b`g]a`]Uf]m`fYdc`fYg`"

5ggYgga`Ybh`.`Hi`hcf]U`ZUW]j]h]h]cb`UbX`fYZYW]cb`

GHUfhXUHY.`

@Yb[`h.`)`a`]bi`hYg`

8YHU]`g.`H\]g`UggYgga`Ybh`Ug`fk`c`dUfYg":`]fgh`Z`gh`XYbhg`k`j`"Ui`bW`X]gW`gg]cb`k`]h`U`Vf]YZHU`_`fbc`a`cfY`h`Ub`Zj`Y`a`]bi`hY`gE`UVci`h`hY]f`ck`b`Yb[`U[`Ya`Ybhk`]h`XYg][`bUHYX`fYUX]b[`g`#`cd]W]g`f`%\$`i`E`"GYW`cbX`m`Z`h`Ym`k`j`k`f]hY`U`Vf]YZfYZYW]cb`f`%`\$!`&`\$`\$`k`cfX`gE`UVci`h`hY`d`fc`W`gg`c`Z`d`f`d`Uf]b[`Z`W`cb`Xi`W]b[`Z`UbX`fYW]j]b[`ZYXVUW`_`cb`hY`ZUW]j]h]h]cb`f`i`E`":`YYXVUW`_`j`]U`]bX]j`]Xi`U`W`c`a`a`Ybhg`cb`V`ch`W`c`a`dcbYbhg`"

5XX]h]cbU`XYHU]`g.`

HI`HC`F`-5`@`:`5`7`@`+5`H`-E`B`Z`k`YY`_`Ugg][`bYX`]b`Z]fgh`h`hcf]U`Z]b`WUgg`UggYgga`Ybh`

K`Y][`h`h`%\$`i`Zc`f`ZUW]j]h]h]cb`UbX`i`Zc`f`fYZYW]j`Y`fYgdc`bgY`h`c`Ya`U]`ZYXVUW`_`h`c`hY`ZUW]j]h]h]cb`-`h`c`hU`%`i`

8YgW]d]h]cb.`: fca`K`YY_`&Z`YUW`h`h`hcf]U`k`j`"Uj`Y`cbY`h`c`h`fY`Y`XYg][`bUHYX`ZUW]j]h]h]cb`fUgg][`bYX`]b`Z]fgh`h`hcf]U`E`"H\Y`ZUW]j]h]h]cb`k`j`"Ui`bW`X]gW`gg]cb`k`]h`U`6`F`-9`:`fbc`a`cfY`h`Ub`Zj`Y`a`]bi`hY`gE`hU`_`UVci`h`hY]f`ck`b`Yb[`U[`Ya`Ybhk`]h`hY`fYUX]b[`#`cd]W`H\Y`]XYU`]g`i`gY`mci`f`ck`b`i`b]ei`Y`d`U`h`k`Um`h`fci`[\`hY`a`UHYf]U`h`cdYb`i`d`X]gW`gg]cb`bchcb`mci`Z`hY`W`cb`hY`b`h`Z`Vi`h`U`gc`c`Z]rg`k`]XYf`i`h]`h`m`i`

'K`]XYf`i`h]`h`m`i`W`c`i`X`a`YUb`a`U`]b[`W`cb`bYW]cbg`VY`h`Y`Yb`hY`fYUX]b[`#`cd]W`UbX`W`cb`hY`a`dcfUfmZYa`]b]ga`g/i`g]b[`hY`a`UHYf]U`Ug`U`^`a`d]b[`c`Z`dc]bhlc`YI`d`cfY`dUfh]W`Uf`hY`a`Yg`#`ei`Ygh]cbg`#`YI`Ua`d`Yg`#`h]b`_`Yfg`#`ZYa`]b]ga`g`]b`U`]hY`a`cfY`XYHU]`/`cf`Ug`U`a`YUbg`h`c`fYZYW]cb`c`k`gV`k`c`Ufg`XYj`Y`cd`Uf[`i`a`Ybhg`fY[`"mci`W`c`i`X`X]gW`gg`hY`fYUX]b[`Ug`Ub`YI`Ua`d`Y`c`ZU`dUfh]W`Uf`UddfcUW`#`ghmY`h`U`h`mci`Z`ci`bX`i`gY`Z`_`cf`i`bdfcXi`W]j`Y`E`"

Hfmbchlc`h]b`_`UVci`h`h]g]Ug`U`bUffck`mXYZ]bYX`YI`YfW]gY`]b`k`h]W`h`Y`fY`UFY`f][`h`h`UbX`k`fcb[`f`fYgdc`bgYg`h`c`hY`a`UHYf]U`"F`U`h`Y`f`]h]g`c`d`YX`h`U`h`h]g`YI`YfW]gY`Yb`W`c`i`fU[`Yg`i`g`h`c`h]b`_`UbX`hU`_`UVci`h`hYU]`g.`

U'Mci 'Hi VY'W]d'cf'U'k YVg]h'cf'hc'i gY'U'dck Yfdc]bh' #h]g'U'gc '\cdYX'hUh'h.]g'YI YfW]gY'YbWci fU[Yg'mci 'hc
gdYU_a cfY'[YbYfU'm]b'h.]g'hi 'hcf]U'UbX']b'mci f'ch\Yf'WUggYg":]bU'mž Ug'hY'U]a 'cZUW']h]cb']g'hc'cdYb

+), ('fK]gh]bW]cbŁ-U'j Yfm[ccX'ZUW]fU]cb]b'k \]W' h'Y'gh XYbhWJa Y'k Y''dfYdUfYX'UbX'cZYfYX]bg][\h' 'Wca a YbUfm]b'UXX]h]cb'hc'gYbX]b['X]gW gg]cb]b]b]fYg]b['X]fYW]cbg"

,)!%\$\$'fK][\ 'X]gh]bW]cbŁ'Ub'YI W'dh]cbU'ZUW]fU]cb]b'k \]W' h'Y'gh XYbhd'fYgYb]X'k]h'ZU]f'UbX]bg][\h'WU'Yb[]b['Vch' h'Y'fYUW'Yf'UbX'gh XYbh]hc'UddfcUW' h'Y'hd]W]b'bYk'UbX'a YUb]b[Z' 'k Umg"

F 9: @97 H-€ B. 'f) i Ł'fUddfc] ja UH'm%) \$'k cfXgŁ

8i Y. 'i d'hc'U'k YY_ 'UZf'f'nci f'h'hc'f'gYbXg'ZYXVUW_ 'hc' h'Y'ZUW]fU]cb"

Gi Va]gg]cb. 'GYbX'hc' h'hc'f'X]fYWhmVmYa U]'cf'j]U'A ccX'Y''Mci 'WUb'U'fUW'Ug'U'k cfX'Z'Y'cf'k f]h'X]fYWhm]b'hc' h'Y'Ya U]"

5]a . 'K f]h'f'YZYW]j Y'mUVci h'h'Y'dfcW'gg'cZfYgYUfW]b[ždfYgYbh]b['UbX'fYW]j]b['ZYXVUW_'cb'nci f ZUW]fU]cb''Mci 'WUb'W'ccgY'hc'Ya d'Ug]g'Y'cbY'dUfhcZ'h'Y'dfcW'gg'c'j Yf'h'Y'ch'Yfgž'Zcf'YI Ua d'Y.

!' \Uj]b['fYW]j YX'k f]h'f'ZYXVUW_ž'nci 'a UmW'ccgY'hc'f'YZYW]cb'k \U'nci 'Wci 'X' \Uj Y'XcbY'X]ZYfYbh]hc]a d'fcj Y'nci f'fYgi 'hC F

!'nci 'a Umi gY'h'Y'cdde'f] b]m]cZfYZYW]cb'hc'fi a]bU'f'cb'h'Y'fYgYUfW' d'fcW'gg. 'Y["VmZ' f'h'Yf Y'U'VcfU]b['cb' \ck'nci 'k \m]nci 'W'cgY'hc'Xc'gca Y'a cfY'fYgYUfW'cb'U'dUfh]W'U'f'UgdYWhcZ'h'Y'hd]WC F

!'nci 'a UmifZYW]cb'h'Y'UggYgga Ybh'UbX']h]i h]]m]Ug'U'k \c'Yž'Y["d'fcj]XY'ZYXVUW_'cb'k \h'Y'f'cf'bch h'g]UggYgga Ybh'Ug'VY'Yb'U'i gY'Z' 'k Um]hc'YI d'cfY'['cVU'Z'a]b]ga g'c'F

!'U[YbYfU'f'YZYW]cb'cb'h'Y'hd]W#Wci fgY']h]Y'Zi g]b['nci f'ZUW]fU]cb'Ug'U'gd'f]b['VcUfX"

<ck'hc'UddfcUW'h'g]UggYgga Ybh'h'g]g]b'chU'Zc'fa U'fYgYUfW'UbX'k f]h]b['YI YfW]gY'f]Y''bchUb YggUmŁ'F U'h'Yf']h]g'XYg][bYX'hc'[Yh]nci 'hc'f'YZYW]cb' \ck'nci f'fYgYUfW'ždfYgYbh]cb'UbX'#cf]b]h'f'd'fYU]h] Y'g_]`g'UfY'XYj Y'cd]b['Ug'h'Y'Wci fgY'dfc[fYggYg'D'fcj]XYX'nci 'Wca a i b]WU'f'nci f']XYUg WYUf'mUbX'XYa cbg]fU'f' [Ybi]bY'f'YZYW]cbž'nci 'k]'f'YW]j Y'Z' 'a Uf_g'Zc'f'h'g]UggYgga Ybh'

: YZXVUW_.'Mci f'fYZYW]cb'k]''VY'fYgdc'bXYX'hc'j]U'Ya U]'k]h]b'U'k YY_'cZfYW]j]b['h'

Gi Va]gg]cb'bch]g.J YfVU'UggYgga Ybhž'k f]h]b'ZYXVUW_#fYZYW]cb"

Hi fb]h]b'gYh]b[. 'H\]g]g]b'chU'Hi fb]h]b'Ugg][ba Ybh

5 hYbXUbW F Yei]fYa Ybhg

Gh XYbhg UfY gfcfb[mYbWci fU[YX'hc UhhYbX'U''WUggYg UbX'fYj]Yk ''YWhi fY'fYWc fX]b[g"

7 ci fgY'GWXYXi `Y

[J \]Yk WUgg'ha YhUVY](#)

H]a YhUV`Y`

A UfWk		GWYYb]b[.8W_ [[e_ ; eZS^SZ, 3 : [efack aX3dST 8W_ [[e_ f&\$%(�
	Hi hcf]U`	GYW `Uf`UbX`#j g`fY`][[ci g`ZYa]b]ga g`]b`hY`A]XX`Y 9UghUbX`B`cfh`5Z]WJ
K YY_+. %5df]`!`+`5df]`	@YWh fY	K \Uh]g; `cVU` : Ya]b]ga 3`H\Y`I B`K ca Yb]g 8YWX Y
	Hi hcf]U`	K \Uh]g; `cVU` : Ya]b]ga 3`H\Y`I B`K ca Yb]g 8YWX Y K cf_g\cd. `9ggUm k f]h]b[
K YY_., ; `5df]`!`%(`5df]`	@YWh fY	�X][Ybci g#B Uh] Y`ZYa]b]ga g
	Hi hcf]U`	8YW�`cb]g]b[`ZYa]b]ga g
K YY_-. % `5df]`!`&% 5df]`	@YWh fY	DcghGcj jYhZYa]b]ga g. `Di ggmF]chUbX` : Ya Yb K fUd`i d. `7 cbhYa dcfUfmiZYa]b]ga g`]b`hY`YfU`cZ a Y`hc
	Hi hcf]U`	Di ggmF]chZ : Ya Yb`UbX`W�`bhYa dcfUfmiZYa]b]ga g
	5ggYgga Ybh	F YgYUfWk `YggUmXi Y`cb`A cbXUm%) h`5df]`fHi fb`� �#A ccX`Y�Vm(da
K YY_%. && `5df]`!`&, 5df]`	F YUX]b[K Y`Uj Y`bc`ZJW`hc`ZJW`WUggYg`]b`K YY_`%\$`Xi Y`hc 5bnUW8Umid i V`]W\c`]XUm
	5ggYgga Ybh	Hi hcf]U`fYgdcbgYg`DUfh`=f(`!`&\$`k cfXg�]g`Xi Y`Vm (da : f]XUm`*`h`5df]`

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

H\YfY`jg`bc`gYhHl Hcc_`Zcf`h]g`Wci`fgY"GYhfYUX]b[g`Zcf`YUW`k`YY`k`j`VY`Uj`U]UV`Y`]b`XYg][bUHfX`Z`XYfg`cb`A`ccX`Y"

5b`YggUm[i`]XY`k`j`VY`dfcj`]XYX`cb`A`ccX`Yzk`]h`gi`[[YghfX`fYUX]b[g`Zcf`gdYW]Z]WYggUmei`Yghcbg"

9I`Hbgj`Y`i`gY`k`j`VY`a`UXY`cZ@Y[Ubtc`!`]bW`X]b[`fYUX]b[g`UbX`gci`fWg`Zcf`hY`YggUm`

F YWca a YbXYX`F Ygci fWg

>ci`fbU`g.`3gefD`fS` `8W_` [[ef`E`fgV[W`e`-`8W_` [[ef`E`fgV[W`e`-`8W_` [[ef`D`Wh[W`-`9`W`VWd`S`V` : [efack`-`9`W`VWd`S`V`E`aU[Wfk`-fi<agd`S^aXI` a_`W` e` : [efack`-`<agd`S^aXfZW` : [efack`aXE`Wj`gS`f`k`-` : [efack`I`ad]eZab`->[fZ`/3gefZ`XW_` [[ef`Z[efackf`E`Wj`gS`f[W`e`-`E`Y`e`-`I` a_`W` e` : [efad[US^D`Wh[W` I` a_`W` e`E`fgV[W`e` ;`fWd`Sf[a`S^`8adg_`fi`I` a_`W` e`E`fgV[W`e`C`gSd`Wd`k`-`U`U`j`U]UV`Y`j`]U`@]VfUfm`7`UH`c`[i`Y`"K` \Yb`i`g]b[`] ;`cc[`Y`GW`c`Uf`a`U`Y`gi`fY`mci`UfY`c` [[YX`]btc`h`Y`@]VfUfm`z`h`Uhk`Umimci`W]b`Xck`b`c`UX`Ufh]WYg"

h`h`fa`g`c`Z`f`Y`gci`f`W`g`z`=\][\`m`f`Y`W`ca`a`Y`b`X`h`Y`U`a`Un]b[`b`Y`k` `F`ci`h`Y`X`[`Y`<`]g`r`c`f`m`c`Z` : `Ya`]b]ga` X`U`H`V`U`g`Y`U`j`U]UV`Y`j`]U`h`Y`@]VfUfm`W]H`c`[i`Y`f]b_`c`Z`@Y[Ubtc`E`-`]h`W`cb]U]bg`df]a`Ufm`UbX`g`Y`W`b`X`U`f`m`gci`f`W`g`gd`Ubb]b[`h`Y`[`c`V`Y`z`ci`f`k` \`c`Y`h`a`Y`d`Y`f]c`X"

7ci fgY`9j`U`i`Uh]cb`UbX`8Yj`Y`cda`Ybh

H\]g`]g`h`Y`h`]fX`h`a`Y`h`U`h`=\Uj`Y`h`i` [\`h`h`Y`W`ci`fgY`z`Vi`h`h`Y`Z]fgh]h`a`Y`=\Uj`Y`h`U`_`Y`b`h`Y`h`h`c`f]U`g`!`=\Ua`j`Y`fm`Y`I`W]h`X`U`V`ci`h`h`]g`*`=\Uj`Y`h`U`_`Y`b`W]fY`h`c`f`Y`g`d`c`b`X`h`c`gi` [[Ygh]cbg`a`UXY`Z`ca`Z`Y`X`V`U`W`_`f`Y`W`]j`Y`X`]b`&`\$`%`#`&`\$`%` `j`]U`A`m`9I`d`Y`f]Y`b`W`#`Ya`U`#`W`U`gg`X`]g`W`gg]cb`!`h`Y`g`Y`]b`W`i`X`Y`g`Y`h]b[`Y`gg`U`mei`Y`gh]cbg`cb`X`Y`W`c`b]g]b[`Z`a`]b]ga` `U`b`X`h`Y`i`B`K`ca`Y`b`f]g`8`Y`W`X`Y`z`g`W`Y`Y`b]b[`a`c`f`Y`X`c`W`a`Y`b`h`U`f`m`Z`c`h`U[`Y`U`b`X`a`c`f`Y`h`a`Y`X`Y`j`c`h`X`h`c`U`gg`Y`gga`Y`b`h`d`f`Y`d`U`f`U`h]cb"

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Hi fb]h]b`Gi Va]gg]cb

Ẓmci `YbWci bhYf`U`dfcV`Ya `k \Yb`U`H`Ya dh]b[`hc`gi Va]hmc i f`Ugg][ba YbhHfci [\`Hi fb]h]bžd`YUgY
H`Yd\cbY`9I H`fbU`Gi ddcfhcb`-` ,) `` `` %cf`Ya U]`H`Ya `cb`YI H`fbU`H`hgi ddcfh4 i bgk "YXi "Ui ``Gi ddcfh
\ci fg`UfY` , .\$\$Ua `--`%\$. \$\$da `cb`k YY_XUmg`UbX`- . \$\$Ua `--`) . \$\$da `cb`k YY_YbXg`fI *) `XUmg`U`m`YUfL` Ẓmci
UfY`i bUV`Y`hc`gi Va]hmc i f`Ugg][ba YbhXi Y`hc`U`ZU` `hk]H`Hi fb]h]b`mci `a UmiUdd`miZc`f`Ub`YI H`bg]cbžVi hmc i
a i ghfYH]b`mci f`h]W`Yhbi a VYf`Zca `9I H`fbU`Gi ddcfhfU`cb[`k]H`Ubmch`Yf`fY`Yj UbhXcW a YbHgE`hc
]bWi XY`Ug`Yj]XYbW`hc`gi ddcfhmci f`YI H`bg]cb`Udd`]W]h]cb" Ẓmci `Ya U]`9I H`fbU`Gi ddcfhmci `k]`

5 WUXYa]W<c bYghmUbX`D`U[]Uf]ga

D`U[]Uf]ga `]g`i g]b[`hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[`hYa `Ug`mci f`ck b" `hWUb`hU`Y`a Ubm
Zcfa gž`Zca `XY`]VYfUHY`WXYU]b[`hc`UWV]XYbhU`mW`dm]b[`Zca `U`gci fW`k]h`ci hUW_bck`YX[Ya Ybh`

I BGK `[fci dg`d`U[]Uf]ga `]bhc`hY`Zc`ck]b[`WUHY[cf]Yg.

7cdm]b[.`i g]b[`hY`gUa Y`cf`j Yfmg]a]Uf`k cfXg`hc`hY`cf][]bU`hYI hcf]XYU`k]h`ci hUW_bck`YX[]b[`hY`
gci fW`cf`i g]b[`ei chU]cb`a Uf_g" `H\]g`U`gc`Udd`]Yg`hc`]a U[YgžUfhUbX`XYg][b`dfc`YWgžUg`k Y`Ug
dfYgYbhU]cbg`k \YfY`gca YcbY`dfYgYbh]g`UbchYf`g]XYUg`cf`k cfXg`k]h`ci hWYX]h`

hUddfcdf]UHY`dUfUd`fUg]b[.`7`Ub[]b[`U`ZYk `k cfXg`UbX`d`fUgYg`k \]Y`a cghmifYU]b]b[`hY`cf][]bU`
ghfi W`i fY`UbX`#`f`dfc[fYgg]cb`cZ]XYUg`cZ`hY`cf][]bU`ž`UbX`]bZcfa U]cb`k]h`ci hUW_bck`YX[Ya Ybh`H\]g`U`gc
Udd`]Yg`]b`dfYgYbhU]cbg`k \YfY`gca YcbY`dUfUd`fUgYg`UbchYf`g]XYUg`cf`k cfXg`k]h`ci hWYX]hU`bX`hc
d]YW]b[`hc[YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk `k \c`Yž`k]h`ci hUddfcdf]UHY`fYZYfYbW]b["

7c`i g]cb.`k cf_]b[`k]h`chYfg`Vi hdUgg]b[`cZ`hY`k cf_]Ug`U`dYfgcb`g`]bX]j]Xi U`k cf_]7c`i g]cb`U`gc
]bWi XYg`dfcj]X]b[`mci f`k cf_]hc`UbchYf`gh`XYbhVYZc`fY`hY`Xi Y`XUHYž`cf`Zc`f`hY`di fdcgY`cZ`hY`a

- i bXYfghUbx'mci f'f][\hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wc'dmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5W'W'dhUV'Y'I gY'cZ I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUbxUfXg'cZVY\Uj]ci f'YI dY'W'X'cZYj Yfmcby']b'h'Y'I BGK 'W'a a i b]m
- 'cW'W'h'gYfj]W'g'UbX'j]bZ'fa U]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'k]''VY'ZJa]]Uf'hc'mci ž'c'h'Yfg'k]''VY'bYk "; U]b]b['U'gc`]X'i bXYfghUbx]b['cZU''h'Y fY'U'Y'X'UgdY'W'g'cZ9@-G9'k]''\Y'd'mci 'a U_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\h'hd.##gi V'Y'W'i \]X'Yg"'\]VfUfm'i bgk "YXi "Ui #' \]gY#\]Vci h' \]gY](#)

5 WUXYa]W]bZcfa Uh]cb`

: cf`YggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[`hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UhY`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua]bUh]cb`dfcVWXi fYg/
- gdYW]U`Vc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a]gUXj Ybh fY/
- ghi XYbhYei]hmUbX`X]gUV`]`hm/
- UbX`chYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\h\]dg.#k k k "Ufmg"i bgk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`dfc\]Vc`g!\[i \]XY`\]bYg#](#)

⇒ U[Y`7 fYX]h

DfchYghz`% +` ``D\chc.`7 ci fhYgmcZGYY`F YX`K ca Yb`g`K cf_g\cd`@i V`]WXca U]bO

7F ⇒ CG

7F ⇒ CG`Dfcj]XYf`7cXY.`\$\$\$- , ;