I B=H98 GH5H9G8=GHF=7H7CI FH : CF H<9A =88@98=GHF=7HC: : @CF=85 CF@5B8C8=J=G=CB

7 Lby 'Bc''' *.&&!% %&

>9BB = 9F 7CI G=BC/A 5HH< 9K 7CI G=BG/D'7'ZA '7'ZG'7'ZUbXB'7'Z VmUbX'h fci [\'h Y]f bYI hZ]YbXgUbX dUYbhyz >Ybb]ZYf UbX'A Uth Yk 7ci g]bg/ K =@@@5F? =BGz VmUbX'h fci [\`]g bYI hZ]YbX'UbX'dUYbhzHYX'@Uf_]bg^{/%} 85J =8 8=B5B/J =? F5BH< F988M ; CB; =8=/?'F'8''UbXF'F'8'ZVmUbX' h fci [\'h Y]f bYI hZ]YbXgUbX'dUYbhg 8Uj]X'8]bUb'UbX'J _fUbh FYXXm ; cb[]X]/UbX'79BH9F@=B? Z=B7'Zcb' VNUZcZ]hg/ZUbX']hga Ya Wfg

Ž

jď.

H<9G7<CC@6C5F8C: CF5B; 9 7CI BHMž: @CF=85/H<9G7<CC@ 6C5F8C: =B8=5BF=J9F 7CI BHMž: @CF=85/H<9G7<CC@ 6C5F8C: 8IJ5@7CI BHMž : @CF=85/UbXH<9G7<CC@6C5F8 C: D5@A 6957<7CI BHMž : @CF=85ž

:`cf]XUG1LhihYŸ%\$\$%(&f]LfWd f&\$&&L

7\U`Yb[Yhc h\Y7cbchh hcbU]hmcZ

DfY]a]bUfmUbXDYfaUbYbh=b1bVhijjY FY]YZFYeiYdtYX

8 YWLfUrcfmF Y]YZF Yei YchYX

8 Ya UbX Zcf U >i fmHf]U

#`

....

<u>7CA D@5-BH: CF 897@5F5HCFM5B8 =B>| B7H=J 9F9@=9:</u>

[%]Di fgi Ubhhc: YX"F "7]j "D") "&f\.lzD`U]bh]ZK]`@Uf_]bgzUa]bcfzk Ujj Ygh\.Ydf]j UMrdfchWi]cbg UZcfXYX Vm YX"F "7]j "D") "&fULUghc`\]gbUa Ycb`m D`UJbHJZZg >YbbJZYf`fÎ >Ybi ŁUbX`A UYN YK `fÎ A UYN Ł7 ci głbgž]bXJj]Xi U`mUbX`Ug bYI hZF]YbXgUbX`dUFYbhgcZD'7 'žA ''7 'žG'7 'žUbX`B ''7 'ža]bcf W]`XfYb/K]``@Uf_]bgž U a]bcfž`VmUbX`h\fci [\`\]gbYI hZF]YbX`UbX`dUFYbHž`HYX`@Uf_]bg' 8 Uj]X`8]bUb`UbX` J]_fUbh\F YXXm cb[]X]`fÎ J]_`; cb[]XJI Łž]bXJj]Xi U`mUbX`UgbYI hZF]YbXgUbX`dUFYbhg cZ? 'F '8 ''UbXF 'F '8 'ža]bcf W]`XfYb/UbX`D`UJbHJZZ7 YbHYf@]b_ž=bV%ZVmUbX`h\fci [\` h\Y]f`i bXYfg][bYX`Wzi bgY`z Vf]b[`'h]g'WU`Yb[Y`hc`: `cf]XU`GHhi HY`Ÿ`%\$\$%(&f] LfWz f&\$&&LfÎ < 6'%) +i ٰgYY_]b[`UXYWL/FUrcfmit X[a YbhUbX`dfY]a]bUfmUbX`dYfa UbYbh d'UjbhjZgÑUhicfbYmZYYg"H\]gjj][]'UbhY YbZcfWa Ybha YWUb]ga ž Wda VjbYX 'k jh. 'h.Y `Uk Ñy jbhYbhjcbU`mj U[i Y`UbX`gk YYd]b[`gWdYž]bj jhYg dUFYbhg k \c`cddcgY`Ubm U<u>M</u>bck `YX[a Ybhk \UngcYj Yf`cZh,Y`Y] jdYbWfcZ@, 6HE Ž`dYcd`Yhc`g YžfYg``hjb[`jb` gWcc`gUMijb[`U[[fYgjj Y`mhc`g]`YbWfgh XYbhgždUFYbhgžUbX'gWcc``dYfgcbbY'''H\Y`Uk ž` VmXYgj[bžW]``ggdYYW UbX`YI dfYggjcb 'h.Uh\Uj Y`UbmWdbbWhijcbž\ck Yj Yf`fYa chYzhc` gYI i U`cf]YbhUjcb`cf`[YbXYf]XYbhjhm'i''

1.1

&'Å

(% H\]g`Uk `fYgf[Mg`@, 6HE Ž `gi XYbłgŇ U/]]łmi łc`UWAgj `]Zł[JJ]b[`]bZcfa U]cbž]bWi X]b[`D`U]bH]ZK K]```@UF_]bgÑU/[]lmi łc`g\UY' h\Y_bck `YX[Y h\Ui \YdYX\]a `i bXYfgUbX`UbX``cj Y\]a gYZ'K \Yb`K]```YUfbYX`U/ci H@, 6HE Ž dYcdYY UbX`h\Y]f`\]głcfnž`\YZ]bU`mfYU]nYX`\Y`k UgbchiVfc_Yb`cf`k fcb[ž Ug\]gW]X\ccX` Vi ``]Yg\UK`a UXY\]a `W']Yj Y''K]``_bck g'h\Uig\Uf]b[`_bck `YX[Y`U/ci H@, 6HE Ž \]głcfmiWb`Ya dck Yf`nœi b[`dYcd`Y`k \c`UfY`gfi [[`]b['' < ck Yj Yfž UžYf`\Y`g\UfYX`U dfYg/bHU]cb`U/ci Hi\Y`GłcbYk U``f]chgk]h`\]g`\]głcfmiWUgj f giUZYf`< 6'%) + k Uj dUgyXž\Y'k Uja cj YX'tc`Ubch Yf`\]głcfmiWUggUbX\]g[fUKYgj ZYfYX`UgUfYg` H'K]``` \UggYfo`Ub]]@, 6HE Ž Vi ``n]b[`UbX\UfUgg Ybh]bVM/UjYg]bW< 6'%) + k UgYbUMiXžž /kc`g`W`UXY[fYY'h\Uigh XYbhg`\U Yhcfb`df]XY`ZU[gci hcZZY`ck `gi XYbhgŇ\UbXgUbX` glea dYX`cb`h\Ya žWi glb[`Ub]]YmiLbX`Z/UFZcf`K]``UbX`\]gdYyfg"5ggWcc`X]gff]Mig UMij Yma cj Y`hc`fYg/JbX`[i]XUbW`UbX`HU]b]b[`U/ci H\Vta dUgjcb`UbX`fYgfMkiZcf` @, 6HE Ž dYcdYžh\Yf]g_cZg`W\Ufa k]``cb`m]bViMUgy'"

) $\[\] < 6\%\]$ + Ugc gło Xg U a Ygd [Y Irc II, Y W] Xf Yo c Z d a Yigł [d If Yohigh, Ui h, Ymg, ci `X`W` Ug, Ua YX`c Z H, Y]f`Z La]]Yg' D`U]bh]Zg 8 U]X`8]bub UbX`J [_`; cb[]X] k Ubhi, Y]f`H,]fX`UbX`Zci fh, [fUXYfg?F 'F '8 ''UbX`? 'F '8 ''ž Irc ZYY`g ddcffYX`UbX`g JZY`Ui h, Y]f`g, Wcc`''H, YmUgc k Ubhi, Y]f W] Xf Yo Irc WUY Yrc gdYU_ U/ci hi, Y]f`Z La] mUhi,]g V[]f]W U [Y k \ Yb Z La] m]gc ZYb UIrcd]WcZX]g, Wgg]cb''6i H< 6%) + d`UWgUVUff]Yf`Irc h, Una cgh\Ug]W[cU'': cf`YI Ua d`Yz k \ Yb '8 U]]X`fYWbhmWUdYfcbYX`UZ]Y X`If]d`k]h.` ? 'F '8 'fÿ WLggž`\Y`WbgcfYX`\]a gYZ]b`U k Um\Y`\UK`bch\VZcfY`< 6%) + fÿ dUgg [Y'' 8 U] X_bYk`Ubma Ybh]cb`cZ? 'F '8' fÿjch Yf`XUX`k Ug`]_Ymfrc dfca dhZ hi fY'ei Ygj]cbg` VmWLgga UYgh, Uhk ci `X\Y`g`YbWXi bXYf'h, Y`Uk ž

(

$\label{eq:linear} \texttt{h}.\texttt{Y}\texttt{f}^{\texttt{Z}}\texttt{La} \ \texttt{h}^{\texttt{h}}\texttt{g}^{\texttt{U}}\texttt{h}\texttt{cd}^{\texttt{W}}\texttt{cc}^{\texttt{h}}\texttt{d} \ \texttt{Y}\texttt{I} \ \texttt{h}^{\texttt{h}}.\texttt{Y}\texttt{I}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{d}^{\texttt{H}}\texttt{d}^{\texttt{g}}\texttt{g}}\texttt{d}^{\texttt{g}}}\texttt{d}^{\texttt{g}}$ {d}^{\texttt{g}}^{\texttt{g

*****"Á

YXi Whjcbž UbX a YbHU $\$ YUH " 5g U fYg hY Uk

88\$8žUbXFi`Yg)+UbX*) cZhXY: YXYfUFi`YgcZ7]j] DfcWXifY"

D5 F H=9G

="D`UjbhjZZg

% ¹/₁ D`UJbHJZgi>9B UbX'A 5HH'7CI G-BGžUa Uff]YX'XJZYfYbHgYI Wzi d'YcZ %) mYUfgë fYgJXY']b `CfUb[Y'7ci bhnži: `cf]XUE'k]N. 'N.YJf'Zci f'W]`XfYbž D`UJbHJZg D'7''' fU[Y'*HžA '7'''fU[Y', HžG'7'''fU[Y'%HžUbX'B'7'''fU[Y'%{H'9UW'cZN YW]`XfYb`UHYbXgi CfUb[Y7ci bhmDi V]W5Wcc`gfflC7DGi H'D`UJbHJZgD'7'žA '7'žG'7'žUbX'B'7''ža]bcf'' W]`XfYbžgi Y'di fgi Ubhhc:: YXYfU'F i `YcZ7]j]`DfcVWXi fY'%+fWzVmUbX'N.fci [\`'N.Y]f'' bYI hZf]YbXgD`UJbHJZg>Yb`UbX'A Uhi7ci glbgi'5ggfi XYbhg'Vbfc``YX']b`C7DG'UbX'N.YJf'' dUfYbhgž'D`UJbHJZg>Yb'7ci glbgi'A Uhi7ci glbgi'D'7''žA '7''ZG'7''ZUbX'B''7'''UfY'gi V'Whz hc'8YZYbXUbhGWcc`6cUfX'cZCfUb[Y'7ci bhnfuj]a d`Ya YbYUfjcb'cZ<6%))+'''

%("¹ D`U**j**bhjZZK =@@`@5F? =BG`fYgjXYg`]b`CfUb[Y`7cibhnž:`cf]XU" < Y`g`Yg` difg`Ubhhc`: YXYfU`F i`Y`cZ7]j]`DfcVXXifY`%f**W**zVmUbX`h\fci[\`]gbYI hZf]YbX`HYX` @Uf_]bg''5g'UghiXYbhUhC7DGž`D`UjbhjZZK]``@Uf_]bg`]g'giVYWahc`8YZ4bXUbhGWcc`` 6cUfX`cZCfUb[Y'7cibhnñgj]a d`YaYbhUjcb`cZ<6'%))+'''

%) $\[D`U]bh]ZZg 85J = 8`8 = 85B`UbX`J =?; CB; = 8 = <math>\[Uauff]YX`d_a Y!d_M Yd_M VZ fYd]XY`]b`=bX]Ub`F]j Yf`7ci bhmž: `cf]XUž k]h.`h.Y]f`hk c`W]`XfYbž D`U]bh]ZZg ?'F '8''' UbX`F'F '8'z k \c`UhYbX`h.Y`GWcc``8]dff]Wa cZ =bX]Ub`F]j Yf`7ci bhm fi C8 = 71 L''D`U]bh]ZZg? 'F '8''' UbX`F 'F '8'z a]bcf`W]`XfYbž g`Y`di fg`Ubhhc`: YXYfU`$ $Fi `YcZ7]j]`DfcWXi fY%fWaVmUbX`h.fci [\`h.Y]f`bYI hZf]YbXgD`U]bh]ZZg8Uj]X`8]bUb`$ $UbX'J]_; cb[]X]''5 qdfi XYbhqUhG8 = 7 UbX'h.Y]f`dUf```$

+

7 ci bhnñýj]a d`Ya YbhUjcb`cZ<6%))+"``

%⁴ D`U]bHjZZ 79BH9F@=B?ž =B7¹¹]g U a]gg]cb!Xf]j Yb bcHZcf!dfc2]h) \$%fWf1Ecf[Ub]nUi]cb'UbX'a Ya Wf!WU3WX'WU]hjcb'h.Uhk UgiZci bXYX']b'%-('UbX']g WU3WX']b': cfh@U XYfXUYž: `cf]XU''7 YbYf@]b_f¥ja Ya WfgUfY'@, 6HE Ž Waa a i b]hm WbYfg Wficggih.Y'Wi bHfmžik \cg/'gffYb[h.'UbX'g gHU]bUV]`]hm7 YbYf@]b_`g ddcffg'' 7 YbYf@]b_`\Y'dgVi]`X'h.Y'WdUV]/fmcZ]hg'a Ya Wf'WbYfghc'Z `2]``'h.Y]f'a]gg]cbg'cZ UXXfYgg]b['h.Y'gcV]/Už'W/hi fUž'\YU1\z'UbX'Ug cWMkfbYYXg'cZ@, 6HE Ž Waa a i b]hm a Ya Wfg''CbY'cZ7 YbYf@]b_f¥jZ bXUa YbHU'a]gg]cbg']g hc'\Y'd']hg'a Ya Wf'WbPYfg']a dfcj Y1\Y]f'cf[Ub]nUi]cbU UbX'g/fj]W'XY']j YfmWdUV]/m'7 YbPYf@]b_`gi Ygcb]hg/ck b' W\UZUbX'cb W\UZcZUZZWWX'a Ya Wf'WbPYfgh\UncdYfUY']b'CfUb['Y7ci bhmž8i j U' 7 ci bhmžUbX'DU'a '6YUW'7ci bhm''

<u>_</u>"

%¹ 8YZ4bXLbh GWcc` 6cUfX cZ =bX]Lb F]j Yf 7 ci bhnž : `cf]XUž]g h.Y [cj Yfb]b[`VcXmcZh,Y G8 = 7 ž cf[Lb]nYX LbX cdYfUYX i bXYf : `U' GhUH' ŸŸ %\$\$%' (` h,fci [\` %\$\$%()' ''' H\Y GWcc` 6cUfX cZ =bX]Lb F]j Yf 7 ci bhm]g WUf[YX k]h.`]a d'Ya Ybh]b[h,YhYfa gcZ< 6 %) + Ugdfcj]XYX]b h,YbYk `mhbUMXX gi VgWkjcb f, LfWz cZ: `U' GhUH' Ÿ %\$\$%(&žî Dck YfgLbX Xi h]Yg cZ X]ghf]MzgWcc` VcUfX'i ``5 gU dc`]h]W` gi VX]j]glcb cZh,YGhUY cZ: `cf]XLžh YGWcc` 6cUfX cZ=bX]Lb F]j Yf 7 ci bhm]ggi V'Wki hc V]j/]`gi]hgdi fg Lbhhc : `U'GhUH'Ŷ%\$\$%(%{{LUbX}gUî dYfgcbi UMjb[i bXYf Wz cf cZ gfUY`Lk k]h,]b h,Ya YLb]b[cZ(&1 'G7''Ŷ%, ' ''D`U]bh]Zg? 'F '8''LbX F 'F '8''LhYbX` di V]WgWcc`]b =bX]Lb F]j Yf 7 ci bhm'i

% ¹/ 8 YZYbXUbh GWcc``6cUfX cZ 8 i j U`7 ci bhnž : `cf]XUž]g h.Y [cj Yfb]b[` VcXmcZh.Y 8 i j U`7 ci bhmDi V]WGWcc``8]gff]Wtffl 87DG iz cf[Ub]nYX UbX cdYfUYX bYk`mYbUMWX`g`VgVMgcb`f]LfMzcZ:`U'GhUY`Ÿ%\$\$%(&žÎDck YfgUbX`XiHjYgcZX]ghf]Mz gWcc`VcUfX'İ`5gUdc`]hjWu`g`VX[j]gjcb`cZh\Y`GhUY`cZ:`cf]XUž'h\Y`GWcc``6cUfX`cZ DUa`6YUW`7 cibhmilggi V'YMahc`V[j]`g`]hgdifg`Ubhhc`:`U'GhUH'Ÿ%\$\$%((%f(LUbX`]gU ÎdYfgcbl`UMgb[`ibXYf`Wz`cf`cZghUY``Uk`k]h\]b`h\Y`aYUb]b[`cZ(&I'G7'''Ÿ%,''''5` a Ya Wf`WbHYf`cZD`U]bhjZZ7YbHYf@]b_`dfcj]XYg`gYfj]Wg`hc`@, 6HE Ž`ghiXYbhg`]b` G8D67''

: 57H 5@5@@9; 5H=CBG

=" < 6 %) + Ny F Yei] fYa Yohg UbX 9 bZcf Wa Yoh Chfi Wa fY

8%⁴ < 6[°]%) +žk \]W'hcc_'YZWkicb'si `m%ä 8\$88ž dfcj]XYgih Uhi OKZUgfcca `]bdfi Wijcb VmgWcc` dYfgcbbY cf h]fX dUfi]Ygicb gil i U`cf]YbhUjcb cf [YbXYf]XYbi]hm a Umbch cWWf`]b`_]bXYf[UfiYb`h\fci [\`[fUXY`' `cf`]b`U a UbbYf`h\Uhi]g bch U[Y! Uddfcdf]UY`cf`XYj Ycda YbhU`mUddfcdf]UY`Zcf`gh XYbhg`]b`UWk/fXUbW`k]h\`ghUY` ghubXUfXglï : `U'GhUh'Ÿ%\$\$%(8f] LfWf1'L''

&& < 6 %) + Ugc]a dcg/gh, YZc``ck]b[`fYei]fYa YbhgUbX``]a]hgi dcb X]dff]Mhi gWcc` VcUfXg '

> fWrfWL"=b`UWWrfXUbWYk]h`h`Yf][\hgcZdUfYbhgYbi a YfUYX]b`gg!"%\$\$&'&\$`UbX %\$%("\$(žUKcdhdfcWXi fYgZcf`bchjZhjb[` Ugh XYbhfijdUfYbhjZh`YfY]gUWUb[Y]bh`Ygh XYbhfijgYfj]Wg cf`a cb]hcf]b[`fY`UYXhc`h`Ygh XYbhfija YbhUžYa chjcbUžcf` d\ng]Wi`\YUh`cf`kY`!VY]b[`UbX`h`Y`gWcc`fij U/]`]hmhc` dfcj]XY`UgLZY`UbX`gi ddcfhjj Y``YUfb]b[`Ybj]fcba YbhZcf`h`Y` gh XYbh'' H\Y`dfcWXi fYg`a i gh`fY]bZcfW' h`Y`Z bXUa YbhU` f][\hcZdUfYbhghc`a U_Y`XYV]gjcbgfY[UfX]b[`h`Y`i dVf]b[]b[` UbX`Wzbhfc``cZ`h`Y]f`W]`XfYb`VmfYei]f]b[`gWcc``X]ghf]Wfi dYfgcbbY`hc`YbWti fU[Y`Ugh XYbhhc`X]gWgg]gj YgfYU]b[` hc`\]gcf`\Yf`kY``!VY]b[`k]h`\]gcf`\Yf`dUfYbhcf`hc`ZU/J/]hUY` X]gWqjCb`cZh`Y]gj Yk]h`h`Y`dUfYbh''''''''

fWf&L'5 gWcc`X]gff]Mda UmbchUKcdhdfcWKi fYgcfgh XYbh g ddcfhiZcfa gh\Uhdfc\]V]hgWcc`X]gff]MdYfgcbbY`Zfca bch]Zh]b[`U dUfYbh U/ci h \]g cf`\Yf`gh XYbhfij`a YbhUž Ya ch]cbUžcf`d\ng]Wi`\YUh\cf`k Y`!VY]b[žcf`UWUb[Y`]b` fYUhXg/fj]Wgcf`a cb]hcf]b[žcf`h\UhYbWdi fU[Ycf\Uj Yh\Y dfcWggcbTh, YgWcc^{TX}]gff]Wf^T: ^TU^TGfU^H^TY%\$\$%(8f] ŁfWfHŁfWfH^L^T^T5bX^T]hdfcj]XYgTh, Už]ZUdU^TYbh^T^Mg^TUk gi]h]ggi WMgg^T žTh, YgWcc^TX]gff]Mfa U^MW^TYei]fYX hc^TdU^MUa cbYfU^Tm Uk U^TX^T]b^TUKX]h]cb^T hc^T a UbXUhcfm^TUhcfbYm ZYYg^TUbX^T Wfi fhi Wzghg^T : ^TU^TGfU^M ^T%\$\$%(8f] LfWfHLfWfHL^T^T<6'%) +f^Mg YbZcfWa YbhgWYa Y^Tdcg/g^T]hhY^Tf]g_^TZcf^TdU^TYbhg^T k \c^TXYgJfY^Thc^{TT}]h][U^ATU[U]bgh^Th, Y]f^TW]^TX^T^MggWcc^{TT}X]gff]Wf^TUbX^T]h^T]bWbhJji]nYg gWcc^{TT} k \Yf\Yf`cf`bch]hWfffYgdcbXgk]h. h.Y]f`gh' Ugj[[bYX`UhV]fh\"=h]gi bWkUFk \Yf\Yf`< 6` %) +`VUbg`U`X]gM/gj]cb`cb`gh/fYchnol]W`[YbXYf`fc`Yg`cf`[YbXYf`Yl dfYgj]cb" : cf` Yl Ua d`Yž`]h]gbchWkUFk \Yf\Yf`U_]bXYf[UfHb`HUWYf`Wb`g]```fYUX`h.Y`WUgg`UVcc_` k \YfY`>LbYk Ubhghc`d`Uh7ccHU`"9j Yb]Zh.]g]gdYfa]hHXžUfYUgcbU/YdYfgcbWbbch H^`k \YfYTc XfUk 'h.Y`]bY''Gi fYm< 6%) +k Ugbch]bHbXYX1c VLbU`i gYcZdfcbci bg` cf`[YbXYfYX`HYfa g7cf`dYcd`Y''6i hih.Y`Uk`cb`]hg7LWYXcYgbchUbgk Yfž7cf`Yl Ua d`Yž k \Yfk`Yf`hfubg[YbXYf`gh XYbhg`a UmfYei Yghh.Y`i gY`cZUMVfUY`dfcbci bg'VmHYUWYfg' UbX`ch\Yf`gh XYbhg`]b`h.Y`WUggfcca ž dUfh]W/UFm]Z gi W`U WUb[Y`a UmfYeV&P`_,*I Mm` ''' 🦌 : `cf]XUỹj?!' 'VcUfX!Uddfcj YX`dfUY'YXi Wf]cb`dfubXUfX

Ubl]!Vi ``n]b[``Ub[i U[Y`UbXž cb`]bZcfa Uf]cb`UbX`VY`]YZž]g`W/ffYbhm]b`h.Y`dfcWggicZ fYj]g]b[`h.Y`[i]XYXiYhc`<6'%) +""

'+'¹ : cf'[fUKYgch\Yf'h\Ub'? !' ž'h\Y`Uk 'fYghf]Mgj]bghfi Mgcb'k \YfY'bchî U[Y! Uddfcdf]UY' cf'Xyj Y`cda YbhU`mUddfcdf]UY'İ 'H\YgY'hYfa g'UY' bchiXYZ]bYXž UbX'bc' ghubXUFXgcf'[i]XUbWf]gXi Yi bh]`'>i bY'' \$ž&\$&'''I bh]`'h\YbžgWcc`gUFY']bWbh]j]nYX' hc'W]``UbX`Wbgcf'gdYYWž'YI dfYgg]cbž UbX`UWMgg'hc']bZcfa Uf]cb'UMMfX]b[`hc'h\Y` ghubXUFX'cZ'h\Y'dUFYbha cgh\cgf]`Y`hc'h\Y`YI]gYbWfcZ@, 6HE Ž'dYcd`Yžg]a d`mhc` Uj c]X'U`Uk gi]h''

', '\ H\Y`Uk']gj U[i YUghc'k \Yh\Yf`Ughi XYbha YfYmX]gM/ggjb['h\Y]f`g/l i U` cf]Yb/U]cb'k]h.'h\Y]f' H/UWYf' Wobg]hi H/g U Î WUb[Y']b'h\Y ghi XYbhñgi g/fj]Wg cf' a cb]hcf]b['fYUH/Xhc'h\Yghi XYbhñgia YbHJžYa ch]cbUžcf'd\ngjWi \YUh\cf'k Y`!VY]b[' UbX'h\YgWcc`NgUU]]hmhc'dfcj]XY'UgLZY'UbX'gi ddcfh]j Y``YUfb]b['Ybj]fcba YbhZcf'h\Y ghi XYbHi' H\Yd\fUgY]bWi XYga i `h]d'YhYfa gh\UhUfYi bXYZ]bYXUbXi bW/Ufž]bWi X]b[` Î k Y`!VY]b['zi' k \]W']gi g/X'fYdYUH/X'mt\fci [\ci hgi Vg/Mi]cbgi, fWf%cUbX', fWf&c'''

'-"i Cb' i bY %) \ddot{z} &\$&& \ddot{z} 8 YZ/bXLbh GWcc`' 6cUFX' cZ DUa '6YUW' 7 ci bhm UKcdHX Dc`]Mrh "+')]a d`Ya Ybh]b['< 6'%) +" 8 Ygd]HY'h Yj U[i YbYggcZj UF]ci gH/fa g XYg/l/JWX UVcj Yž]bWi X]b[î WLggfcca]bg/fi Vh]cbži î g/l i U cf]YbHu]cbži UbX î [YbXYf']XYbh]hnži Dc`]Mrh "+') XcYg bch XYZ]bY'h cg/' H/fa g' =bg/tUKž]h]bg/fhg UXX]h]cbU' j U[i YbYgg Vm gi VYMi]b[' Ya d`cmYYg hc' X]gJ/d']bUfm UMi]cb' Zcf' î UhYa dhQb[Q hc' YbMrl fU['Yi 'Ugh XYbhhc'k]h \c'X']bZcfa U]cb'Zfca 'h Y]f'dUfYbhg''HYUWYfg']b DUa ' 6YUW'7 ci bhmgWcc`g\U Y'UfYUKmWyb]bg/fi Wi/X'hc'fy]]Yk 'U` WLggfcca 'Vcc_gUbX' fYa cj Y'Ubmh Uh]bg/fi Wi/cb'g/l i U'cf]YbHu]cb'cf'[YbXyf']XYbh]hmiZcf'[fUXYg?!' 'UbX'

%⊦`

UMgj jhm^H = hg gdcbgcf WUfjZjVX h,Uh h,Y Ua YbXa Ybh k,Ug XYgj[bYX hc Uj cjX XjgMgja]bUfjcb U[U]bgh@, 6HE Ž W] XfYb. Î = Zh,Y]bHYbhcZh,]gV] ``jgbfinhc a Uf[]bU]nY UbnobYž `Yhfig a U_Y gi fY k Y UfYbfin VmdUggjb[`h,]g Ua YbXa Ybhi' 5 gi cbY W/ `YU[i Y bcHYX. Î H,Y ch,Yf U/gi UbhU[Yhc h,YgYbUrcffigiUa YbXa Ybhi]gh,Uh]hHU_Ygci hh,Yk cfXg h,Uh HUf[Yh U a]bcf]hm[fci d''''''''' K Y Xc bch k,Ubh W] XfYb UbX ch,Yfg hc [Yh h,Y]a dfYgg]cb k Yh,]b_]h]gk fcb[`hc W][Uhcf hc WHfUbg[YbXYf'i' 7 f]h]Wi nž < 6 %) +hỹj gdcbgcf]b h,Y GYbUY g'UHYX h,Uhih,Y Ua YbXa Ybhg,ci `X bchVY gi ddcffYX VVWi gY]h Î k ci `X g][b]Z]Wbhm[i hh,YYZcfhcZh,YV]`''I 'H,YUa YbXa YbhZJ]YX''

(' $\$ 5a YbXa Ybhg +' (&((`UbX`*\$\$*\$+`dfcdcg/X`WL/F]Zhjb[`h\Uh<6`%))+` Î XcYg bchUdd`mhc`UbmX]g)A/gg]cb`Whk Yb`U'ghi XYbhk \c`]XYbhjZjYg'Ug'HfUbg[YbXYfž [YbXYf`bcbVabZcfa]b[ž bcb!V]bUfnži cf`ch\Yfk]gY'@, 6HE`UbX`h\Y]f`dYYfg'i`H\Y` Ua YbXa Ybhg ZJ]`YX'' 5bX`Ua YbXa Ybhi&-\$\$-*ž k\]W`k ci`X`\Uj Y`XYZ]bYX`Î g/I i U` cf]YbhUjcbi`UbXÎ [YbXYf`]XYbhjhmi`hc WL/F]Zmt\Uhi\Y'hYfa gYbVaa dUgg]XYbhjhjYgich\Yf` h\Ub`@, 6HE Ž]XYbhjhjYgžgi W`Ug\YhYfcg/I i U]hnžiUgc ZJ]`YX'''

(("[[]5a YbXa Ybhi+))&& & k ci `X`\UjY`]a]HYX`H\Y`XYZ]b]Hjcb`cZÎ WLbgfcca]bdfi Wijcbï hc YI Wi XYX]dwlogjcbgcZZLa]`mdfi Wii fYgžcV/WijjY\]dfcf]WV Yj YbhgžUbX` Vi ``njb[`dfYj Ybhjcb/dji XYbh=9D`cf`)\$(`d`Ubg/ZUVj7]Huhjb[`X]dwlogjcb Whk YYb`dji XYbhg/ UbX`Ug_]b[`UbX`Ubdk Yf]b[`ei YdhjcbgVmdji XYbhg''H\Y`Ua YbXa YbhZu]`YX'''

() $\frac{1}{1} < 6^{\circ}$ %) + $\frac{1}{10}$ bWi ci gi UbX cj YfVfcUX hYfa gi UW]Yj Y h.Y]bH/bXYXž X]g/tīja]bUrcfm[cU cZYfUjb[U`a Ybh]cb cZ@, 6HE Ž dYcd YUbX ZLa]`]Yg]b g/Vcc g' < 6%) + Vt7/UYg cg/! cg/'g]hi U]cbgZcf dUYbhyž hYUVYfgž UbX ghi XYbhyl '5 g/Vcc `Y]h.Yf Wb U c]X Ubm/Wzbj YfgLi]cb U<u>M</u>bck `YX[]b[@, 6HE Ž dYcd Y cf ZUV/U`Uk gi]hVmUbm dUfYbh\cgf]Yhch\YdfYgYbWrcZ@, 6HE Ž ghi XYbhgUbXZLa]`]Yg''''

(*¹/¹/₁ =b`dfUMjWz<6³) + hY`gU` W]`XfYb h`Uh'\ YfYUFYWfHUjb`gʻ VYMgU/ci h` k \]W h`YmMubbch`YUfbžUbX`]hHY`gʻU``dYcd`Y`h`Uh@, 6HE Ž!]XYbf]Zhjb[`dYcd`Y`UFY` bch`\i a Ub`W]b[gik cfh\mcZU/Ubck`YX[a YbhUbX`X]gMgg]cb'''=h`]bhYfZ/fYgik]h` h\Y` U/]`]hm` cZ @, 6HE Ž` ghi XYbhg` hc` cVhUjb` UZJfa]b[` gʻ ddcfhi gʻfj]Wgʻ]b` gʻWcc`ž` i bXYfa]bYgʻdfchWhjcbgʻZfca `Vi``njb[`VUgʻX`cb`h\Y]f`]XYbfjHjYgʻUbX`h\Y`gffi Whi fY`cZ h\Y]f ZLa]`]YgʻUbXXYdf]j Ygʻh\Ya`cZ`]hYfUhi fYUbX'fYgci fWgj]hU`hc`h\Y]f`XYj Y`cda Ybhž` YXi WhjcbžUbX`a YbhU`\YU'h.'''

=J "' < 6 '%) + '\Ufa g D`UjbhjZZg Vm]a dYfa]gg]V mW]``]b[`gdYYW UbX`YI dfYgg]cbž` cVg/fi Wijb[`Wda a i b]Whjcbgž gck]b[`WdbZi g]cbž XYdf]j]b[`nci b[`dYcd`Y`cZ j]HU`g ddcfhgYfj]Wgž UbX`gh][a Uhjn]b[`W]`XfYb''

%'<6%)+`\Ug`\Ufa YX`UbX`k]`` Wobhjbi Y`hc`\Ufa `D`UjbhjZZg>YbbjZYf`UbX`A Uhi 7 ci gjbgž`UbX`D`UjbhjZZgD'7'žA '7'ž`G'7'ž`UbX`B''7''

(+'أ >Yb`UbX`A Uhi7ci gibg`\UjY`WYb`a Uff]YX`Zcf`cjYf`%)`mYUfgUbX`UfY`h\Y dUfYbhg`cZZci f`W]`XfYb''>Yb`]gʻUʻZi``!hjaY`aca`UbX`A Uhi]gʻU`gcZhkUfY`UfW]hYMdUh

Gub[]Ybg"H\YZua]`m`]j Yg]b`Cf`UbXcž: `cf]XU"

(-'[#] >Yb' UbX' A Uhi \Uj Y' fUjgYX' h\Yjf' W]`XfYb' hc' W' _]bXž cdYb!a]bXYXž fYgdYVhal``cZX]ZYfYbWgžUbX Wda ZcfhU/Y]b'h\Yjf'ck b'g_]b''A cfY'h\Ub'Ubnh\]b[žh\Ym k Ubhih\Yjf'W]`XfYb'hc'ZYY`gLZY'UbX'gi ddcfhYXÍ bchcb`m'Uh'\ca YžVi hi]b'U``UgdYMagcZ h\Y]f~]j Ygž]bWi X]b[`UhgWcc`''`

) \$\% >\Yb`UbX`A UMMY`W]`Xz`G7'z`WaY`ci hUgʻbcb!V]bUfm`UgʻinYUfz`UbX`i gʻygʻ Î h. Yn#h. Ya i` dfcbci bg''H\Y`ZLa]`mgi ddcfhg`G'7''Wa d`YhY`nž`UbX``cj Ygʻh.Uh`G'7'']gʻ Wa ZcffUVY`]b`h.Y]f`ck b`g_]b`UbX WabZ]XYbh]b`k \c`h.Ym'UfY''G'7'']g\Wa d`YhY`m¹ ci Hi` UhgʻWcc``UbX`]g`Ub`UMjj Y`a Ya Wf`cZh.Y]f`gʻWcc`Nj; G5`ghi XYbhWi V''H\Y; G5`\Ugʻ WYb`U`]ZY`]bY`Zcf`G'7'''UhgʻWcc`žUbX`dfcj]XYg`UgʻYbgʻY`cZVY`cb[]b[ž\Wa a i b]hnž`UbX` UMMdhubW'Zcf`G'7'''UbX`ch.Yf`@; 6HE Ž`ghi XYbhg''G'7''\UgʻZ]YbXgik \c`Xc`bch\Uj Y` Ubmch.Yf`gdUW]b`k \]W`h.YmgLZY`mMub`W'h.Ya gʻrj Ygci hgʻXYcZh.Y; G5''''

)%# 5b°C7DG'XcWa YohfYWohmi HijnYX']b'HUb]b['UhH.Y'dWcc``X]df[Mt Î@Y[]qUHj YI dXUYqA Um&\$&&ji]bdfi MgdUZXh.Uh`]VfUfmÎ Vcc_gh.Uha U_Yk f]HYb` cf'd[Macf]U'fYZYfYbW'hc'dyl i U'cf]YbhLijcb'cf'[YbXYf']XYbijhmd\ci `X'bchW'U U`UY' hc?!' di XYbhahc Vick dy'cf WYW ci li UbXZ fh Yf di Llygh Uhî \i bXfYXd cZa UYf Ug k]```bYYX`hc`VY`fYj]Yk YX" 5b`C7DG`XcWa Ybh'h]hYX`Î@Y[]gUh]jY`A YX]U 7 YbhYf` 7\Ub[Yop] dulygh,Uhîk YYbWotifU[YYYa YbhUfma YX]UopWI[U]dogho WobXi WolUfYi]Yk cZVcc_gU U U V hc di XYbhg]b [fUXYg? h fci [\ ' ža U_b[bch/ cZUbmVcc_gh U i bwixy k filityb cf divit filu fyzyfybwig hc gyl i U cfiybhuticb cf i ybxyf i xybhindi 5b C7DG XcWa Ybh HhYX Î = bdfi WijcbU A UYf]Ug @]VfUfmA YX]U & & @Y[]gUjcbl ` dcg/gh.Yei Ydjcb. Î 5 Vcc_jgi g/X Zcf]bdfi VijcbU di fdcg/ghc HUW U/ci hZLa]]Yd" H\YVcc_]bWiXYgfYZyfYbWgUbX d]WifYgcZUZLa] mk]h, hk c a ca gUbX hk c XUXd GbWhY`Yopcb]gU/ci hZla]]YgUbX bchqYl i U cf]Ybhufjcb cf [YbXYf]XYbhjhzž]g]h c_Umhc`i dY`h\UhVcc_3``=hUbdkYfg`Î 6cc_`Wub`VY`j]YkYX`Ug`]bhfcXiV]jb[`dyl i U` cf]Ybhuhcbhc?!' _]Xg]Z]h]gi gYX UgdufhcZ]bgfi Wijcb]b?!''l

) & $1 \times 10^{-1} \text{ LbX' A Uhi k]g}^{+1} \text{ M}]f^{+1} \text{ M}]XfYb^{-1} \text{ hc}^{-1} \text{ Mzbh]bi Y^{-1} \text{ hc}^{-1} \text{ UVY} \text{ hc}^{-1} \text{ UVW} gg^{-1}$]bZcfa Uh]cb^{+1} UhiXYd]MugiX]j Yfg]hmUbX^{-1}]HYfUhi fY^{+1} UhifYZYMughX Y]f^{-1}]j YX^{+1} dYf]YbWg^{-1}

]XYbh]hmUbX`dfcbci bgž`YUj]b[`h.Ya`cdYb`hc`Vi``n]b[`Zcf`\Uj]b[`Ub`@; 6HE Ž Zua]`m a Ya Wf'''

) ('^{||} >Yb`UbX`A Uhi dfci X`m`X]gd`Um`UbX`dfYgYfj Y`h\Y`gWcc``dfc^Whig`UbX`

dufijW/U°mjZgWcc`gWb`bc``cb[Yf'U`ck`; G5gihc`Z bWjcb`fWWi gY'h YmfYei jfY' MUWYfgihc`g/fj Y`Uggdcbgcfg':cf`UZjfa]b[`UbX`k YWa]b[`]H/a gig W`UggLZYgdUW' $gjWYfgUbX`@, 6HE Ž]bWi gj Y`]VfUfma UYf]Ug'F Ya cj U`cZh YgjVWfg]gUgc``]_Ym$ $hc`Ya Vc`XYb`h`cgY`gh XYbhgi'UbX`Yj Yb`dUfYbhgi'k \c`gYY_'hc`\UfUggih Ya `cf`Xc`h Ya`$ $\Ufa ''Cb`]bZcfa Ujcb`UbX`W']YZi'U[fci d`cZUbi]!@, 6HE Ž`dUfYbhg\UgfYei YgYX'h Y`$ bUa YgcZYj Yfm; G5`Wi V'gdcbgcf'Undi V]WgWcc`g]b`h Y'gUY'cZ: `cf]XUi']bWi X]b[`h`cgY]b'h YC7DGi'hc`k YUdcb]nY'<6'%)+hc`[Yhih cgY'h/UWYfgZjfYX'''

*\$% HYUWYfg\UjYUk Ung\WybicbYcZhYacqhijUiU/YUbXia dcfhubh fYgcifWgZcfG7'ZB'7'ZD'7'ZUbXA '7''>YbUbXA Uhi_bck 'hUh< 6%) +]gWiWU]b[` U VUff]Yfinc: Vi]X]b[` dcg]h]jY fYU]cbg\]dg UbX`]bHYfUMjcbg Wfk Ybi 'hY]fi W]XfYb#h YagYj YgUbX'hYHVUWfgHU_YX'k]h 'YXiWJ]b[`hY]fW]XfYb''H\Y]f'hk c` nei b[YgłZA '7'''UbX'D'7'Z`\UjYUfYUKmYI dfYgg/X`WzbWfbgU/ci hi[Yhjb[`]b`hfci VY` hYagYj YgZUgkY``Ugî[Yhjb[`'hY]f'HVUWfg]b'hfci VYI`VmHU_]b[`U/ci hihY]f'bcb! V]bUfmg]V]b[]bWLggfcca 'gMijb[g'K]h\ci hgLY'gdUW'g]V_YfgZA '7''UbX'D'7''Xc'bch _bck 'k\]W'H/UWYfgk ci `XW'gi ddcfh]jYfYgci fWgZcf'h\Ya`UhgWcc`'''

& < 6%)+ $Ug Ufa YX UbX k] `` Wordship bi Yhc Ufa D`UjbhjZZK] ``@Uf_jbg''$

*% K]``]g'U'f]gjb[`ghb]cf'UnK]bhYf`DUf_`<][\`GWcc``]b`CfUb[Y'7 ci bhnă : `cf]XUž'U'dUfhcZh\Y'C 7 DG''< Y]XYbh]Z]Yg'Ug'[UmLbX'bcb!V]bUfmLbX']g'h\Y'dfYg]XYbh UbX'U'Mz!Zci bXYf`cZ\]ggWcc`ĨĝjE i YYf'Gh XYbhl b]cb''''

*& $\[K] _bYk Zica Uj Yfminoti b[U[Yih, Uhi\Yik UgX]ZXfYbhZica ch, Yf Vengi \]gU[YžUbX`\Yighti [[`YX Zef UWWelhubWV Veh,]bhYfbU`mLbX`YI hYfbU`mk]h, `]gdYYfg'' K]``UWYX h, Y`Ub[i U[Yhoti bXYfgfUbX k \Uh]hk UgU/ei h\]a h, Uha UXY\]a X]ZYfYbh''$

K]``NyZ]YbXžk \c`k UgUgc`Ughi XYbh]b`h\Y`WUggžZ]`a YX`h\Y`dfYgYbhUr]cb''H\Y`j]XYc` cZK]``Ny`Yggcb`k Ybhj]fU`cb`gcV]JU`a YX]UžUbX`Ub`Ufr]WY`UVci h]hk Ugdi V]g\YX`]b`U bUr]cbU`bYk gici hYh''

*) * 5ZMF1\YbYk gdjefmk Ugdi V]d\YXžK]``Nj\]djefmHVUWf Wa d`UJbYX'hc` UKa]b]dfUhefd" GWcc`` cZZJVJU gi \Yb` d`UWX` K]``` i bXYf` Î]bj Ydj[[U]cbi` Zcf` \Y` dfYdYbHJ]cb`cb`l\YGhebYk U`F]chd'I `Ha UHYnž\Yk Ughe`X'hUh\Yk UgW]b[`a cj YX` hc`Ubch\Yf`\]djefmWLbgžUbX'hUh\Y`\UX'bc`Wc]W]b`l\Y`a UHYf";]j Yb`l\Uhi]hk Ugi WcdY'hc`l\Y`YbX`cZh\Y`mUFUbX`a cj]b[`]bhc`UbYk`UbX`i bZLa]`]UF`WLbg`gc`WcdY'hc` Z]bUgk UgWU`Yb[]b[žK]`Njj[fUKYggj Z2/fYX]b'l\YbYk`WLbgUgUfYgj`H'K]`NjjZ]YbX` Ugc`k UgX]d/Jd`]bYX`Zcf'Z]`a]b[`]gdfYdybhUjcb''

*** K]`` Ugc`\Ug k]hbYggYX`Uo`]bVR/UgY`]b`Ubl]!@, 6HE Ž`Vi``m]b[`UbX` \UfUgga Ybhg]bW/h\YYbUMa YbhcZ< 6%) +*'K]``\i b[i dUVUbbYf'h\UhfYUXÎ DF =8.9` 69@CB; G`< 9F 9Ï`U\YUX`cZU ghi XYbHcf[Ub]mYX`dfchYghicddcg]b[`< 6`%) +ž`UbX` k]h]b`U XUm]h\UX`WYb`j UbXU]mYX`UbX`hcfb`]b`gYj YfU`d'UMg'': i fh\Yfž Xi f]b[`U ghi XYbHcf[Ub]mYX`k U_!ci hžZcf'k \]W'K]``\UX`gci [\hUbX`cVhU]bYX`dYfa]gg]cb Zfca` h\Y`df]bV]dU`]b`UYj UbWžUghi XYbhk U_YX`i d'UbX`hcfY`Udf]XY`ZU[`ci hcZh\Y`\UbX`cZ Ubch\Yf`ghi XYbhUbX`f]ddYX`]hi d''5`gWxbX`ghi XYbhghca dYX`cb`Udf]XY`ZU[`h\Ym*cc_` Zfca`Ubch\Yf`ghi XYbhk \c`\UX`WYb`\c`X]b[`]h''K]``ZYY`g`Ygg]d_ZYUh\]gC7DG'gWcc`` UgUfYg``hcZ< 6`%) +''

*+^{1/} 5 g DfYg XYbhc Zh, Y E i YYf Ghi XYbhi b]cbžK]``\Uggdc_Yb hc`\]g ZY`ck Wi V a Ya Wfg U/ci h\ck h\YmZYY`]b``][\hcZ<6'%) +'''A Ubm\Uj Y YI dfYgg X/ZYY]b[g cZ XYdfYgg]cbž Ubl]Yhnž UbX Z/Ufž bchcb`m W/Ui gY'c dUjb2 ``f\ Yhof]VWYjb[`gdYk YX`VmH\Y`: `cf]XU @Y[]g`Uhi fY"K]``W`]Yj Yg'l\Y`f\ Yhof]W dYfdYhi UYX VmH\Y'g'UY'jb'gi ddcfhcZh\]gV]``ž']bWi Xjb['h\Y`; cj YfbcffygjGY0j/Hufm W``]b[']hH\YÎ 5 bh]!; fcca]b['6]``l' UbX'g'Uf]b['h\Uhi\cgY'cddcg/Xhc'h\YV]``ž`]_YK]``ž gi ddcfhî h\Y`[fcca]b['cZ(!, 'mYUF'c`X`W]`XfYbži'`]g'V]b['a]a]\WYX`Vmghi XYbhg'k \c' UFY`]bVMUbj]b['h\Y]f`Vi``mjb['cZUbX`\cgh]`]m*hck UFX`@; 6HE Ž`ghi XYbhg'''

*, ¹/₁ K]``k Ubłg łc WY\]a gYZ]b gWcc`'' < Y'k Ubłg łc HJ_'U/ci h@, 6HE Ž ` \]głcfmk]A ci hZ/UFcZW]b['dYbU]mYXU[U]b'''5gUf]glb['g/b]cfk]A Wr`Y[YdfcgdWldg cb'AY\cf]ncbžK]``WobchUZcfX'łc W'X]gl/Jd]bYX'UbX'\U Y`\]g[fUXYg gj ZMFZcf' gdMJ_]b['U/W/fUY'm]b WLggU/ci hfYYj Ubh@, 6HE Ž \]głcf]W/ UbX/WffYbhYj Ybłg'< Y' k]g\Ygłc U/Lock `YX[Yłc ch Yfgłi XYbłgź łc HUWYfgź UbX'łc \]gl/da a i b]m+hUh\Y]g ei YYf''< Y'k Ubłg łc ['c hc'g/vcc` UbXbchW'g\Ua YX'UbX'g]`YbWX'gJa d'mZcf'k \c \Y]g'' < 6 %) +łŷjYbU/da Ybłź'UbX']rg]a d'Ya Ybłu]cb Vm8 YZ/bXUbhGWcc``6cUFX'cZCfUb[Y' 7 ci błmž\U YW]`YX'UbX'dYbU]mYX'K]``fŷgdYWW'UbX'I dfYgjcb VUg/X'cb]łg/Wb/bh UbXj]Yk dc]błź'UbX'g] VYMMX'\]a 'UbX'ch Yf'@, 6HE Ž głi XYbłgUhC 7 DGhc]bVM/Ug/X' \UfUgga Ybłź'Vi``m]b[ź'UbX'X]g/fJa]bUjcb'''

*-" HYUWYfg\U YWYbicbYicZhYa cyfik cbXYfZ `fYgci fWgZcfiK]``UbXiZcfi chYfi@, 6HE Ž : gli XYbhgi k \c: UfY gffi [[`]b[`hc: Z]bX: hY]fi d'UWf UhigWcc`" CbY gi ddcffi]j Y'HUWYfi Wubia U_YU`'h YXJZYfYbWziUgiK]``YI dYf]YbWXik \Ybi\]giHUWYfi Wza ZcfHYX \]a `fY[UfX]b[`Ubi]bVJXYbHUHU < U`ck YYbidUfhmik \YfY\]gia UYYVUgga UY'gi h fYUH/bYXi\]a `k]h.`d\ng]Wi`j]c`YbWf UbXig\ci HYXi\ca cd\cV]Wgii fg''H\Y'HUWYfi dfcj]XYXigLZ/miZcfiK]``UYgJWEc`}W6#g

 $< U^{T} = (1, 1)^{T} = (1, 1)$

$gWcc`'''8 \line{J}$

 $\label{eq:huwfgubX:WLggautygcZ? F '8 "UbX:F 'F '8 "UbX:k \ Yb'h YmUthybX:gWcc`Yj Ybhgž Uj c]X]b[`fYZ/fYbW/hc'h Y]f 'fYUjcbg\]džg/l i U`cf]Yb/UjcbžUbX:Ubmch\Yf hcd]Wh\Uh a][\hW?XY/a YX:Î]bUddfcdf]Uh'i`VmdUfYbhg'h\Uh'Wz `X'h\fYUY/b hc'g'Y'h\Y'gWcc`` i bXYf'< 6'%) +": cf'Yl Ua d'Yž8Uj]X'fYWbhmfYU]nYX'k \]`Y'd]V<u>U</u>b[`i d'? 'F '8 "Zfca`' gWcc``h\Uh'Y'k Ug'k YUf]b[`Uhg\]fhW?YVfUjb[`U$

bYk ~Y[]gUjcb"

("'< 6'%) + `\Ug`\Ufa YX`UbX`k]`` Worbhjbi Y'hc`\Ufa `D`UjbhjZZ7 YbhYf@jb_`UbX`jhg` a Ya Wf`WbhYfg'''

, & 7 YbYYf@]b_Nija]gg]cb`]gihc`dffYb[H\Ybž`giddcfhž`UbX`WdbbYWd@, 6HE Ž Wda a i b]hm`WbYYfd'' 7 YbYYf@]b_`k cf_gihc`XYj Ycd`dffcb[ž`gidfU]bUVY`Wda a i b]hm` WbYYfgih\Undfcj]XY'@, 6HE Ž`dYcd`Y`cZU``U[Ygik]h\`h\YVi]`X]b[`V`cV<u>/</u>gicZk Y``!VY]b[` cj Yf" *\$i dfcj]XY gca Y X]fWM \YUN `gYfj]Wg f]bWi X]b[` Wi bgY]b[ž dYYfi`YX dfc[fLa gž LbX g ddcfh [fci dgž Lg k Y``Lg d\ng]W'`\YUN `LbX ch Yf a YbH)`\YUN ` gYfj]Wg!''5 hih Y gLa Y Ha Yž h cgY WbH/fg fYa U]b`h]b`mghUZXX.`cj Yf`'\$i `cdYfLHY` gc`Ymk]h j c`i bHYfg LbX cj Yf`*\$i `Ya d`cmZ]j Y cf`Zk Yf`dU]X ghUZ''7 YbH/f@]b_Nj a Ya WfgdLmUg]X]b[!gWYa Ya Wfg]d ZYY''C bW/UWbH/f VWka YgUa Ya Wfž]h\Lg UW/gg hc`g/fj]Wg g W`Lg h Y`7 YbH/f@]b_`fYgci fW dcfhUž bYk g`YhH/fž dfc[fLa a]b[` LbX``]ghg/fj g Lbbi U``YUKYfg]d LbX ghUZ WzbZfYbWg LbX dfcZ/gg]cbU`U(j]W'U/ci h cdYfLHcb`LbX g/fj]Wg''

, **(**"

YUKYfgUbXinori h\ dfc[fUa gfuZZdYYf!VUg/XhWb]WJUgjgfubWUbXhfU]b]b[žk W]bUfg cb'Uj Uf]YhmcZhod]Wg/cZ]bhYfYghho:inori h\ dfc[fUa a]b[`gfuZZ'U a cbh\ mfYgci fW'Y! bYk g`YhhYfž'U a Ya Wf`dcfhU`k]h\ XcWa Ybhgž'UbX'hYa d`UhYg''=hUgc`dfcj]XYg`ch\Yf` dfUMjWJUgjgfubWž]bWi X]b[WcUW]b[`UbX Wzbg` hUjcb Zcfinori h\ dfc[fUa a]b[`gfuZZ' bYYXVa d` M ``njb[ž']bWi Xjb[`Vi ``njb[`VUgVX'cb'gii XYbhgÑ@, 6HE Ž ']XYbhjljYg'A i `hjd'Y'WbhYfg' dfcj]XY'hfUjb]b[g]b'gWcc`gUbX'ZU/J/]hUY'h Y'XYj Y'cda YbhUbX'Z bVhjcb]b['cZ; G5gë' k \]W'UfY'nci h.!'YX'cf[Ub]nUjcbgh UhgY_'hc'VMUY'gLY'gdUVkgZcf'@, 6HE Ž 'nci h.' UbX'UXXfYgg'Ubj!@, 6HE Ž `\UfUgga Ybhž'Vi ``njb[ž'UbX'X]gMija]bUjcb']b'gWcc`g'' A Ya Wf' WbhYfg'UMiUg'U fYgci fW Zcf'ghi XYbhg'UbX'hUVYf'ZU/J/jhUrcfgë'k \]W' Wb'']bWi XY'Ugjjdjb['k]h.'hfUjb]b['UbX'a Yhjb['ZU/J/]hUjcbž'dfcj]X]b['a]Mic![fUbhg'Zcf''; ; G5 Yj YbhgUbX'a Uhf]UgëcZxhf]b['hfUjb]b[gZcf]bhYfYghX'dUfYbhgcZ@, 6HE Ž 'nci h.' cb'hcd]Vkj]bWi Xjb[`\ck hc'dfcj]XYUgLYUbX'g ddcfhjj YYbj]fcba YbhžUbX VkbbYNkjb[']ggi YgʻUf]gyz ZYY`U [fYUYf`gybgy'c Z Wda a i b]hnži UbX`UfY`a cfY``]_Y mhc`[fUXi UY`\][\` gWcc`'''

-\$" $\frac{1}{2} + \frac{1}{2} + \frac$

-% < 6%) + UfYUKm\Ug]bh/fZ/fYX k]k žUbX cVg/fi Wi/X k cf_dYfZcfa YX Vnž 7 Ybh/f@]b_UbX g/j YfU cZ]hg : `cf]XU a Ya Wf Wbh/fgž Zfi g/fU]b[`k\Y a]gg]cb cZ 7 Ybh/f@]b_UbX h\Yg/a Ya Wf Wbh/fgž]bh/fZ/f]b[k]k\Ukijj]h]Ygh\Ymk]g\ hc Wabh]bi Y]b Z fh\YfUbW cZh\Yff a]gg]cbgUbX h\Y]f cV][U]cbgi bXYf Z/XYfU `nhZ bXYX WabhfUkigž Wabg a]b[`UbX X]j Yfh]b[`h\Y]f fYgci fWgžUbX \Ufa]b[`h\Y`@, 6HE Ž `nci h\`h\Uhih\Ym

U' 7 Ybh/f@]b_ a Ya Wf Wbh/f]b 8i j U 7 ci bhm

-&¹/₄ : cf[~]Yi Ua d[~]Yž U 7 YbhYf@]b_[^]a Ya Wf[~]WbhYf[~]]b[~]8i j U[~]7 ci bhmdfcj]XYg[~] hfU]b]b[[~]Zcf[~]dU^rYbhg[·]UbX[~]h/UWYfg[·]cb[~]dJZ[′]UbX[·]gi ddcfh]j Y[~]Ybj]fcba Ybhg[·]Zcf[~]@, 6HE Ž[~] ghi XYbhg[′]Ugg]ghg[·]8 7 DG[·] cb[~]dc[~]]/J^Wg[·]UbX[·] dfcVWXi fYg[·]Zcf[~]ghi XYbh[·]gi ddcfhi UbX[·]Ubf]! Vi [~]m]b[[/]Wda a i b]WhYg[·]k]h.[~]UbX[·]dfcj]XYg[·]gi ddcfhihc⁻; G5 g[·]UbX[·]h.Y]f[·]UKj]gcfg[′]UbX[·] gi ddcfhg[·]]bX]j]Xi U⁻ ghi XYbhg[·]X]fYMi[·]mfYZ/ffYX[°]Zica [~]giUZ Uni 8 7 DG^{·°} H\]gi WbYf[°]]gi

' +'

g WoldhfuMil/X Vm8 YZ4bXUbhGWcc``6cUfX cZ8 i j U 7 ci bhmhc dYfZcfa 'h YgYg4fj]Wg i bXYf U Z4XYfU Wc`UVcfUjj Y [fUbhž UbX df]j UY Xcbcfg UbX Zci bXUjcbg dfcj]XY UXX]hjcbU Z bX]b[`g ddcfhZcf]hgk cf_'''

-''¹// 6YZcfY'dUggL[Y'cZ<6'%)+ž'7YbHYf@]b_Ng'8ijU'7cibhm

]hgifYgci fWg'< 6%) + \Ugig]YbWX h,]gia Ya Wf WbHfždfYj YbHX]hgidUZZZfca Z ``m Waa a i b]Wh]b[k]h, ghi XYbhgžHUWYfgžUbX gWcc` cZZJVJU ghc h, Y Yi HYbh]h\Ugi]b h, Y dUgh hc dfcj]XY h, Ya k]h, gi ddcfhž UbX ch, Yfk]gY cVg/fi WbX]hg a]ggjcb UbX]hg ZXYfU`nhZ bXYX k cf_ hc gi ddcfhi]bX]j]Xi U @, 6HE Ž ghi XYbhgUbX; G5g'''

V" 7 YbhYf@]b_a Ya Wf WbhYf]b C fub[Y 7 ci bhm

-, $\frac{1}{2} = 5 \cdot 7 \text{ YbhYf@]b}_a Ya Wf^WbHYf^]b^CfUb[Y^7cibhmUgc^UgYfWgYfWgYbWX^$ $\Ufa^UgUfYg^hcZ<6%) + "H\]gWbHYf^cdYfUYgZUJ/JHUYX^dYYffHc!dYYf^WgibgY^]b[$ $gYgg]cbgZcf^@, 6HE Ž_maih."6YZcfY^dUgd_YcZ<6%) + žh\YgY'gYgg]cbgUy YfU[YX+hc^$ $%$maih.]bUhYbXUbW'G]bWh\Y^Uk ÑgYbUMa Ybhžh\Ybia Wf~cZghiXYbhUhYbXYYgUh$ $h\YgY'gYgg]cbg\UgXciVYX"GhiXYbhgUhih.YgY'gYgg]cbg\UyY'gUhYX`h\Uh<6%) + `\Ug$ $a UKY`h\Ya^bYfjcig UbX`\Y][\HYbYX`h\Y]f^Ub] Jhm'f DUfYbhg`\UyY'gci[\hicihh\YgY'$ $gYfj]WgZcf`h\Y]f`HYbg'gdYV]Z]Wi`mWWigYcZ<6%) + "5g'UfYg`a?f_; `&a &&?U_; &b)W)?i.$ G8D67"5h`YUghigca Y'HYUWYfg']b'G8D67'k \c'dfYj]ci gìmk ci `X'fYZ/f'ghi XYbhg'UbX' h\Y]f'ZLa]`]Yghc'h\Y'WbHYf'cf'X]fYWbh\f cf'X]fYWbh\Ya 'hc'fYgci fWgdfcj]XYX'Vmh\Y'WbHYf'UfY'bc' `cb[Yf'Wda ZcfHU/Y'Xc]b['gc']b``][\hcZ<6%))+hyjjU[i Y``Ub[i U[Yž]bHYfZ/f]b['k]h\'h\Y' WbHYffYjUV]`]hmhc'Wda a i b]WhY'k]h\'ghi XYbhg'k \c'UfY'bchich\Yfk]gY'UkUfY'cZh\Y'

%%% HYPDUa '6YUW'7 ci bhma Ya Wf WbMf \Lg Yi dYf]MvWX Lb]bWRL9X' XYa LbX Zcf]Inga YbHU \YUH, 'gAfj]Wg fYgci fWg LbX'gi ddcfh Zcf 'cWI 'nœi b['dYcd'Y'' < 6'%) + `\Lg Yi LWFVLHX'U a YbHU `\YUH, 'Mg gig Zcf '@, 6HE Ž 'nœi h.ž k \cí Yj Yb WZcfY'dLgg [YcZ < 6%) + Í UfYUXmk YfY Zci f Hja Yga cfY'']_Ymtc UtHYa dhgi]MXYcf' h]b_'UVci higi]MXY h.Lb 'h.Y]f 'bcb!@, 6HE Ž 'dYYfg''H\Y'gtUZ Uhh,]ga Ya Wf WbMf' \Uj Y'gtMohLb]bcfX]bUH'La ci bhcZHja YLbX'fYgci fWgcb a]H][UHjb['h.Y']a dUMg cZ < 6'%) + 'cb 'gti XYbhg Ña YbHU `\YUH, 'LbX'ei Y`]b['h.Y'Lb]]YmcZnœi h. 'LbX'Lb]]'fg''' H\Y']bVMU9X'XYa LbX'Zfca '@, 6HE Ž 'nœi h. 'LbX'h.Y]f'ZLa]]Yg Zcf'X]fWMi9/fj]Wg ź Xf]j Yb 'Vm< 6'%) + ź`Llg YI WXXYX'h Y WbU/JimcZ h Y WbMff Ñg gtUZjb[''';]j Yb 'h.Y' a Ya Wf 'WbMf Ñg ']a]HX'fYgci fWg X]fWi4jb['U'Uf[Y'cMfWbhL[Y'cZh,Y'gtUZIhc'UXXfYgg] WbWfbgftJg9X Vm< 6'%) + \Lg\]bXYfYX'h.Y'a Ya Wf WbMff Ñg UJ[]mthc'dYfZcfa 'ch.Yf' @, 6HE Ž Wa a i b]tma cfY['YbYfU'n'''

%\$&! K G8 D67 ` \Ugi WubWr`YX gYj YfU ` `cb[!gfUbX]b[` X]j Yfgihm UbX `]bWi gicb ` hfU]b]b[gi Zcf ` hYUWYfgi cb `@, 6HE Ž ` \]ghcfm UbX ` W/ff]W/i a `]bWi gicbž fYa cj YX]bWi gij Y a UhYf]Ug]b `][` gWcc ` Wai fgYgZfca `h. Y W/ff]W/i a `UbX gYj YfU Vcc_gik]h. ` @, 6HE Ž `WabhybhZfca `U ` WLggfcca gë UbX]g fYj]gib[[i] XYg Zcf"@, 6HE Ž 'dji XYbhg']b'fYgdcbdy'hc'< 6'%) +": cf"Yl Ua d'Yž U'hYUV]b['hcc`' H]hYX'h,Y'Î; YbXYfVfYUK'DYfgcbžⁱ'k \]W']g'U'Wda dcbYbhcZh,Y'< i a Ub'; fck h, 'UbX' 6YUW 7 ci bhm'i 5 ``` D`U]bh]ZZgi gW_ dfY]a]bUfm UbX dYfa UbYbh]bfi bMi]cbgž UbX WU`Yb[Y< 6 %) +žUbX UbmUMi]cb Vm8 YZ/bXUbhgicf 1% Y]f U[YbhgigW_]b[hc]a d`Ya Ybh]hVch, ZU/JU`mUbX UgUdd`]YX hc h Ya ''

%\$** H\Y:]fgh5a YbXa Ybhž UgUdd]YX hc h.Y gfuh/gh.fci [\ h.Y: ci fhYbh.

j]c`UYX'k \Yb``]VfUfma UYf]Ug'UfY'fYa cj YX'cf`W/ff]W/`i a `cf`WLggfcca `]bgffi Wijcb` UfY'WffU]`YX'Zcf'Udi fdcgY'bchifYUgcbU/mfY'UYX'hc'U`Y[]h]a UY'dYXU[c[]Wi WzbWfb''

%& 5 XX]IjcbU`nžU`Uk 'a UmW`]bj U]XUWX`Ugʻcj YfVfcUX`k \Yb`Uʻgʻ VgfubljU` bi a Wf`cZ]hgʻUdd`]WhjcbgʻUfY`i bWobgjhi HjcbUž´A X[YX`]b`fY`Ujcb`hc`UbmdYfa]ggjVY` Udd`]WhjcbgʻcZh\Y`gfuhi hY'''

%% $\[D`U]bl]Zg > b 7ci glbg A Uh 7ci glbg D'7 Z A 7" G7 Z B7 Z K]^$ $@Uf_]bg 8U]X 8]bUb J]; cb[]X]Z? 'F '8 ZUbXF 'F '8 "\U Y b[U Y.S]bUZ]fa]b[$ gd WW UbX 11 df ygg cb WabWfb]b['h Y]f ck b cf ch Yfg ŷg 1 i U cf] ybHJ cb UbX [YbXYf]X b]m]b gWcc WabH1 hg UbX k]h gi X bhg UbX k]g, 'hc Wab]bi Y hc Xc gc" H Yg Y $D`U]bl]Zg Uf Wm U Y Wb W] YX UbX#cf Zcf WX hc gY ZWbgcf Vm U_]b['Wf Y bchirc$ a Ybl]cb 'h Y]f ck b cf 'UZ h] ma Ya Wff ŷg 1 i U cf] YbHJ cb UbX 'f [YbXYf]X bh]m]b $gWcc `WabH1 hg k \b 'h Ym ch Yfk]g 'k ci `X 'b[U[Y]b gi W gd YW UbX '11 df yg]cb Ug$ Uf yg `hcZ h Y]a d'Ya YbHJ cb cZ < 6 '%) + Vm 8 YZ/bXUbhg GWcc ` 6cUfX cZ C fUb[Y'7 ci bhm LbX GWcc ` 6cUfX cZ =bX]Ub F]j Yf 7 ci bhm < 6 '%) +]a dYfa]gg]V mW] `g h YWabHbhUbX [] Yk dc]bH'

%%('¹/₁ 5 XX]**h**]cbU`nži < 6[°]

((`

fl Ł Zfca · dfchWnjb[· D`UjbhjZzg D'7 'ž A '7 'ž G'7 'ž B '7 'ž K]``@Uf_]bgž ? 'F '8 'ž UbX F 'F '8 '' Zfca · dj][a U UbX Vi ``njb[· Ug U fYgj `hcZ h,Y] a]ggjcb UbX h,Y k Y`!VY]b[cZghi XYbhg'''

%%+"Å H\Y XWJgjcb Vm D`UJbhjZZ 7 YbhYf@]b_Ñgia Ya Wfgihc Waaaib]W4Y U a YggL[Y`cZ]bWi/gjcbž UZ2]fa Ujcbž UbX`giddcfhik]h\`fYgdYWahc ghi XYbhgÑ@, 6HEŽ gYIiU`cf]YbhUjcb UbX [YbXYf"]XYbhjhmh WabgjgYbhik]h\`h\Y]f`a]ggjcbí Wabgijhih'gi dfchWMX:]fgh5a YbXa YbhUMajj]hm'i"

%% ¹/₁ H\Y di fdcg/ UbX YZMti cZ < 6 %) +]g hc W] UbX g ddfYgg Wologijh HobU mafchWti/X:]fgh5 a YbXa YbhUtijj]hm/mHuf[Yhjb[`gdW]ZJWk/bh/bhUbX j]Yk dc]bhg Zcf g ddfYgjcb'' < 6 %) + ž UbX]hg YbZcfWa Ybh Vm8 YZ/bXUbhg GWcc `` 6cUFX cZC fUb[Y7 ci bhnžiGWcc ``6cUFX cZ8 i j U 7 ci bhnžiUbX GWcc ``6cUFX cZDU a ` 6YUW 7 ci bhm U YdYbU]nYX D`UjbhjZZ7 YbhYf@]b_ftja Ya WfgVmdfYj Ybhjb[h.Y]f gHZZ Zfca `Yb[U[]b[`]b`UZjfa]b[`UbX`]bWi gjj Y`gdYWV UbX Vt/a a i b]Whjcbg U/ci hg/l i U cf]YbhUjcb UbX`[YbXyf"]XYbhjhnžiVmZcfV]b[`h.Ya `hc`gdYbX UXX]hjcbU fYgci fWgicb h.Y` a YbhU `\YUh` cZnci b[`dYcd`Y Uhh`Yg/`gWcc ``X]gfj\Mgž UbX Vm]bYfZvf]b[`k]h` h.Y]f` UJ`]hminc Wza cimk]h` WfhUjb`[fUbhcV][UjcbgUbX hc`g/Y_ Z hi fY Z bX]b[`hc`Xc`h.]g a]gj]cb!Xf]j Yb`k cf_'''

%% '∮ 6YWLigY`U`giVghUbhjU`biaWf`cZh\Y`Ubd`]WLhjcbgicZ<6`%))+`UFY` ibWzbghjhihjcbUžîłX[YX]bfY`Uhjcbhc]hg`Y[]hjaUYYgkYYdž<6%))+]gUgc`cjYfVfcUX` UbX]hgYbZcfWaYbhg\ci`XVYYb?c]bYX''''

<u>7CI BH=</u>

8 Ydf]jUjcbcZ8iYDfcWggcZ@Uk : cifhYYbh\5aYbXaYbhhch\YI'G'7cbdjhihjcb (&I'G'7''Ÿ%,' 5[Ujbdh5``8 Y2YbXUbhg

%&\$th D`U**j**bhjZZgfY!U`Y[YUbX]b\&/fdcfUYVmfYZ/fYb\W'dUfU[fUd\g%h\fci[\%\$` Ug]ZZ ``mgUhYX`\YfY]b''

%8% D`UJbHJZgi>Yb UbX`A Uh7 ci glbgžD'7'žA '7'žB '7'žUbX`G'7'žUbXD`UJbHJZZ K]```@UF_]bgighUY`H\]giWigY`cZUMijcb`U[UJbgi8YZ/bXUbhGWcc``6cUfX`cZCfUb[Y' 7 ci bhm'iD`UJbHjZZg 8U]X`8]bUbžJ]_`; cb[]X[ž?'F'8'žUbX`F'F'8'''glUY`H\]giWUJa` U[UJbgi8YZ/bXUbhGWcc``6cUfX`cZ=bX]Ub`F]jYf`7 ci bhm'iD`UJbHjZZ 7YbYf@]b_ž`cb` VAUZcZ]hgYZUbX`Jhga YaVVfgž'glUYgiA]gWigYcZUMijcb`U[UJbgh8YZ/bXUbhgGWcc``6cUfX`cZCfUb[Y'7 ci bhmäGWcc``6cUfX`cZ8 i jU`7 ci bhmäUbX`GWcc``6cUfX`cZDUa` $6YUW`7 ci bhm'i 5```D`UJbHjZgigYV_`dfY`]a]bUfm UbX`dYfa UbYbh`]b4 bMijcbgž UbX`$ $<math>WU`Yb[Y<6'%] +žUbXUbmUMijcbVm8YZ/bXUbhggYY_]b[hc]a d`YaYbhJhVcH, ZU/JU`m`$ UbX`UgUbd`]YX'hc'h,Ya''''

۶۶۶۶ אָרָי SiY DfcWgg 7`UgY cZh.Y: cifhYbh. 5a YbXa Ybhž YbZcfWU/Y difg Ubhhc (&1 'G'7 ''Ÿ%, 'ždfcj]XYgh.Uhî ObcOghUY g.U`''''''XYdf]jYUbmdYfgcb cZ `]Z/ž`]Wfhnžicf dfcdYfhnžik]h.cihXiYdfcWggcZ`Uk 'Ï`

%& 'Å I bXYf ïh.Y: ci fhYybh. 5a YbXa Ybhhc ïh.YI b]hYX Głuhyg 7 cbg]hi h]cbž U [cj Yfba Ybhu YbUMda Ybh`]_Y < 6 %) +]gi bWdbgh]hi h]cbU`mj U[i Y]Z]hZu]`ghc dfcj]XY Udyfgcb cZcfX]bUfm]bhY`][YbW/ZU]f bch]W cZk \Uh]gdfc\]V]hYX cf [ggc głubXUFX Ygg h.Uh]h U h.cf]nyg cf`YbWdi fU[Yg gyf]ci gmX]gy/Ja]bUhcfmYbZcfWa Ybh" 8]ZyfYbhm

głułyXž[cjYfbaYbłu YbUłbaYbłgufYi b\ktbg]hih]cbU`mjc]XZcfjU[iYbYggk\Ybh\Y]f dfc\]V]h]cbgUfY`bchWtU`mXYZ]bYX''GiW`YbUłbaYbhgaUmUgcWjc]X`ZcfjU[iYbYgg

UMijj]HjYgĨWhohfU]hmhoc'h,Yjf'a]ggjob'UbX'h,Yjf'UVj`]hmhoc'gYfjY'UbX'giddofhi@, 6HEŽ' nocih,''

 $\%_{k}$ $\frac{1}{4} < 6\%$) + j]c`UYgh.Y'8 i YDfcWgg'7`U gY'cZh.Y': ci fHYbh.'5 a YbXa Ybh UbX']g j c]X'Zcf' j U[i YbYgg'VWU gY']h]bZf]b[Yg'cb'U``D`U]bh]ZZgÑ Wzbgf]hi H]cbU`m dfchWWX'f][\hhc ZfYY'gdYYWUbX'dfcj]XYg]bUXYei UY'bch]W'cZh.YWzbXi Wz[hdi fdcfhg' hc'dfc\]V[h]'

<u>7CI BH = </u>

8 Ydf]jUh]cb`cZ9eiU`DfchYMj]cb`cZh\Y`@Ukg : cifhYYbh\`5a YbXa Ybhhc`h\YI ''G''7 cbgh]hih]cb` (&I ''G'7 ''Ÿ%,' 5[U]bgh5``8 Y2YbXUbhg

%&- "↓ D`U**j**b**ijZz**gfY!U`Y[YUbX]b\&/fdcfUYVmfYZ/fYb\WfdUfU[fUd\g%t\fci[\%\$` Ug]ZZ ``mg**tU**YX`\YfY]b'''

% \$ 1^{1} D`U]bHjZg>Yb UbX'A Uh7 ci glbgžD'7'žA '7'žB '7'žUbX'G'7'žUbXD`U]bHjZZ K]``@Uf_]bg ghUY'h,]g Wi gY cZ UMjcb 'U[U]bgh8 YZ/bXUbhGWcc``6cUfX'cZ CfUb[Y' 7 ci bhm'i D`U]bHjZg 8U]X'8]bUbž'J]_'; cb[]X[ž?'F'8'žUbX'F'F'8''ghUY'h,]g WU]a ' U[U]bgh8 YZ/bXUbhGWcc``6cUfX'cZ =bX]Ub'F]j Yf'7 ci bhm'i D`U]bHjZZ 7 YbYf@]b_ž cb' W\UZcZ]hgY ZUbX']hga Ya Wfgž'ghUYgih,]g Wi gY'cZUMjcb 'U[U]bgh8 YZ/bXUbhgGWcc`` 6cUfX'cZC fUb[Y'7 ci bhmžGWcc``6cUfX'cZ8 i j U'7 ci bhmžUbX'GWcc``6cUfX'cZDUa ' 6YUW' 7 ci bhm'i 5``` D`U]bHjZgj gYY_' dfY']a]bUfm UbX' dYfa UbYbh']b4 bMijcbgž UbX' WU`Yb[Y'< 6%) +žUbX'UbmUMijcb Vm8 YZ/bXUbhggYY_]b[hc]a d`Ya Ybh]hVch, ZU/JU`m' UbX'UgUbd']YX'hc'h Ya '''

% % H\Y: ci fhYbh, 5 a YbXa YbhžYbZcfWUVY di fgi Ubhhc (& I 'G'7''Ÿ%, 'ž`

dfcj]XYgh\UhÎ @@`dfUhY`g\U``''''''XYbmhc`UbmdYfgcb`k]h\]b`]hgi^ff]gX]Mjcb`h\Y`Yei U` dfchWhjcb`cZh\Y`Uk dji

% & k < 6 · %) + · j]c`UYg h,Y 9ei U · DfcHWhijcb · 7 `U gY cZ h,Y : ci fHYbh. · 5 a YbXa Ybhhc h,Y i b]HX GłuYg 7 cbgijhi Hjcb VmX]gyhija]bUijb[· U[U]bghghi XYbhgʻUbX · dUFYbhgʻVUgYX cb gʻl žgyl i U cf]Ybhuijcbž[YbXYf]XYbhjhnž UbX HfUbg[YbXYf gʻluhi gžVch, · ZUJJU`m'LbX UgʻUbd`]YX''

%''^k < 6%) + k UgYbUMXX k]k 'k Ydi fdcgY'nc X]gMiJa]bUYYUbX \ Ugik YYZYMi cZX]gMiJa]bUHjb[`'U[U]bghigh XYbhgik \ c`\Uj Y`@, 6HE Ž`dUFYbhgiUbX 'ZLa] ma Ya Wfgž @, 6HE Ž`gh XYbhgžUbX @, 6HE Ž`dUFYbhgžgi VYMiJb['k Ya 'nc X]ZYfYbHjU UbX UAj YfgY 'fYUha Ybhcb 'k Y VUgigcZh Y]f`gH žgH i U`cf]YbHuHjcbž[YbXYff]XYbHjmžUbX hfUbg[YbXYff gHh gžUbX#cf`'k Y`gH žgH i U`cf]YbHuHjcbž[YbXYff]XYbHjmžUbX hfUbg[YbXYff`gHh gi cZh Y]f`dUFYbhgicf`ZLa] ma Ya Wfg'''

% (% < 6° %) + % Ua Yg UbX g][a U]nYg h YgY gh XYbhg UbX ZLa]]Yg]bj]HYg gWcc`cZ]V]U g HUWYfg UbX WLgga UHYg hc j]Yk 'h Ya 'Ug]bZf]cf (Ufa gh Y]f`cb[! HYfa '\YUh UbX k Y`!VY]b[\ddot{z} UbX XYb]Yg h Ya 'Yei U 'YXi WL]cbU 'cddcfhi b]h]Yg cb h Y VUg g cZh Y]f gH \ddot{z} gh i U 'cf]YbhU]cb [YbXYf]XYb]mžUbX HUbg YbXYf gH i g'

%) $| \langle \langle 6 \rangle \rangle$ + \Ug Wobhf] Vi HX hc h\Y VFMUHcb cZUb UbhJ!@, 6HE Ž WJa UHY]b h\Y di V]WgWcc g cdYfUHX Vm8 YZ4bXUbhg" = hZcdYfg U W/hi fY cZ g YbW UbX bcb! UWWdhUbW cZ @, 6HE Ž di XYbhg UbX @, 6HE Ž ZLa]]Yg UbX X]gWdi fU[Yg gWcc`` cZJVJU g Zica Wda d'njb['k]h\'h\Y]f cV][U]cbghc HYUhU` di XYbhg Yei U`m'

% * 1/ 8]g//[]a]bU]cb`VUg/X`cb`g/l ž`g/l i U`cf]Yb/U]cbž [YbXYf`]XYb/]mž UbX` HfUbg[YbXYf`g/Uh`gYUW`k UffUbhUh`YUgh\Y][\HYbYX`g//[] Hjbn'l`

)\$[.]

 $\% + \frac{1}{2} < 6^{\circ}$ %) + XcYg bch gYf Y Ubm Y[]h]a UY di fdcg/ź dYXU[c[]W cf ch Yfk]g/ź YhUcbY h Y Y WYX]b[`mdYfg Ug] Y cf W

6m Gja cbY7\f]ggž9ge"fil 6B %&(\$*& >cX]GJYYž9ge"fil 6B)%%%42 Gci h\Yfb@Y[U 7 ci bgYž=bW %&&-BK %&h 5j Ybi Y ; UjbYg]`Yž: `cf]XU' &*\$% f1)&L&+%, , -\$ gja cbYWf]gg4 gci h\Yfb`Y[U"cf['cX]'g]Y[Y4 gci h\Yfb`Y[U"cf[

5b[YUJ][]`ž'9ge"f] 6B ', *&+E 6U_YFA VV Ybn]Y@@D %%%6f]VVY``5j Ybi Y G]YY'%\$\$ A]Ua]ž: `cf]XU' ' % % f]\$)E+, -!, -\$\$ Ub[YUj][]`4 VU_Yfa VVYbn]Y'Vda`

6m[°]

6m 8 WfU8 UbXYbYU ž9ge"fl 6B - +, ' *\$E @5bXfYk G"F]Wfcž9ge"fl 6B - % +, E 6U_Yf A W Ybn]Y @@D () &:]Zh 5j Ybi Y B Yk Mcf_žB M%\$\$% f&%E* &*!(%\$\$ XYVFUXUbXYbYU 4 VU_Yfa V_Ybn]Y Wda UbXfYk 'f]Wfc4 VU_Yfa V_Ybn]Y Wda

> @La VXU@Y[U`8 YZ/bg/`` LbX`9Xi WJ]cb`: i bXž=bW'` Gci h. 7 YbHU F Y[]cbU`C ZZ]W ')\$\$`CU_`@Lk b`5j Y'žGY'')\$\$`` 8U`LbžHL`+)&\$* f&%(Ł&%!,),) dWd]``c4`La VXUY[U'cf[

<u>6m</u> DU`8"7U;]`cž9œ;"

@Ua VXU@Y[U'8 YZYbgY'' UbX'9Xi WJ]cb': i bXž=bW/ K YgYfb'F Y[]cbU'C ZJW/' (&&%K]'g\]fY'6ci `Yj UfXžGi]HY'&, \$'' @cg5b[Y'Ygž75'-\$\$%\$!')%&'' f&%'E', &!+*\$\$' _c`gcb4 `Ua VXUY[U''cf['

<u>6m</u> ? Y``@"C`gcbž'9ge"

@Ua VXU@Y[U`8 YZ/bgY`` UbX`9Xi WJr]cb`: i bXž=bVV A]Xk YgYfb`F Y[]cbU`C ZZ]VV *)`9''K UV_Yf`D`'ž`Gi]HY`&\$\$\$`` 7\]W[cž=@ž`*\$*\$% f1%&E**'!((%` WLImcf4`Ua VXUY[U'cf[`

<u>6m</u> 7 La]``U'6"'HLhcfž'9œ"'

F YopWhat ``mgi Va]hhyX h,]g&) h, XUmcZ>i `m&\$&&"

6m. >Ybb]Z/f[·]JU]`ž'9ge"^{···}

Gci h, Yfb Dcj Yfhm@Uk '7 YbhYf' A cbh[ca Yfnži5@"" *%\$(` Ybb]Z/f'j U[`4 qd`WbH/f'cf[`

6UW/fX] >UW/gcbž'9ge"fl 6B (++& Ł GM2thiA V7 cnži9qe"fl 6B %\$\$(-*)Ł Gua 6cn%29ge"fl 6B %\$%&% %k Gci h, Yfb Dcj Yfhm@Uk 7 YbhYf & 6]d/MhbY 6ci Yj UfXžGi]HY' +) \$

(\$\$ K Ub)]b[hcb 5j Ybi Y

A]La]ž: `cf]XU' ' %%

VUWFX]"/UVgcb4 gd`WbHYf"cf[` guthia Withal go Wolyf'cf[gua 'VcnX4 gd`WbhYf'cf[