



HUMS2006

F YgYUfVX `D`UW`a Ybłž`5 fng`UbX`GcWU`GWYbWg

HYfa `Cby`#`&\$&%

GWcc`cZ<i a Ub]hYg`UbX`@Ub[i U[Yg`#`I BGK `5 fng`UbX`GcWU`GWYbWg



7ci fgY`Cj Yfj]Yk

GHJZZ'7cbHJW`i8YHJ]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]]]m	@cWJhcb	D\cbY
B Uca]`DUf_]bgcb	b"dUf_]bgcb4 i bgk "YXi "Ui	VmUddc]bħa Ybh	' ' *`A 6	

GWXcc``7cbHJW`i`bZcfa Uh]cb

GWXcc``cZ<i a Ub]hYg`UbX`@Jb[i U[Yg

@cWJhcb. `GWXcc``C Z]W`žA cfj Yb`6fck b`6i]X]b[ž@Yj Y``&ž&),

C dYb]b[`<ci fg. `A cbXUm! : f]XUmž`- Ua `!`) da

D\cbY. `Ž*%&`-' ,) `%, %

: U! . `Ž*%&`-' ,) ; , +\$)

9a U]: [\U`4 i bgk "YXi "Ui](#)

7ci fgY'8YHJ]`g

7fYX]hDc]bfg '*`

Gi a a UfmicZh\Y'7ci fgY

h`h]g`Wci fgYžmci `k]`Yb[U[Y']b`U`fYU!`]Z`UWUXYa]WfYgYUfW`YI dYf]YbW`cb`U`a U`f`dfc`YWh`YX`Vm
I BGK `gWkc`Ufg]b`5fng/ `GcWU`GWYbWg"McI `k]`k cf_`k]h`U`YUX]b[`gWkc`Ufz`Wca d`Yh`cf][]bU`
fYgYUfW`UbX`k f]h`U`dUdYf`UVci hmcI f`UfYU`cZfYgYUfW`"

7ci fgY`@YUfb]b[`Ci hWca Yg

%` 9I YW hY`Ugg][bYX`fYgYUfW`hUg_g`]b`U`Wca dYhYbhž`dfcZYgg]cbU`UbX`hja Y`mia UbbYf
&" 7f]h]W`mifYZYWhcb`mci f`fYgYUfW`hUg_gžXYa cbgfU]h]b[`mci f`i bXYfghUbX]b[`cZmci f`fYgYUfW`
dfc`YWh]b`][\hcZgca Y`fY`Yj Ubh`]hYfUh`fY
' " F YZYWhcb`mci f`YI dYf]YbW`cZk cf_]b[`cb`U`fYgYUfW`dfc`YWh

HYUW]b[`GhfU]h[]Yg`

H\]g`WUgg`k]`W]YZmVY`hU [\h\h`fci [\`cbY!cb!cbY`cf`ga U``[fci d`a YYh]b[g`k]h`mci f`fYgYUfW`

5ggYgga Ybh

5ggYgga YbhHUg_g

5ggYgga YbhHUg_	K Y][\h	8i Y'8UH	Gh XYbh@YUfb]b[Ci hWta Yg'5ggYggYX
F YgYUfW 'DcfhZ`]c`) \$i	%- #\$(#&\$&%\$) . \$\$'DA	%ž'
F YgYUfW 'F Ydcfh	(\$i	%- #\$(#&\$&%\$) . \$\$'DA	&
F YgYUfW 'Gi dYfj]gcf 5ggYgga Ybh	%)\$i	Bch5dd`]WVY	%

5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'F YgYUfW 'DcfhZ`]c`

GhUfhXUH. 'K YY_%

@Yb[h. ' \$\$\$

8YHU]`g.

hYfbg\]d'dcfhZ`]c`fl \$\$\$k cXgŁ 'H\Y'dcfhZ`]c`g\ci `X'VY'UggYa V'YX'hłfci [\ci hłY'hYfa "'#ig\ci `X
XcW a Ybhmc i f'Yl dYf]YbWgždfc[fYgg'UbX'fYZYW]cbg'cZmc i f'F @dfc[fUa "'8cW a YbhU]cb`]bWł XYg
Zcfhb][\hmfYdcfngž'UbX'Yj]XYbW'cZfYgYUfW' i bXYftU_Yb"'#ig\ci `X'U'gc`]bWł XY'U'W]hWł'fYZYW]cb'cb

Gi Va]gg]cb' bchYg. 'J]U'9a U]

Hi fb]h]b'gYH]b[. 'H\]g']g' bchU'Hi fb]h]b'Ugg][ba Ybh

5ggYgga Ybh' . 'F YgYUfW\ 'Gi dYfj]gcf'5ggYgga Ybh

GHUfhXUH\ . 'Bch5dd']WV\Y

8YHU]`g.

Mci f'fYgYUfW\ 'gi dYfj]gcf'k]''UggYgg'mci f'dYfZ:fa UbW\ 'U[U]bghdfcj]XYX'W']Hf]U": YYXVUW_]b'k f]h]b['UbX
Vmfi Vf]W

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

BchUj U]UV`Y

F YWca a YbXYX`F Ygci fWg

BchUj U]UV`Y

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

Gh XYbhZYXVUW_k]`VY [UH\YfYX`j]U`Ya U]`UhihY`YbX`cZhY`Wci fgY`VmihY`Wci fgY`Wcbj Ybcf`"Gh XYbfg
k]`VY`fYei YghYX`hc`dfcj]XY`ZYXVUW`cb`hY]f`Ugg][bYX`dfc`YWhf]bWi X]b[`ei U]`micZ
gi dYfj]g]cb/k cf`cUX/hfUbgZfUV]`]micZfYgYUfVW`g_]`g/\ck`Yb[U[]b[`hYmZci bX`hY`Ugg][bYX`dfc`YVW`
H\Ymk]`U`gc`VY`fYei YghYX`hc`Wca a Ybhcb`hY`cj YfU`g`gf] Wi`fY`cZhY`Wci fgY`UbX`]hg`UggYgga Ybfg`"
: YYXVUW`cb`]bX]j]Xi U`dfc`YVWg`k]`VY`fY`ZfYX`hc`gi dYfj]gcf]`hc`[i]XY`hYa`]b`gf] Wi`f]b[`a UHf]U`Zcf
Z hi fY`<I A G&\$*\$`fYgYUfVW`]bhYfbg`": YYXVUW`cb`hY`Wci fgY`k]`VY`i gYX`hc`UX↑gha`cXYg`cZ
UggYgga Ybh`

Gi Va]gg]cb 'cZ5ggYgga YbhiHUg_g

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

Ʒmci 'YbWci bHYf'U'dfcV'Ya 'k \Yb'UH'Ya dh]b['hc'gi Va]hmc i f'Ugg][ba YbhiH'fci [\ 'Hi fb]h]bž'd'YUgY
HY'Yd\cbY'9I HYfbU'Gi ddcfhcb'- ' ,) " ' ' %cf'Ya U]'H'Ya 'cb'YI HYfbU'HY'f'gi 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'YUfI" Ʒmci
UfY'i bUV'Y'hc'gi Va]hmc i f'Ugg][ba YbhiXi Y'hc'U'Zi 'hk]H'Hi fb]h]b' mci 'a UmUdd'm'Zc'f'Ub'YI HYbg]cbž'Vi hmc i
a i ghfYHU]b' mci f'h]W_Yhbi a VYf'Z'ca '9I HYfbU'Gi ddcfhfU'cb['k]H'UbmcH'Yf'f'Yj UbhXcW a Yb'g'k'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'YI HYbg]cb'Udd']W]h]cb" Ʒmci 'Ya U]'9I HYfbU'Gi ddcfhmci 'k]
Ui 'ca UH]W]m'f'YW]j Y'U'h]W_Yhbi a VYfž'Vi h]Zmci 'HY'Yd\cbY' mci 'k]'b'Y'X'hc'gd'Y'W]W]m'Ug_ 'Zc'f'cbY"
Hi fb]h]b'U'gc'dfcj]XYg'i dXUH'g'cb'H'Y]f'gm'g'Ya 'g'h]i g'cb'Hk]H'Yf"

; YbYfU'mž'UggYgga YbhiHUg_g'a i ghVY'gi Va]H'Y'X'Y'Y'W'f'cb]W]m'j]U'Y]H'Y'f'Hi fb]h]b'cf'U'A ccX'Y
Ugg][ba YbH' 'b]bg]H'Ub'W'g'k \YfY'H'g]g' bchidcgg]V'Yž'hk]'VY'g'H'Y'X'cb' mci f'Wci fgY'g'A ccX'Y'g]H'k]H
U'HY'fbUH] Y'gi Va]gg]cb'XYHU]g"

: cf]bZ'fa UH]cb'cb'\ck 'hc'gi Va]h]Ugg][ba Yb'g'cb]b'Y'j]U'A ccX'Y. \H'hdg. #gh XYb'hi bgk "YXi "Ui #ck!
gi Va]h]Ugg][ba Yb'ha ccX'Y

5 WUXYa]W< cbYgmiUbX`D`U[]Uf]ga

D`U[]Uf]ga]g`i]b[`hY`k cfXg`cf]XYUg`cZcH.Yfg`UbX`dFYgYbh]b[`hYa`Ug`mci`f`ck`b`" #WUb`hU`Y`a`Ubm`Zcfa`gZ`Zca`XY`VYfUHY`WX`YU]b[`hc`UW]XYbhU`mWc`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[`WU]Y[cf]Yg.

7 cdm]b[.`i`g]b[`hY`gUa`Y`cf`j`Yfmg]a]Uf`k`cfXg`hc`hY`cf][]bU`hY`hcf]XYU`k`]h`ci`hUW`bck`YX[]b[`hY`gci`fW`cf`i`g]b[`ei`cH]cb`a`Uf`g`"H\`g`U`gc`Udd`Y]g`hc`]a`U[YgZ`Ufh`UbX`XYg][`b`dfc`YWgZ`Ug`k`Y`Ug`dFYgYbhU]cbg`k`YfY`gca`YcbY`dFYgYbh]`Ubch`Yf`g`]XYUg`cf`k`cfXg`k`]h`ci`hWYX]h`

#Uddfcdf]UHY`dUfUd`fUg]b[.`7`U]b[]b[`U`Zk`k`cfXg`UbX`d`fUgYg`k`Y`a`cghm`fY]b]b[`hY`cf][]bU`g`fi`W`fY`UbX`#`f`dfc[`fYgg]cb`cZ]XYUg`cZ`hY`cf][]bU`Z`UbX`]bZcfa`U]cb`k`]h`ci`hUW`bck`YX[Ya`Ybh`H\`g`U`gc`Udd`Y]g`]b`dFYgYbhU]cbg`k`YfY`gca`YcbY`dUfUd`fUgYg`Ubch`Yf`g`]XYUg`cf`k`cfXg`k`]h`ci`hWYX]h`UbX`hc`d]YW]b[`hc[Y`h`Yf`ei`c`h`g`UbX`dUfUd`fUgYg`]bhc`U`bYk`k`c`Yz`k`]h`ci`hUddfcdf]UHY`fY`ZYf`bW]b["

7 c`i`g]cb.`k`cf_]b[`k`]h`c`hYfg`Vi`hdUgg]b[`cZ`hY`k`cf_]Ug`U`dYfgcb`g`]bX]j`]Xi`U`k`cf_]`7`c`i`g]cb`U`gc`]bW`i`XYg`dfcj`X]b[`mci`f`k`cf_]hc`Ubch`Yf`g`h`XYbh`VY`Zc`fY`hY`Xi`Y`XU]Y`Zc`f`Zc`f`hY`di`fdcgY`cZ`hY`a`d`U[]Uf]g]b[`Uh`Ubmi]a`Yz`dUm]b[`Ubch`Yf`dYfgcb`hc`dYf`Zc`fa`Ub`UWXYa`]W]Ug`_`Z`gh`U`]b[`cf`UW`ei`]f]b[`Ubch`Yf`dYfgcb`g`UWXYa`]Wk`cf_]UbX`Wc`dm]b[`]h`c`Z`Yf]b[`hc`Wc`a`d`Y`h`Ubch`Yf`dYfgcb`g`k`cf_]cf`gY`_]b[`dUma`Ybh`Zc`Wc`a`d`Y]b[`UWXYa`]Wk`cf_]`

#Uddfcdf]UHY`W]U]cb.`7`]h]b[`gci`fW`g`k`k`]W`Uj`Y`bch`VYYb`fYUX`Z`k`]h`ci`hUW`bck`YX[]b[`hY`gY`Wc`bXUfm`gci`fW`Zca`k`k`]W`_`bck`YX[Y`cZ`hY`a`U`g`VYYb`c`fU]bYX`

8 i`d`]WU]cb`f]gY`Zd`U[]Uf]ga `E`gi`Va`]h]b[`mci`f`ck`b`k`cf_]b`k`c`Y`cf]b`dUf]Z`k`YfY`]h`Ug`dFY`]ci`g`m`VYYb`dFYdUfYX`cf`gi`Va`]hYX`Zc`f`Ubch`Yf`UggYgga`Ybhcf`Wc`i`fgY`Uhi`BGK`cf`Ubch`Yf`i`b]j`Yfg]h`

7 cffYW]fYZYfYbW]b[`dfUW]W]g.

- DUfUd`fUg]b[`Zgi`a`a`Uf]g]b[`Z`YggUm`k`f]h]b[`UbX`h]a`Y`a`UbU[Ya`Ybh`
- 5ddfcdf]UHY`i`gY`cZ`UbX`U]h]f]Vi`h]cb`Zc`f`U`fU]b[Y`cZ`a`U]h]f]U`g`]bW`i`X]b[`hY`h]`]a`U[YgZ`Zc`fa`i`UY`UbX`Wc`bW`d]g`"

#X]j`]Xi`U`Ugg]gh`UbW`]g`Uj`U]UV`Y`cb`fYei`Ygh`Zca`H\Y`@YUfb]b[`7`YbhY`f`h`h`d`#`k`k`"Wi`bgk`"YXi`"Ui`#`G`h`XYbh]`UfY`U`gc`fYa`]bXYX`h`Uh`W]fY`Z`h]a`Y`a`UbU[Ya`Ybh]g`Ub`]a`dcff`Ubhd`Ufhc`Z`gh`Xmi`UbX`cbY`cZ`hY`]XYbh]Z`YX`W]i`gYg`cZ`d`U[]Uf]ga]g`d`cc`f`h]a`Y`a`UbU[Ya`Ybh`G`h`XYbh]g`g`l`ci`X`U`ck`gi`Z`W]Y`bh]h]a`Y`Zc`f`fYgYUfW`Z`X`fU`Z]b[`UbX`d`fcd`Yf`fY`ZY`fY`bW]b[`c`Z`gci`fW`g`]b`dFYdUf]b[`U`UggYgga`Ybh]h]a`g`

I BGK `@]VfUfmU`gc`U`g`hY`9`@G9`hc`Uj`U]UV`Y`hc`Ugg]gh`mci`k`]h`mci`f`gh`Xmi`Uhi`BGK`"9`@G9`]g`XYg][`bYX`hc`]bhc`Xi`W`bYk`g`h`XYbh]hc`gh`Xm]b[`Uhi`BGK`Vi`h]h`Wb`U`gc`VY`U`[`fYUhfY`ZYg`Yf`Xi`f]b[`mci`f`

- i bXYfghUbx'mci f'f][\hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wcdmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5Ww'dhUV'Y'I gY'cZ I BGK '⇒H'F Ygci fW'g'Dc`]Wm
- VY'Uk UfY'cZh'Y'ghUbxUfXg'cZVY\Uj]ci f'YI dYW'X'cZYj Yfmcby'j]b'h'Y'I BGK 'Wca a i b]m
- `cWJh'gYfj]Wg'UbX'j]bZcfa Uh]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh'YgY'UfYUg'k]`VY'ZJa]]Uf'hc'mci ž'ch'Yfg'k]`VY'byk " "; U]b]b['U'gc`X'i bXYfghUbx]b['cZU`h'Y fY'UH'X'UgdYW'g'cZ9@G9'k]`Y'd'mci 'a U_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\hhd.##ji V'YWf i \]XYg" \]VfUfm'i bgk "YXi "Ui #' \]gY#JVci h' \]gY](#)

5 WUXYa]WbZcfa Uh]cb

: cfYggYbh]U`gh XYbh]bZcfa Uh]cb fY`Uh]b[`tc.

- fYei Yghg`Zcf`YI H`bg]cb/
- `UhY`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<YU`h`UbX`GUZYmidc`]WYg/
- YI Ua]bUh]cb`dfcW`Xi fYg/
- gdYW]U`W`bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]mUbX`X]gUV`]m/
- UbX`c`hYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\ftdg.#k k k "Uftg"i bgk "YXi "Ui #W ffYbh\]gh XYbh\]UWUXYa \]W\]bZcfa Uh\]cb#dfchW`g`\[i \]XY`\]bYg#](#)

⇒a U[Y`7fYX]h

GmbYf[]Yg`]b`Gci bX`&\$%*`

7F ⇒CG

7F ⇒CG`Dfcj]XYf`7cXY.`\$\$\$- , ;

5W_bck`YX[Ya Ybhcz`7ci b]fm

K Y`UW_bck`YX[Y`hY`6YXY[U`dYcd`Y`k`c`UfY`hY`hfUX]h]cbU`W`ghcX]Ubg`cZ`hY`UbXg`cb`k` \]W`I`BGK`
? Ybg]b[`hcb`W]a`di`g`]g`cW]hYX"