



**ARTS3810**





# 5ggYgga Ybh

: cf'U``]bZcfa UhcbžgYY'A ccXY"

## 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UHŸ	Gh XYbh@YUfb]b[ Ci hWta Yg'5ggYggYX
A YX]U'UfhjWY#6`c[ `	' \$l	&, # \$* #&\$%- '%%) - `DA	%ž*
; fci d'Dfc YWñ	' \$l	\$&#\$, #&\$%- '%%) - `DA	&ž ž( ž)
5gg][ ba Ybh	( \$l	\$- # \$, #&\$%- '%%) - `DA	&ž*

## 5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'A YX]U'UfhjWY#6`c[

GHUfhXUHŸ. 'Bch5dd]WUV'Y

@Yb[ h. `% \$ \$'k cfXg

8YHU]`g. Gh XYbŸgi Va ]hU`% \$ \$!k cfX`k f]hŸb`Ugg][ ba Ybhia cXY`YX`cb`hŸY`ghmY`cZU`a YX]U`ci hYhcf`V`c[

k ]`fYw]j Y`k f]hYb`ZYXVUW`UbX`U`bi a Yf]WJ`[ fUXY`k ]h]b`hYb`k cf\_]b[ `XUmg`cZgi Va ]gg]cb`"H\Y`ZYXVUW`  
g\YYh#i Vf]Wk ]`VY`Uj U]UV`Y`hc`mci `UhihY`ghUfncZhY`Wci fgY`gc`h`Uhmci `W]b`k cf\_]hc`k UfXg`gdYV]ZYX  
ghUbXUfXg

## 5 hYbXUbW F Yei JfYa Ybhg

ቁ'5F HG' , %\$z'gYa JbUf'UhhYbXUbW UbX'hY'Wca d'Yh'cb'cZ'hY'cb'JbY'Wca dcbYbhg'UfY'Wca di `gcfm'5  
 gh XYbhk \c'UhhYbXg''Ygg'hUb'Y][ \hmidYf'WbhicZ'hY'WUggYg'k Jh'Jb'U'Wci fgY'a UmVY'fYZ gYX'Z'bu'  
 UggYgga Ybh'

## 7 ci fgY'GWYXi `Y

[J Jyk WUgg'ha YhUVY](#)

Hja YhUVY'

8UH	HmdY	7cbhYbh
K YY_%' ' >i bY!'+'>i bY		GYY'A ccXY
K YY_&.%\$>i bY!'%( >i bY		GYY'A ccXY
K YY_' .%+'>i bY!'&% >i bY		GYY'A ccXY
K YY_(.'&(>i bY!'& >i bY		GYY'A ccXY
K YY_) .%>i `m!) >i `m		GYY'A ccXY
K YY_*.' , >i `m! %&>i `m		GYY'A ccXY
K YY_+.%) >i `m! %->i `m		GYY'A ccXY
K YY_,' &&>i `m! *>i `m		GYY'A ccXY
K YY_-' &->i `m! & 5i [i gh		GYY'A ccXY
K YY_%.') `5i [i gh!'- 5i [i gh		GYY'A ccXY

# 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

⊕`&\$% ž'gh XYbhZYXVUW`gi [ [ YghYX`hUhY`Wci fgY`a ] [ \hVYbY]hZca`i g]b[ `hY`hja Y`X]ZYfYbhmž`Ug`  
' !\ci f`gYa ]bUfg`k YfY`bchU`k Umg`k \c`midfcXi W]j Y" =bck`i gY`bYk`"YUfb]b[ `hYWbc`c[ mhc`V`YbX`U`  
a ]l hi fY`cZJWY!hc!ZJW`UbX`cb`]bY`"YUfb]b[ `UW]j ]hYg`UbX`gWXYXi`"YX`&!\ci f`WUggYg"

⊕`&\$%\* ž'gh XYbhZYXVUW`gi [ [ YghYX`hUha cfY`hja Y`VY [ ]j Yb`]b`WUgg`Zcf`hY` [ fci d`dfc`YW`hdfc`cgU`ž`Ug`  
gh XYbhg`bchYX`hUh]h`k Ug`cZ`Yb`X]Z]W`h`hc`cf[ Ub]gY`hcc`a i W`hja Y`ci hg]XY`cZ`WUgg`"A cfY`hja Y`Ug`g]bW`  
VYYb`UXXYX`hc`h]g`Y`Ya YbhXi f]b[ `ci f`ZJWY!hc!ZJW`gYgg]cbg" Gh XYbhg`U`gc`gi [ [ YghYX`hUhY`m] Yfm`  
a i W`Yb`emYX`hY`a YX]U`UbX`V`c [ [ ]b[ `k cf`\_g\cdg`UbX`Ug`gi W`h]g`Ug`U`gc`VYYb`a cfY`g] [ b]Z]Wbhm`  
]bV`f`dcf`U`hY`]bhc`hY`Wci fgY" ⊕`&\$%+ž`k Y`k cf`\_YX`fYU`m\UfX`hc [ YhUh`YUgh`• `cZ`hY`Wc`c`f`hg`U`f`h]WYg`  
di V`]g`YX" H\Y`chY`f`g] [ b]Z]Wbhd]YW`cZ`ZYXVUW`k Ug`hUhgh`XYbhg`gUk`a Yf]h]b`hY`k f]hY`b`ghU`hYa Ybhcz`  
WldUV`]hYgž`Vi hX]X`bchYb`emhY`dcf`hZ`]c`cZ`Yj ]XYbW`V]bXYf`gi Va ]gg]cb" H\g`Ug`VYYb`fYa`cj YX`Zca`  
hY`Wci fgY`UbX`bck`]h]g`↑ gh`hY`k f]hY`b`ghU`hYa YbhY`Ya Ybh`

⊕`&\$%+ž'gh XYbhg`gi [ [ YghYX`hUhY`W]h]W`fYZYW]cb`g\ci`X`fY`U`h`hc`hY` [ fci d`dfc`cgU`ž`h`i`g` [ ]j] b[  
gh XYbhg`Ub`c`ddcf`h`b]mhc`YI`hY`bX`cb`U`dfc`YW`h`h`Uh`UX`d`UmYX`gi W`U`\_Ymfc`Y`]b`hY`Wci fgY" : i f`hY`fz`  
Yb[ U[ ]b[ `k ]h`U`"ghfYUa`"YUfb]b[ `ci hWca`Yg`Zcf`hUh]ZbU`UggYgga`Ybhk`Ug`XY`Ya YX`YI`W`gg]j Y" H\Y`Z]bU`  
UggYgga`Ybh`bck`fY`U`h`g`hc`]bX]j`]Xi`U`YI`dYf]YbW`g`UbX`W]h]W`fYZYW]cbg`cZ`hY` [ fci d`dfc`YW`ž`UbX`k`]" VY`  
fYgh]WYX`hc`U`\UbXZ`"cZ`ghfYUa`"YUfb]b[ `ci hWca`Yg`Ug`XYW]XYX`Vm`hY`Wc`c`f`h`⊕`&\$% ž`h`k`Ug`gi [ [ YghYX`  
hUhY`Wci`b]Ybcf`gY`YW`h`hY`ghfYUa`"YUfb]b[ `ci hWca`Yg"

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[`h`c`gi`Va`]h`mci`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`  
H`Y`d`\`cb`Y`9I`H`fb`U`Gi`ddcfh`cb`-`,`),`"`,`"`,`"`,`%`cf`Ya`U]`h`Ya`cb`YI`H`fb`U`H`h`gi`ddcfh`4`i`bgk`"YXi`"Ui`"Gi`ddcfh`  
\`ci`fg`UfY`,`.\$\$Ua`-`-%\$.\$\$da`cb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`cb`k`YY`YbXg`f`l`\*)`XUmg`U`m`Y`U`f`l`"Ẓmci`  
UfY`i`bUV`Y`h`c`gi`Va`]h`mci`f`Ugg][`ba`Ybh`Xi`Y`h`c`U`Z`U`h`k`]h`Hi`fb]h]b`mci`a`Um`U`dd`m`i`Z`f`Ub`YI`H`bg]cb`z`Vi`h`mci`  
a`i`gh`f`Y`h`U]b`mci`f`h]W`Y`h`bi`a`VY`f`Z`ca`9I`H`fb`U`Gi`ddcfh`f`U`cb[`k`]h`Ub`m`c`h`Y`f`f`Y`j`Ub`h`X`c`W`a`Y`b`h`g`l`h`c`  
]b`Wi`XY`U`g`Y`j`]X`Y`b`W`h`c`gi`ddcfh`mci`f`YI`H`bg]cb`U`dd`]W`h]cb"Ẓmci`Ya`U]`9I`H`fb`U`Gi`ddcfh`mci`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.

7 cdm]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[ Ygž`UfhUbX`XYg][ b`dfc`YWgž`Ug`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]h`UbX`hc  
d]YW]b[ `hc[ YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk `k \c`Yž`k ]h`ci hUddfcdf]UHY`fYZYfYbW]b[ "

7 c`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\_]7 c`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'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'jb'h'Y'I BGK 'Wc'a a i b]m
- `cWJh'gYfj ]W'g'UbX'jbZcfa 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'YW'i \]XYg" \]VfUfm'i bgk "YXi "Ui #' \]gY#JVci h' \]gY](#)

5 WUXYa ]WbZcfa Uh]cb`

: cfYggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[ `rc.

- fYei Ygh]Zc`fYI hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I BGK `<YU`h`UbX`GUZY`mdc`]WYg/

