



ARTS3510

5Xj UbWX'; Yfa Ub'5

HYfa 'H\fYY'##'&\$&\$

7ci fgY`Cj Yfj JYk

GhUZZ)cbHJWk8(YHJhg

k

Zonjvhoofc

7 ci fgY'8YHJ`g

7 fYX]hDc]bng *`

Gi a a UfmicZ\hY'7 ci fgY

h`h]g`Vci fgY'mci`k`j`Vcbgc]XUHY`UbX`YI`HYbX`mci`f`g_]`g`b`]ghYb]b[`hc`z`gdYU_]b[`z`fYUX]b[`UbX`k`f]h]b[
; Yfa Ubz`k`h`U`X]gh]bVhZcW`g`cb; Yfa Ub`gcWY`hmiUbX`W`h`fY`"@YUfb]b[`UW]j`]hYg`]bW`i`XY`UbU`mg]b[
Vca`d`YI`hY`hg`cb`VcbhYa`dcfUfmi`cd]Wg/\c`X]b[`X]gW`gg]cbg`cb`dfYdUfYX`gi`V`Y`Wg`k`h`Z`ck`gh`XYbngz`
UbX`Vca`a`i`b]W]h]b[`cb`U`fUb[`Y`cZgdYW]Z`YX`gi`V`Y`Wg`fY`U]h]b[`hc`]ggi`Yg`cZ`h`Y`Yj`YfmXUmVi`hU`gc`hc`
VfcUXYf`gcW]U`z`dc`]h]W]z`UbX`W`h`fU`ei`Ygh]cbg`"Mci`k`j`U`gc`YI`dUbX`UbX`\cbY`ja`dcfUf]bighi`Xmig_]`g`
gi`W`Ug`W`ccg]b[`Uddfcdf]UHY`YUfb]b[`ghfUHY[`]Yg`za`cb]hc]f]b[`UbX`UXj`UbV]b[`mci`f`ck`b`dfc[`fYgg`"

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

%`5bU`mgY`Uf[`i`a`Ybng`]b`hY`hg`XYU`]b[`k`h`VcbhYa`dcfUfmi`dfcV`Ya`g`h`UhUfY`fY`Yj`Ubhlc`
; Yfa`Ubcd`l`cbY`Vca`a`i`b]h]Yg`"
&`8YVUHY`cb`dfYdUfYX`gi`V`Y`Wg`]b; Yfa`Ub`k`h`U`XY[`fY`cZ`Zi`YbWm]UbX`g`dc]b]UbY]m`
'`" `DfcXi`W`WYUfz`XYHJ]YX`k`f]h]b`UbX`gdc`_`Yb`X]gW`gg]cbg`cb`U`k`]XY`fUb[`Y`cZ`gi`V`Y`Wg`]g]b[
`Y`Z`Y`W]j`Y`[`fUa`a`U]h]W]`g]h]f`h`fYg`UbX`Uddfcdf]UHY`j`c`W]Vi`U`fm`
(`" `GY`Za`cb]hc]f`YUfb]b[`dfc[`fYgg`UbX`]XYb]h]Zm]UfYUg`]b`b`Y`X`cZ]a`dfcj`Ya`YbhUbX`#`f`fYj`Yk`"
)`" `XYb]h]Zm]UbX`W`ccgY`gi`]h]U`V`Y`YUfb]b[`ghfUHY[`]Yg`hc`Vcb]h]bi`U`m]Yb`l`UbW`UbX`YI`dUbX`U`Vci`]fYX`
g_]`g`"

HYUWX]b[`GhfUHY[`]Yg`

F`U]h]cbU`Y`Zc`f`h`Y`h`W`i`g]cb`cZ7`cbh]bh]UbX`HYUWX]b[`5ddfcUWX

5Xj`UbW`X; Yfa`Ub`5`]g`XYg][`bYX`Zc`f`gh`XYbng`k`h`U`X]`UbW`X`Yj`Y`cZ; Yfa`Ub`Ub[`i`U[`Y`dfcZ]W]YbWm]UbX`
Zc`fa`g`dUfmcZ`h`Y`V`fY`Ub[`i`U[`Y`dfc[`fUa`_]b; Yfa`Ub`G`h`X]Yg`" `h]gYfj`Yg`Ug`h`Y`H`]fX`M]Uf#`]fgh]h`fa`
Vci`fgY`]b`h`Y`h`f`c`Xi`V`c`fm]G`fYUa`UbX`h`Y`G`Y`V`b`X`M]Uf#`]fgh]h`fa`Vci`fgY`]b`h`Y`h`h`fa`YX]UHY`G`fYUa`" `h`
U`gc`gYfj`Yg`Ug`h`Y`M]Uf`%`Yb]fmi`c`gh`XYbng`k`h`Yei`]j`U`Ybh`_`bck`YX[`Y`cZ`h`h`fa`YX]UHY; Yfa`Ub`6`" `h`
Vcbgc]XUHY`g`UbX`YI`HYbXg`g_]`g`b`]ghYb]b[`hc`z`gdYU_]b[`z`fYUX]b[`UbX`k`f]h]b[; Yfa`Ubz`k`h`U`X]gh]bVh`
ZcW`g`cb`h`Y`W`h`fU`UbX`dc`]h]W]`l`g]c]fmi`cZa`cXYfb]XUm; Yfa`Ubm]@`UbXYg_]bXYO`H`Y`h`cd]Wg`gY`W`W`X`Zc`f`
h`Y`Vci`fgY`j`Ufm]Zca`m]Uf`hc`m]Uf`F`Yj`Yk`g`cZ[`fUa`a`Uf`UbX`k`f]h]b[`g_]`g`k`j`VY`VcbXi`W`W`X`h`fci[`l`ci`h`
h`Y`h`fa`"

HYUWX]b[`GhfUHY[`]Yg`

H`Y`Ub[`i`U[`Y`cZ]bg]h]f`W]cb`]g`dfYXca`]b]Ub]h]m; Yfa`Ub`fk`h`h`Y`YI`W`dh]cb`cZgca`Y`YI`d`Ub]h]cb`cZ`
[`fUa`a`U]h]W]`Z`Y`U`h`fYg`E`gc`h`U`h]gh`XYbng`XYj`Y`cd`h`Y`f`]ghYb]b[`g_]`g`"@Y`W`i`fY`Vcb]h]bh]g`gd`]hVY`h`YYb`
fYj`Yk`]b[`]`fUa`a`Uf`UbX`h`Y`dfYgYb]U]h]cb`cZ`W`h`fU`a`U`h]f]U`V`W`j`YfYX`]b`h`Y`Vci`fgY`" `H`Y`h`h`f]U`g`dfcj`]XY`
YI`h`bg]j`Y`cddcf]h`b]h]Yg`hc`]ghYb`hc`z`fYUX`z`gdYU_]`UbX`k`f]h]b; Yfa`Ub`"7`Uggfcca`X]gW`gg]cbg]b; Yfa`Ub`
dfcj`]XY[`fUa`a`Uf`UbX`j`c`W]Vi`U`fm]c`XYj`Y`cd`h`Y`a`Yg`fY`Yj`Ubhlc`h`Y; Yfa`Ub]gdYU_]b[`gcW]Y]h]Yg`cZ`
9i`fcdY`UbX`dfcj`]XY`cddcf]h`b]h]Yg`Zc`f`gh`XYbng`hc`YI`dfYgg`h`Y`a`gY`j`Yg`]b`fY`U]h]cb`hc`h`Y]f`ck`b`
VUW_]`fci`bXg`UbX`YI`dYf]YbW]g`UbX`k`h`fY[`UfX`hc`h`Y]f`gcW]c!`W`h`fU`Ybj`]fcb`a`Ybh`G`h`XYbng`
Vca`a`i`b]W]h]b]Zc`fa`U]h]cbz`]XYUg`UbX`Uf[`i`a`Ybng`Vcb`c`fU`m]UbX`]b`k`f]h]b[" `H`Y`m[`U`h`Y`f`UbX`dfcW]gg`
]b]Zc`fa`U]h]cb`Zc`a`U`j`Uf]YmicZdUdYfz`Ui`X]c]j`]gi`U`UbX`Y`Y`W`fcb]W]gci`f`W`g`" `H`Y`mi`gY`#`Y`Z`Y`W]j`Y`mVch`Ug`U`
a`YUbg`cZ`Vca`a`i`b]W]h]cb`UbX`Ug`Ub`U]X`hc`YUfb]b[`Ug`k`Y`Ug`hc`XYa`cbghfUHY`gca`Y`UV`]m]Ug`Ub`
]bXYdYbXYbh`YUfbYf`

5ggYgga Ybh

5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K Y][\h	8i Y'8UH	Gh XYbh@YUfb]b[Ci hWta Yg'5ggYggYX
Dcfhzc`]c`) \$i	- 'CWV' '* 'Bcj	%z&Z ž(ž)
HYgh	' \$i	%Bcj	%z ž(
GdYU_]b['5ggYgga Ybh	&\$i	% 'Bcj	%z&Z

5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'Dcfhzc`]c`

GHUfhXUH. 'Bch5dd`]WVY

@Yb[h. '%\$a bg'zcfYUWX 'dUfh

8YHU]`g.

Dcfhzc`]c`Wcbg]ghcZtk c'dUfhg'k \]WX 'UFY'gi Va]HYX'cb'hY'@A G'cj Yf'hY'Wti fgY'cZhY'hYfa "'9UWX 'dUfhk]`
fYei]fY'WU"'&\$a bg'k cf_z]bW' X]b['g\cfhUbgk Yfza i 'hd'Y'Wc]W'UbX'cdYb!YbXYX'ei Ygh]cbgž'g\cfh
k f]h]b['HUg_g'UbX'fYZYW]cb'cb'gh XYbhgfYUfb]b['bYYXg'UbX'dfc[fYgg"

: YYXVUW_c'b'YUWX 'dUfhj]U'a Uf_]b['fi Vf]Wk]h]bX]]Xi U'Wta a Ybhg"

5ggYgga Ybh& 'HYgh

GHUfhXUH. 'Bch5dd`]WVY

@Yb[h. '* \$a bg

8YHU]`g.

H\]g'hYghk]`fWU"'* \$'a]bi hYgk'k]`Wcj Yf[fUa a Ufz`]ghYb]b['UbX'fYUX]b['Wta dfY\Ybg]cb'Ug'k Y`Ug
k f]h]b["

: YYXVUW_]]U['YbYfU'WUgg'X]gW'gg]cb"'A Uf_YX'hYghg'Uj]U]UV'Y'zcf'gh XYbhg'hc`cc_'UH"

5ggYgga Ybh' . 'GdYU_]b['5ggYgga Ybh

GHUfhXUH. 'Bch5dd`]WVY

@Yb[h. '+!, a bg'dYf'gh XYbh[fci d

8YHU]`g.

5 hYbXUbW F Yei]fYa Ybhg

Gh XYbhg UfY gfcfb[mYbWci fU[YX hc UthYbX U WUggYg UbX fYj]Yk YWfi fY fYWcfX]b[g"

7 ci fgY GWXYXi Y

[J Yk WUgg ha YhUV Y](#)

Hja YhUV Y

8UhY	HmdY	7cbhYbh
K YY_%%(GYdhYa VYf! %GYdhYa VYf	Hcd]W	6Yfi ZgV]XYf
K YY_&.&%GYdhYa VYf! &)GYdhYa VYf	Hcd]W	6Yfi ZgV]XYf
K YY_'.&.'GYdhYa VYf! &C Wc VYf	Hcd]W	: Øf]a a Yfi bX Yk]]
K YY_(.)C Wc VYf!'- C Wc VYf	Hcd]W	Di V]W<c`]XUmžbc YWfi fYž\ca Yk cf_Ugg][ba Ybh : Øf]a a Yfi bX Yk]]
	5ggYgga Ybh	DcfhZc`c`DUfhžXi Y'-C Wc VYf`%\$. \$\$žj]U'7 ci fgY A ccX`Y`dU[Y"
K YY_).%&C Wc VYf!`%* C Wc VYf	Hcd]W	? Ui Zbž_Ui Zbž_Ui ZYb
K YY_*.%C Wc VYf!`& C Wc VYf	@YWfi fY	6fYU_K YY_!!`bc WUggYg
K YY_+.&*C Wc VYf!`\$ C Wc VYf	Hcd]W	? Ui Zbž_Ui Zbž_Ui ZYb
K YY_).&Bcj Ya VYf!`* Bcj Ya VYf	Hcd]W	9bX`W`l fUi V
	5ggYgga Ybh	DcfhZc`c`=Xi Y`*`Bcj Ya VYfž%\$. \$\$j]U'7 ci fgY A ccX`Y`dU[Y
K YY_)-Bcj Ya VYf! % Bcj Ya VYf	Hcd]W	9bX`W`l fUi V
	5ggYgga Ybh	HYghž%%Bcj Ya VYf Xi f]b[`hi hcf]U`ha Ygž*\$a bg"
K YY_%\$.%*Bcj Ya VYf! &\$Bcj Ya VYf	Hcd]W	B UØf]W`B Uhi f
	5ggYgga Ybh	GdYU_]b[`UggYgga Ybh Xi f]b[`hi hcf]U`ž% Bcj Ya VYf"

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

5gdY_h`B Yi `6%Z`@\f`!`i bX`5fVY]hgVi WkZHY]`&Z`5i X]c`7 8`f+ , ` %&* \$) \$%- +L!!`Uj U]UV`Y`UhkY
I`bj Yfg]mi6cc_gtcfY"

F YWca a YbXYX`F Ygci fWg

GYY`A ccXY`Wci fgY`k YVg]hY"

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

7ci fgYg`UfY`dYf]cX]Wj`mfYj]Yk YX`UbX`ghi XYbhg`ZYXVUW_]g`i gYX`hc`]a dfcj Y`hYa`": YXVUW_]g
[UhYfYX`Zfca`ghi XYbhg`i g]b[`a m9I dYf]YbWY" Ghi XYbhg`UfY`YbWci fU[YX`hc`Wca d`Yh`hY]f`gi fj Ymg`Vm
UWYgg]b[`hY`dYfgcbU`]gYX`k YV`]b_]]U`hY`A ccXY`Wci fgY`g]hY"

Gi Va]gg]cb`cZ5ggYgga YbhiHUg_g

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

≠mci`YbWci bHYf`U`dfcV`Ya`k` \Yb`UH`Ya` dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybhi`h`fci`[`\`Hi`fb]h]b`z`d`Y`Ug`Y`
HY`Yd`cb`Y`9I`HY`fb`U`Gi`ddc`fh`cb`-`,`,)``''`%`cf`Ya`U]`h`Ya`i`cb`YI`HY`fb`U`HY`hgi`ddc`fh`4`i`bgk`"YXi`"Ui`""`Gi`ddc`fh`
`l`ci`fg`UfY`,`.\$`\$Ua`-`-%`\$.\$`\$da`i`cb`k`YY`_X`Umg`U`bX`-`.\$`\$Ua`-`-`).`\$`\$da`i`cb`k`YY`_Y`bX`g`f`l`*)`X`Umg`U`m`Y`U`f`l`"≠mci`
UfY`i`b`UV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybhi`Xi`Y`hc`U`Z`Ji`h`k`]h`Hi`fb]h]b`mci`i`a`Um`Udd`m`Z`f`U`b`YI`HY`bg]cb`z`Vi`hmc`i`
a`i`gh`f`Y`h]b`mci`f`h]W`Y`hbi`a`VY`f`Z`ca`9I`HY`fb`U`Gi`ddc`fh`f`U`cb[`k`]h`U`b`m`c`h`Y`f`f`Y`Y`U`b`h`X`c`W`a`Y`b`h`g`k`hc`
]b`Wi`XY`U`g`Y`j`]X`Y`b`W`hc`gi`ddc`fh`mci`f`YI`HY`bg]cb`Udd`]W`h]cb`"≠mci`Ya`U]`9I`HY`fb`U`Gi`ddc`fh`mci`k`]`
Ui`hc`a`U`h]W`U`m`f`Y`W`]j`Y`U`h]W`Y`hbi`a`VY`f`z`Vi`h]Z`mci`HY`Yd`cb`Y`mci`k`]`b`Y`Y`X`hc`gd`Y`W`Z]W`U`m`U`g`_`Z`f`c`b`Y`"
Hi`fb]h]b`U`gc`d`fc`j`]X`Y`g`i`d`X`U`h`g`i`cb`h`Y`]f`g`m`g`h`Ya`i`g`h`U`h`g`i`cb`Hk`]h`Y`f`"

;`Yb`Y`f`U`m`z`U`gg`Y`g`ga`Y`b`h`i`U`g`_`g`a`i`gh`V`Y`gi`Va`]h`Y`X`Y`Y`W`f`c`b]W`U`m`j`]U`Y`]h`Y`f`Hi`fb]h]b`c`f`U`A`cc`X`Y`
U`gg][`ba`Y`b`h`i`h`]b`g`h`U`b`W`g`k` \Y`f`Y`h`l`g`]g`b`c`h`d`c`g`g]V`Y`z`]h`k`]`V`Y`g`h`U`h`X`i`c`b`mci`f`W`ci`fg`Y`g`A`cc`X`Y`g`]h`k`]h`
U`h`Y`fb`U`h]`Y`gi`Va`]gg]cb`X`Y`h]g`"

:`c`f`]b`Z`c`fa`U`h]c`b`c`b`l`c`k`hc`gi`Va`]h`U`gg][`ba`Y`b`h`i`c`b`]b`Y`j`]U`A`cc`X`Y`.\`h`d`g`#`g`h`X`Y`b`h`i`bgk`"YXi`"Ui`#`c`k`!
gi`Va`]h`U`gg][`ba`Y`b`h`i`a`cc`X`Y`"

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

D`U[]Uf]ga `]g`i`g]b[`h`Y`k`c`f`X`g`c`f`]X`Y`U`g`c`Z`c`h`Y`f`g`i`U`b`X`d`f`Y`g`Y`b`h]b[`h`Y`a` `U`g`m`c`i`f`c`k`b`" `#`W`U`b`h`U`_`Y`a` `U`b`m`
Z`c`f`a`g`Z`Z`c`a` `X`Y`]V`Y`f`U`h`Y` `W`X`Y`U`h]b[`h`c` `U`W`W`Y`X`Y`b`h`U` `m`i`W`c`d`m]b[`Z`c`a` `U`g`c`i`f`W` `k`]h`c`i`h`U`W`_`b`c`k` `Y`X[`Y`a` `Y`b`h`

I`B`G`K` `[`f`c`i`d`g`d`U[]Uf]ga `]b`h`c` `h`Y` `Z`c` `c`k`]b[`W`U`h`Y`[`c`f`]Y`g.

- i bXYfghUjX'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'UjX'5W'W'dhUV'Y'I gY'cZ I BGK '⇒H'F'Ygci f'W'g'Dc'W'h
- VY'Uk UfY'cZ'U'g'U'g'U'f'X'g'c'Z'V'Y'U'j]ci f'Y'I d'Y'W'X'c'Z'Y'j Y'f'm'c'b'Y']b'U'Y'I BGK 'W'c'a'a'i'b]m
- 'c'W'U'h'g'Y'f'j]W'g'U'j'X']b'Z'c'f'a U'h'c'b'U'V'c'i h'l BGK 'U'j'X'I BGK '@]V'f'U'f'm

Gca Y'cZ'U'g'Y'U'f'Y'U'g'k]''V'Y'Z'J'a]]U'f'U'c'm'c'i ž'c'h'Y'f'g'k]''V'Y'b'Y'k "; U]b]b['U'g'c'X'i bXYfghUjX]b['cZU''U'Y' f'Y'U'h'X'U'g'd'Y'W'g'c'Z'9@-G'9'k]''\Y'd'm'c'i 'a U_Y'U'Y'a c'g'h'c'Z'm'c'i f'g'h'X]Y'g'U'hl BGK ''

[\h'c'.#\]j' V'Y'W'f'i \]X'Y'g'' \]V'f'U'f'm'i b'g'k "Y'X'i "U'i #' \]g'Y'#\]V'c'i h' \]g'Y](#)

