

# **ARTS2122**

DYfZcfa UbWY DfcXi Wgcb

HYfa "C bY" ## "&\$&\$

g\UdY`cZh\Y`Z]bU``dYfZcfa YX`dfcXi Wržmci f`gi [ [ Ygh]cbg`UbX`dYfgdYWh]j Yg`cb`h\Y`Ybei ]fmUfY fY`]YX`i dcb`Uh'U```h]a Yg"`H\Uh']gžh\Y`Wci fgY`\Y`dg`mci `hc``YUfb`Vch\`hc`H\\_Y`X]fYWh]cb`Zfca `U dfcZYgg]cbU``dfUWh]h]cbYfžUbX`hc``YUX`UbX`]b]h]UhY`XYW]g]cbg`UbX`UWh]cbg"``DUfhcZmci f`H\Jg\_`]g`hcbUj ][ UhY`h\]g`Wca d`YI `dfcWfgg`k ]h\`[ YbYfcg]mmUbX`]a U[ ]bUh]cb"

 $H\ [g'Wc'ifgY'cZZYfg'U'fUfY'cddcfh'b] \ [h\ Y'65']b'H\ YUhfY'UbX'DYfZcfa UbW'Gh'X] Yg'hc WcgY'mYl Ua \ [bY'UbX'a Ub] \ [ZYgh'U'Wca d'Yl'fYgdcbgY'hc'Ub'Yl HUbh'dYfZcfa UbW'hYl h'$ 

## 5ggYgga Ybh

Q YfY 'mci 'WUb'ci h]bY'UbmfY'Yj Ubh]bZcfa Uh]cb'h\Uhk Ug'bch]bWi XYX']b'5  $\Rightarrow$  G'Vi ha Umdfcj Y'\Y'dZ `'Zcf mci f'ghi XYbhg": cf'Yl Ua d'Yžmci 'a ][\hdfcj ]XY'XYhU]'g'cb'h\Y'fYZYfYbW]b['gmghYa ž`]b\_g'hc'dfYj ]ci g ghi XYbhYl Ya d'Ufg'cf'h\Y'XYg][ bUhYX'k YY\_']b'h\Y'Wci fgY'h\Uhmci 'k ]```X]gW gg'h\Y'UggYgga Ybh'Uh'Yb['h\"  $\Rightarrow$  dcfhUbhmž'h\]g'gYWf]cb']g'Ub'UfYU'Zcf'mci 'hc'dfcj ]XY']bZcfa Uh]cb'h\UhXcYg'bch[ c'h\fci [ \'h\Y'Uddfcj YX [ cj YfbUbWY'ghfi WhifY"Q

## 5ggYgga Ybh'HUg\_g'

	5ggYgga Ybh'HJg_		K Y][ \h	8i Y <sup>.</sup> 8UhY	Gh XYbh@YUfb]b[ Ci hWca Ygʻ5ggYggYX
	7 cblf]Vi l]cb'hc'DfcXi Wl]cb' F YZYWl]j Y'>ci fbU''		*\$1	: fca 'h\Y'Z fghifY\YUfgU``hc h\Y'Z bU``dYfZcfa UbWY"	%ž&Ž ž( ž)
			' \$1	\$-#\$'#&\$&\$`\$).\$\$`DA	%ž&Ž <i>ž</i> *
	DfcXi Wgcb'6`c['		%\$i	6ma ]Xb][\hcb:YUW\cZh\Y XUmg:mci:\Uj:Y:VYYb U``cWJhYX:hc:VY:GhJ[Y A UbU[Yf"	&ž) <i>ž*</i>

5ggYgga Ybh'8YHJ]`g

5ggYgga Ybh% 7cblf]Vi h]cb hc DfcXi Wh]cb

GhUfhXUhY. Bch5dd`]WUV`Y

Hi fb]hjb gYhjb[. H\]g ]g bchU Hi fb]hjb Ugg][ ba Ybh

5ggYgga Ybh& FYZYWhjj Y >ci fbU`

GhUfh'XUhY. '&\$#\$%#&\$&\$ '\$-.' \$ '5A

**@Yb[h**\. ₩ %) \$\$ k cfXg

**8YHJ]`g.** `GY`YWYX``ci fbU``gY[ a Ybhg`fW%z) \$\$`k cfXg`]b`hcHJ`Ł": cfa Uhjj Y`UbX`gi a a Uhjj Y`ZYYXVUW\_fYWY]j YX`k ]h\]b`' `k YY\_g`cZgi Va ]gg]cb"`

5XX]h]cbU`'XYhU]`q.

H\Y'>ci fbU`

H\fci[\cihh\Y`fY\YUfgU``UbX`dYfZcfa UbWY`dYf]cX`mci 'UfY`YI dYWYX`hc`\_YYd`U`XU]`mi>cifbU`fYWcfX]b[`mcif'dYfgcbU``cVqYfjUh]cbg"'H\Y`>cifbU``Wcbg]ghg`cZ

%" mci fick bifYWcfXicZYj YbhgiUbXiX]gW gg]cbgžUbXiHJg\_gimci ia UmiVYi[]j YbiXi f]b[ifY\YUfgUi/ &" mci fick bifYZYWhj YžidYfgcbUižiUbXig\]Zhjb[icVgYfj Uhjcbgicbih\YidfcXi WhjcbidfcW/ggiUbXi]hgifYgi ihg/ UbX

' "gca Y`fYZYfYbWYg`hc#bchYg`cb`UXX]h]cbU``fYUX]b[`UbX`fYgYUfW\`h\Uhmci i bXYfhU\_Y`ci hg]XY`cZ h\Y`fY\YUfgU``fcca `f\gYY`A ccX`YŁ"'

H\Y'>ci fbU``g\ci `X'VY`\_Ydh`]b`U`bchYVcc\_cZmci f`W\c]\W'`UbX`mci `a Um`Z]bX`]h\Y`dZ ``hc`Vf]b[ `]hhc YUW\ fY\YUfgU`": cf`YI Ua d`Yž]h\\ci `X'VY`5( `cf`5' `]b`g]nYž\Uj Y`fi `YX`UbX\cf`V`Ub\_`dU[ Yg"\\ci f`fY\\cf\xg UbX`fYZY\\f\]cbgždUff]\W``Uf`mf\\cgY`mci `k ]g\`hc`\Uj Y`UggYggYXžg\ci `X'VY`YI dfYggYX`]b`k f]\f\Yb`Zcfa "<<k Yj Yfžmci `\\Ub`U`gc`]\b\\i XY`ch\Yf`j ]gi U``a UhYf]\U`g`gi \\\ U\\Y]\Ug\Zmci `Z]bX`gi \\\ a UhYf]\U``j U`i U\`Y`Zcf`mci f`cVqYfj Uh\cb`UbX`fYZY\\f\ch\Yg"

C b 'gca Y 'XUmgžh\Y'>ci fbU``k ]``ZYY``h]a Y!Wcbgi a ]b[ 'UbX'Vcf]b[ "'<ck Yj Yfž]h']h']g'k cfh\ 'dYfgYj Yf]b[ ž'Ug h\]g'dfYj ]ci g'h\]fX!mYUf'ghi XYbhYI d`U]bg.

"5 Xa ]hh/X`mž\_YYd]b[ ih,Y``c[ Vcc\_'G-ci fbU'Q]b]h]U`mZ/`hh/X]ci g`UbX`\_]bX`cZh]a Y`Wcbgi a ]b[ ž\ck Yj Yf`= gccb 'VYWJa Y`Uk UfY`h\Uhh\Y`]XYUg`UbX`fYU`]gUh]cbg`=\UX`Ug`U`fYgi `hcZZcfW]b[ ia mgY`Zhc`k f]hY`k ci `X`bch \Uj Y`VYYb`Uj U]`UV`Y`Ubmch\Yf`k Um'' < Uj ]b[ `U`W\UbWY`hc`g]a d`mWcbgc`]XUhY`U```h\Y`Z]hh]b[ g`@j]WQcZ ]XYUgžii bfYUgcbYX`Wca di `g]cbgžUbX`fYgcbUbh\WcbWYdhgžbchhc`a Ybh]cb`h\Y`f]W\`]bgd]fUh]cbg`Zfca 'h\Y a Ubmg\ck g`UbX`Yj Ybhg`UbX`k \Uhbchk Y`YI dYf]YbWY`h\fci [ \ci hh\Y`k YY\_ž'VYWJa Y`YggYbh]U`"'H\Y`hfi Y a U[ ]WcZh\Y``c[ Vcc\_'dfcWYgg`k Ug`bchfYU``mUddUfYbhi bh]``h\Y`YbX`h\ci [ \žk \Yb``YUZ]b[ `VUW\_'h\fci [ \`]h'=k Ug`UV`Y`hc`hfUWY`U`dfcWYgg`h\Uh=\UX`bchfYU``mVYYb`WcbgW]ci g`cZUg`=k Ug`g` VWdfS] [ Y [f`GYa d\Ug]g UXXYXQ`UbX`Wci `X`cb`mfYWc[ b]gY`]hh\fci [ \`YbWci bhYf]b[ `]hUg`U`k \c`Y`VmfY!fYUX]b[ `UbX`fYa Ya VYf]b[ `]h h\fci [ \`h\Y``c[ Vcc\_""ffYdfcXi WYX`k ]h\`dYfa ]gg]cbŁ"

Zmci 'WUb'\Ub[ ']b'h\YfYžfYWcfX'h\Y'Wf]gYgž'hi fb]b[ 'dc]bhgžgi fdf]gYgž'ei Ygh]cbgž'UbX'ZJ]`i fYgž'mci 'k]`\Uj Y'gca Yh\]b[ 'a i W\'a i W\'f]W\Yf']b'A UfW\"'ZU``Y`gY ž QcZ

#### HYFYZYWICD

F Uh\Yf'h\Ub`\UbX]b[ ']b'h\Y'Ybh]fY'>ci fbU``hc'h\Y'7 ci fgY'7 cbj Ybcfž'h\]g'UggYgga YbhUg\_g'mci 'hc'gY`YWi\_YmgYWh]cbg"'H\YgY'a ][ \h'VY'h\Y'Wf]gYg'UbX'ei Ygh]cbg'a Ybh]cbYX'UVcj Yž'cf'h\Yma ][ \h']bj c'j Y gca Yh\]b[ 'Y'gY'U[ U]b"'+b'UXX]h]cbž'Uh`YUghicbY'Ybhfmg\ci `X'fYgdcbX'hc'cbY'cZh\Y'gYhfYUX]b[ g'fbb A ccX`YŁ"

#### >cifbU`ŽFYZYWNcb1TFYZYWNjY'>cifbU`

H\YfY UfY 'kk c 'Wca dcbYbhg 'Zcf' gi Va ]gg]cb.

- %" >ci fbU``GY`Z\5ggYgga Ybh: cfa "'H\]g']g'BCH'; F5898'Vi hfYei ]fYX'hc'dUgg'h\Y'UggYgga Ybh' D`YUgY'gi Va ]hih\]g']b`\UfX'WcdmZcfa 'Vm-'" \$Ua 'hc'A Uf\_'A ]hW\Y``cb'A cbXUm' : YVfi Ufm &\$% "'H\]g'Zcfa ']g'Uj U]`UV`Y']b'h\Y'5ggYgga Ybh'gYW]cb']b'A ccX`Y"''Mci f'7cbj Ybcf'k ]``'dfcj ]XY ZYXVUW\_k ]h\]b'%k YY\_'cZgi Va ]gg]cb"
- &" GY`YWYX`>ci fbU``GY[a Ybhg"`H\]g`]g`; F 5898"`D`YUgY`gi Va ]hih\]g`VYZcfY`a ]Xb][\hihc`Hi fb]hjb cb`A cbXUmž-`A UfWX ž&\$% ": cf`UggYgga Ybhž'd`YUgY`gY`YWhh\Y`a cghfY`Yj UbhYl hfUWg`Zfca `mci f >ci fbU``UbX`hmdY`]bhc`U`XcW a Ybhff%) \$\$`k cfXgŁ"`5bXž'Ug`ghUhYX`UVcj Yž'Uh``YUghcbY`Ybhfma i gh fYZ/f`hc`cbY`cZh\Y`gYhfYUX]b[g`fbb`A ccX`YŁ"

 $H\setminus [g:g:Va:]gg]cb:[g:a:Uf_YX:UVWcfX]b[:hc:h\Y:Zc:ck:]b[:5ggYgga:Ybh:7f]hYf]U.$ 

- h\Y`W\Uf]hm\UbX`ei\U`]hmcZmcif`fY\VcfX]b[`cZ\UbX`fYgdcbX]b[`hc`Yl\Yf\\]gYg`UbX`[fcid`X]g\W\gg]cbg/
- h\Y'XY[fYY'UbX'ei U`]hmcZmci f'fYZYWfjcb'cb#JbU`mg]g'cZ]bX]j ]Xi U`'UbX'Wc``UVcfUhj Y'dfcW'ggYgž

 $H\setminus g^{-1}UggYgga Ybhik ]^{-1}VY^{-1}UggYggYX^{-1}UWVcfX]b[hc^{-1}hY^{-1}Zc^{-1}ck]b[h^{-1}Wf]Wf]U.$ 

- WUf]miUbX'YZZYWfj YbYgg'cZgi a a UfmcZ\_YmYl YfVJgYg'UbX'X]gW gg]cbg
- XYHJ] 'UbX'Wca d'YhYbYgg'cZhYVXb]WU 'bchYg'UbX'UWjcb'dc]bhg

9 UWX 'c Zmci f'Ybhf]Yg'k ]```VY'gi Va ]hhYX'hc'Ub'cb`]bY'XcW a Ybhj ]g]V'Y'hc'U```Wci fgY'ghUZZUbX'dUfh]W]dUbhg"' Mci 'k ]```VY']bZcfa YX'UVci hh\]g'cb`]bY'ZUW]]hmcb'h\Y'Z]fghXUm''Mci 'k ]``fYWY]j Y'Zcfa Uhj Y'ZYYXVUW\_fWca a YbhUfm£cb'mci f':  $\neq$  GH'Ybhfm'Zfca 'mci f'7 cbj Ybcf'k ]h\]b'+&\fg'cZgi Va ]gg]cb'cZh\UhV`c["'Mci 'k]` fYWY]j Y'gi a a Uhj Y'ZYYXVUW\_fU'a Uf\_£'Zfca 'mci f'7 cbj Ybcf'j ]U'Hi fb]h]b'VmA cbXUm'%' 'A UfWX"

B6. Zmci 'Xc'a cfY'h\Ub'' 'Ybhf]Yg'Xi f]b[ 'h\Y'dfcXi Whcbžmci 'bYYX'hc''Yhmci f'7cbj Ybcf'\_bck 'j ]U'Ya U]` mci f'' 'dfYZYffYX'Ybhf]Yg'VmA cbXUm&'A UfW\Z'ch\Yfk ]gY'g]a d`mmci f'Z]fgh' 'Ybhf]Yg'k ]``'VY'gY`YWhYX'Zcf UggYgga Ybh'

Gi Va ]gg]cb'bchYg. Mci 'k ]```VY']bZcfa YX'cb'h\Y'Z]fghXUmcZh\Y'Wci fgY'Ug'hc'k \]W\`XUmg'mci '\Uj Y'VYYb U``cWUhYX'hc'Xc'U'GhU[Y'ffg'fYdcfhz'k\]W\`mci 'a i gh'Wca d'YhY'Vma ]Xb][\hcb'h\UhXUm''F Ydcfhg Wca d'YhYX'UZhYf'a ]Xb][\hcb'h\UhXUm''F Ydcfhg

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

#### 5 hyb XUb WY F Yei ]fYa Ybhg

Mci f'dfcZ/gg]cbU`]ga ']g`Uggi a YX`]b`h\]g`Wci fgY"``Mci 'UfY`YI dYWYX`hc`hi fb`i d`cb!ha Yž'Yj Yfmiha Yž dfYdUfYX`UbX`Wca a ]htYX`hc`Wcbhf]Vi hY`hc`U`HYUa 'dfc`YWf'``=Zmci 'UfY`]``žfi bb]b[ ``UhY`cf`Zcf`gca Y`[ ccX fYUgcb`]h]g`]a dcgg]V`Y`Zcf`mci 'hc`UhHYbX`U`fY\YUfgU`ž]h]g`mci f`fYgdcbg]V]`]mihc`WcbhUWh\Y`7 ci fgY 7 cbj Ybcf`fA Y[ 'A i a ZcfXŁ'UbX`DfcXi Wh]cb`A UbU[ Yf`fA Uf\_`A ]h\W.Y``Ł'Ug`gccb`Ug`dcgg]V`Y`UbX`hc`dfcj ]XY fY`Yj UbhXcW`a YbhUh]cb`YI d`U]b]b[ 'h\Y`fYUgcb"`=Zmci 'WUbbchUhYbX`U`dYfZcfa UbWi`h\YgY`ghUZa Ya VYfg a i ghVY`WcbhUWhYX`]a a YX]UhY`m'``: U]`i fY`hc`Xc`gc`k ]``VY`hfYUhYX`Ug`bcb!UhHYbXUbWi''BchJZ]WUh]cb`cZ UVqYbWY`]g`U`gc`Ub`]a dcfhUbhWci fhYgmhc`mci f`ZY``ck`WUghUbX`WfYk`a Ya VYfg"

## 7 ci fgY GWX YXi `Y

#### J ]Yk 'WUgg'ha YHJV'Y

#### H]a YHJV`Y

8UHY	Hmd Y	7 cbh/bh
K YY_'%'%+': YVfi Ufm!'&% : YVfi Ufm		H\]g`Wci fgY`fi bg`]b`>Ubi UfmUbX`: YVfi UfmUbX a U]b`mdf]cf`hc`h\Y`Wca a YbWfa YbhcZHYfa '%''`GYY A ccX`Y`Zcf`h\Y`fY\YUfgU``UbX`dfcXi Wfjcb`gW\YXi `Y"

## FYgci fWyg

DfYgWf]VYX F Ygci fWYg

GYY'A ccX`Y'UbX'Cb`]bY'FYUX]b['@]gh''

FYWca a YbXYX FYgci fW/g

GYY'A ccX`Y'UbX'Cb`]bY'FYUX]b['@]gh'

### 7ci fgY 9j U'i Uhjcb UbX 8Yj Y'cda Ybh

Ghi XYbhYj U`i Uhj Y´ZYYXVUW\_cb'h\Y`Wci fgY´]g´[Uh\YfYX`dYf]cX]WU``mži g]b[ 'Ua cb[ 'ch\Yf'a YUbg'h\Y I BGK 'a m9I dYf]YbW'cb`]bY`ghi XYbhWci fgY`gi fj YmZJWj]lmfgYY \hdg.##\YUW\]b[ "i bgk "YXi "Ui #a mYI dYf]YbWYL"''Mci fʻZYYXVUW\_']g`H\\_Yb`gYf]ci g`mž'UbX`Wcbh]bi U` ]a dfcj Ya Ybhg`UfY`a UXY`hc'h\Y`Wci fgY`VUgYX`]b`dUfhcb'gi W\`ZYYXVUW\_"''=b`&\$\% 'h\Y`a cghg][ b]Z]\Wbh W\Ub[ Y`a UXY`hc'h\Y`Wci fgY`k Ug'h\Y`ghfYUa `]b]b[ 'cZh\Y`DfcXi Whcb'6`c[ 'fGHJ[ Y`A UbU[ Yffg`F Ydcfh\z']b cfXYf`hc'a U\_Y`h\Y`HUg\_'a cfY`a UbU[ YUV`Y`UbX`h\Y`fYdcfhYUg]Yf`hc'i gY`Vmh\Y`dfcXi Whcb'YbgYa V`Y''`=b &\$\% 'h\Y`bUhi fY`UbX`gW\YXi `Y`cZUggYgga Ybhg`k Ug'U`h\fYX`]b``][ \hcZh\Y`a cj Y`hc'U`hf]a Ygh\f`gmgh\a"

#### 5 WUXYa | W < cbYghmUbX D`U[ | Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i±iWUbihU\_Yia Ubm Zcfa qžZfca iXYi]VYfUhYiW\YUh|b[ihciUVW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hUW\_bck iYX[Ya Ybh'i

IBGK '[fci dg'd'U[]Uf]ga ']bhc'h\Y'Zc``ck]b[ 'WUhY[cf]Yg.

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a]`Uf'k cfXg'hc'h\Y'cf][]bU`hYl h'cf']XYU'k]h\ci h'UW\_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf\_g"'H\]g'U`gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k\YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'

⇒ Uddfcdf]UhY 'dUfUd\fUg]b[...7\Ub[]b[ 'U'ZYk 'k cfXg'UbX'd\fUgYg'k \]'Y 'a cghmfYhJ]b]b[ 'h\Y'cf][]bU` ghfi Wh fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU'žUbX']bZcfa Uh]cb'k ]h\ci hUW\_bck `YX[Ya Ybh'H\]g'U`gc Udd`]Yg']b'dfYgYbhUh]cbg'k \YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k ]h\ci hWfYX]hUbX'hc d]YW]b[ 'hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yžk]h\ci hUddfcdf]UhY'fYZYfYbW]b[ "

7 c``i g]cb. 'k cf\_]b[ 'k ]th 'cth Yfg'Vi hidUgg]b[ 'cZZth Y '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\_'thc'Ubcth Yf'ghi XYbh'VYZcfY'th Y'Xi Y'XUHYZcf'Zcf'th Y'di fdcgY'cZth Ya

- i bXYfgfUbX mci f'f][\hg'UbX'fYgdcbg]V]`]hJYg'Ug'U'gh XYbhUhl BGK
- VY`Uk UfY`cZd`U[]Uf]ga ž`Wcdmf][\hz'l BGK `Gh XYbh7cXY`cZ7cbXi WhUbX`5VWWdhUV`Y`l gY`cZ I BGK `=\forall H`F Ygci f\W\g`Dc`]\m\m
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj ]ci f'Yl dYWYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wca a i b]hm
- `cWUHY 'gYfj ]WYg'UbX ']bZcfa UH]cb'UVci hI 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 bXYfgHJbX]b['cZU``h\YfY`UhYX'UgdYWng'cZ9@+69'k]``\Y`d'mci 'a U\_Y'h\Y'a cghicZmci f'ghi X]Yg'UhI BGK "'\\hd.##qi VYWfi |XYg"`]VfUfm'i bqk "YXi "Ui #\`]qY#JVci hY`]qY