



# IEST5001

: fUa Yk cf\_g`Zcf`9bj ]fcba YbhU`A UbU[ Ya Ybh

HYfa `C.bY`#`&\$%-

7ci fgY`Cj Yfj ]Yk

`GHUZZ7cbhUW`i8YHJ]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]`]m	@cW]h]cb	D\cbY
5#DfcZHYa U A ]ghY]b	hYa U"a ]ghY]b4 i bgk "YXi "Ui	D`YUgY`a U_Y`Ub Uddc]bha Ybhj ]U Ya U]`	A cfj Yb`6fck b 6i ]X]b[ " A 6' * (	

`@YW`i fYfg`

B Ua Y	9a U]`	5j U]UV]`]m	@cW]h]cb	D\cbY
8f`>c\b`7Uff	^c\b"W]ff4 i bgk "YXi "Ui	d`YUgY`a U_Y Uddc]bha Ybhj ]U Ya U]`	A cfj Yb`6fck b 6i ]X]b[ " A 6' *'	

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

# 7 ci fgY'8YHJ]g

7 fYX]hDc]bqg \* .

Gi a a UfmcZhY'7 ci fgY

H\]g'Wci fgY'dfcj ]XYg'Ub]bfcXi W]cb'hc'hY'A UghY'fcZ9bj ]fcb a YbhU'A UbU[ Ya Ybhdfc[ fUa "'Mci 'k ]''[ U]b Ub'UddfYU]h]cb'cZhY'Wca d'YI 'UbX'fUbg]X]gW]d']bUfmbUhi fY'cZYbj ]fcb a YbhU''ggi Yg'UbX'cZhY']b\YfYbh W\U''Yb[ Yg]b'a i 'h]X]gW]d']bUfmiUddfcUWYg'hc'Ybj ]fcb a YbhU''a UbU[ Ya Ybh'H\Y'Ya d\Ug]g]g'cb'YI d'cf]b[ WcbW'dh U''UbX'dfUW]WU''ZUa Yk cf\_g'UbX'['cVU'ghfU]h[ ]Yg'Zcf'UXUdh] Y'Ybj ]fcb a YbhU''a UbU[ Ya Ybh' GHUfh]b[ 'Zca 'hY'dfYa ]gY'cZ''gi ghU]bUV'Y'XY] Y'cda Ybh[ cU'g''Ug'U'W ffYbhVfcUX'm]YbXcfcgYX'ZUa Yk cf\_Zcf'Ybj ]fcb a YbhU''a UbU[ Ya Ybh'z'mci f'YI d'cfU]h]cb'k ]''bW' XY'hY'XY] Y'cda Ybh'cZhY'WcbW'dhg'cZ gi ghU]bUV'Y'XY] Y'cda Ybh'UbX'gi ghU]bUV]']miUbX'dfcV'Ya g]b'dfUW]W'm]bH'fdYf]b[ 'UbX']a d'Ya Ybh]b[ gi ghU]bUV]']m' 'Mci 'k ]''YbWci bh'f'U'fUb[ Y'cZf'Y'Yj UbhdYfgdYW]h] Yg]b'W' X]b[ 'Zcf'YI Ua d'Y'X] [ Ybci g k cf'X'j ]Yk gZ'd\]cgcd\m]UbX'Yh]WgZ'gcW]U''g]hW]Z'd'Ubb]b[ 'Z'Y'Wcbca ]WgZ'YU'h'gW]YbW'gZ'Y'Wc'c[ mZ'a YX]Uz UbX'W' 'h' fU''UddfcUWYg''Mci 'k ]''YI d'cfY'hY'df]bW]d'Yg'cZgi ghU]bUV'Y'XY] Y'cda Ybh]b'hY]f'Udd']W]h]cbZ ]b'W' X]b[ [ 'cj Yfb'UbW'fYgdcbgYg'hc'hY' ''gi ghU]bUV'Y'XY] Y'cda Ybh[ cU'g''U]h]X]ZYfYbh'Yj Y'g'cZ [ 'cj Yfba Ybh'z'Vmbcb [ 'cj Yfba Ybh'cf[ Ub]nU]h]cbgZ'VmiW'fdcfU]h]cbgZ'UbX'VmdfcZ'gg]cbU''cf[ Ub]nU]h]cbg''Mci 'k ]''YbWci bh'f'W]h]ei Yg'cZgi ghU]bUV]']miUg'U'ZUa Yk cf\_Zcf'Ybj ]fcb a YbhU''a UbU[ Ya Ybh'z'UbX'YI d'cfY U'h'fbU]h] Y'a cXY'gZ'UbX'dcgg]V'Y'gc'i h]cbg"

# 7 ci fgY@YUfb]b[ 'Ci hWca Yg

- % " 8 ]gW gg'hY'W\Ub[ ]b[ 'ghU]h'cZhY'Ybj ]fcb a Ybh'UbX'dYfgdYW]h] Yg'cb'W ffYbh\_YmYbj ]fcb a YbhU' ]ggi Yg'Ug]bZi Ybh]U'ZUW'c'fg]b'ZUa Yk cf\_g[ 'cj Yfb]b[ 'Ybj ]fcb a YbhU''a UbU[ Ya Ybh
- & " X'Ybh]Zm'hY'\_YmghU\_Y\c'XYfg'UbX'fY'Yj UbhX]gW]d']bYg'Zcf'UXXfYgg]b[ 'gdYW]Z'WYbj ]fcb a YbhU' a UbU[ Ya Ybh]ggi Yg'UbX'YI d'U]b'hY]f'fY'U]h] Y'fc'Yg'UbX'a cXYg'cZdUfh]W]dU]h]cb
- ' " HU\_Y'U'c' ]g]h]VZ']bh'fX]gW]d']bUfmiUddfcUW'hc'UbU'mg]b[ 'Ybj ]fcb a YbhU''a UbU[ Ya Ybh]ggi Yg
- (" 9I d'U]b'UbX'W]h]ei Y'hY'j Ufn]b[ 'WcbW'dhg'cZgi ghU]bUV]']miUbX'gi ghU]bUV'Y'XY] Y'cda Ybh'z[ ]j ]b[ Xi Y'fY'Wc[ b]h]cb'hc'hY]f'a Ubm]bH'fdYfU]h]cbgZ'UbX'U'h'fbU]h] Y'WcbW'dhg'UbX'ZUa Yk cf\_g
- ) " X'Ybh]ZmVUff]Yfg'hc'gi ghU]bUV]']miXYf]j ]b[ 'Zca 'U'VfcUX'fUb[ Y'cZd\]cgcd\]WU''UbX'Yh]W]Z Uxa ]b]ghfU]h] Yz'Y[ U'zdc'h]W]Z'gcW]U''UbX'Y'Wcbca ]WZUW'c'fg
- \* " 5dd'm'hY'df]bW]d'Yg'cZgi ghU]bUV]']miUbX'X]gW gg'\ck [ 'cj Yfba Ybh'gZ'Vi g]bYgg'UbX'Wca a i b]m cf[ Ub]gU]h]cbg'W]b]a d'Ya Ybhgi ghU]bUV'Y'XY] Y'cda Ybhd'fcW'ggYg]b[ ]j Yb'W]gY'gh' Xmg]h] U]h]cbg

# HYUW]b[ 'GhfU]h[ ]Yg'

H\fcI [ \ 'h]g'Wci fgY' mci 'k ]''[ U]b'Ub'i bXYfg]h]bX]b[ 'cZhY'ZUa Yk cf\_g'k ]h]b'k \]W\ 'UXUdh] Y Ybj ]fcb a YbhU''a UbU[ Ya Ybh]U\_Yg'd'UW''K'Y'k ]''ghU]h'VmYa d\Ug]g]b[ 'UbX'YI d'cf]b[ 'hY'Wca d'YI ]miUbX bUhi fY'cZYbj ]fcb a YbhU''a UbU[ Ya Ybh]ggi Yg'UbX'hY']b\YfYbhW\U''Yb[ Yg]b']bh'fX]gW]d']bUfmi[ fci d UddfcUWYg'hc'Ybj ]fcb a YbhU''a UbU[ Ya Ybh'UbX'gi ghU]bUV]']mi' Mci f'[ fci d'Vf]b[ g'U'k ]XY'j Uf]YmicZ X]gW]d']bUfmiVUW] fci bXg'UbX'dfcZ'gg]cbU''UbX''Z'YI dYf]YbW]g'hc'hY'gY'YbXYUj ci fgZ'Ug'k Y''Ug'U'k ]XY gdfYUX'cZ[ Yc[ fUd\]WVUW] fci bXg'UbX'YI dYf]YbW'Vch'Zca 'k ]h]b' 5i ghU]U'UbX']bh'fbU]h]cbU''m': cf'cb! W]a di g'gh' XYbh'gZ'X]gW gg]cbg'k ]''VY ]bh[ fU]h'X]b'hc'hY'' !\ci f'WUgg'h]a Y'YUW'k Y'Y'z'k \]Y'Zcf'X]ghU]bW gh' XYbh'g'X]gW gg]cbg'k ]''HU\_Y'd'UW'cb']bY''Hc'dfcj ]XY'VUW] fci bX'Zcf'h]g'Wci fgY'k'Y'k ]''Vf]YZm'fYj ]Yk W ffYbh\_YmYbj ]fcb a YbhU''ggi Yg'cZ'WcbW'fb ]b'W' X]b[ 'W]a U]h'W\Ub[ Y'z'U]f'UbX'k U]h'f'dc''i h]cbz'cgg'cZ V]cX]j Yfg]miUbX'Y'Wc'c[ ]WU''bh'f[ f]mz'Ug'ZUW'c'fg]bZi YbW]b[ 'hY'ZUa Yk cf\_g'Zcf'Ybj ]fcb a YbhU' a UbU[ Ya Ybh'z'UbX'Wcbg]XYf'fYbXg]b'hY'gY''K'Y'k ]''YI d'cfY'hY'W]i gU]h] Y'UW]h] ]h]Yg'UggcW]U]h'X'k ]h'hY'gY ]ggi Yg'UbX'hY'fYgi 'h]b[ 'Ybj ]fcb a YbhU''a UbU[ Ya Ybh'W\U''Yb[ Yg''H\Y'a U]b'Ya d\Ug]g]b[ fUa Yk cf\_g'Zcf 9bj ]fcb a YbhU''A UbU[ Ya Ybh]g'cb'YI d'cf]b[ 'WcbW'dh U''UbX'dfUW]WU''ZUa Yk cf\_g'Zcf'Ybj ]fcb a YbhU'

a UbU[ Ya YbH'5 \_Yma YggU[ Y' ]g' hUhhYgY' ZUa Yk cf\_g' UfY' bchghUqWwi hWbhb'bi U`mYj c'j ]b[ žk ]h' hY  
dUW' cZVXUb[ Y' dUfh'W' Uf'mfUd]X' UhdFYgYbH'

## 5ggYgga Ybh

: i ``XYHJ]g`Uj U]UV`Y`j ]U`mci f`A ccX`Y`g]H`

### 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \ h	8i Y`8UH`	Gh XYbh@YUfb]b[ Ci H`a Yg`5ggYggYX
5bbcHUHX`6]V`]c[ fUd`m	' * i	8UH`H65	%z&z ž( ž)
; fci d`DfYgYbhU]cbg`	%&i	h`mci f`Ugg][ bYX`k YY_	%z&z ž( ž*
: ]Y`X`Hf]d`9I W`fW]gY`	%&i	Gi Va ]ha ]X`HYfa ``8UH`H65	%z&z ž( ž*
F YgYUfW`9ggUm	( \$i	5h`hY`YbX`cZHYfa ``8UH`H65	%z&z ž( ž) ž*

### 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%`5bbcHUHX`6]V`]c[ fUd`m

GHUfhXUH`. H\Y`V]V`]c[ fUd`mXYj Y`cdg`UW`cgg`hY`W`i fgY

8YHJ]`g. `6f]YZgi a a Uf]Yg`ZcF`\_YmdUdYfgz`Vcc`\_W`UdHYfg`UbX`c`hYf`fYZYfYbW`g" `5ddfcI` `%) \$\$`k`c`fXg`  
K f]H`b`ZYXVUW`\_dfcj ]XYX`UW`c`fX]b[ `h`U`fi`Vf]W`

5XX]h]cbU`XYHJ]`g.

: i ``XYHJ]g`Uj U]UV`Y`j ]U`mci f`A ccX`Y`g]H`

5ggYgga Ybh&` ; fci d`DfYgYbhU]cbg`

GHUfhXUH`. `Mci`k`]`VY`Ugg][ bYX`U`k`YY\_`]b`k` \]W`h`c`dfYgYbh`

8YHJ]`g. `5`W]gY`gh`XmdfYgYbhU]cb`]b`WUgg`cf`Ug`Ub`cb!`]bY`Zcfi`a`dcgh`K`f]H`b`ZYXVUW`\_dfcj ]XYX`

5XX]h]cbU`XYHJ]`g.

: i ``XYHJ]g`Uj U]UV`Y`j ]U`mci f`A ccX`Y`g]H`

5ggYgga Ybh' . : ]Y`X`Hf]d`9I W`fW]gY`

GHUfhXUH`. H\Y`Z]Y`X`Hf]d`]g`YUf`m]b`hY`HYfa`

8YHJ]`g. `Gh`XYb]g`k`]`VY`fYeI`]fYX`h`gi`Va`]hU`k`f]H`b`fYdcfhVUgYX`cb`U`Z]Y`X`Hf]d`

5XX]h]cbU`XYHJ]`g.

: i ``XYHJ]g`Uj U]UV`Y`j ]U`mci f`A ccX`Y`g]H`

5ggYgga Ybh( . `F YgYUfW`9ggUm`

GhUfhXUHY.

8YHU]g. 'DUdYf]b'k \]Wk 'mci 'Udd'miU'g]l 'ghYd'gi ghU]bUVY'XYj Y'cda YbhiUbU'mg]g": ]bU'Ugg][ ba YbhiZcf'hAY  
Wci fgY''Uddfcl ' ' ) \$\$'k cfXg''K f]hYb'ZYXVUW\_dfcj ]XYX'UVWcfX]b[ 'hc'U'fi Vf]W

5XX]h]cbU'XYHU]g.

: i ''XYHU]g'Uj U]UV'Y'j ]U'mci f'A ccX'Y'g]hY








5 WUXYa ]W<c bYghmiUbX`D`U[ ]Uf]ga

D`U[ ]Uf]ga `]g`i g]b[ `h`Y`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[ `h`Ya `Ug`mci f`ck b" `h`WUb`hU`Y`a Ubm  
Zcfa gž`Zca `XY`]VYfUh`W`YU]b[ `h`UW]XYbhU`miW`dm]b[ `Zca `U`gci fW`k ]h`ci hUW\_bck `YX[ Ya Ybh`

I BGK `[ fci dg`d`U[ ]Uf]ga `]b`h`Y`Zc`ck ]b[ `W]hY[ cf]Yg.

7cdm]b[ .`i g]b[ `h`Y`gUa Y`cf`j Yfmg]a ]Uf`k cfXg`h`h`Y`cf][ ]bU`hI hcf]XYU`k ]h`ci hUW\_bck `YX[ ]b[ `h`Y



5 WUXYa ]WbZcfa Uhcb`

: cfYggYbhU`ghi XYbh]bZcfa Uhcb`fY`Uh]b[ `rc.

• fYei Ygh`Zc`fYI hYbg]cb/

•