



# **IEST5004**

9bj ]fcba YbHU``A UbU[ Ya YbhF YgYUfW\`=bHYfbg\]d

## 7 ci fgY<sup>-</sup>Cj Yfj ]Yk

## `GHJZZ`7cbHJWh`8YHJ]`g`

## '7cbj Ybcfg'

B Ua Y	9a U]`	5j U]`UV]`]m	@cWUh]cb	D∖cbY
HYa U'A ]`ghY]b	1010	-	A cfj Yb 6fck b A 6' *(	-',)''+-+

## GWXcc``7cbHJWhi=bZcfaUh]cb

GWXcc``cZ<iaUb]ŊYg'UbX'@Ub[iU[Yg

@cWUhjcb. `GW&cc``C ZJWYžA cfj Yb`6fck b`6i ]`X]b[ ž@Yj Y``&ž&),

CdYb]b[ '< ci fg. A cbXUm! : f]XUmž - Ua '!') da

D\cbY. Ž\*%&'-',) %\*, %

: UI . Ž\*%&'-' , ) ', +\$)

9a U]`. <u>\U`4 i bgk "YXi "Ui</u>

## 7ci fgY<sup>·</sup>8YHJ]`g

## 7 fYX]hDc]bhg\*\*\*

## Gi a a UfmcZh\Y'7ci fgY

H\Y'cV'YW] Y'cZh\Y'9bj ]fcba YbHJ`A UbU[ Ya Ybh]bhYfbg\]d']g'hc'dfcj ]XY'mci 'k ]h\'h\Y'cddcfh b]mhc'k cf\_ k ]h\'YI dYf]YbWYX'Ybj ]fcba YbHJ`dfUW]h]cbYfg`]b'U'dfcZygg]cbU`gYh]b[ "'Mci 'k ]``i gY'h\Y'\_bck `YX[ Y [ U]bYX']b'dfYj ]ci g'A 9A 'Wci fgYgž'UbX'hc'Udd`m]hhc'dfc'YWhUg\_g'h\fci [ \ci hh\Y']bhYfbg\]d"'8YHJ`g'cZh\Y HUg\_g'k ]``VY'UffUb[ YX']b'Wcbgi `HUh]cb'k ]h\'h\Y'Wci fgY'WccfX]bUhcf'cf'a i h'U``m'U[ fYYX!i dcb'UWUXYa ]W gHJZgi dYfj ]gcf'UbX'mci f'cb!g]hY'gi dYfj ]gcf'fUb'Uddfcj YX'gHJZa Ya VYf'k ]h\]b'df]j UhY'cf'di V`]WgYWfcf ]bgh]h h]cb'cf'cf[ Ub]gUh]cbŁ"Df]cf'hc'd'UWYa Ybhg']b'cf[ Ub]gUh]cbgž'h\Y'Wci fgY'WccfX]bUhcf'k ]``'k cf\_'k ]h\ mci 'UbX'h\Y'U[ YbV]Yg'hc'Ybgi fY'mci 'UfY'Z ``mdfYdUfYX'UbX'h\Uh'h\Y'dfc'YWi]g'Uddfcdf]UhY"

## 7cifgY`@YUfb]b[`CiHWcaYg

- % Ghi XYbhg``YUfb`\ck `hc`XYj Y`cd`U`dfcZYgg]cbU`#fYgYUfWX`dfc'YWhih\fci [\``]U]gcb`k ]h\`U`dUfhbYf cf[ Ub]gUh]cb
- &" Ghi XYbhgʻa i ghXYj Y`cdʻdfc YWhU]a gʻUbXʻgWcdY
- ' " K ]h 'h Y dUffbYf cf[ Ub]gUh]cbžgh XYbhg a i ghXYj Y cd UbX Udd mUddfcdf]UhY a Yh cXc c[ ]Yg hc UXXfYgg h Y U]a g cZh Y cf[ Ub]gUh]cb UbX h Y gh XYbhidfc YWh
- ("Ghi XYbhg``YUfb`hc`WcbXi Wi`]hYfUhi fY`fYj]Yk g`]b`hc`UXXfYgg`gdYWjZjWfYgYYUfWX`hcd]Wg"
- ) "Ghi XYbhg UbU`mgYžfYdcfhUbX`]bhYfdfYhZjbX]b[g
- \*" Ghi XYbhg`YUfb'hc'XY`]j Yf'WcbWi g]cbg'UbX'fYWca a YbXUh]cbg'h\fci [\'fYdcfh]b['UbX'cfU`'XY`]j Yfm

#### HYUW ]b[ GhfUhy[ ]Yg

HYUWX]b['glfUhY[]Yg']bWi XY'Wcbgi `HUh]cb'UbX'gi dYfj]g]cb'a YYh]b[g'k]h\`mci f'Wci fgY'Wc!cfX]bUhcf'cf a i h U``mU[fYYX!i dcb'UWUXYa]WgHUZZgi dYfj]gcfź'U'\UbXg!cb'k cf\_]b['fY`Uh]cbg\]d'k]h\`mci f'\cgh cf[Ub]gUh]cbz'UbX'fYdcfh]b['j]U'h\Y'Wci fgY'UggYgga Ybhg"

#### 5XX]h]cbU``XYhJ]`g.

H\Y'Zcfa UhUbX'WcbhYbhk]``VY'XYhYfa ]bYX'Vmh\Y']bhYfbg\]d'gi dYfj ]gcf'UbX'h\Y'\cghcf[ Ub]gUh]cb"

Gi Va ]gg]cb'bchYg.: i ```XYHU]`g'hc'VY'bY[ch]UhYX'k ]h\`\cgh'cf[Ub]gUh]cb'UbX']bhYfbg\]d'gi dYfj ]gcf

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

GHUfhXUHY. Bch5dd`]WUV`Y

**8YHJ]`g.** `G\cfhVf]YZk ]h\`dfc^YWfU]a gžgWedY`UbX``YHYf`cZU[ fYYa Ybhk ]h\`cf[ Ub]gUH]cb`]bWf XYX"F Yj ]Yk VmWei fgY`Webj Ybcf

#### 5XX]h]cbU``XYhJ]`g.

H\Y`Vf]YZZcf`h\Y`⊕hYfbg\]d`]g`YgHUV`]g\YX`]b`Wcbgi `HUh]cb`VYHkYYb`h\Y`]bhYfbg\]d`gi dYfj ]fcg`UbX`h\Y \cghcf[ Ub]gUh]cb"`Bcfa U``mh\Y`Vf]YZk ]``VY`XYhYfa ]bYX`UbX`k f]hhYb`k]h\]b`h\Y`Z]fghHkc`kYY\_g`cZh\Y HYfa "

Gi Va ]gg]cb'bchYg.: i ```XYHJ]`g'hc'VY'bY[ch]UhYX'k ]h\`\cghicf[Ub]gUh]cb'UbX`]bhYfbg\]d'gi dYfj ]gcf

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

5ggYgga Ybh(. ⊕hYfbg\]d 8]Ufm

GHUfhXUHY.Bch5dd`]WUV`Y

**8YHJ]`g**. '=b`cfXYf`hc`Ugg]ghk ]h\`ghi XYbhidfc YWia UbU[ Ya Ybhig\_]``gžighi XYbhg`a i gh\_YYd`UbX`gi Va ]hU X]UfmifYdcfh`]bX]WUh]b[`UVW]j ]h]Ygžidfc YWid`Ubb]b[`UbX`h]a Y`]bYg"5ggYggYX`Vmih\Y`Wcbj Ybcf

Gi Va ]gg]cb'bchYg.: i ```XYHJ]`g'hc'VY'bY[ch]UhYX'k ]h\`\cghicf[Ub]gUh]cb'UbX`]bhYfbg\]d'gi dYfj ]gcf

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

## 5 HHYbXUbWY FYei ]fYa Ybhg

Ghi XYbhgʻUfYʻghfcb[`mʻYbWci fU[YX'hcʻUhhYbX'U```WUggYgʻUbX'fYj]Yk ``YWhi fYʻfYWcfX]b[g"

## 7 ci fgY GWX YXi `Y

#### J]Yk WUgg ha YHVY

## H]a YHJV`Y'

8 UHY	Hmd Y	7 cbhYbh
K YY_`%`%*`GYdHYa VYf`! &\$`GYdHYa VYf		5 k YY_`mgW\YXi `Y`]gʻbchdfcj ]XYX`\YfY"`8i f]b[ `cf VYZcfY`h\Y`Z]fghk YY_`cZHYfa žh\Y`gWcdY`cZh\Y ]bhYfbg\]d`bYYXg`hc`VY`XYhYfa ]bYX`]b`bY[ ch]Uh]cbg VYhk YYb`\cghcf[ Ub]gUh]cbžmci ž'UbX`mci f`U[ fYYX! i dcb`UWUXYa ]WghUZZ]bhYfbg\]d`gi dYfj ]gcf"`5```ch\Yf gW\YXi `]b[ `UbX`fYei ]fYa Ybhg`Zck `Zīca `h\]g`YUf`m YghUV`]g\a YbhcZh\Y`]bhYfbg\]d"`

## FYgci fWg

#### DfYgWf]VYX F Ygci fWfg

H\Y`fYgci fWYg`bYYXYX`Zcf`mci f`=bhYfbg\]d`k]``VY`XYhYfa]bYX`Vmh\Y`gWcdY`UbX`]bhYbhcZh\Y`dfcYW#z`UbX Vmh\Y`fYei]fYa Ybhg`cZmci f`\cghcf[Ub]gUh]cb`UbX`mci f`U[fYYX!i dcb`UWUXYa]WgHUZZ]bhYfbg\]d gi dYfj]gcfž`fY`UhYX`hc`mci f`hcd]W

#### FYWca a YbXYX<sup>-</sup>FYgci fWYg

Mci 'UfY'YI dYWYX'hc'YI YfWjgY'U'\][\'XY[fYY'cZ]b]hjUhjjY']b'ZjbX]b[ 'mci f']bhYfbg\]d'UbX'fYgYUfWX'a UhYf]U`g fY`Yj UbhZcf'mci f'dfc'YW'

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

@\_Y'U``A 9A 'Wci fgYgžh\Y'UddfcUW\'hc'h\Y'=bhYfbg\]d']g'XYj Y`cdYX'cb'h\Y'VUg]g'h\Uh]bXYdYbXYbhUbX Udd`]YX``YUfb]b[\_']g'\][\`mj U`i YX'Vmgh XYbhgž'VUgYX'cb'dUghYI dYf]YbW''UbX'dfYj ]ci g'ZYYXVUW\_" Gh XYbhg`\Uj Y'U`gc'YI dfYggYX'ghfcb[\_']bhYfYgh']b'h\Y'YI hYfbU` Wca a i b]m#[ cj Yfba Ybh#B; C#bXi ghfmYI dYf]YbW''h\Uhi\Y'=bhYfbg\]d'cZYfg"

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

D`U[]Uf]ga `]g`i g]b[`f\Y`k cfXg`cf`]XYUg`cZcf\Yfg`UbX`dfYgYbh]b[`f\Ya `Ug`mci f`ck b"`=fiWUb`hU\_Y`a Ubm Zcfa gžZfca `XY`]VYfUHY`W\YUh]b[`fc`UWV]XYbhU``mWcdm]b[`Zfca `U`gci fWFk]h\ci hUW\_bck `YX[Ya Ybh'

I BGK '[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 Yfmig]a ]`Uf`k cfXg`hc`h\Y`cf][ ]bU``hYI h`cf`]XYU`k ]h\ci h`UW\_bck`YX[ ]b[ `h\Y

## 5WUXYa]W=bZcfaUh]cb<sup>.</sup>

: cf<sup>·</sup>YggYbhJU<sup>··</sup>gh XYbhJbZcfa UhJcb<sup>·</sup>fY<sup>·</sup>UhJb[<sup>··</sup>hc.