



# IEST5003

5XXfYgg]b[ '9bj ]fcb a YbhU`=ggi Yg

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

7ci fgY`Cj Yfj ]Yk

`GHUZZ7cbhUWw8YHJ`g`

`7cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWUjcb	D\cbY
DUi ``6fck b	dUi ``Vfck b4 i bgk "YXi "Ui	9a Uj`jg`VYgh WcbhUWw`A YYHb[ g VmUddc]bta Ybt'	A cfj Yb`6fck b 6i ]X]b[ A 6' *)	\$(%' , ) +\$

GWXcc``7cbhUWw`bZcfa Uhjcb

GWXcc``cZ<i a Ub]hYg`UbX`@Ub[ i U[ Yg

@cWUjcb. `GWXcc``C ZjWz`A cfj Yb`6fck b`6i ]X]b[ ž@Yj Y``ž&),

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

D\cbY. `ž\*%&`-' , ) `%\*, %

: U! . `ž\*%&`-' , ) `; , +\$)

9a Uj`. [\U`4 i bgk "YXi "Ui](#)

7ci fgY'8YHJ`g

7fYX]hDc]bqg`\*`

Gi a a UfmicZ\hY'7ci fgY

H\]g`Wci fgY`i` ghfUHg`hY`bUhi` fY`cZ`UbX`bYYX`Zcf`a`i`h`!`cf`fUbg!X]gVd`]bUfmUddfcUWYg`Zcf`UXXfYgg]b[  
Ybj]fcba`YbH`dfcV`Ya`g`cZbUh]cbU`UbX`#cf`[`cVU`]a`dcfHUbW`";`fci`d`k`cf`\_`gYa`]bUf`dfYgYbHh]cbg`k`]"`  
XfUk`cb`W`ffYbhcf`fYW`bh`\_YmYbj`]fcba`YbH`]ggi`Yg`UbX`k`]"`VY`gi`ddcfH`X`VmVf]YZ`YW`i`fYg`"Gca`Y`cZ`h`Y`  
hcd]Vg`mci`k`]"`Wcj`Yf`UfY`Ybj`]fcba`YbH`]"`cj`YfbUbVW`Z`]bh`fbUh]cbU`Ybj`]fcba`YbH`fY`[`]a`Yg`#`W`bj`Ybh]cbg/  
ZUa`]b[`UbX`XYZ]b]b[`Ybj`]fcba`YbH`]"`ggi`Yg`/di`V`]WdUfh]W]dUh]cb`UbX`gH`U`Y`c`XYf`Yb[`U[`Ya`Ybh]b`XYW]g]cb`  
a`U`\_`b[`/]bH`[`fUH`X`UbX`Zcfk`UfX`cc\_]b[`UbU`mg]g`/d`Ubb]b[`Zcf`gi`ghU]bUV`Y`XYj`Y`cda`Ybh`gV]YbW`Z`f]g`\_`UbX`  
\_bck`YX`[`Y`/`W`ca`d`YI`gmg]H`a`g`UbX`UXUdh]Y`a`UbU[`Ya`Ybh`/`gi`ghU]bUV`Y`bUhi`fU`fYgci`fW`a`UbU[`Ya`Ybh`/  
Ybj`]fcba`YbH`]"`a`dUW`g`cZdfcXi`W]cb`UbX`W`bgi`a`dh]cb`"

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

%`8Ya`cbghfUH`Ub`UXj`UbW`X`i`bXYfghUbX]b[`cZ`h`Y`a`i`h`!`X]gVd`]bUfmVcXmicZ`\_bck`YX`[`Y`bYYXYX`Zcf`  
Ybj`]fcba`YbH`]"`a`UbU[`Ya`Ybh]UbX`Udd`mX]gVd`]bUfmUbX`fUbg!X]gVd`]bUfmdf]bW]d`Yg`UbX`dfUW]V]g`  
h`bYk`cf`W`ca`d`YI`W`U`Yb[`Yg`"  
&"`8Yj`Y`cd`UbU`m]W]g`\_]gZ`UXj`UbW`X`W]h]WU`hUb`%o

ghi XYbHg'UFY`YI dYWwXžcb`k YY\_`mVUg]gžhc`k f]hY`U`V`c[ `YbhfmfYZYW]b[ `cb`h\Y]f`YUfb]b[ `cZ`h\Y`k YY\_`m  
hcd]W`8]ghUbWw`ghi XYbHg`k ]``U`gc`hU`Y`fYgdcbg]V`]hmiZcf`YUX]b[ žYbWłi fU[ ]b[ `UbX`a cXYfU]b[ `cb`]bY  
X]gW gg]cb`cj Yf`cbY`Z ``k YY\_žcb`h\Y`k YY\_`mi b]hcd]WUbX#cf`WUgY`ghi Xnř`H\Ymk ]``dfcXi W`Ub`cd]b]cb  
YggUmUg`h\Y`Z]bU`Ugg][ ba YbhZcf`h\Y`Włi fgY"

# 5ggYgga Ybh

: i f\Yf[ i ]XUbW'Uj U]UVY'j ]U'hY'Wci fgY'A ccX'Y'g]H"

## 5ggYgga YbhHUg\_g'

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UH'	Gh XYbh@YUfb]b[ Ci hWta Yg'5ggYggYX
K YY_'m6`c[ ' .	' \$i	Xi Y'YUW'k YY_	%z&Z ž( ž)
: ]Y'X'5gg][ ba Ybh	&\$i	8i Y'a ]X'hYfa ž'YI UWhXUH'hc VY'UXj ]gYX	%z&Z ž( ž)
; fci d'7 UgY'Gh Xmi	&\$i	Hck UfXg'hY'YbX'cZH'fa " 8UH'H65"	%z&Z ž( ž)
C d]b]cb'9ggUm	' \$i	8i Y'Uh'hY'YbX'cZH'fa "'8UH' H65"	%z&Z ž( ž)

## 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh% 'K YY\_'m6`c[

GHUfhXUH'.

@Yb[ h. ; YbYFU'mUfci bX" \$\$'k cfXg'Zcf'YUW'V'c[ "

8YHJ]`g. 'K YY\_'mig\cfhk f]H'Yb'gi a a Uf]Yg'Zcf'X]ghUbW'UbX'cb!WJa di g'gh XYb'gžk ]h'g\cfhcb']bY  
ZYXVUW\_[ ]j YbžZcf'%'k YY\_g'r' '\$\$'k cfXg'dYf'k YY\_

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

Hcd]Wg'Zcf'mci f'V'c[ g'k ]'VY'YghUV]g\YX'YUW'k YY\_ž'UbX'k ]'fY'UH'hc'mci f']bXYdYbXYbh'fYgYUfW"

Gi Va ]gg]cb'bchYg.Gi Va ]hk YY\_'mj ]U'mci f'A ccX'Y'g]H'

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

5ggYgga Ybh&. : ]Y'X'5gg][ ba Ybh

GHUfhXUH'. 'b h'Y'Zfgh'h'fY'k YY\_g'cZ'h'Y'Wci fgY

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

8YHJ]`g. 'Gh XYb'g'k ]'VY'fYei ]fY'hc'gi Va ]hU%'\$\$\$'k cfX'fYdcfhVUgYX'cb'U'Z]Y'X'Ugg][ bYa Ybh

Gi Va ]gg]cb'bchYg.Mci f'dfcdcgU'Zcf'mci f'Z]Y'X'k cf\_'k ]'VY'cbY'cZ'mci f'V'c[ g"H\Y'Z]bU'fYdcfhk ]'VY  
gi Va ]H'X'j ]U'mci f'A ccX'Y'g]H'

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




## F Ygci fWg

### DfYgWf]VYX 'F Ygci fWg'

ቅጥረት ሁከር ሁከር ከፍተኛ ጥራት ጋር ማጣገጥ ለመቻላቸው ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው። ለመሆኑም ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው።

### F YWta a YbXYX 'F Ygci fWg

ቅጥረት ሁከር ሁከር ከፍተኛ ጥራት ጋር ማጣገጥ ለመቻላቸው ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው። ለመሆኑም ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው።

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

ለ ማንኛውም ጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው። ለመሆኑም ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው።

: ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው። ለመሆኑም ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው።

ፊት ለፊት ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው። ለመሆኑም ለጥራት ማረጋገጫ ስርዓት ማከናወን አለባቸው።





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" `hWUb`hU`Y`a Ubm  
Zcfa gžZca `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 Uh]cb`

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

- fYei Yghg`ZcfYI hYbg]cb/
- `Uhr`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua ]bUh]cb`dfcVWXi fYg/
- gdYW]U`Wc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a ]gUXj Ybh fY/
- ghi XYbhYei ]hmUbX`X]gUV`]`hm/
- UbX`chYfYggYbh]U`UWUXYa ]W]bZcfa Uh]cbz`gYY

[\hfdg.#k k k "Ufng"i bgk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`dfc\]Wc`g`\[ i \]XY`\]bYg#](#)

⇒ U[ Y`7fYX]h

6UfUb[ Ufcc.`GmXbYmf]i fVUb`fY!XYj Y`cda YbhW]U`Yb[ Yg`i g`hc`h]b\_`UVci hUXUdhj Y`UbX`dUfh]W]dUrcfm Ybj ]fcba YbhU`a UbU[ Ya Ybh]b`hY`ZJW`cZdfYgg]b[ `Ybj ]fcba YbhU`]ggi Yg`-`ck`hc`Wc]b]b`UbX`fYUh Wc]b]Ua ]bUhYX`]bXi gh]U`g]Ygž`ck`hc`hU\_Y`UW]c`i bhczW`h`fU`Yf]U[ Y`]bW] X]b[ `bX]] Ybci g`Yf]U[ Y`UbX ]bXi gh]U`g]hcfnz`ck`hc`Yb[ U[ Y`rdi V`]W]f]b`Ybj ]fcba YbhU`XYW]g]cb]a U\_]b[ ""D`chc[ fUd`VmDUi`6fck b"

7F ⇒ CG

7F ⇒ CG`Dfcj ]XYf`7cXY.`\$\$\$- ;