

# **SOCW3006**

GcWjc!@Y[U``DfUWjWY`]b'GcWjU``K cf\_'GYHjb[g



# 7 ci fgY Cj Yfj ]Yk GHJZZ 7 cbHJWn8YHJ] g

### 7ci fgY 8YW] g

#### I b]hg~cZ7fYX]h~\*

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

#b 'lh ]g 'Wci fgY 'mci 'k ]``YI d`cfY 'h\Y 'Y[ U`ž'dfcZYgg]cbU`ž'UbX 'Yh\]\W\`cddcfti b]tj\Yg 'UbX 'WcbglfU]btg cZgc\J\U` k cf\_'dfU\Wj\\W'''8 fUk ]b[ 'cb'dfU\Wj\\Y' ']bZcfa YX 'WUgY 'gh X]Ygž'`Y\Wi fYg 'UbX 'h hcf]U`g`k ]``'dfcj ]XY 'h\Y cddcfti b]tm'Zcf'mci 'fc'\\cbg]XYf'h\Y 'h\Ybg]cbg'UbX'X]Ya a Ug`cZgc\J\C! 'Y[ U`'dfU\Wj\\Y 'h\fci [ \ 'Ub'YI Ua ]bUtjcb cZgc\J\U'' k cf\_']bt\Yfj Ybtjcbg']b'gY`Y\WigYttjb[ g"'5th\Ybtjcb']g'dU]X'tc''Y[ U`'gmgt\Ya gž'Y[ U`'\\cb\Ydfg\Z 'UbX \Uk a U\_]b[ 'dfc\W'ggYgž'gci f\W'g'cZgc\J\c! 'Y[ U`'Ugg]gt\Ub\Y''UbX']bt\YfU\Wjcbg'\Ytk YYb'gc\J\J\U'\k cf\_Yfg'UbX `Uk m\Yfg''

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

- %" 91 d`U]b 'U`fUb[Y`cZ]bhYfUW]cbg`VYhk YYb`gcW]U``k cf\_'dfUW]\W`UbX`h\Y``Uk "`
- ' " 9j U`i UHY'H\Y'fYgdYWNjjY'fc`Yg`cZjU`i Yg`UbX`YH\]Wg`]b`gcW]c!`Y[U``dfUWNJWY`]b`gcW]U``k cf\_`gYHn]b[g"` (" 5dd`m`VUg]W`Y[U``\_bck `YX[Y`UbX`Udd`m`gcW]U``^ gH]WY`df]bW]d`Yg`]b`H\Y`UbU`mg]g`cZU`fUb[Y`cZgcW]c! `Y[U``WcbHYI hg"

#### HYUWX]b[ 'GhfUhY[]Yq'

\$\text{\text{UWVcfXUbWYrk}}\text{\te

5g Wci fgY WccfX]bUlcfgžk Y VY`]Yj Y ih Ulighi XYbhg WUb a Ul ]a ]gY ih Y]f "YUfb]b[ "]b ih ]g Wci fgY VmUlth/bX]b[ Vch "YWi fYg UbX ii hcf]U`g fY[ i `Uf nž Wca d`Yh]b[ 'fYei ]fYX fYUX]b[ 'VYZcfY ih Y ii hcf]U`WUgg UbX Vm dUfh]W]dUh]b[ ']b X]gW gg]cb ]b Vch "YWi fYg UbX ii hcf]U`g" "5 'bi a VYf cZ[ i Ygh YWi fYfg k ]` "dfcj ]XY Yl dYfh ]bZcfa Uh]cb k \]W ]g ]bhYbXYX ic ]bWfYUgY 'ghi XYbhYb[ U[ Ya YbhUbX ]bhYfYghUg k Y`` 'Ug Ybgi f]b[ 'U'fUb[ Y cZdfcZygg]cbU``Yl dYf]YbW g UbX 'g\_]``g ']g 'dfYgYbhYX 'Zcfghi XYbhWcbg]XYfUh]cb" K \YfY 'dcgg]V`YžVUg]W Dck YfDc]bhq`]XYg k ]``VY 'Uj U]`UV Y 'UZhYf'h Y "YWi fY"

## 5ggYgga Ybh

5ggYgga Ybh'tUg_	K Y][ \h	8iY'8UHY	7 ci fgY @YUfb]b[ Ci hWca Yg 5ggYggYX
%"·G\cfhFYZYWfjY`Kf]h]b[	%) ।	' \$#\$- #&\$&&`%%) - `DA	%
&"'7 ci fhF Ydcfh	')	' %#%\$#&\$&&`%%) - `DA	%ž <sup>*</sup> (
' "`5bU`mg]g`cZ7cbhYlhiUbX DfUW¶W	) \$1	&) #/%#&\$&&`%%) - `DA	%ž'&ž'' ž'(

#### 5ggYgga Ybh% G\cfhFYZYWhjj Y K f]hjb[

5ggYgga Ybh`Yb[ h\. +) \$ k cfXg 8 i Y XUhY. \* \$#\$- #&\$&&\*%) - DA

5 '+) \$'Ugg][ ba Ybhcb'hcd]\Wg'fY`Yj Ubhhc'h\Y'\\ci fgY"'Gh XYbhg'UfY'[ ]j Yb'k f]hhYb'ZYYXVU\\\\_'k ]h\]b'hk c k YY\_g'cZgi Va ]gg]cb"

H\]g`Ugg][ ba Ybh]g`gi Va ]hhYX`h\fci [\`Hi fb]h]b`UbX`gh XYbhg`Wb`gYY`Hi fb]h]b`g]a ]`Uf]hmifYdcfhg"

#### 5ggYgga Ybh& 7ci fhF Ydcfh

5ggYgga Ybh``Yb[ h\. '%&\$\$'k cfXg 8i Y`XUhY.'' %#%&\$&\$'%() - 'DA

 $5 \% \$\$ fYdcfhcb'hcd] Wg'fY`Yj Ubh'hc'h\Y'Wc'i fgY'''Ghi XYbhg'UfY'[]j Yb'k f] hhYb'ZYYXVUW_k ]h\]b'hk c'k YY_g'cZ gi Va ]gg]cb''$ 

•

H\]g`Ugg][ ba Ybh]g`gi Va ]hhYX`h\fci [\`Hi fb]h]b`UbX`gh XYbhg`Wb`gYY`Hi fb]h]b`g]a ]`Uf]hmifYdcfhg"

## 5ggYgga Ybh' . 5bU'mg]g cZ7cbhYl hUbX DfUWhJWY

8i Y'XUhY.'&) #%#&\$&&'\%) - 'DA

 $5 \% \$\$ \$! k \ cfX`Ugg][ \ ba \ Ybhcb`U`hcd]WfY`Yj \ Ubhhc`Wci \ fgY`a \ UhYf]U```Ghi \ XYbhg`UfY`[ ]j \ Yb`k \ f]hhYb`ZYYXVUW_k \ ]h\]b`hk \ c`k \ YY_g`cZgi \ Va \ ]gg]cb"$ 

H\]g`Ugg][ ba Ybh]g`gi Va ]hhYX`h\fci [\`Hi fb]h]b`UbX`gh XYbhg`Wb`gYY`Hi fb]h]b`g]a ]`Uf]hmfYdcfhg"

## FYgci fWyg

#### DfYgWf]VYX F Ygci fWYg

7 ci fgY hYI h

7\f]q^AUm`YUž~f&\$&\$L\*GcWJU`~Kcf~UbX~h\Y^@Uk.~U~[i]XY~Zcf~Yh\]WU`~dfUWf)WYžFYX~;~`cVY~DfYggž@cbXcb"~

H\]g`WUb`VY`di fVXUgYX`Zfca 'h\Y`I BGK '6cc\_q\cd`]b`cb`]bY`cf`\UfXWcdm\Zcfa Uh'

< UfX: Wcdm: \hdg.#k k k "Vcc g\cd"i bgk "YXi "Ui #XYHJ]`g"W ]3+19A B C 1 - +, % ) &\$\$, ' \*(

C b`]bY. ``\htdg.#k k k "j ]hU`gci fW\"Wca #\b!Ui #dfcXi W\g#j - +, % ) &\$\$, ' +%

.

 $\label{lem:conditional} K YY\_`mfYUX]b[g`]bWi X]b[g`fYfU``\_YmWkUdhYfg`Zfca `hkY`dfYgWf]VYX`UbX`fYWca a YbXYX`hYI hg`k]```VYUj U]`UV`Y`cb`@Y[Ubhc'j]U`A ccX`Y"$ 

#### FYWca a YbXYX FYgci fW/g

FYWca a YbXYX HYI h

 $G]a\ cb`F]W'`UbX`5bXfYk`8Um' \textcircled{9} Xg" Qf \& \% \& `GCW]U``K\ cf_']b`h\Y`G\UXck`cZh\Y`@Uk`: YXYfUh]cb`DfYgg \& 5bbUbXU`Y''$ 

Mci 'UfY 'YI dYWYX'hc'i gY'h\Y'I BGK '@]VfUfm'\hd.#k k k "`]VfUfm'i bgk "YXi "Ui '"

; c'hc';  $cc['Y'GWkc'Uf2'gYh]b[g2'']VfUfm']b_gž'UbX'YbhYf''l b]j Yfg]micZBYk 'Gci h\'K U'Yg'']b'h\Y'Vcl 'Zcf "@\VfUfm'.$ 

±0 'UXX]h]cb'hc'h\Y'fYUX]b[g'cb'A ccX`Y'h\YfY'UfY'U'bi a VYf'cZch\Yf'fYgci fW/g'h\Uh'gh XYbhg'a Umik ]g\'hc Wcbg]XYf'Zcf'a cfY'XYhU]`YX`]bZcfa Uh]cb'UbX'h\Y]f'UggYgga Ybhg.

• "H\Y "`Uk '\UbXVcc\_, 'mci f'dfUW]\WU` [i]XY 'hc'h\Y "Uk ']b'BYk 'Gci h\ 'K U`Yg 5```W\UdhYfq'UfY 'Zfca 'h\Y '% h\ 'YX]h|cb'cZH\Y '@Uk '< UbXVcc\_'dfcj ]XYX 'Vm'H\ca qcb'F Yi hYfq'Zcf  $\bullet \text{H}Y\text{SighfU']Ub'@Uk'FYZcfa'7caa]gg]cb'UbX'hY'BGK'kkkk''U'fW'[cj''Ui\#'''HYY':YXYfU''5ighfU']Ub'`UkfYZcfa'VcXmh\Uh'\Ug']bghfiaYbhU'']b'fYWcaaYbX]b['fYZcfag'hc'`Uk'g]bW''%+)'''HYYfY'UfY'U'gc'X]ZYfYbh@Uk'FYZcfa'7caa]gg]cb'g']b'jUf]cig'GhUhY'^ff]gX]Wf]cbg'k\]W''U'gc'dfcXiW''aUbm]bhYfYgh]b['fYdcfhg'cb'Y[U''aUhYfg''$ 

### a ]gg]cb cZ5ggYgga YbhHUg\_g

jb Gi Va ]gg]cb

YbWci bhYf`U`dfcV`Ya 'k \Yb`UhhYa dh]b[ 'hc`gi Va ]h`mci f`Ugg][ ba Ybhih\fci [ \`Hi fb]h]bž'd`YUgY cbY`9| hYfbU``Gi ddcfh'cb`-',)'''' %cf`Ya U]``h\Ya 'cb`Yl hYfbU`hY`hgi ddcfh4 i bgk "YXi "Ui

fh\cifg'UfY', .\$\$Ua`—'%\$.\$\$da`cb`k YY\_XUmg'UbX'-.\$\$Ua`—').\$\$da`cb`k YY\_YbXg'fl\*) 'XUmg'U

Zmci 'UfY'i bUV'Y 'rc'gi Va`]hmci f'Ugg][ ba Ybh'Xi Y'rc'U'ZJi `hk ]h\ 'Hi fb]h|bž'mci 'a Um'Udd`m'Zcf'Ub

]cbžVi hmci 'a i ghfYhJ]b'mci f'h|W\_Yhbi a VYf'Zfca '91 hYfbU''Gi ddcfhfU'cb[ 'k ]h\ 'Ubmch\Yf'fY'Yj Ubh

YbhgŁ'hc']bWi XY'Ug'Yj ]XYbWY'rc'gi ddcfhmci f'Yl hYbg]cb'Udd`]WJh]cb"'-Zmci 'Ya U]`'91 hYfbU''Gi ddcfhž

|``'Ui hca Uh]WJ``mfYWY]j Y'U'h|W\_Yhbi a VYfž'Vi h]Zmci 'HY`Yd\cbYž'mci 'k]``'bYYX'hc'gdYWJZJWJ``m'Ug\_'Zcf
i fb]h|b'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa'ghUh g'cb'Hk]hHYf"

U``mžUggYgga Ybh'NJg\_gʻa i gh'VYʻgi Va ]lhYX'Y`YWfcb]WU``mj ]U'Y]h\YfʻHi fb]h]bʻcfʻUʻA ccX`Y a Ybh'ʻ±bʻ]bghUbWYgʻk \YfYʻh\]gʻ]gʻbch'dcgg]V`Yž'U`hYfbUh]j Yʻgi Va ]gg]cbʻXYNJ]`gʻk ]```VYʻghUhYX'cbimci f ('gʻA ccX`Yʻg]hY"': cfʻ]bZcfa Uh]cbʻcbʻ\ck ihcʻgi Va ]hʻUgg][ ba Ybhgʻcb`]bYʻj ]UʻA ccX`Y. #gh XYbh'i bgk "YXi "Ui #\ck!gi Va ]h Ugg][ ba Ybha ccX`Y

i Va ]gg]cb DYbU`m

`\Ug`U`ghUbXUfX``UhY`gi Va ]gg]cb`dYbU`hmcZ

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

D`U[]Uf]ga `]g`i g]b[ 'h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b[ 'h\Ya `Ug`mci f`ck b"`±hWJb`hU\_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b[ 'hc`UWW]XYbhJ``mWcdm]b[ 'Zfca `U`gci fWY`k ]h\ci hUW\_bck `YX[ Ya Ybh'

IBGK [fcidg'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'U\V\_bck 'YX[]b[

## 5 WUXYa ]W + DZcfa Uh]cb

8 i Y'hc'Yj c'j ]b[ 'UXj ]WY'VmBGK '<YU'h\z'ghi XYbhg'a i ghW\Y<u>W</u>'Zcf'i dXUhYX']bZcfa Uh]cb'fY[ UfX]b[ 'cb`]bY 'YUfb]b[ 'Zcf'U``'5fhgz'8Yg][ b'UbX'5fW\]hYWi fY'Wci fgYg'h\]g'hYfa 'fJ ]U'A ccX`Y'cf'Wci fgY']bZcfa Uh]cb dfcj ]XYXŁ"

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 $\label{eq:decomposition} D`YUgY`gYY. \$\https://dc... $$ Li bgk "YXi"Ui #Ufhg!XYg][b!UfWX]hYWh fY#ghi XYbh`]ZY#Ygci fWYg!gi ddcfh#dfchcWc`g! $$ [i ]XY`]bYg`Zcf`YggYbh]U``ghi XYbh`]bZcfa Uh]cb`fY`Uh]b[`hc. $$$ 

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