



# **LING5024**

@ $b[i]ghWg^cZGdc_Yb^9b[^]g\$ 

HYfa 'C bY''##'&\$%-

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

### 'GhJZZ'7cbhJWh'8YhJ]`g'

'7cbj Ybcfg'

B Ua Y	9a U]`	5j U]`UV]`]m	@cWJhjcb	D\cbY
>Ua Ygʻ@YY	ŭ ŭ	S	&&* 'A cfj Yb 6fck b 6i ]`X]b[	Ya U]` dfYZYffYX" -',)'% *%

### GWXcc``7cbHJWhi±bZcfa Uh]cb

GW.cc``cZ<iaUb]h]Yg'UbX'@Ub[iU[Yg

@cWUhjcb. GWkcc`CZZJWYž'AcfjYb'6fckb'6i]X]b[ž'@YjY``&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 8YHJ] g

### 7 fYX]h'Dc]bhg'\*

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

Mci 'k]``YI d`cfY'h\Y'dUhYfbg`cZgdc\_Yb`9b[`]g\":Mci 'Z̄fghYI Ua]bY'h\Y'Zcfa UhJcb`cZgci bXg`UbX'h\Y gci bXg`H\Uha U\_Y'i d'h\Y'9b[`]g\ gci bX'gmghYa "'Mci 'h\Yb'Vi]`X'Z̄fca 'g]b[`Y'gci bXg'hc'h\Y'Wca V]bUhJcb`cZ gci bXg']bhc'gm`UV'Yg'UbX'h\Y'fc'Y'cZgm`UV'Yg']b'9b[`]g\'f\nth\a ž'h\Uh]gž'h\Y'a Y`cX]\W\cbrci f'cZ gYbhYb\Wg"'\Ci 'U'gc'YI Ua]bY'h\Y'\cbghfi \WJcb'cZk cfXg'Z̄fca 'gci bXg'UbX'h\Y'\wca V]bUhJcb'cZk cfXg']bhc d\fUgYg'UbX'gYbhYb\Wg"': ]bU``mž'mci 'YI d`cfY'k\UhHU\_Yg'd`U\W'U\Vcj Y'h\Y'gci bXgž'h\Uh]gž'U\W\bhi UhJcb UbX']bhcbUhJcb']b'Vch\'Zcfa U``UbX'\\cei ]U``\wcbhYl fg"'H\]g'\wci fgY'\Ug'Udd`]\WJhJcbg'Zcf`]b[i]ghg'k\c Yj U`i UhY'UbX'UbbchUhY'gdc\_Yb'`Ub[i U[Y'XUhU']b'`Ub[i U[Y#]b[i]gh]\\g'']bXi ghf]Ygž]bhYfdfYhYfg'k cf\_]b[']b a i `h]`]b[i U`gYhJb[g'k]'g\'g\'g\'g\'y\g''\U\X'Yfg'cZ9b[`]g\'U\X'YbC'\cgY'k\c k]q\'hc'\_bck 'a cfY'U\ci h'9b[`]g\'g\'d\cbYh\\g'UbX'd\cbc`c[m'

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

%" XYgWf]VY`h\Y`\_YmZYUhi fYg`cZh\Y`9b[`]g\`gci bX`gmghYa`]bWi X]b[`UVW\bhi Uh]cb`UbX`]bhcbUh]cb" &" UbU`mgY``]b[i]gh]WXUhU`UbX`Uf[iY`h\Y`aYf]hg`cZh\UhUbU`mg]g" \" WaadUfY`Wa``cei]U``UbX`ZcfaU``dUhhYfbg`cZgdc\_Yb`9b[`]g\"

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

H\Y`Wci fgY`]g`HJi [\hJg`U`k YY\_`mih\fYY`\ci f`gYa]bUf"'<U`ZcZh\Y`gYa]bUf`dfYgYbhg`h\Y`WcbW\dhi U`\_bck`YX[Y`cZh\Y`dUhh\fbg`cZgdc\_Yb`9b[`]g\"``+b`h\Y`gYWcbX`\U`ZcZh\Y`gYa]bUf`dfYgYbhg`k\cf\_ik]h\gdYYW\`gUad`Yg`]b`k\]W\`h\YmUdd`mh\Y`WcbW\dhi U``\_bck`YX[Y`hc`h\Y`UWhi U``dfcXi Wh]cb`UbX\Wcadf\\Ybg]cb`cZgdc\_Yb`9b[`]g\"

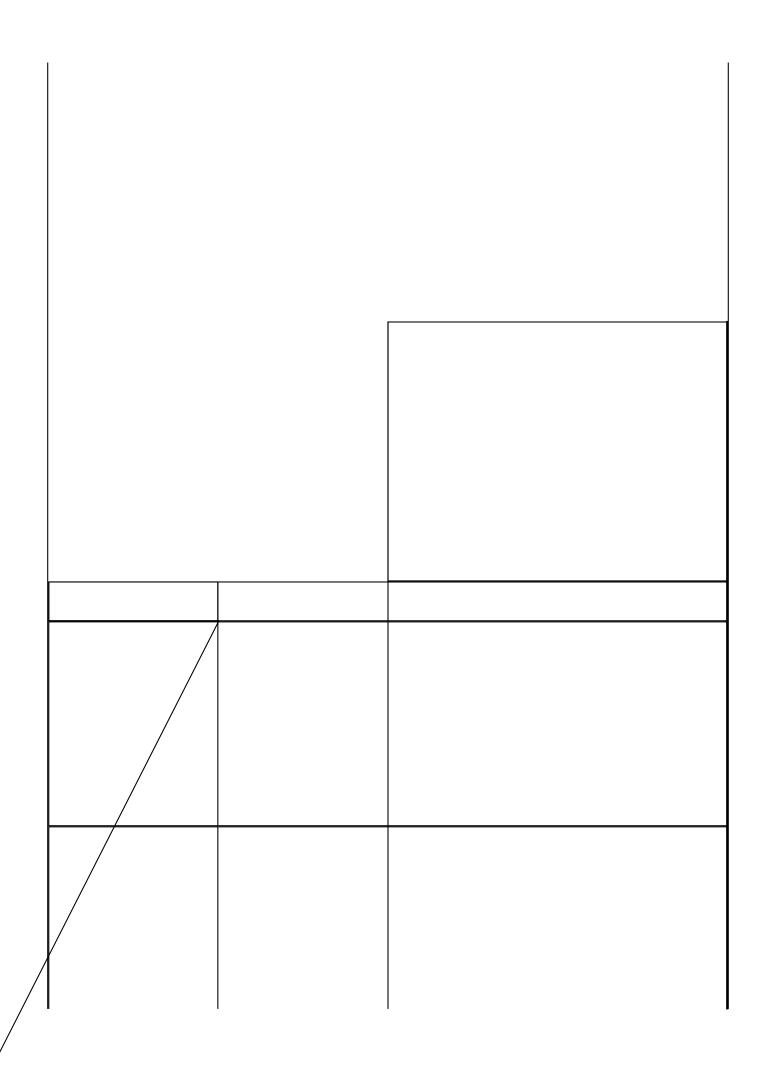
# 5ggYgga Ybh

# 5ggYgga Ybh'HUg\_g

5ggYgga Ybh'HJg_	K Y][ \h	8iY'8UHY	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX	
Dfc YWi	) \$1	\$, #\$) #&\$% `\$%\$\$`DA	% <u>ž&amp;</u> Ž	
HU_Y`\ca Y`hYgh`	')।	% #\$' #&\$% '\$).\$\$'DA	%	
DfYgYbHJh	‰	H	h <b>‰ ‰ ‰</b>	

### 5 https://bxubww.Fyei]fyaybhg

<u> </u>	1



1		' "'F YUX]b[ 'gYh'*
		@UV <sup>·</sup> k cf_
		("'Wcfdig^`]b[i]gh]Wg
K YY_', .', '5df]`'!''%( '5df]`	GYa ]bUf	8 ]gW gg]cb
		%"FYUX]b[ 'gYh'*
		C fU``dfYgYbfUf]cb
		&"'Ug'fcghYfYX
		Cj Yfj ]Yk
		' "'F YUX]b[ 'gYh'+
		@UV <sup>·</sup> k cf_
		("'Wcfdig``]b[i]gh]Wg
K_YY_''%)	GYa ]bUf	8 ]gW gg]cb
301)		%"``F YUX]b[ 'gYh'+
		C fU``dfYgYblUljcb
		&"'Ug'fcghYfYX
		Cj Yfj ]Yk
		' "'F YUX]b[ 'gYh,
		@UV <sup>·</sup> k cf_
		("'Wcfdig``]b[i]gh]Wg
K_YY_`%\$.`&&`5df]``!`&, 5df]`	GYa ]bUf	5df]``&&`]g`9UghYf`AcbXUmžU`diV`]W\c`]XUm'`Bc WUgg"

## Fygci fWyg

DfYgWf]VYX F Ygci fWYg

 $\label{eq:hammer} $$H\Y'WcifgY'fYUX]b[g'UfY'cifbU`Ufh]WYg'UjU]`UV`Y'h\fci[\Y'BGK'']VfUfm'$$$ 

FYWca a YbXYX FYgci fWfg

 $\label{eq:cc_point} 6cc\_'-Gci~bX'DUlttYfbg'cZ9b[~]g\'Vm@bXU'G\cW\underline{Y}m''6`UW\underline{k}~Y```Di~V`]g\Yfg''$ 

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

### Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

### Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Hi fb]h]b Gi Va ]gg]cb

#mci 'YbWci bhYf'U'dfcV'Ya 'k \Yb'UhYa dhJb[ 'rc'gi Va ]hmci f'Ugg][ ba YbhNhfci [ \'Hi fb]hJbž'd'YUgY
hY'Yd\cbY'9I hYfbU'Gi ddcfhcb'-', ) '' ' ' %cfYa U] 'h\Ya 'cb'YI hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY\_XUmg'UbX'-.\$\$Ua '-') .\$\$da 'cb'k YY\_YbXg'f1 \*) 'XUmg'U'mYUft'' #c'ii
UfY'i bUV'Y 'rc'gi Va ]hmci f'Ugg][ ba YbhXi Y 'rc'U'ZJi 'hk ]h\ 'Hi fb]hJb 'mci 'a Um'Udd'mZcf'Ub'YI hYbg]cbž'Vi hmci
a i ghfYhJ]b 'mci f'hJW\_Yhbi a VYf'Zfca '9I hYfbU''Gi ddcfhfU'cb[ 'k ]h\ 'Ubmch\Yf'fY'Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj ]XYbWY 'rc'gi ddcfhmci f'YI hYbg]cb'Udd']WUh]cb'' #mci 'Ya U]''9I hYfbU''Gi ddcfhmci 'k ]'`
Ui hca UhJWJ'`mfYWY]j Y'U'hJW\_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k ]'``bYYX'hc'gdYWJZJWJ'`mUg\_'Zcf'cbY''
Hi fb]hJb'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hYf''

; YbYfU``mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\W)``mij ]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ ba Ybh'' =b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]``'VY'gHJhYX'cb'mci f'\\ci fgY'g'A ccX`Y'g]hY'k ]h\ U`hYfbUh]j Y'gi Va ]gg]cb'XYhJ]`g''

cfi]bZcfa Uh]cbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbh'i bgk "YXi "Ui #\ck! qi Va ]hUgq][ ba Ybha ccXiY

### 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]XYbhU`mWcdm]b[ 'Zfca `U`gci fWY'k ]h\ci hUW\_bck `YX[ Ya Ybh'

IBGK [fcidgdu[]uf]ga ]bhch\YZc``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'dfcYWgž'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 Whi fY 'UbX#cf'dfc[ fYgg]cb'cZ]XYUg'cZh\Y'cf][ ]bU`ž'UbX']bZcfa Uh]cb'k ]h\ci h\UW\_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 h\UhYX]hUbX'hc
d]YW]b[ 'hc[ Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yž'k ]h\ci h\Uddfcdf]UhY'fYZYfYbW]b[ "

7 c``i g]cb.'k cf\_jb['k]h\ch\Yfg'Vi hdUgg]b['cZZh\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\_'hc'Ubch\Yf'ghi XYbhVYZcfY'h\Y'Xi Y'XUhYžcf'Zcf'h\Y'di fdcgY'cZh\Ya d`U[]Uf]g]b['UhiUbmh]a Yž'dUm]b['Ubch\Yf'dYfgcb'hc'dYfZcfa 'Ub'UWUXYa ]WhUg\_ž'ghYU']b['cf'UWei]f]b[ Ubch\Yf'dYfgcb'g'UWUXYa ]Wk cf\_'UbX'Wcdm]b[']hz'cZYf]b['hc'Wca d'YhY'Ubch\Yf'dYfgcb'g'k cf\_'cf'gYY\_]b[ dUma YbhZcf'Wca d'Yh]b['UWUXYa ]Wk cf\_"

±bUddfcdf]UhY`W]hUh]cb.`7]h]b[`gcifWrg`k\]W\`\UjY`bchVYYb`fYUXžk]h\cihUW\_bck`YX[]b[`h\Y`´gYWcbXUfm´gcifWrZfca`k\]W\`\_bck`YX[Y`cZh\Ya`\Ug`VYYb`cVhU]bYX"

8 i d`]\W\n]cb`ffgY`Z\d`U[]\Uf]ga "Ł`gi Va]\n]b[`mci f`ck b`k cf\_z`]b`k \c`Y`cf`]b`dUffz`k \YfY`]h\Ug`dfYj]ci g`m VYYb`dfYdUfYX`cf`gi Va]\nYX`Zcf`Ubch\Yf`UggYgga Ybhcf`\\cf\\text{i fgY`UhI\_BGK\_`cf`Ubch\Yf`i b]j Yfg]\m'

7 cffYWnfYZYfYbWlb[ 'dfUWnWyg.

- DUfUd\fUg]b[žgi a a Uf]g]b[žYggUmk f]h]b[ 'UbX h]a Y a UbU[Ya Ybh
- 5ddfcdf]UhY'i gY'cZUbX'Uhtf]Vi h]cb'Zcf'U'fUb[Y'cZa UhYf]U`g']bWi X]b['hYl hž']a U[Ygž'Zcfa i `UY'UbX WbWYdhg"

±0X]j ]Xi U``Ugg]ghUbWr`]g`Uj U]`UV`Y`cb`fYei YghZfca `H\Y`@YUfb]b[ `7 YbhY`f\hd.#k k k "`Wi bgk "YXi "Ui #£" Gh XYbhg`UfY`U`gc`fYa ]bXYX`h\UhWUfYZ ``ha Ybu[ Ya Ybh]g`Ub`]a dcfhUbhdUfhcZgh XmUbX`cbY`cZh\Y ]XYbh]Z]YX`WUi gYg`cZd`U[ ]Uf]ga `]g`dccf`h]a Y`a UbU[ Ya Ybh'`Gh XYbhg`g\ci `X`U``ck `gi Z]W]Ybh'h]a Y`Zcf fYgYUfW\žXfUZh]b[ `UbX`dfcdYf`fYZYfYbW]b[ `cZgci fWfg`]b`dfYdUf]b[ `U``UggYgga Ybh']hYa g"

IBGK @]VfUfmU`gc`\Ugʻh\Y`9@G9`hcc``UjU]`UV`Y`hc`Ugg]ghmci`k]h\`mcif`ghiXmUhIBGK "'9@G9`]gXYg][bYX`hc`]bhfcXiVW`bYk`ghiXYbhg`hc`ghiXm]b[`UhIBGK`Vih]hWUb`U`gc`VY`U`[fYUhfYZfYg\Yf`Xif]b[`mcifqhiXm"

7 ca d'Yhlb[ 'h\Y'9@&9'hi hcf]U`'UbX'ei ]n'k ]`'YbUV'Y'mci 'hc.

 UbU`mgY`hcd]\Mgž'd`Ub`fYgdcbgYg`UbX`cf[Ub]gY`fYgYUf\W\`Zcf'U\WXYa]\Wk f]hjb[`UbX`ch\Yf UggYgga YbhhUg\_g

### 5WUXYa]W = DZcfa Uh]cb

: cf`YggYbhJU``gh XYbh`]bZcfa UhJcb`fY`UhJb[ 'hc.

- fYei Yghg Zcf Yl hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk 'cZa Uf\_g/
- I BGK '<YU`h\ 'UbX'GUZYhm'dc`]W[Yg/
- YI Ua ]bUh]cb dfcWYXi fYg/
- gdYWJU``Wcbg]XYfUhjcb`]b`h\Y`Yj YbhcZ]``bYgg`cf`a ]gUXj Ybh fY/
- gh XYbhYei ]lmUbX X]gUV] ]lm/
- ÜbX'ch\Yf'YggYbhJU`'UWUXYa ]W]bZcfa UhJcbž'gYY

\hdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbhghi XYbhg#UWUXYa ]W]bZcfa Uhcb#dfchcWc`g![i]XY`]bYg#