

=a a][fUh]cb
5hgi XYfY



5hgi XYfY! 'i b]j Yfg]hYh

Fi a Âbg_

5 j fYU'gß'a ß'ÉbgW]i `U'i b]j Yfg]hYh"
5 b[]j `UhXi `[YfbYj] `]bXg_f]j Yg

Gj Ybg_

>U[j] ` `Uba À'U'a]['h` `i b]j Yfg]hYh'

5 j fYU'gß'Ud`]WU'Wfgj `XY'SSSSSSSSSSSSS"
5 b[]j `UhXi `[YfbYj] `gQ[Y'YhZU[

>U[j] ` `Uba À'U'a]['h` `Yb`SSSSSSSSSSSS"

gi XYbh

: U[

_UbX]XUh_i fg

gi XYbhW`X]d`ca ß

: U[

Uj UbWfUX`_i fg

XcWcfUbX

: U[

Xc_hcfUbX_i fg

W`bcfa ß'ÉbfYU[ß

: U[

Z `h]Xg_i fg

W`↑ a ßhY`XY'bcfa ß

: U[

XYh]Xg_i fg

`UX]ghub ß

: U[

cb`]bY_i fg

A]!Uf'd`ßWU'gß'gi X]Yn`U'i b]j Yfg]hYhYU
Xi a bYUj cUjfb'dYbfi `Vß'SSSSSSSSSSS"
5 b[]j `]j cf`Ub[`X]b'i Xj Y_g]b[`Yf

>U[`g_i `Yj] `U'gi XYfU'dÁ'Yfhi b]j Yfg]hYh] 'SSSSSSSS"

i b'gYa Ygfi

@Åb[XY'UZcd\c`X'j YX'i XYb`UbXg_`i b]j Yfg]hYh

Yb'hYfa]b

i b`Ub`UWXYa]W

@Åb[XY'UZcd\c`X'j YX'i XYb`UbXg_`i b]j Yfg]hYh

Yrh`AgÁf

7UFY'g bhVcbX]]]Y'XY`i Vfi `dYbfi `gi XYb]3
GdÔf[`ca `UFVY'XgYgYf]_h]cbYf`Zcf`gi XYfYbXY

J UX`Áf`XYhZÖf`UFVYgYV[f`Ábgb]b[Uf`ZÖf`gi XYbhYf3

=a a][fU]cb 5higi XYfY



HfYVi]Y'gB'dfYn]bhXcW'a YbhY'Y'cf][]bUY'gu 'Vtd]]
UY'UWg'cfU3

A ÁghY'U[j]gU'cf][]bUXc_i a YbhYb'Y'Yf'_cd]cf'Uj
cf][]bUXc_i a YbhYb3

GdÔf['ca 'Xi 'g_U'UZ'Yj YfY'XY'cf][]bUY'dUd]fYf'Y'Yf'V'ch_cd]Yf

7UFY'g bhVcbX]]]'Y'XY'UXa]HfY'U'i b]j Yfg]HUY3
<j UX'Vfi [Yg'bÁf'Xi 'UbgÔ[Yf'ca 'cdH] Y'gy'dÁ'i b]j Yfg]HUYh

J]'_U'Áf'VÁ'Ôf][\Yrg_fUj Yb'ZÔf'i b]j Yfg]HUYh3

ªa]j Y]'f]a]Hf'c'gW]gcUFY'XY'UWwdHUY3
GdÔf['ca 'Xi 'j]' 'a cXHU[Y'Yb'Zcfa Y'cdH] Y'gy'gVY_fÁ'ZHY'gy

? ca a Yf'b]'Urhig_]W_U'YhZcfa Y'h'YfV'i XUbXY3

CZYfB'i b]j Yfg]HUYU'VhUY'XY'UgYa YbYU3
GdÔf['ca 'i b]j Yfg]HUYh] 'VmXYf']bX_] UfHYf]b[

; UFUbHYfUf'i b]j Yfg]HUYhVcYbXY3

9I]gB'dYf]cUXB'XY'dfUW]VB'Éb'd'Ubi 'XY'g]i X]]3
GdÔf['ca 'X]bY'i b]j Yfg]HUYgZU[]bXY'c'XYf'Yb'dfU_h_dYf]cXY

=bbYZUHUf'_i fgYb'Yb'dfU_h_dYf]cX3

Gh XYb]]'WUFY'j]b'W'gW]a V'XY'Yi dYf]Yb B'fYVi Y
gB'd'BYUgMB'hu B'XY'Éba Uf]W'UFY3

A ÁghY'U[žgca 'i hVntHgg]i XYbZ'VhU'U'HYfa]bgJ []ZhdÁ
X]Hhi b]j Yfg]HUY3

GdÔf['ca 'Xi 'Yf'bÔXhi]' 'UhVYHU'Y'Zcf'Uhigi XYfY'gca 'i Xj Y_g]b[gg]i XYfYbXY'dÁ'XYHY'i b]j Yfg]HUYh

7i a 'dchi fa Bf'dfc[fYg' 'Ud']WU]Y]'a Y'Y3
GdÔf['\j cfXUb'Xi '_Ub'gY'X]b'UbgÔ[b]b[gZfYa [Ub[

< i f'_Ub'U['ZÔ'U'i h] WU]b[Yb'Uj 'a]b'UbgÔ_Ub3

7UFY'Ygh'b]j Y'i 'XY'O]a VUQWfi H33
GdÔf[]bX'h]' \j]'_Y'_fUj 'h]' gdfc['XYf'g_U'cdZmXYg'Zcf'U'i bbY'V'j Y'cdH] YhdÁ'i b]j Yfg]HUYh

J]'_U'Áf'gdfÁ__fUj Yb3

7i a 'Ygh'g]g]Ya i 'SSSSSSSSSSSS3
GdÔf['h]']bZcfa U]cb'ca 'gng]Ya Yh

< i f'Zi b[YfUf'SSSSSSSS'3

XY'WYX]HY
J i fXYf]b[ggng]Ya

dcAb[gng]Ya Yh

XY'bchY
J i fXYf]b[ggng]Ya

Wm]gg]Hhb]b[Yb

J c]'df]a]'c'ZcU]Y'a Uf]W'ÉB'U'Z]bU'i 'a cV]'H3]]3
GdÔf['ca 'Xi 'g]Xgh]' X]hi Xj Y_g]b[gcd'c'X'j]' ZÁ'Yb'U'UXYa]g_'i Xg_f]Zh

: Áf'U['Yb'_cd]U'Uj 'a]bU'U'UXYa]g_U'fYg 'hu]'gi HhUj
a]Hhi hVntH3

⇒ a a][fU]cb 5hgi XYfY



7i a 'Ygh'g]hYa i ``XY'dfYXUY3
GdÔf['h`i bXYfj]gb]b[gZcfa Yb

< i f `Áf i bXYfj]gb]b[Yb3

Gi bhSSSSSSSSSSSSSS3
GdÔf['h`i bXYfj]gb]b[gZcfa Yb

:]bbgXYhSSSSSSSS3

Wfgj f] 'hcfY]W
? i fgj gmdY

ZÔfY Àgb]b[Uf

gYa]bUf]]
? i fgj gmdY

gYa]bUf]Yf

hi hcf]UY
? i fgj gmdY

\UbX`YXb]b[

V&bZYf]b Y
? i fgj gmdY

_cbZYfYbgYf

W`ZY`XY`Wfgj f]'cZYfB' V&`]'Y`XY'j UfB3
GdÔf['ca]bZcfa U]cb'ca `XY`ZU[`XYf'h`VmXYgdÁ'gca a Yfg_c`Y

J]_U_i fgYf YfV'i Xg]'gca a Ufg_c`Ub3

7³hX'gY'g] g]bY'gYg]i bYU`XY`Yi Ua YbY3
GdÔf[`j cfbÁf`XYf`Yf`Y_g]a]bYf

BÁf `Áf`hYb]UdYf]cXYfbU3

I bXY`dch[Bg]]bZcfa U]]`XYgdYf'hcU`Y`Wfgj f]'Y
X]g]cb]V]'Y3
GdÔf[`j cfX`Xi `_Ub`Z]bXY]bZcfa U]cb'ca `ZU[YbY

J Uf`_Ub`U[\]hU]bZcfa U]cb'ca `U`U`h`[`Áb[`][U
_i fgYf3

5 fY'i b]j Yfg]hU`YU`Wb]fi `gdcf]j 3
GdÔf['ca `XYf`Yf`Yb`gdcf]h`U`dÁ'i b]j Yfg]hY`Yh

< Uf`i b]j Yfg]hY`Yh`Yb`]Xf`ch]g]b`Á[[b]b[3

7i a `a B'dchiU`B]hi fU`Ugc`WU]]`cf`gi XYb Y h]3
GdÔf[`j cfX`Ub`Xi `_Ub`XY`hU[Y]'gi XYb]YfZcfYb]b[Yf

< i f`_Ub`U[[`Á'a YX]'gi XYb]ZÔfYb]b[Uf3

7UFY'g] bhW`Y`h]Y]'Y`XY`Éb]fY]bYfY`Yg]a U]j Y`Éb
Q`fU i `Q
GdÔf[`YZ]Yf`XY`Ubg`ÁYXY`Yj Yca _cg]b]b[Yf]'`VmYb

< i f`^Q`U`Áf`Yj bUXg_cg]bUXYfbU]'Q`hUXQ3

5hgi XYfY! `Gdfc[_i fgYf
F i a Ábg_

Gj Ybg_

⇒ a a] [f U h] c b 5 h g i X Y f Y



7 Y "] a V] g h f B] b Y ' d c h g i X] U ' É b ' W b l f i `

J] _ U ' g d f Á _ U b ' U] ' g i X Y f U d Á X Y b b U ' g _ c ' U b 3

GdÔf [` \]] _ Y ' g d f c [` X i ' _ U b ' g i X Y f Y ' d Á ' g _ c ' Y b

9 l] g B ' i b ' h Y g i X Y ' Y] U i U F Y ' d Y b l f i ' U a] ' g ' X Y h f a] b U

:] b b g X Y h Y h i h Y g i ' U] _ U b ' h U Z Ô f ' U h V Y X Ô a U a] b ' b] j Á 3

GdÔf [` c a ' X Y f ' Y f ' Y b ' d ' U W f] b [g h Y g i Z c f ' U h V Y X Ô a a Y ' X] h b] j Y U

9 l] g B ' d c g] V]] h u h U X Y ' U Z] ' h U b g Z Y f U h ' U U h b] j Y

? U b ' U] ' V n h U b] j Á ' c a ' U] ' b h Y ' Á f ' b Ô X ' a Y X X Y b ' U] [Á f] 3

X U W B ' b i ' Z F Y V Y b h Y n ' b] j Y i ' ` d c h f] j] h a] Y 3

5 j Y] ' c ' X Y g W] Y F Y ' X Y h U] U h B ' U W f g] ' i] 3

:] b b g X Y h Y b ' X Y h U ' Y f U X ' V Y g _ f] j b] b [' U] _ i f g Y b 3

GdÔf [` c a ' X Y f ' Y f ' Y b ' X Y h U ' Y f Y h V Y g _ f] j Y ' g Y ' U Z Z U] Y h

7 U F Y ' Y g h Y ' b i a B f i ' ` a U] a ' X Y ' g i X Y b] ' X] b l f i ' c ' W U b 3

< i f ' a Á b [U ' g i X Y b h Y f ' h U f ' _ i f g Y b ' a U] a U h] b 3

GdÔf [` \] U X X Y h a U _ g] a U Y ' U b h U ' U Z X Y h U] Y b X Y ' g i X Y f Y b X Y ' Y f ' d f " Z U]

7 Y ' Z U W] h B f] ' c Z Y f B ' W b l f i ' ` 3

J] _ U ' c _ U U b ' Á [[b] b [U f ' Z] b b g X Y h] ' g _ c ' U b 3

GdÔf [` \]] _ Y ' Z U W] h Y h Y f ' X Y f ' Z] b X Y g ' d Á ' g _ c ' Y b

C f [U b] n U] ' Y i W f g] ' X Y ' U g Y a Y b Y U 3

5 f f U b [Y f U f ' g _ c ' U b ' c W g Á i h Z m h Y f 3

GdÔf [` c a ' g _ c ' Y b ' c [g Á ' U f f U b [Y f Y f ' Y _ g _ i f g] c b Y f

7 Y ' d f c [f U a B ' c Z Y f]] 3

J] _ U ' d f c [f U a ' Y f V ' 1 X g 3

GdÔf [` \]] _ Y ' d f c [f U a a Y f ' X Y f ' h] ' V n X Y g

5 h g i X Y f Y ! ' G h] d Y b X] Y f

F i a Á b g _

G j Y b g _

5 a ' j Y b] h d Y b l f i ' U W f Y] b Z c f a U]] ' É b ' ` Y [B h f B ' W

> U] ' Á f \ Á f ' Z Ô f ' U h Z Á [U ' c a ' Z] b U b g] Y f] b [g a Ô ^] [\ Y h Y f "

d c g] V] ' h B] ' Y ' X Y ' Z] b U b U F Y

7 Y ' c f [U b] g a Y ' É a] ' d c h Z] b U b U ' g i X]] Y 3

J] _ U ' c f [U b] g U h] c b Y f ' _ U b ' Z] b U b g] Y f U a] b U ' g i X] Y f 3

GdÔf [` Y Z h Y f ' \ j]] _ Y ' c f [U b] g U h] c b Y f z ' X Y f ' _ U b ' Z] b U b g] Y f Y X] h g i X] i a

5 a ' b Y] c] Y ' X Y ' U f ' h c f ' Z] b U b W U f ' d Y b l f i

> U] ' V M Ô Y f Y _ c b c a] g _ \ Á ' d ' Z Ô f ' S S S S S S S S "

SSSSSSSSSSSS"

5 b [] j ' U h X i ' \ U f ' V f i [' Z c f ' Ô _ c b c a] g _ \ Á ' d

⇒ a a] [f U] c b 5 h i g i X Y f Y



KU B'XY' Vē'UF]nUFY

g_c'Uj []ZYf

GU[Yfz'Xi '\UF'V\cj 'Zcf'Ô_cbca]g_'g'ÔtY'h'

Êb'fY]bYfY

a]bU'Yj bUXg_cg'bUXYf

GU[Yfz'Xi '\UF'V\cj 'Zcf'Ô_cbca]g_'g'ÔtY'h'

Êb[f]'fY'Vēd]] 'a]bcf]

VUfbca gcf[

GU[Yfz'Xi '\UF'V\cj 'Zcf'Ô_cbca]g_'g'ÔtY'h'

7Y'Zr'XY'Vi fgY'XY'g'i X]i 'g bhX]gdcb]V]Y3

J]'_U'hmlYf'Uj 'g]dYbX]Yf'Z]bbgXYh3

GdÔf['\j]'_Yb'gU[g'g]dYbX]Yfz'XYf'Yf'h' ['Åb['Y]['Y

5 h i g i X Y f Y ! ; c X _ Y b X Y g Y ' U Z i X Y b ' U b X g _ Y i X X U b b Y g Y f

F i a Å b g _

G j Y b g _

5 'j fYU'g3'a]'Y\j U'Yn'Wf]Z]W]h' 'XY'g'i X]]'Êb
OUfU3

>U['g_i ''Yj]' 'Uj U]XYfU'a]h'Yi Ua YbgVj]g]'OUbXYh3

5 b []j 'UhXi '[YfbYj]'] U]XYfY'X]h]Uzgi HtYbXY'Y_g]a YbgVj]g]' 'UbXYh

5 j Y]'c''g]B'W'f'UXi V3'rcf]'U'rcf]nU]'Êb'0]a VU3

:]bbgXYhYb''g]U'Q'Yf'U'U'Wf]Z]Yf'UXY'Q'Yf'g'ÅHUFY'Z'f
Q'df'Å'3

GdÔf['ca 'XYf'Yf'Yb''g]Y'cj Yf'Wf]Z]WfYXY'cj Yfg'ÅHtYfY]'XYhgd'fc['Xi '\UF'V\cj 'Zcf

I bXY'dchcV]bY'i b'Wf]Z]W]hXY'Y\j U'UFY3

J Uf'_Ub'U['Z'Å'Yh'_]j 'ÅfX]]h'Wf]Z]_U3

GdÔf['\j cf'Xi]'_Ub'Z'Å'Yh'Å'_]j U'YbgWf]Z]_Uh