

# >Y'Ybh\_YnÅg A chj 1Wj g`Yj Å`



A chj 1Wj g`Yj Å`! ? YnXÅg  
\_cfYUJ

fca 1b  
Gha UY'8ca bž

< j Uu cgž ZÅFZ] VĚa nYhž]ga YfYhYb`bÅj

Gha UrB'8cUa bžž

< j Uu cgž b ] VĚa nYhž]ga YfYhYb`bÅj

Gha UY'8ca b#8cUa bžž

< j Uu cgž VĚa nYhbyj Y Åg`bYa Y ]ga YfYhYb

Gha U ]'8ca b]ž

( )  
< j Uu cgž h0W`VĚa nYh

ab`Uhb ]U'W]`Ygh`]bhYfYgUž

( )  
< j Uu cgž VĚa nYhY`\_bYj Y`Åg`bYa Y`hY`YgYb`]ga YfYhYb

Gha UY'8ca bi`Y'DcdYgWž

< j Uu cgž ZÅFZ] VĚa nYhž]ga YfhibÅj

Gha UrB'8cUa bB'DcdYgWž

< j Uu cgž b ] VĚa nYhž` \ 1/2 Učž]ga YfhibÅj

Gha UrB'8ca b] cUfB'DcdYgWž

< j Uu cgž b ] VĚa nYhž`Y[mYX0 1/2 ě ž]ga YfhibÅj

Gha UrB'8cUa bB'DcdYgWž

< j Uu cgž b ] VĚa nYhž]ga YfhibÅj ž]ga YfYhYb`VgU 1/2] 1/2 Udch

8fU[ B'5bXfY]DcdYgWž

? Yj ÅgVÅ` \ j Uu cgž a 1/2 fÅ[ YW'Ī HUj Ub`0n`Yh`\_UdVg`Uh

8cfYgWgB`Ud`]WdYbfi`dcgh`XY""dcghXYWfYUa`i`Uh`U  
Wbc h]b B'df]b`]bhYfa YXj]`""Ě`XUfYXY""

GHubXUFX`Zcfa i`UY[mic`mub`1/2 1/2 fUž`Ua Ymb\_Y`U`]fXYhÅg`hY[mĪg]1/2 VUb j U[ mia U[ Uh]bVUb`1/2 hUX

J B'gWji`Ě`Y[ Bhi fB`W`Ubi b i`dcgUhdY""

GHubXUFX`Zcfa i`UY[mcb`]bY`\]fXYhYh1/2 1/2 fUj 1/2 Ugn`1/2 cf

>Y Ybh\_ YnÅg  
A chj 1Wj g`Yj Å`



... ( ) ... : UMfYZf]fY`Ubi b i `8j g'X]b""X]b XUuXY""  
GfubXUFX'Zcfa i `UbbU\_Ya U[ ntUF1/2]1/2Uz\c[ m\c` HU 1/2HU'Ua Y[ \]fXYH/H1/2 1/2gh

... ( ) ... .. 5a `V]h]h]bi b i `8j g'df]b`WfYV]i HU ]i b'ca `W  
Yl dYf]Yb B'f]o Xca Yb]i `""f]o bi a Bfi `""U'di V]W ]Y]""W  
a UFY]bhYfYg'  
GfubXUFX'Zcfa i `UY[ mic`mb`1/2 1/2]U`Y Ybh\_YnÅg\_cfzUa Y nYhY[ mia U[ Uh]bVub]j U[ m\Yf]`UdVUb`1/2 1/2

... . 7i `XYcgV]h]bhYfYgUd]VdYbfi `dcgh `XY""gV]g`U  
V]bWf'g'  
GfubXUFX'Zcfa i `U`1/2 1/2]Y Ybh\_YnÅg\_cf

... . 5 `Xcf]`gB`Ud`]VdYbfi `dcn] ]UXY""  
GfubXUFX'Zcfa i `U`1/2 1/2]Y Ybh\_YnÅg\_cf

... , .... a`b`dfYnYbh`i V]Yn'dYbfi "" ]fYgdcbgU]`]hB ]Y'a YY  
]bW X""  
Bm]h`i`a cbXUu\_Åbh\Ugnb1/2 1/2`U`Y Yb`Y[ ]`Zc[ `U\_cn]g] 1/2 Udch`Yf`1/2]U

A chj 1Wj g`Yj Å`! `¥fj YÅg  
\_cfYU]

... , . fca 1b  
Gi bh]bhYfYgUhf]o`a cX'gdW]U`XY`UWghdcghXYcUFYW""  
5 bbU\_`Ua Y[ a U[ ntUF1/2]1/2Uz\c[ mia ]ÅfhgnYfYbÅX`Uh`UXcthia i b\_1b

... , . 5 `Xcf]`gB`i V]Yn'dYbfi `Wa dUb]U`8j g'XYcUFYW""  
5 bbU\_`Ua Y[ a U[ ntUF1/2]1/2Uz\c[ mia ]ÅfhgnYfYbÅX`Uh`UXcthia i b\_1b

... . Di bV]Y`a YY`ZcfHY`g bh""  
5 `Y[ Zcbhc]gUW`h`U`Xcb]g]U]X`Yf`1/2]U\_cf

... , .... 5 `gdi bYV]B`gb[i fi `#]b[i fYY'a YY'di bV]gUW`#di bV]W  
gUMY`Ygh`#j bh""""8Uf`]bhYb ]cbYn`gB`f]a Vi bB`B YgU]  
UMgh#UMghY`UgdV]W#UgdV]W"  
I HU`1/2]U[ mYb[YgÅ[ Y]XFYZXY`UbbU\_`a i HU`1/2]Uz\c[ mignYfYbÅ`YnY\_Yb`U`HYfØ`YH\_Yb`ZY^ Xb]

... , . 5 `Z]`dYf`gcUbU`dchf]j ]hB`dYbfi `UMghdcghXYcUFYW""  
5 bbU\_`Yf`1/2]Uz\c[ mia ]h`j`U[ m]f`Y Ybh\_Yn `Ua i b\_1bU

# >Y Ybh\_ YnÅg A chj 1Wj g`Yj Å



...	...	ab Vj XU ZLh i ] Vb bi 'Ua 'c'Yi dYf]Yb B'Ubhf]cUfB'Eb Xca Yb]i `"'zUa 'Uj i h'chi ]''''
5 a ]_cf'a Å[ 'bYa 'Xc[ 'cnh½Uh'UXchihYfØYHbžXY'gnYfYbÅX'VYa i hUhb]'Ua ½g'HYfØYHY_Yb'gnYfnYHhUdUgnUUhU]XUh		
	/	7 U]ZVBF]Y#5V]hB ]Y'a YY'dfcZYg]cbUY'gY'Xcj YXYgWU]Z dchf]j ]HYWF]b Ycf W'a dUb]Y]'8j g'
5 bbU_'U`Yf½g'Uz\c[ mia ]`mYb`_ÅdYggÅ[ Y_'hYgnbY_'U_'Ua Ugg½U'a i b_½U		
...	, ...	DY'dYf]cUXUW'Ua `i WUhW''za ]!Ua Êa Vi bBh ]hÊa Vc[ B ]h# h]bgW/bc h]b YY'Êb'Xca Yb]i `''''
9[ mUXchihYfØYHYb'gnYfnYHhUdUgnUUhVYa i hU½g'U'Åg'U_'ÅdYggÅ[ 'Ö`_ÅdYggÅ[ Y_#i X½g'gnYfnÅgÅfY		
...		8ca Yb]i `a Yi 'XYVUhB'YgY''''
5 bbU_'Yf½g'Uz\c[ mia Yn]_'HYfØYHYb'j UbbU_'U`Y[ bU[ n'cW'YfYXa ÅbmY]Xz'UdUgnUUhU]X		
...	, ...	7i 'h'cUHYVb'Ua `i WUh'Eb'Xca Yb]i `''''Ua VEdBhU W/bc h]b YUj UbghY' ]'Eb''''
9[ mUXchihYfØYHYb'gnYfnYHhUdUgnUUhVYa i hU½g'U'Åg'U_'ÅdYggÅ[ 'Ö`_ÅdYggÅ[ Y_#i X½g'gnYfnÅgÅfY		
		7\]Uf' ]Uh bV]V%bX`i WYn'Eb'f!i b'f]ha 'UYf'hibi 'bY[ ]'Yn UW'fUHY'YU'a i bV] ]'df]b'i fa UfYW'bg]XYf Vb'U dYf'g'UbU'dchf]j ]hB'dYb'f'i 'dcgi `XY''''
5 bbU_'Ya U[ mUf½g'Uz\c[ mia ]Åfh`YbbÅ`'f' 'Uh'½½g'U'U_'cf½V]'a i b_'UdUgnUUhU]X'U'Ud'½b		
가	, ...	7\]Uf' ]V%bX`i WYn'g'V'dfYg]i bY'dchia Yb ]bY g]UbXUfXY'Ya i bV] ]'ZcUfHY'f]X]W'HY''
5 bbU_'ÅfnÅ_Y'HYhÅgÅfYz\c[ mi_ÅdYgj U[ mia U[ Ug]] ÅbmY_Yh'f'½ Ugn' ]_Ö'f'bnYnYHYb'Xc[ 'cnb]		
		Df]b'i fa UfYU 'Uj YU'cW'h]U'gß'W'a V]b'Xca Yb]]`Y'a YY'XY ]bhYfYgW'UW'gh`cW'XY'a i bVb'
5 bbU_'VYa i hU½g'Uz\c[ mignYa Å'mYgYb']g'bU[ m'cb'ÅfXY_` Xgn'U'a i b_'U]f'½h		
...	, ...	5a 'i b'fYU ]bhYfYg'Eb'''' ]'U 'UdfW]U'ZcUfHY'a i `h cdcfh b]hUHU#UbgU'XYU'Êa ]`Bf[ ]W/bc h]b YY`i W'ß%bX dYb'f'i 'W'a dUb]U'8j g'
5 bbU_'VYa i hU½g'Uz\c[ mignYa Å'mYgYb']g'bU[ m'cb'ÅfXY_` Xgn'U'a i b_'U]f'½h		

>Y Ybh\_ YnÅg

A chj 1Wj g`Yj Å`



, 가가

8i dB'Wa 'fY]YgY' ]X]b'7J !i `URU Urz'Yi dYf]Yb U' ] W]Z]V]Bf]Y'a Y'Y'gY'dcf]j Yg]W]F]b Y'cf'dcgi `i ]"

5 n'ObÅ`YhfU'ncX`\_] \Ub[ gÖmçn]U\_cf'Åg'UbbU\_`ÅfnÅ\_Y HnÅgÅfYz`c[ ma Ybbn]fY' ]`YbY'\cnn]X`Yn'U'a i b\_U

...

Dcgi `XY'''cWdUh`U'''a ]!UcZyf]hcdcfhi b]hUyU'XYU `i WU'Ebhf!i b'a YX]i `gc`]V]HbhEb`WfY'gY'di bYU'UWWhi ` dY`i Wf `Eb`Ww]dBz'a YX]i `i bXY'YgY'YgYb ]U`gB`i WfYn] YZ]V]YbhEb`Ww]dB'dYbhf i `U'ZUW'ZU B'hfa YbY'cf!`ja ]hB"

5 bbU\_`Yf'U'Uz`c[ ma ]`mYb`hi X]g]U'V]fch]2`Y`U`Y`Yb`Y[ ]`a i b\_`X`gc'f]b

... , ....

DY`3]b[ B'fYgdcbg]V]hB ]Y'a Y'Y'W'''zUa`V]d]B]h]XY U]gYa YbYU' ]U'V]hB ]Eb`Xca Yb]i `'''

9i hfU\_`ÅdYg]fÅgY`#i X]g`Yf'U'Uz`Ua ]\_YhU`Y`Yb`Y[ ]`1/2`1/2gcXcb`\_YfYgn]Ø`g]V]fch]2`Y`Åg`Ua ]\_`bYa`ZY`hÅh`YbØ`ZØ[ ]bY\_ ÖgnY`gncfcg]b`U`Zc[ `U`cn]g]`dcn]V]i`XXU

A chj 1Wj g`Yj Å`! ? ÅdYggÅ[ Y\_#\_ÅgnÅ[ Y\_ \_cfYU]

fca 1b

... , ...

@ja VU'a YU'bU]h] B'YgY'''zXU'f`j cfVYg]V]i Ybhi ]'''

5 n'UbntubnYj YX'Åg'Uh'Y[ mÅV`Zc`mÅ\_cbtub`VYgnÅ`hibnYj Y\_`Yf'U'Uz`U

...

GhBd3]bYg]V]ZcUf]h'V]bY'''

B Ya `UbntubnYj ]zXY'a U[ U]g]n]bhYb`VYgnÅ`hibnYj Y\_`Yf'U'Uz`U

...

7i bcd]WU'b]j Y`a YX]i `'''

B Ya `UbntubnYj ]`Åg`\_ÖnÅdgn]bhYb`VYgnÅ`hibnYj Y\_`Yf'U'Uz`U

... ..

5a `'''Ub] XY'Yi dYf]Yb B'Eb`Xca Yb]i `'''

9[ m]UXc]h]i]Ø`Yh]`hYfØ`YhYb`gnYfnYh]i]h]d]U]gn]U`U]h]X`Yf'U'Uz`U

...

Gi bhii b`i`h`]n]U'cf`Yi dYf]ja Yb]h]iXY'''

Gn]a`Ei [ ÅdYg]gncZj Yf`]ga YfYh`\_VYa i hU]h]U

가 ... ..

7 cbg]XYf`V]B`XY ]b`V]a`V]bU ]U`]XYU`B'EbhfY''' ]''''''

5 bbU\_`Yf'U'Uz`c[ ma Ybbn]fY`\_]Y[ mYbgÖmçnch]U\_`U\_`ÅdYggÅ[ Y]X

# >Y Ybh\_ YnÅg A chj 1Wj g`Yj Å`



5V] ]hB ]XYVta i b]WfYi WYbhY"

=bZcfa 1Wj \_'a Y[ cgnh1gUÅgV]ncbncgXc`[ c\_`Ya U[ nUf1h1gU`U`c`Å[ 1/2bU\_

; 3bX]fYXYXi Wdj B"

6]ncbncgXc`[ c\_`a Y[ ÅfhÅgY`Åg[ ncfjÅg`UÅ`cbmY`a U[ nUf1h1gU

; 3bX]fY`c[ ]MB"

5nY`\_ÅdnY`ÅgY`#ChYhY`\_dfYVhÅg`f`1`1g[ cbXc`hia i Xcbj U i`gnYf`YgnÅgYz`OgnYfU\_1gU

5V] ]hB ]`UbU]hW"

? ÅngÅ[ `UXc`[ c\_`fÅgn`YhYg`ÅfhÅ`Y`ÅgÅfY

5V] ]hB ] ]bhYfdYfgcbUYVi bY"

5`\_c`Å[ 1/2\_U`j U i` \UÅ`cbmY[ n0tha \_OXÅg`Åg`\_ca a i b]\_1Wj fUj U i` \_ÅngÅ[

5V] ]hB ] XYbY[ cWfY

A 1g] 1/2UUh\_`\_U`j U i` \UÅ`cbm0h`YhY`Åg[ \_ÅngÅ[ `

5V] ]hB ] `Eb`UXfYgUfYUWbYfYi b`di V`JWUf["

5`\_ÅngÅ[ z`c[ mgc`\_Ya VYf`Y` h1\_ÅdYg`\UÅ`cbntub`Y` UXb]`Uh`Ch`YhY]h

## A chj 1Wj g`Yj Å`! @Yn1E1g \_cfYU]

fca 1b

Gi bhZcUfHY`a chj U i` ]`Ubh]V]dYn`W`d`BWFY`UMj ]fUfU  
j Uf]UfB`dY`WfY`i b`dcgh`Eb`Vta dUb]U`8j g`a ]!Uf`cZf]!`c"

@Yn1E1g1/2`a Y[ ]ga ÅhY`j Yz`c[ mia Ybbrj]fY`gnYfYhÅ`Uj 1/2UUhU\_`Xc`[ cnb]

J BX`bc]`Y`gUfV]b]#UWghidcghW`dY`c`dfcj cWfY`dY`WfY`c  
Ubh]V]dYn`W`d`BWFY"

@Yn1E1g1/2`a Y[ ]ga ÅhY`j Yz`c[ mia Ybbrj]fY`gnYfYhÅ`Uj 1/2UUhU\_`Xc`[ cnb]

5` `Eb`f`a d]bU`W`Vi Wf]Y`dcg]V] ]fUfU`XY`UX]gW`H`U`W`  
8j g`dYf`gcbU`XY`U]]`Y`Y[ Uf`XY`dcgh`

@Yn1E1g1/2`Z`j ]`Ubh]b] Y[ m`Y`YhÅ[ Yg]bhYf`Ch

# >Y'Ybh\_YnÅg A chj 1Wj g`Yj Å`



5HU UhgW]gcf]] di HY ]fY[ Bg] 7J !i `a Yi "

GHubXUFX'Zcfa i `U'UbbU\_`YF`g]Uz`c[ mIU7J 'U'Vg]Uc`a 1bmVubj Ub

, ...

J B'dchiZ fb]nU'fYZf] Y'XY`U""XUMB'g bhbYWgJfY"

GHubXUFX'Zcfa i `U'UffUz`c[ mibn]rcthj U[ mifYZfYbW]1/2`UX1/2]U

...

F YZf]b Y'Y'dchiZ'gc`J]HU'XY`U""

5 bbU\_`YF`g]Uz`c[ mih Xgn`cnb]'fYZfYbW]1/2'Åg`c[ m\_]h\_YfYggYbY\_`ÅfhY

...

Gi bhX]gclcb]M]'dYbfi i b]bhYfj ]i `dY""

5 bbU\_`U'hi Xca 1/2'`UX1/2]Uz`c[ mignUMUX'j U[ miY[ mi]bhYf'ÖU

가

J B'a i ` i a YgWdYbfi 'h]a di `UMfXUhi ]'dYbfi 'V]HfYU  
Ud]W ]Y]"5 HdhW ]bhYfYgdcg]V] ]HU'XY'Uj B'Yi di bY  
dYfgcbU`a chj Y'Y'dYbfi 'WfYVcbg]Xf V]g bhidYfgcUbU  
dchf]j ]H'dYbfi 'UMghidcg]'J B'fc[ 'gB'a B'VcbUMU ]  
df]b""

.....

5 `dfYZf'1/2'hY Åf\Yh gÅ[ Y\_`a Y[ UX1/2]1/2'Åg'U`Y'Ybh\_YnÅg'1/2'bÅnÅgÅÅfhia Y[\_ÖgnÖbÅgY\_cf`\Ugnb1/2]Uc

... ( )

7i 'gh]a Bž

< ]j U]UcgžV]a nYthibYj Y']ga YfYhYb

... ( )

7i 'g]bWf]HUhž

< ]j U]UcgžgnÅ'Yg\_ÖfVyb`\Ugnb1/2]hž]ga YfhV]a nYth

... , ... ( )

7i 'fYgdYmž

< ]j U]UcgžbYa 'rÖ`Y'HYf'YXhž]ga YfhV]a nYth

... .

HcUH'WYVi bYž

BYa `]j U]UcgžÖn'Yh'dUfhbYfY\_`\_ÖnÖhžU\_]`HY[ Yn XbY\_