

% MNO%!FE% I()*+,(-.%1'?%Z'B4C,(/'%('MNO%TBC++(BC4CK%?*)*4/J*+U%

%

!"#F%TY144U% MNO%PQ#%M+/@+1K%M41''('@%1'?%R)14C1-('/%

% MNO%!F"%5*1?%*+,2(J%1'?% [+/CJ% I . '1K(B,%

% MNO%PDP%O('GZ'-'*+',2(J%('MNO%

% MNO%!Q"%M+/0*,,(/'14%M41''('@%('MNO%

%

R1,-*+'%H1,2('@-/ '%&'()*%+,(-.%

%

!"#Q%TH('-%+U% 7O3<%\$#"51'@C1@*%1'?%3/B(14%Z'-%+1B-('/%

%

!"#E%TY144U% 7O3<%\$P!%O*?(1%3.,-%K,%1'?%7/KKC'(B1-('/%<*B2'/4/@(*,%

7O3<%\$ED%ZK1@*8%O*,1@*8%O*1'('@%

%

!"#E%T3J+('@U% N753%\$;Q% [4/=14%7(-X*',2(J%1'?%Z'-%*+'1-('/14%</C+(,K%TW'4('*%

!"#\$%T3J+('@U% 7/C+,*U%T7C++(BC4CK%I*)*4/J*+U%

%

!"#E%T3J+('@U% RWG""#%W'4('*%Y1BC4-.%W+(*'-1-('/%T7C++(BC4CK%I*)*4/J*+U%

!"#E%TH('-%+U%

!"#\$%TY144U%

%

!"#E%TH('-%+U% N753%\$;"3*'(/+%71J,-/'*('%N*B+*1-('/%1'?%5*(,C+*%3*+)(B*,

7144(*%3J*'B*+%3B2C4-X8%M1@*%\$%
!

!"##%TY144U%% % TZ',-+CB-/+U% %
%

!"#!%TY144U% Z' -*@+1-*?%7/+*% I(,BC,,(/'%3*B-(/'%!"7/KK*+B(14%N*B+*1-(/'%1'?'%

&'?*@+1?C1-*%L/' /+,%M+/'*B-%/+<2*,(,8%a [4/=14%7(-(X*',2(J%M+/'*B-_%<2*%BC4-C+*%1' ?%

+*4(@(/C,%+1?(-(/',%/0%b*J149a%TY*+=C1+.%#"8%!"!"%G% : J+(4% !\$8%!"!"U9%

: ?)(,*?_%O1??(*%341C@2-*+%

%

3CJ*+)(,*?%N*,*1+B28%a7+*1-('@%B/KKC'(-.%^(-2%C'?*+@+1?C1-*%0+*,2K*'_&3Z%/)*+'(@2-%
J+/@+1K&a%LCK1'%3*+)(B*,9%T:C@C,-!"#F%G%O1+B2%!"#DU9%:?)(*?_%Z6*%Z,11B,/ '%

3CJ*+)(,*?%N*,*1+B28%aM+/@+1K%J41''('@%J1+-'*+,2(J% ^(-2%\1B6,/ '%7/C'-.%M1+6,%1'?%
N*B+*1-('/8%=C(4?('@%B/KKC'(-.%-2+/C@2%B/+ '2/4*8a%LCK1'%3*+)(B*,9%T:C@C,-!"#F%G%
O1+B2%!"#DU9%:?)(*?_%c+(-1%M1--/'8%7/'+'3-*4*8%b(B6%>/-*44/GL*+'1'?*X%

3CJ*+)(,*?%N*,*1+B28%aI*,(@(' '@%1'%*VJ*+(*'-(14%*?CB1-('/%J+/@+1K%0/+%-2*%71-1K/C'-%
3B2//4_%<2*%d3C+)(14%W4.KJ(B,f8a%LCK1'%3*+)(B*,9%T:C@C,-!"#F%G%O1+B2%!"#DU9%
:?)(*?_%3*1KC,%74C'*8%72+(,%<1+'*.%

Other Teaching

Y1B(4(-1-*?%M/)*+-.%3(KC41-('/%('M1+-'*+,2(J% ^(-2%Z7:8%O7:b%M/)*+-.%3(KC41-('/8%
&b7G3.-,*K%&N:M%:^1+?%J1+(B(J1'-,9%TO1+B2%E8%!"!"U9%

Y1B(4(-1-*?%M/)*+-.%3(KC41-('/%('M1+-'*+,2(J% ^(-2%Z7:8%O7:b%M/)*+-.%3(KC41-('/8%
&b7G3.-,*K%&N:M%:^1+?%J1+(B(J1'-,9%TW

7144(*%3J*'B*+%3B2C4-X8%M1@*%F%
!

=-18\$1&D!9G8% S %N/, *8%\9%T!"#!U9%<2*%?*K/B+1-(X('@%J/-*'(14%/0%1'%'4(' *%4*(,C+*%,J1B*_%
% Y1B*=/ /6%1 '?%B+(-B14%-2/C@2-9%, :.+)#."+, - ."6'K-I#."6'-: 'X,#+I"6'B- 2 2 I.,+,)%'"'. /'7- *, "6'
' U)+S -#\$%&'GYPU8%E;GFE9%%
!

. / "2" * ' & ' () * 2'

!

N*0*+**?%M+*,*'-1-(/','%%

!

5*@@8R9%TM+*,*'-*+%S% : C-2/+U8%=\$)5+%FD!9G!=98%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,% : ''C14%
7 / '0*+*'B*% / '%N*,*1+B2%1'?'<*1B2('@8%aZK1@('('@%-2*%0C-C+*%/0%,J / +-%-2+ / C@2%1+-_% : '%
1] +]- / @+1J2(B('mC(+.8a%&+=1'1G721KJ1(@'8%Z59%TY*%=+C1+.##8%!"!"%GY*%=+C1+.##\$8%!"!"%U9%%

%

=)\$)5+%FD!9G!=6D% c CKK8%>9%TM+*,*'-*+%S% : C-2/+U8%N/,*8%\9%TM+*,*'-*+%S% : C-2/+U8%5*@@8R9%
TM+*,*'-*+%S% : C-2/+U8%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,% : ''C14%7 / '0*+*'B*% / '%N*,*1+B2%
1'?'<*1B2('@8%aN1?(B14%4*(,C+*%,_7+*1-('@K*1'('@0C4%+*,J / ',*%1'?'-16('@%1%,-+1-*@(B%
/00*' ,) *8a%&+=1'1G721KJ1(@'8%Z59%TY*%=+C1+.##8%!"!"%GY*%=+C1+.##\$8%!"!"%U9%%

%

=)\$)5+%FD!9G!=6D% c CKK8%>9%TM+*,*'-*+%S% : C-2/+U8%M1-*8%\9%TM+*,*'-*+%S% : C-2/+U8%<2*% : B1?*K.%/0%
5*(,C+*%3B(*'B*,% : ''C14%7 / '0*+*'B*% / '%N*,*1+B2%1'?'<*1B2('@8%a3/C'?^146('@_% : '%
1C+14%1JJ+ / 1B2%- / %, / B(14%`C,-(B**%?CB1-(/ '8a%&+=1'1G721KJ1(@'8%Z59%TY*%=+C1+.##8%!"!"%GY*%=+C1+.##\$8%!"!"%U9%%

!

=)\$)5+%FD!9G!=68% OB c * / ^ '8%\9%T!"#;U%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,%
: ''C14%7 / '0*+*'B*% / '%N*,*1+B2%1'?'<*1B2('@8%a : 4-K*+-(B,_O*1,C+('@%-2*(KJ1B-%/0%
B / '-*KJ / +1+.4*(,C+*%,B2 / 41+,2(J8a%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,% [+**')(44*8% b 79%
TY*%=+C1+.#!Q8%!"#;%GO1+B2%#8%!"#;U9%%

%

=)\$)5+%FD!9G!=68% c CKK8%>98%N/,*8%\98%5*@@8R98%T!"#;U%<2*% : B1?*K.%/0%
5*(,C+*%3B(*'B*,% : ''C14%7 / '0*+*'B*% / '%N*,*1+B2%1'?'<*1B2('@8%aRK/-(/'14%M*?1@/(@(*,_%
3+-1-*@(*,%0 / +*%'@1@('@%, / B(14%`C,-(B*%('%-2*%B41,+, / /K8a%<2*% : B1?*K.%/0%5*(,C+*%
3B(*'B*,% [+**')(44*8% b 79%TY*%=+C1+.#!Q8%!"#;%GO1+B2%#8%!"#;U9%%

%

=)\$)5+%FD!9G!=68%M1(,4*.8% c 98%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,% : ''C14%7 / '0*+*'B*% / '%N*,*1+B2%
1'?'<*1B2('@8%aY+ / K%a=1?%0*K('(-,a%-%a'1,-.%^ / K*'_aN*-2('6('@%*KJ / ^*+K*'-('%-2*
1@*%/0%<+oKJ8a%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,%8Z'?('1'1J / 4(,8%Zb9%TY*%=+C1+.#!"8%!"#DG%%
Y*%=+C1+.#!P8%!"#DU9%%

%

=)\$)5+%FD!9G!=68%N/,*8%\98%5*@@8R98% S c CKK8%>98%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,% : ''C14%
7 / '0*+*'B*% / '%N*,*1+B2%1'?'<*1B2('@8%a<*1B2('@%3 / B(14%`C,-(B*%0+ / KM/ ,(- / ',% / 0
M+)(4*%*8a%<2*% : B1?*K.%/0%5*(,C+*%3B(*'B*,%8Z'?('1'1J / 4(,8%Zb9%TY*%=+C1+.#!"8%!"#DG%
Y*%=+C1+.#!P8%!"#DU9%%

%

\ / , -1?8%\98%721, *8%O98%3B2C4-X8%\98%7 / ' '*44.8%598% S!=-18\$1&!=\$)5+%FD!9G%T!"#FU9%3-1-*%

7/KJ+*2*' ,() *%WC-?//+%N*B+*1-('/%M41 '%T37WNMU('%H1,2('@-/ '_N*,C4-,%0+/K%-2*%
!"#F%+*,(?*'-%,C+)*.9%M+*,*'-1-('/%1%-2*%H1,2('@-/ '%N*B+*1-('/%S%M1+6% : , /B(1-('/%
7/'0*+*'B*8%3J/61 '*8%H : 8%O1.% !%p%\$9%

%

3B2C4-X8%\98% S % = -18\$1&!=\$) 5+%FD!9G!TO1.8%! "#QU9%N*B+*1-('/%S%5*(,C+*%3-C?*'-%
RVJ*+(*'B*,%1,%1%5*' ,%('-%/ I ()*+,(-.%S%3/B(14%\C,-(B*%7C++(BC4CK9%OD)';.+)#. "t,-.'6'
K-1#.'6'-.'8#+'='7*,).*)%'B-.:.)#).*)L'>/,-/'8%O : 8%&3 : %

%

5*@@8%R98%=-18\$1&!=\$) 5+%FD!9G8% S % 5*@@8%>9T : J+(48%!"#QU9%ZK1@('1-('/%,-1-('/%
e/C-2%(K1@(' '@%-2*%0C-C+*%/0%@(4,%1'?'%=/.,%J41.('@,%J/+-,%9%42)#9)J'OD)'>I+I#) '-:'7A-#+'
HMGML'M2/*'(V8% : q8%&3 : 9%

!

= -18\$1&D!9GD%3B2C4-X8%\98% : @+(, ,8%398%O1,('@14*8%<98%>+**'8%O98%O*+*?(-28%>9TY*+=C1+.8%
!"#EU9%e**JB14K%1'?'B1++.%/_%M+ /) /6('@%*K-/('/%('-%2*%B41, ,+//K9%7)5).+D'P),. ,.'6'
!#-5-\$, .9'B1##, *1612'7+1/,)%'B-.:.)#).*)L'A1'B/C)*+8%>+(-,(2%7/4CK=(18%71'1?19%

%

= -18\$1&D!9G!S%M1(,4*.8% c 9TY*+=C1+.8%!"#EU9%>1+('@%/C+%/ ^ '%=*1,-,%1'?'B144('@% ^ /K* '%,4C-,_%
7/GB/' ,+CB-('@%(?'-'(-(*,%1,%d*KJ/ ^ *+K*'-% !9'9f%JJ^h'8. .I"6'F6-T"6,^"t, - .&@,5)#%,+?k'

!

=-18\$1&d!9G8% S %M1(,4* . 8% c9%T\C4 . 8% !"#PU9%Y+/K%Y1(+.%<14*,%-%dc('6.%YC s t *+ . _f%N*1?('@8%
741,,8%%1'?'>(/J/4-(B14%M+/?CB-(/'9%;.+)#. "+, - . "6'<),%I#)'7+I/,)%'8%%-%, "+, - . '
B- . :)#). *)L'' O1'B2*, -*+8%&c9%%

!

=-18\$1&d!9G8% S %M1(,4* . 8% c9%TO1 . 8% !"#PU9%H/K*'8%4*(,C+*8%1'?'%,141B(/C,%,*V_%ICB21KJ1,%-/(4*-%
% 1'?'>,+:?'7D"/')%'-'F#)?9%B16+I#"6'7+I/,)%'8%%-%, "+, - . %B- . :)#). *)VB#,+,*'6'>)2,,%+ '
' 7+I/,)%'@,5%, - . L'72(B1@/8%Z58%&939 : 9%

!

=-18\$1&d!9G8% S %M1(,4* . 8% c9%TWB- / = * + 8% !"#!U9!A e /C%6' / ^%=(K=/%K/?*4%(%('uf_%OD)%P''*D)6-#%1,%1%
4*(,C+*%,J1B*%0/+%('-*+@/1-('@%J*+0/+K1'B*,%/0%0*K('(-.9% [-#6/'<),%I#)'B- . 9#)%%L'
N(K('8%Z-14.9%%

%

M1(,4* . 8% c98% S %=-18\$1&d!9G%TWB- / = * + 8% !"#!U9% b * @ / -(1-('@%O / +K / '%0*K('(-.%1-2*%(' -*+, *B- / ' %
/0%+*4(@ / ' %1'?'4*(,C+*9% [-#6/'<),%I#)'B- . 9#)%%L%N(K('8%Z-14.9%%

!

=-18\$1&d!9G8% S %M1(,4* . 8% c9%T\C4 . 8% !"#!U9%<^ / % ^ / K*'8%1%=-4*%/0%^('8%1'?'OD)'P''*D)6-#_%
&-(4(X('@%?C/*-2' / @+1J2 . %-%B+(-B144 . %*VJ4/+*%1%B/44*B-())*%4*(,C+*%*VJ*+(*'B*9%
; . +)#. "+, - . "6'<),%I#)'7+I/,)%'8%%-%, "+, - . 'B- . :)#). *)L'R?('=C+@28%3B/-41'?'9%%

%

=-18\$1&d!9G8% S %N/, *8%\9%T\C4 . 8% !"#!U9% I * K / B+1-(X('@%J / - *' -(14%('%, /B(14%K*?(1_ : %Y1B*=/ / 6%
1'14. ,(,9%__;;

3B2C4-X8%\98=-18\$1&d!9GD!S%7('?'+(B8%79%T!"#EU9%I()*+,-.%1'2%,/B(14%C,-(B*%('%+*B+*1-(/'%1'2%
4*(,C+*%,*+)(B*%BC++(BC4CK%?*)*4/JK*'-9%4''%+)#.' [''%D,.9+-.' \ .,5)#%,+?'@,5)#%,+?' [)\$%
P-''#/'-:'O#I%+))%'!-%+)#7)%%, -.l'72*'*.8% H : 8%&3 : 9%%

!

7/'0*+*'B*%M1'*4,%721(+*?%

!

=-18\$1&d!9G%TO1.8%!"#\$U9%Y*K(',-%vC14(-(-)*%Z'mC(+._%<2*%7/441=/+1-(-)*8%-2*%N*41-(/'148%1' ?
% 7/KK* ',C+1=(4(-.9%NI''6,+''+,5)';.ZI,#?&'721KJ1@ '*G&+=1'18%Z5%O1.%!#G!\$%

%

Z')(-*?% : B1?*K(B%M+*,*'-1-(/' ,%

%

!"#E%TY*=+C1+.U% >#-2':",#?'+'6)%'+-%`\$,.\$?':Ia b)#?Jc'[-2).&'6),%I#)&''./%Y(0-.%321?*,%
/0% [+*.%

%

7/'-*KJ/+1+.%Z, ,C* ,%('Y*K(',-%N* ,*1+B2%
H/K* '1,%3-C?(*,%7*'-*+%M+/@+1K%3J*16*+%3*+(*,%%
R1,-*+'%H1,2('@-/ '%&'()*+,-.%

%

!"#\$%T : J+(4U%% !)#:-#2,.9*'-66''T-#''+,5)'#)%''#*DJ'8.',.+#-/I*+,-.'+'-/I-)D.-9#''AD?%
c*.' /-*%3J*16*+% % %

%

v& : 5%DE\$"%M1+(B(J1'-%W=,*+)1-(/'8%Y(*4?^/+68%1' ?%R-2' /@+1J2.1,%
[+1?C1-*%3-C?*'-%M/,-*+%3* , (/ '%1' ?%7/KJ*-(/'9%

%

&'()*+,-.%/0% [*+/@(1!"7/44*%*%/0%R?CB1-(/'%%

%

I*J1+-K*'-%/0%5(0*4/'@%R?CB1-(/'8% : ?K(',-+1-(/'8%1' ?%M/4(B.

!

(11&!<1I*1J1&!

!"! "%T\C4.U%

!"! "%T O1.U%

!"#;%TWB- / = * + U%

!"#;%T3

Z')(-*?%N*)(*^*+%!"! "#\$%"&#'("&)*+(,%"&)*(-#.\$*/(0'() (12*(-*3\$'4,%\$'

Z')(-*?%N*)(*^*+!"3\$'4,%\$*/0'\$"0\$4%

Z')(-*?%N*)(*^*+!"3\$'4,%\$*/0'\$"0\$4%

!"#\$G!"#Q%	%	7/KK(--**%O*K=*+pY1BC4-.%7/KK/' ,%M41''('@%7/KK(--**%
%	%	R1,-*+'%H1,2('@-/ '%&')*+ ,(-.8%Y1BC4-.%W+@1'(X1-('/ '%S% : B1?*K(B% : 001(+,%
!"#E%T : J+(4U%	%	3* , ,(/ '%O/?*+1-/+%P%b1-(/ '14%7/'0*+'B*%/ '%&' ?*+@+1?C1-*%N* ,*1+B2%
%	%	R1,-*+'%H1,2('@-/ '%&')*+ ,(-.%
!"#\$G!"#E%	%	7/KK(--**%O*K=*+p%&')*+ ,(-.% : , , * , , K*'-%7/KK(--**%
%	%	R1,-*+'%H1,2('@-/ '%&')*+ ,(-.8%Y1BC4-.%W+@1'(X1-('/ '%S% : B1?*K(B% : 001(+,%
!"#\$%TY144U%	%	7/KK(--**%O*K=*+"

7144(*%3J*'B*+%3B2C4-X8%M1@*%#F%

!

I*,B+(J-(/'_3-C?*'-,%0+/K%MNO%PQ_#!#-9#"22,.9'"/'45"6I"+,-.%J1+-'*+*?%^(-2%-2*%
71-1K/C'-%3B2//4%-%J+/?*%1%-2+**G

J*+, / ', % ^(-2%?(, 1=(4(-(*, %1' ?%2(@24(@2-*?%-2*%K. +(1?% ^1. , %-/ %B*4*+=+1-*%
+*B+*1-(/ '9%<2(, %J+/@+1K%1)*%, -C?*'-, %-2*%B21 'B*%- / %B / ' -(=C-*% - / % -2*(+%
B / KKC' (-. % ^2(4*%1(' @%21' ? , G / ' %*VJ*+(*' B*% ^ / +6(' @% ^(-2%B2(4?+*' % ^(-2%
?(, 1=(4(-(*, 9%

!

, / & * ' 2!& * #!2%+) 1& / 2+ (. 2!

!

!"#D%

=)\$ 5+%FD% 79%39%TM+(' B(J14U8% H*44, 8% [9% O9%T7 /GM+('B(J14U8% I 1)(, 8%<9%
TZ') *, -(@1- / +U8% I ([(1B(' - / 8% c 9%T7 /GM+('B(J14U8% >+1? , 21 ^8%39%T7 /GM+('B(J14U8%
aRKJ / ^*+(' @%, -C?*'-, %- / %B / K=1-%J /) *+-. %-2+ / C@2%B / KKC' (-. %1B-(/ ' _%

!

!"#!% %

%

R?CB1-(/'14%N*,/C+B*%I*)*4/JK*'-%7/C'B(4%3B2/41+,2(J%Tx\$""U%

&'()*+,-.%/0%&-12%L*14-2%3B(*'B*,%7*'-*+%
%

%

% % %

%

!"#!%% %

%

I+9%5(''%N9%N/B6^//?%R'?/^*?%3B2/41+,2(J%TxFE"U%

&'()*+,-.%/0%&-12%I*J1

%

!"#;%

7 / '0*+* 'B*%a : ?) * '-C+*%R?CB1-(/ '%7 / '0*+* 'B*%a H * , - * + '%71+ / 4(' 1%
& ' () * + , (- . 8% > + *) 1 + ? 8% b 7 9% TWB - / = * + % # 8% ! " # ; U 9%

%

!"#D%

H / + 6 , 2 / J 8% a M /) * + - . % 3 (K C 4 1 - (/ ' % Y 1 B (4 - 1 - / + % < + 1 (' (' @ 8 a % O (, , / C + (%
7 / K K C ' (- . % : B - (/ ' % b * - ^ / + 6 8 % 3 - 9 % 5 / C (, 8 % O (, , / C + (8 % & 3 : 9 % T b /) * K = * + % # ! 8 %
! " # D % G % b /) * K = * + % # P 8 % ! " # D U 9 %

%

!"#D%

7 / '0*+* 'B*%a b 1 - (/ ' 1 4 % N * B + * 1 - (/ ' 1 ' ? % M 1 + 6 , % : , , / B (1 - (/ ' % 7 / '0*+* 'B*%
7 W : M N < % < + 1 (' (' @ 8 a % b N M : 8 % Z ' ? (1 ' 1 J / 4 (, 8 % Z ' ? (1 ' 1 8 % & 3 9 % T 3 * J - * K = * + % ! ! 8 %
! " # D % G % 3 * J - * K = * + % ! P 8 % ! " # D U 9 %

%

!"#D%

: B 1 ? * K . 8 % a L * 1 4 - 2 % R ? C B 1 - / + n , % : B 1 ? * K . G < * 1 K G > 1 , * 2 % 5 * 1 + ' (' @ % > / / - %
7 1 K J 8 a % L * 1 4 - 2 % S % L C K 1 ' % 3 B (* ' B * ,] 7 / C 4 - * + % Y 1 B C 4 - . % 7 / K K / ' , 8 % 7 C 4 4 / ^ 2 * * 8 %
b / + - 2 % 7 1 + / 4 (' 1 8 % & 3 : 9 % T \ C 4 . % P " 8 % ! " # D % G % : C @ C , - % P 8 % ! " # D U 9 %

%

!"#D%

H / + 6 , 2 / J 8% a < 2 * % : B 1 ? * K . % / 0 % 5 * (, C + * % 3 B (* ' B * , % v C 1 4 - 1 - () * % N * , * 1 + B 2 %
H + (- (' @ % N * - + * 1 - 8 a % < 2 * % : B 1 ? * K . % / 0 % 5 * (, C + * % 3 B (* ' B * , 8 % Z ' ? (1 ' 1 J / 4 (, 8 %
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