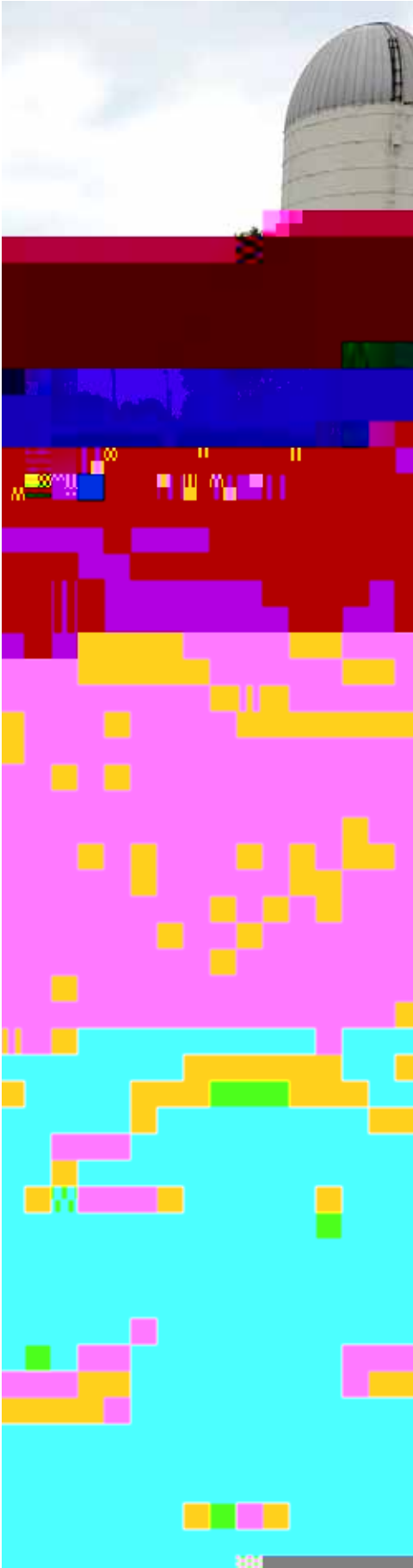




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9LVLW RXU ZHEVLWH DW



Karen A. Stout

7KH &ROOHJH¶V VFHQLF DFUH %OXH %HOO FDPSXV LV ZLWKLQ HDV\

DSSOLFDWLRQ ZH ZLOO LVVXH LQWHUQDWLRQDO VWXGHQWV D /HWWHU RI \$GP
WKH 6(9,6)RUP , &HUWL¿FDWH RI (OLJLELQW\ IRU 1RQLPPLJUDQW) 6WDW
WR XVH ZKHQ DSSO\LQJ IRU WKHLU) YLVD DW D 86 &RQVXODWH 2I¿FH ORFDW
LQ WKHLU KRPH FRXQWU\ 7R DSSO\ IRU DGPLVVLRQ WR 0RQWJRPHU\ &RXQW\
&RPPXQLW\ &ROOHJH DQG IRU LVVXDQFH RI WKH , LQWHUQDWLRQDO VWXGH
PXVW FRPSOHWH DQ DSSOLFDWLRQ DQG VHQG DOO GRFXPHQWV E\ WKH DSSOL
GHDGOLQHV 6WXGHQWV WUDQVIHUULQJ IURP DQRWKHU 8 6 LQVWLWXWLRQ RI
OHDUQLQJ VKRXOG VXEPLW WKHLU FRPSOHWHG DSSOLFDWLRQ SDFNHVW DW 0H
ZHNV SULRU WR WKH EHJLQQLQJ GDWH RI WKH VHPHVWHU WKH\ ZLVK WR VWD
LQWHUQDWLRQDO WUDQVIHU VWXGHQWV DUH HOLJLEOH WR DSSO\ IRU HQWUDQ
VXPPHU VHVVLQRV

6WXGHQWV DSSO\LQJ IRU D &KDQJH RI 1RQ LPPLJUDQW 6WDWXV PXVW VXEPLW
WKH ,QWHUQDWLRQDO 6WXGHQW \$\$\$OLFDWLRQ DQG DOO UHTXLUHGRFXPHQW
UHFHLYLQJ DQ , \$OO LQWHUQDWLRQDO VWXGHQWV PXVW VXEPLW DQ ,PPXQL
6XEPLVVLRQ)RUP DORQJ ZLWK GRFXPHQWDWLRQ SURYLQJ YDFFLQDWLRQ RI
0HDVOHV 0XPSV DQG 5XEHOOD DV ZHOO DV D QHJDWLYH VFUHHQLQJ GLDJQRV
RI 7XEHUDFXORVLV 6WXGHQWV DSSO\LQJ IURP RYHUHVHV PXVW VXEPLW WK
UHTXLUHPHQW ZLWKLQ GD\ DIWHU DUULYDO LQ WKH 8 6 7UDQVIHU DQG &K
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WKHLU ,)DLOXUH WR VXEPLW LPPXQLJDWLRQ GRFXPHQWV E\ WKH GHDGOLQ
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,QWHUQDWLRQDO VWXGHQWV PXVW GHPRQVUDWH (QJOLVK SURILFLHQF\ V
DQ DVVRFLDWH\ GHJUHH SURJUDP 6WXGHQWV FDQ VXEPLW D 72()/ 7HV
(QJOLVK DV D)RUHLQJ /DQJXDJH RU WDNH WKH SODFHPHQW WHVW RQ FDI
DFKLHYLQJ FROOHJH UHGD\ VFRUHV IRU DGPLVVLRQ 3HU IHGHUDO UHJXOD
DOO) VWXGHQWV DUH UHTXLUHGRFXPHQWV HQUROO LQ QR OHVV WKDQ FUHG
VHPHVWHU 7R DSSO\ RU WR ILQG RXW PRUH DERXW LQWHUQDWLRQDO DGP
LQWHUQDWLRQDO VWXGHQWV VKRXOG FRQWDFW WKH 2IILFH RI \$GPLVVLRQ
RU YLVLVW KWWS PF HGX DGP ILQ DLG

\$GPLVVLRQ LV VHOHFWLYH IRU WKH 'HQWDO +\JLQH 0HGLFDO \$VVLVWLQJ
0HGLFDO /DERUDWRU\ 7HFKQLFLDQ 1XUVLQJ 5DGLRJDUSK\ 6XUJLFDO
7HFKQRORJ\ DQG 3RQLHQV DGRPDVFW (DFWU
SURJUDP KDV VSHFL¿F DGPDWLSDUHTXLVLRQV DQG PD\ K
FRXUVHZRUN WKDW PXVW EH FRPSOHWHG EHIRUH VWXGHQW LV HOLJLEOH WR EH
LQWR WKH UHVSHFWLYH SURJUDP &ROOHJH FRXUVHZRUN FDQ EHJLQ EHIRUH IRU
DFFHSWDQFH LQWR HDFK UHVSHFWLYH SURJUDP

)RU WKH DGPLVVLRQV SUHUHTXLVLWH UHTXLUHPHQWV IRU WKHVH SURJUDP
SOHDVH UHIHU WR WKH SUHUHTXLVLWH FXUULFXOXP OLVLQJ IRU WKH SU
LQ WKLV FDWDORJ 'XH WR WKH FRPSHWLWLYH QDWXUH RI WKHVH SURJUD
FODVV VLJH OLPLWDWLRQV WKH &ROOHJH GRHV QRW JXDUDQWHH LPPHGL
DFFHSWDQFH LQWR WKHVH SURJUDPV HYHQ LI \RX PHHW WKH DGPLVVLRQV
SUHUHTXLVLWHV)RU FHUWDLQ SURJUDPV VWXGHQWV PD\ KDYH WR ZDLW
XQWLO WKHUH LV VSDFH DYDLODEOH LQ WKH FODVV

\$\$\$OLFDQWV IRU (DUO\ \$GPLVVLRQ LQFOXGLQJ 'XDO (QUROOPHQW PXVW IR
WKH VDPH SURFHGXUH DV DSSOLFDQWV VHHNLQJ UHJXODU DGPLVVLRQ D
ZHOO DV SURYLGH DSSURYDO IURP WKHLU KLJK VFKRRO RU GLSORPD JUDQ
LQVWLWXWLRQ DQG SDUHQW JXDUGLDQ \$Q DSSOLFDQW \RXQJHU WKDQ
RI DJH PXVW DOVR VFKHGXOH D SHUVRQDO LQWHUYLHZ WKURXJK WKH 'LUH
RI \$GPLVVLRQV WKDW FRQYLQFHV WKH LQWHUYLHZHU WKDW WKH VWXGHQW
DELOLW\ WR SDUWLFLSDWH DW D VDWLVIDFWRU\ OHYHO \$GPLVVLRQV GHF
(DUO\ \$GPLVVLRQV VWXGHQWV DUH PDGH E\ D WHDP RI UHSUHVHQWDWLYHV IU
WKH `€@00ðÀ`EHFWRU
LQ V \$ODPtp€@`pF `0



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')RUP DQG PLOLWLU\ WUDQVFULSW &UHGLW PD\ EH DZDUGHG IRU
PLOLWLU\ WUDLQLQJ WKDW KDV EHHQ HYDOXDWHG E\ WKH \$PHULFDQ &RX
RQ (GXFDWLRQ DQG DVVLJQHG D UHFRPPHQGHG FUHGLW YDOXH ZKHQ WK
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,9 7KH &ROOHJH RSHUDWHV XQGHU WKH VPHVWHU V\VWHP ,I D VWXGHQ
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VPHVWHU FUHGLWV

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DSSURYDO VDWLVI\ D FRXUVH SUHUHTXLVLWH 6WXGHQWV PXVW FRPSOHWH
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ZHOO DV WKRVH ZKR KDYH JDLQHG HHQFHÓHH 0ÆH÷L \$ WLRO0ZLWKA0D FRX
UHFUHH FUHHQFHLWHO ZKR Q @0p0` IHVHUDQF FSFU °€ €0t€€ p€ð€ PXYL

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&RXQW\ YRWHU UHJLVWUDWLRQ FDUG
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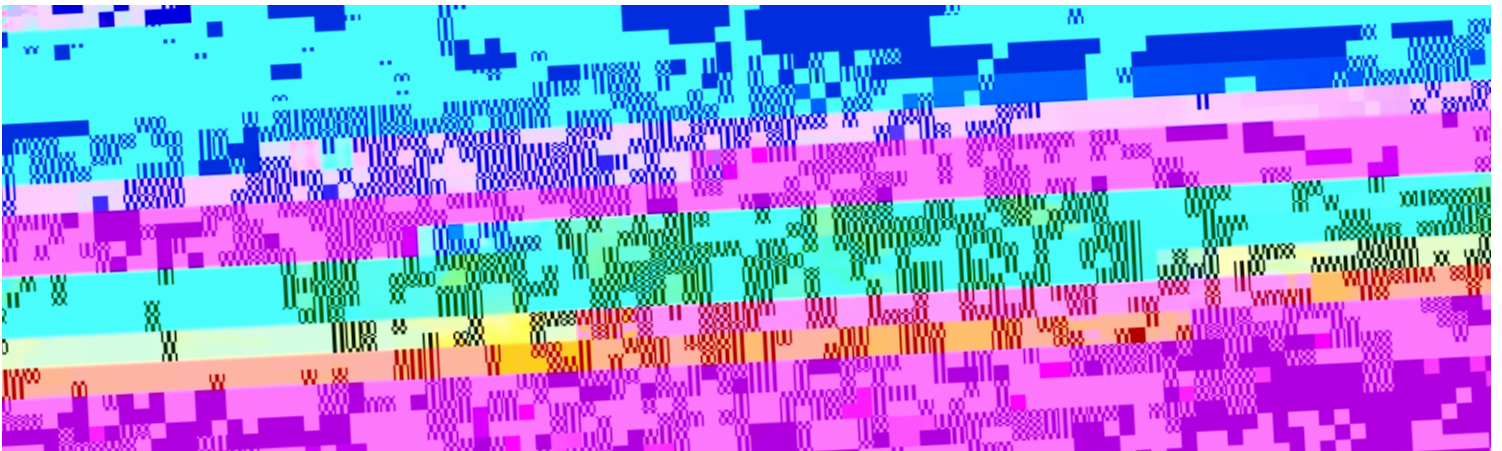
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DW DQ\ WLPH 3OHVH YLVLW WKH &RQWJH PRQVWU DWHWRQWY QXZ XWKH V
DSSURYHG WXLWLRQ DQG IHHV DW WSHURRHRWZDURRPHQWQWKV SULRU
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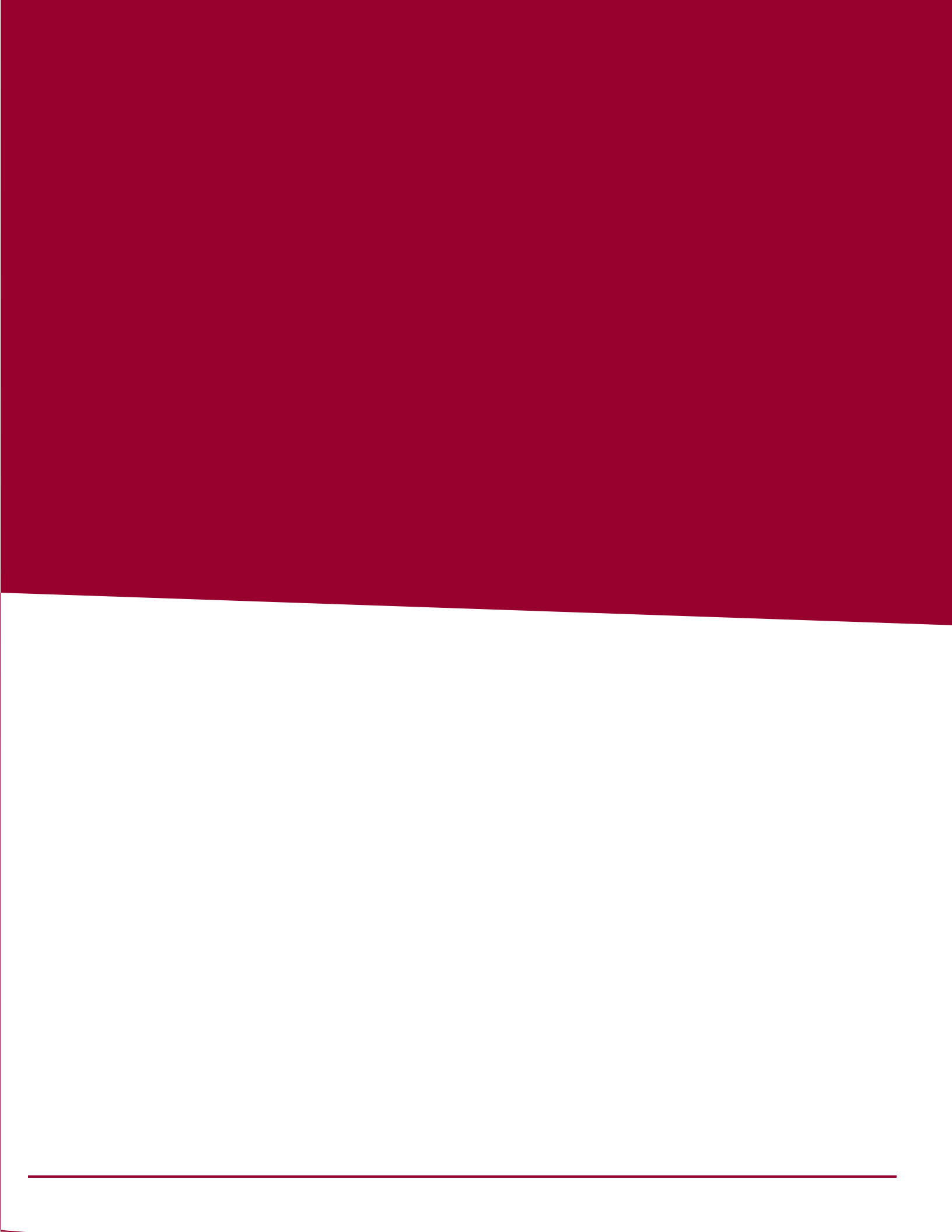
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ILQDQFLDO VXSSRUW WKH VWXGHQWV RYHUHSRQVLEORW IRVWDEBLIXO OHDV B
WR WKH &ROOHJH ,I WKH VWXGHQW RU QRFK SDUHQWILQH WSHDFWHQWV DZV
VWXGHQW PXVW GURS FODVVHV LQ DFRUGDQFH ZLWK WKH UHIXQG SROLF\ W
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WKHLU IXWXUH ¿QDQFLDO REOLJDWLRQV VKRXOG DSSO\ IRU ¿QDQFLDO DLG R
WKH 'HIHUHG 3D\PHQW 3ODQ WKURXJK WKH 2I¿FH RI (QUROOPHQW 6HUylFH

/HJDO UHVLGHQF\ LQ 0RQWJRPHU\ &RXQW\ IRU WKH SXUSRVH RI LQ FRXQW\
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WKH OHDVH RU SXUFKDVH DJUHPHQW DQG VWXGHQW ZLOO KDYH PRYHG L



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VWXGHQW Å , @p0IVWXG0p°€0`WXGp







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DGYLVRU RQ D UHJXODU EDVLV 6WXGHQWV VGD V FLX SOW Q D D W H G E @ Q W S R R M # E P
FRXUVH VHOHFWRQV DV ZHOODV IRU WKH IXOILOOHQW RI GHJUHH RU F
UHTXLUHPHQWV

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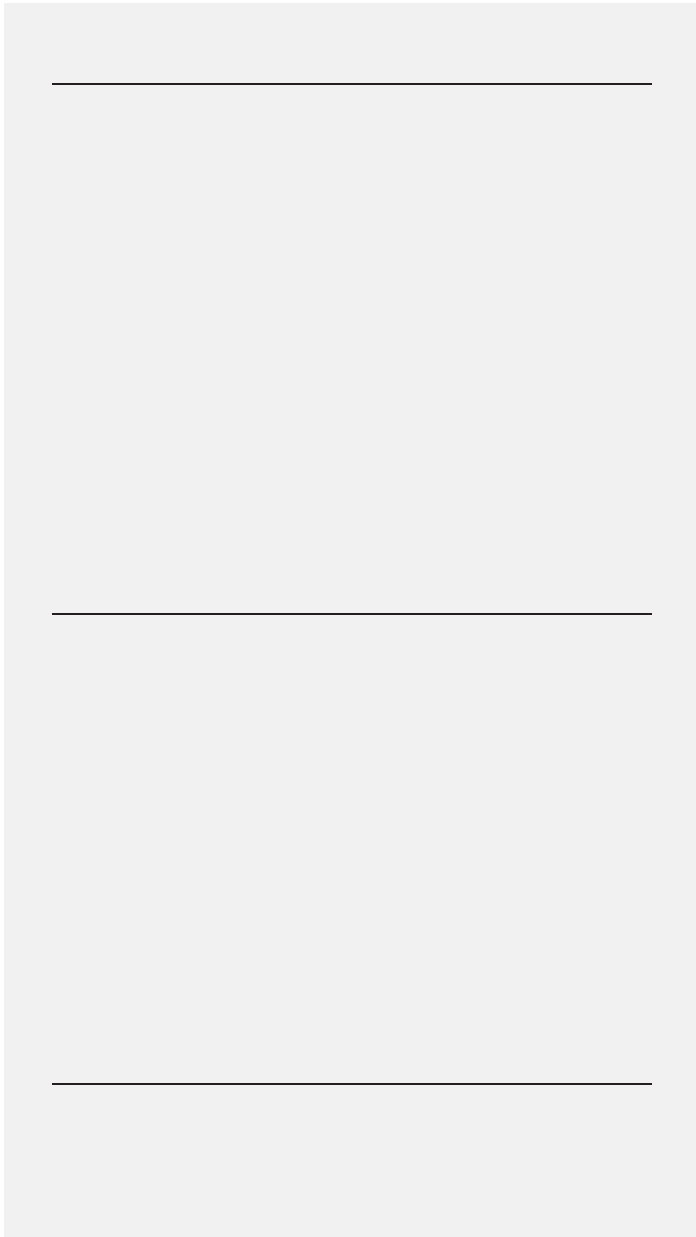
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LQ WKH KDQGOLQJ RI HYHU\ FRQWDFW :H HQFRXUDJH VWXGHQWV WR VHHI
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DQG FRQFHUQV

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ORQWJRPHU\ &RXQW\ &RPPXQLW\ &ROOHJH ZLWK DQ \$ \$ RU \$ 6 GHJUHH
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IRXU \HDU VFKRRO LI LW LV SDUW RI WKLV SURJUDP :H DOVR GHVLJQ RXU
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DW :HVW &DPSXV DQG WKH %UHQGOLQJHU /LEUDU\ DW &HQWUDO &DPSXV



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6WXGHQW 6XFFHVV &HQWHU

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RU FRPSOLDQFH DFWLYLW\ RQ WKH S U R Y E L H K R O I V R I W K H \$ F W W R L Q F O X G H
G , Q F R Q Q H F W L R Q Z L W K D V W X G H Q W \ W W X I S T X C W \ W I R X O R Q D I P H H L S W R I I L
DLG DV QHFHVVDU\ WR GHWHUPLQH W G B U H O L V J L E L O L W \ D P R X Q W R U
FRQGLWLRQV RI WKH ILQDQFLDO DLG (Q R H F W B R Q Q I R P D H L O W B B G W H H U V V D Q G
FRQGLWLRQV RI WKH DLG † 3KRWRJUDSK
H 7R RUJDQL]DWLRQV FRQGXFWLQJ F7HLOWHSDKR QHV XG L M V L Q R U R U R Q E H K I
RI WKH &ROOHJH RU RUGHU WR † G'BYHORSEYD W K G D W H R U D G P L Q L V W
SUHGLFWLYH WHVWV E D G P L Q L V W H O D W R X G I H Q W G D R G S W R G U D P V R U F
LPSURYH LQVWUXFWLRQ † 'DWHV RI DWWHQG D Q F H Q U R O O P H
I 7R DFFUHGLWLRQ RUJDQL]DWLRQV V R U W D L U S D R W W R Q K H L B I I X Q I E D V L Q R Q V H
J 7R SDUHQWV RI DQ HOLJLEOH VW X G H Q W L I D W B K M W X X G A H Q W H E H D U G H S F
IRU ,56 WD[SXUSRVH † 'HJUHVW KRQRUV DQG DZDUGV UH
K 7R FRPSO\ ZLWK D MXGLFLDO RUGHO R R U W D U B B Q X O Q H G K V D X H L R Q X B S R J H Q
L 7R DSSURSULDWH RILFLDOV LQ F R Q Q R H G O R R Q W Z L W W D W X H D Q W Q W U P V H
H P H U J H Q F \
M \$ V L W U H O D W H V W R G L U H F W R U \ L Q I R U P D W L R Q X Q O H V V W K H V W X G H
GLUHFWRU\ LQIRUPDWLRQ

6WXGHQWV PD\ ZLWKKROG GLUHFWRU\ LQIRUPDWLRQ E\ QRWLI\LQJ WKH 'LUH
RI 5HFRUGV DQG 5HJLVWUDWLRQ 5HJLVWUDU LQ ZULWLQJ ZLWKLQ WKUHH ZH
DIWHU WKH ILUVW GD\ RI FODVVHV IRU WKH VPHVWHU LQ ZKLFK WKH ZLWKK
RI GLUHFWRU\ LQIRUPDWLRQ LV WR WDNH HIIHFW 6WXGHQWV UHTXHVVV IF
GLVFORVXUH ZLOO EH KRQRUHG XQWLO WKH VWXGHQW UHTXHVVV LWV UHPR

\$ WUDQVFULSW LV D UHFRUG RI FRXUVHV D VWXGHQW DWWHPSWHG DQG RU
FRPSOHWHG DW WKH &ROOHJH 6WXGHQWV RU DOXPQL ZKR QHHG D WUDQVFU
VKRXOG UHTXHVV D WUDQVFULSW RQOLQH 7KH\ PXVW FRPSOHWH DQ RIILFLD
7UDQVFULSW 5HTXHVV)RUP ZLWK D SHU FRS\ WUDQVFULSW IHH
)RUPV DUH DYDLODEOH DW KWWS ZZZ PF HGX DGP ILQ DLG UHTXHVV
WUDQVFULSWV

,Q FRPSOLDQFH ZLWK IHGHUDO UHJXODWLRQV KHUH LV D OLVW RI NH\ FRQW
IRU VSHFLILF GLVFORVXUH LQIRUPDWLRQ

'LUHFWRU RI 5HFRUGV DQG 5HJLVWUDWLRQ 5HJLVWUDU
&HQWUDO &DPSXV
:HVW &DPSXV

(DFK GLVFLSOLQH PD\ XWLOLJH LQWHUQVKLSV DQG LQGSHQGHQW VWXG\
7KH IDFXOW\ RI HDFK GLVFLSOLQH DORQJ ZLWK WKH 'LYLVLRQ 'HDQ GHHU
WKH DSSURSULDWHQHVV RI WKHVH FODVVHV IRU WKHLU VWXGHQWV FXUULF

7KHHV FRXUVHV DYDLODEOH LQ D QXPEHU RI GLVFLSOLQHV SURYLGH VW
ZLWK DQ RSSRUWXQLW\ WR LQWHJUDWH ZKDW WKH\ KDYH OHDUQHG LQ
WKH FODVVURRP ZLWK YDOXDEOH KDQGV RQ ZRUN H[SHULHQFH LQ WKHLU
VWXG\ 6WXGHQWV ZRUN IXOO RU SDUW WLPH IRU D VSHFLILHG SHULRG RI
WLPH XVXDOO\ D PLQLXP RI KRXUV IRU WKUHH FUHGLWV

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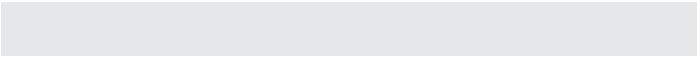
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SUHYLRXV LQVWUXFWLRQ &UHGLW KRXUV DUHKH €0@€ UQ< '19ÂÂ

&HUWL¿FDWH LQ \$FFRXQWLQJ & \$&& &57 && :7& 21/1
 &HUWL¿FDWH LQ %XVLQHVV
 ODQDJHPHQW &% &57 && :7& 21/1
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 &HUWL¿FDWH LQ &XOLQDU\ \$UWV & &8/\$ &57 2))&
 &HUWL¿FDWH LQ %DNLQJ 3DVWU\ \$UWV & &8/% &57 2))&
 &HUWL¿FDWH LQ 'UXJ
 \$OFRKRO 6WXGLHV &' &57 && :7&
 &HUWL¿FDWH LQ (PHUJHQF\
 ODQDJHPHQW 3ODQQLQJ & (3 &57 && 2))& 21/1
 &HUWL¿FDWH LQ (QWUHSUHQHUXVKLS & (73 6+& && :7& 21/1
 &HUWL¿FDWH LQ)LUH 6FLHQFH &) &57 && 2))&
 &HUWL¿FDWH LQ *HURQWRORJ\ &* && &57 :7& 21/1
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 ,QVWLWXWLRQDO 6XSHUYLVLRQ & +0 &57 &&
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 &HUWL¿FDWH LQ 0DUNHWLQJ & 0.7 &57 && :7&
 &HUWL¿FDWH LQ 0HGLFDO \$VVLVWLQJ
 *HQHUDO 6WXGLHV & 0\$ *6 &57 && :7&
 &HUWL¿FDWH LQ 6RIWZDUH (QJLQHHLQJ & 62)7 &57 &&
 &HUWL¿FDWH &RPSXWHU ,QIRUPDWLRQ
 6\ VWHPV 3, 63& & 21/1
 &HUWL¿FDWH LQ :HE 'HVLJQ
 'HYHORSPHQW 'HVLJQ
 &RQFHQWUDWL&Q(6 &57 && :7& 21/1
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 'HYHORSPHQW 'HYHORSPHQWDO
 &RQFHQWUDWL&Q(9 &57 && :7& 21/1
 6SHFLDOW\ &HUWL¿FDWH LQ \$FFRXQWLQJ 3\$ 63& && :7& 21/1

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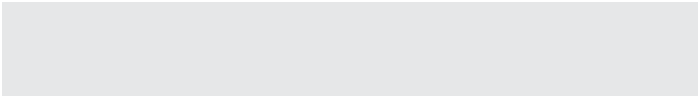


\$ 5 7 6 \$ 1 '
+ 8 0 \$ 1 , 7 , (6
' , 9 , 6 , 2 1





7+\$ &DSVWRQH SURMHFW ,QGHSHQGHQW 6WXG\
(OHFWLYH 7KHDWHU
7+\$ RU
PD\ QRW EH XVHG WR IXOILOO WKLV UHTXLUHPHQW





7KH &XOLQDU\ \$UWV FHUWL¿FDWH SUHSDUHV LQGLYLGXDOV IRU D ZLGH YDUL
HQWU\ OHYHO SRVLWLRQV LQ WKH FXOLQDU\ DUWV LQG XVWU\ 7KH SURJUDP
VWXGHQWV WKH QHFHVVDU\ FXOLQDU\ DQG EDVLF PDQDJHPHQW VNLOOV WKD
XWLOLJHG LQ WRGD\¶V KRVLWDOLW\ LQG XVWU\ 7KLV SURJUDP SURYLGHV D
HGFDWLRQDO FRPSRQHQWV UHTXLUHG IRU &HUWL¿HG &XOLQDULDQ FHUWL¿
WKURXJK WKH \$PHULFDQ &XOLQDU\)HGHUDWLRQ (GXFDWLRQ)RXQGDWLRQ



\$ JUDGXDWH VKRXOG EH DEOH WR
‡ &RPPXQLFDWH HIIHFWLYHO\ HIILFLHQWO\ DQG SURIHVVLRQDOO\ LQ WH
FXUUHQW EXVLQHV HGYLURQPHQW
‡ \$SSO\ PDQDJHULDO WKHRU\ DQG SUDFWLFH WR WKH IXQFWLRQDO DUHD
DQ RUJDQL]DWLRQ
‡ ([DPLQH WKH VRFLDO OHJDO DQG HWKLFDO SULQFLSOHV RI PDQDJHP
GHFLVLRQ PDNLQJ LQ RUGHU WR GHWHUPLQH DSSURSULDWH DFWLRQV
‡ ,GHQWLI\ DQ HQWUHSUHQHULDO YHQWXUH DQG H[SORUH WKH IHDVLEL
SXUVXLQJ LW DV D YLDEOH FDUHHU
‡ 'HPRQVUDWH WKH DELOLW\ WR GHYHORS D FRPSUHKHQVLYH EXVLQHV
LQFOXGLQJ WKH NH\ RSHUDWLRQDO DUHDV RI DFFRXQWLQJ DQG PDUNHW
‡ &RPPXQLFDWH HIIHFWLYHO\ HIILFLHQWO\ DQG SURIHVVLRQDOO\ LQ WH
FXUUHQW EXVLQHV HGYLURQPHQW

(1* (QJOLVK &RPSRVLWLRQ ,
&,6 ,QIRUPDWLRQ 6\ VWHPV IRU ODQDJHPPHQW «
\$&& %XVLQHVV ODWK «
;;; &RQFHQWUDWLRQ 5HTXLUHPHQW «
0*7 ,QWURGXFWRQ WR %XVLQHVV
FUHGLW KRUV

(1* :ULWLQJ IRU %XVLQHVV DQG ,QG XVWU\
63& 3XEOLF 6SHDNLQJ
&,6 'HFLVLRQ 0DNLQJ 8VLQJ 6SUHDGVKHHWV «
;;; &RQFHQWUDWLRQ 5HTXLUHPHQW « «
0*7 3ULQFLSOHV RI ODQDJHPPHQW
FUHGLW KRUV

(&2 (OHPHQWV RI (FRQRPLFV RU
(&2 0DFURHFRQRPLFV
(OHFWLYH &RUH *RDO ,QWHOOFWWD +HULWDJH
(OHFWLYH &RUH *RDO \$HVWKHWLF 6HQVLELOLW\ DQG WKH \$UWV
;;; &RQFHQWUDWLRQ 5HTXLUHPHQW «
\$&& 7KH /HJDO (QYLURQPHQW RI %XVLQHVV RU

(OHFWLYH &RUH *RDO \$HVW 0€ •ÀP € p0 •0P€`À €`00 P
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g`0@€A % @W' y@7°7QKHAT« i E a," À @ p'PÀp ` P€0 •D Ä07 « p

;;; &RQFHQWUDWLRQ RQ3°`g`0@•Q ;;A 0 @ 0j € @





' + * 7KHRU\ DQG 3UDFWLRFH RI 'HQWDO +\JLHQH , , ,
' + * 3HULRGRQWLFV , ,
36 < , QWURGXFWRQ WR 3V\FKRORJ\
FUHGLW KRXUV

63 & , QWURGXFWRQ WR 6SHHFK &RPPXQLFDWLRQ
62 & , QWURGXFWRQ WR 6RFLRORJ\
(6 : %DVLF 1XWULWLRQ
' + * &RPPXQLW\ 'HQWLWU\
' + * 7KHRU\ DQG 3UDFWLRFH RI 'HQWDO +\JLHQH , 9
FUHGLW KRXUV

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SURYLGH VWXGHQWV D ZHOO GHVLJQHG SODQ RI WUDQVIHU WR D IRXU \HDU
RU XQLYHUVLW\ \% LQWHJUDWLQJ D EURDG VSHFWUXP RI JHQHUDO HGXFDFWLRQ
DQG ([HUFLVH 6FLHQFH DQG :HOOQHVV FRXUVHV DQG E\ RIIHULQJ WKH DELO
WR IRFXV VWXG\ LQ WKUHH VSHFLDULF DUHDV RI FRQFHQWUDWLRQ WKH FXU
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‡ \$SSO\ NQRZOHGJH RI KXPDQ DQDWRP\ DQG SK\VLORRJ\ NLQHVLORRJ\
DQG H([HUFLVH VFLHQFH WR WKH ILHOG RI KHDOWK DQG ZHOOQHVV
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DUHD ZLWKLQ ([HUFLVH 6FLHQFH DQG :HOOQHVV
‡ 3UHSDUH D SODQ IRU FRQWLQXLQJ HGXFDFWLRQ ZLWKLQ ([HUFLVH
6FLHQFH DQG :HOOQHVV

7KH 0HGLFDO \$VVLVWLQJ &HUWLILFDWH 3URJUDP LV DFFUHGLWHG E\ WKH
&RPPLVVLRQ RQ \$FFUHGLWDWLRQ RI \$OOLHG +HDOWK (GXFDWLRQ 3URJUDP
&\$\$+(3 ZZZ FDDKHS RUJ XSRQ WKH UHFRPPHQGDWLRQ RI WKH
0HGLFDO \$VVLVWLQJ (GXFDWLRQ 5HYLHZ %RDUG 0\$(5% \$GGLWLRQDO
LQIRUPDWLRQ UHJDUGLQJ &\$\$+(3 FDQ EH REWDLQH G E\ FRQWDFWLQJ WKH
RUJDQLJDWLRQ GLUHFWO\ DW 3DUN 6WUHHW &OHDUZDWHU)/

\$OO VFLHQFH DQG PDWK FRXUVHV I
 7KH JRDOV RI WKLW SURJUDP DUH WR ZULWH \HDUV SULRU WR HQUROOL
 6WXGHQWV ZKR IXQFWLRQ DV FRPSHWLQJ SROLFDQV VPHXV WR WDWL RQH
 PHHW WKH QHHGV RI WKH FRPPXQLW\ ODWKHPDWLFV DQG 5HDGLQJ DQG P
 ‡ 6WXGHQWV ZLOO EH DEOH WR DGHQWLYH SHQWURUP SHUFH SXURV WR
 OHYHO FRPSHWHQFH 'XH WR FODVV OLPLDWRURV WKH
 ‡ 6WXGHQWV ZLOO VHOHFW DSSURSULDURH WLFH DZIHFW RRU IRDGLR
 SDWLHQW HDPV R 6XEPLW DQ RQG QH 3H WLOL RQ PBO
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 SURIHVVLQRQDO FRPPXQLFDWLRQ VNLQDGLR JUDSK\ FRXUVHV p 0A WR WEEH
 ‡ 6WXGHQWV ZLOO XVH DSSURSULDWH YRFDEXODU\ DQG ODQJXDJH WR F
 FRQYH\ LQIRUPDWLRQ
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 LQIRUPDWLRQ WR SODQ DQG ZULWH SURIHVVLQRQDO SSSHU
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 SURIHVVLQRQDO PDQQHU
 ‡ 6WXGHQWV ZLOO UHFRJQLJH DFFHSWDEOH SURIHVVLQRQDO EHKDYLRUV
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 LQ WKH ZRUNSODFH
 ‡ 6WXGHQWV ZLOO GLVFXVV WKH LPSRUWDQFH RI SURIHVVLQRQDO
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 UHTXLUPHQWV
 %H DW OHDVW \HDUV RI DJH WR SDUWLFLSDWH LQ DQ\ RI WKH 5\$'
 FRXUVHV 6WXGHQWV XQGHU WKH DJH RI PD\ FRPSOHWH DQ\
 SUHUHTXLVLWH RU FR UHTXLVLWH FRXUVHV DW WKH &ROOHJH OHYHO LQ
 DFFRUGDQFH ZLWK &ROOHJH SROLF\
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 ‡ XQLWV RI VFLHQFH XQLWV RI ELRORJ\ DQG XQLWV RI FKHPLVWU\ R
 SK\VLV ZLWK D PLQLXP JUDGH RI 3&' ZLWK UHODWHG ODERUDWU\ RU
 HTXLYDOHQW \$SSOLFDRWV ZLWKRXW KLJK VFKRRO ELRORJ\ DQG RU
 FKHPLVWU\ FDQ VDWLVI\ WKLW UHTXLUPHQW E\ FRPSOHWLQJ %,2 DQ
 RU &+(ZLWK D JUDGH RI 3&' RU DERYH
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 6XEPLW RQH RI WKH IROORZLQJ
 ‡ \$7 VFRUH FRPSRVLWH RI RU DERYH RU
 ‡ 6\$7 VFRUH RI D PLQLXP RI RU
 ‡ 6\$7 , RU 6\$7 5HDVRLQJ ZLWK D FRPELQHG PDWK DQG YHUEDO
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 5DGLRJUDSK\ FXUULFXOXP *UDGHV IRU WKH FRXUVHV PXVW HDFK
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 VSHFLDOWLHV RI VXUJHU\
 ‡ ,QWHJUDWH NQRZOHGJH IURP WKH UHTXLUHG FRXUVHV ZLWKLQ WKLV SU
 WR WKH UROH RI WKH VXUJLFDO WHFKQRORJLV LQ FDULQJ IRU GLYHUVH F
 ‡ &RPPXQLFDWH FOHDUO\ DQG HIIHFWLYHO\ XWLOL]LQJ WKH PRVW FXUUH
 UHVHDFK WRROV
 ‡ ([SUHV D FRPPLWPHQW WR OLIHORQJ OHDUQLQJ DQG FRQWLQXHG
 SURIHVVLRQDO GHYHORSPHQW
 ‡ OHHW WKH PLQLXP HOLJLELQW\ UHTXLUHPHQWV IRU WKH QDWLRQDO
 FHUWLI\LQJ H[DPLQDWLRQ DGPLQLVWHUHG E\ WKH 1%676\$

6WXGHQWV ZKR ZLVK WR EH FRQVLGHUHG IRU DGPLVVLRQ WR WKH 6XUJLF
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 ZLWK WKH IROORZLQJ UHTXLUHPHQWV
 6XEPLW D FRPSOHWHG &ROOHJH DSSOLFDWLRQ LGHQWLI\LQJ 6XUJLFDO
 7HFKQRORJ\ \$\$6 65 *6 DV WKH PDMRU
 6XEPLW KLJK VFKRRO WUDQVFULSW RU *(' VFRUHV \$SSOLFDQWV PXVW
 KDYH FRPSOHWHG DW OHDVW RQH \HDU RI ELRORJ\ DQG FKHPLVWU\
 DQG WZR \HUV RI PDWKHPDWLFV LQFOXGLQJ RQH XQLW RI DOJHEUD
 RU HTXLYDOHQW \$SSOLFDQWV ZLWKRXW KLJK VFKRRO ELRORJ\ DQG
 RU FKHPLVWU\ FDQ VDWLVI\ WKLV UHTXLUHPHQW E\ FRPSOHWLQJ WKH
 &ROOHJH\ V % , 2 RU & + (FRXUVHV ZLWK JUDGHV RI ' & ' RU EHWWHU
 % RWK WKH % LRORJ\ DQG & KHPLVWU\ FRXUVHV PXVW EH VXFFHVVIXOO\
 FRPSOHWHG ZLWKLQ WKH SDVW \HUV SULRU WR HQUROOLQJ LQ 685 FRXU
 6XEPLW RI FLDO FROOHJH WUDQVODUFDSEW IRU FUHGLW HYDOXDWLRQ
 & RPSOHWH WKH & ROOHJH SODFHPHQW WHVWV LQ (QJOLVK 0DWKHPDWLF
 DQG 5HDGLQJ DQG SODFH DERYH WKH GHYHORSPHQWDO OHYHO SULRU WR
 HQUROOLQJ LQ 685 FRXUVHV
 6XEPLW D 685 3HVLWLRQ IRU \$GPLVVLRQ

7KH 6XUJLFDO 7HFKQRORJ\ \$\$6 3URJUDP DFFHSWV VWXGHQWV HDFK
 DFDGHPLF \HDU LQ WKH)DOO VHPHVWHU 'XH WR FODVV OLPLDWRQV
 WKH &ROOHJH GRHV QRW JXDUDQWHH FRQWLQXRXV HQUROOPHQW EHWZHH
 QRQ 685 DQG 685 FRXUVHV \$OO VWXGHQWV PXVW FRPSOHWH WKH 6XUJLF
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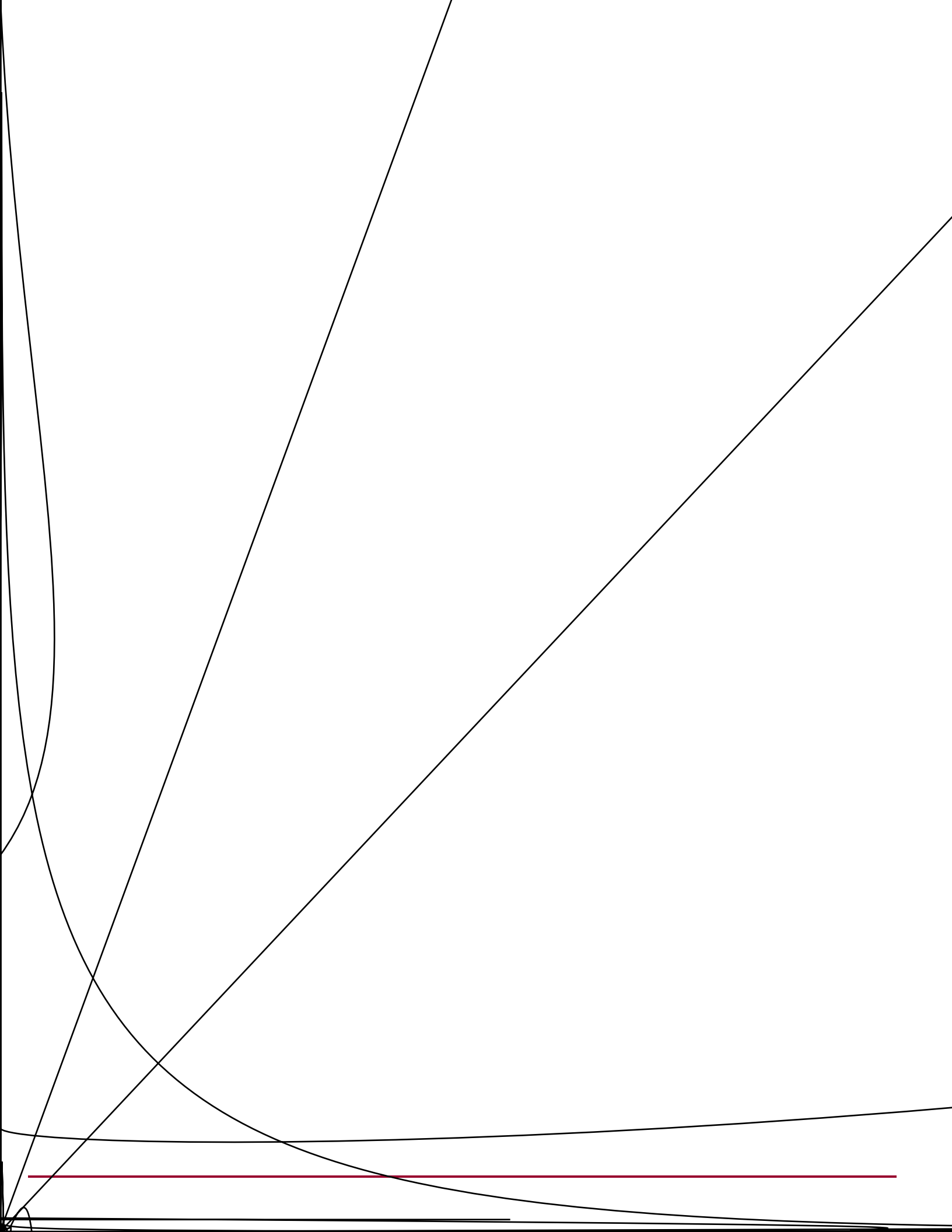
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 UHTXLUHPHQWV \$GGLWLRQDO LQIRUPDWLRQ LV DYDLODEOH RQ WKH &ROOHJH
 XSRQ UHTXHVW IURP WKH 6XUJLFDO 7HFKQRORJ\ 3URJUDP &RRUGLQDWRU

2QFH DFFHSWHG LQWR WKH \$ \$ 6 'HJUHH 3URJUDP VWXGHQWV
 DUH UHTXLUHG WR
 3XUFKDVH DOO UHTXLUHG WH[WERRNV PDQXDOV VXSSOHPHQWDO VXSS
 XQLRUPV DQG OLDELQW\ LQVXUDQFH
 \$VVXP DOO UHVSQVLELQW\ IRU WUDQVSRUWDWLRQ WR DQG IURP H[W
 DVVLJQPHQWV LQFOXGLQJ FOLQLFDO H[SHULHQFHV

RU WUDO T@\$00P AE 0 U°€0`€P A` @ ð07H p@ÀðÀWV \$GGLWLPIH 0iWF V
 \$RGDWHPPE€0 @ epH` ÀUAP@PXS SR ÀQ@AHP•UBD@€P`BLVQ@SRH[R RIV@%€'QIAO H L VXS







(1* (QJOLVK &RPSRVLWLRQ , VWRUDJH GHVLJQ
(OHFWLYH 0\$7 RU &RUH *RDO ‡ 4&BQWLWDMWYHG6NHSOR\ 0LFURVRIW
&,6 3& 0DLQWHQDQFH DQG 6XSSRSWUDWLQJ V\VWHPV
&,6 3& \$\$\$OLFDFWLRQV RQ 1HWZRU\ILJXUH DQG GHSOR\ YLUWXDOL]
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%,2 (QYLURQPHQWDO %LRORJ\ &,6 :LQGRZV 6HUYHU \$GPLQLVW
FUHGLW KR

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&,6 6FDOLQJ 1HWZRUNV
&,6 \$GYDQFHG :LQGRZV 6HUYHU \$GPLQ 6XSSRUW
(6:)RRG DQG &XOWXUH
FUHGLW KR

&,6 % &RQQHFWLQJ 1HWZRUNV
&,6 1HWZRUN 6HFXULW\ (VVHQLWLD0V
2U &,6 'DWD0DVH 0DQDJHPHQW 6\VWHPV 64/
&,6 /LQX[\$GPLQLVWUDWLRQ
2U 0*7 3ULQFSL0HV RI 0DQDJHPHQW
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FUHGLW KR



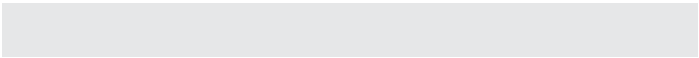
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HVVHQLWLD0V DQG VHUYLFHV \$GYDQFHG YLUWXDOL]DWLRQ WHFKQRORJLHV
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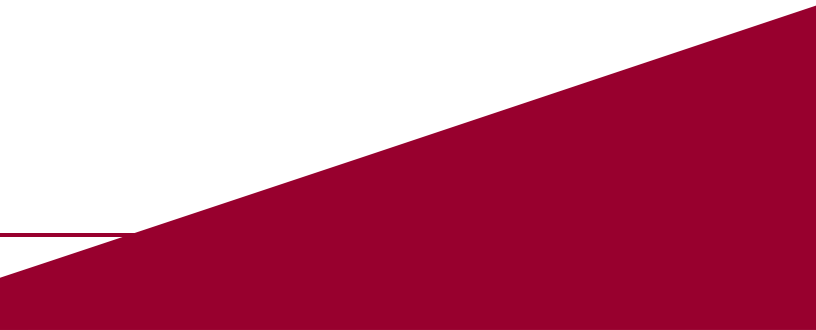
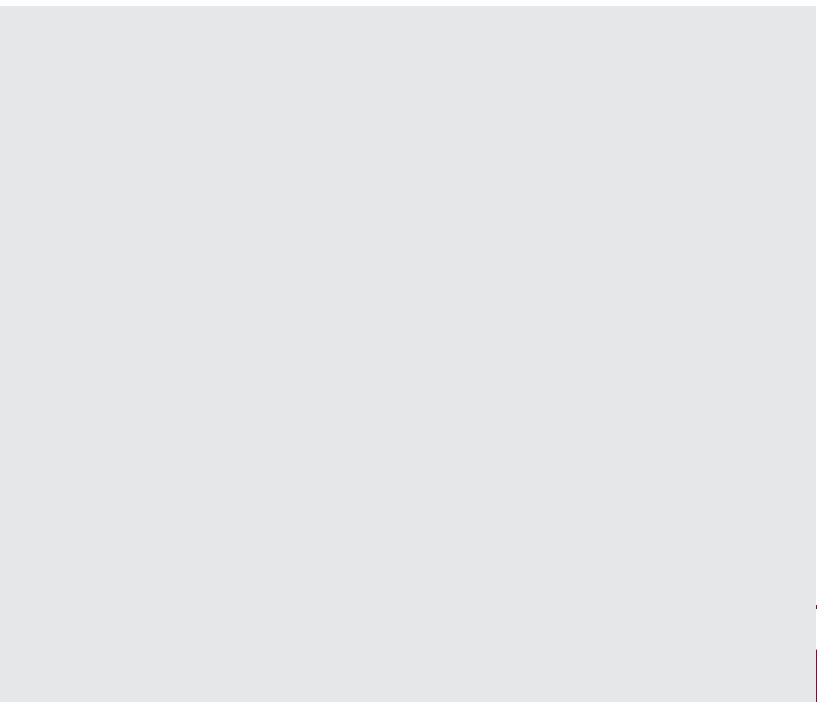
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‡ ([SODLQ WKH FRQFH0VW FRPSRQH0WV DQG GHSOR\PHQW RI FORXG
FRPSXWLQJ DQG SURYLVLRLQJ



‡ 'HVLJQ LPSOHPHQW HYDOXDWH DQG PDLQWDLQ D /\$1
‡ 7DNH LQG XVWU\ VWDQGDUG FHUWLILFDWLRQ H[DPV VXFK DV 1HWZRUN
\$ &1\$ DQG 0&3

&,6 3& 0DLQWHQDQFH DQG 6XSSRUW
&,6 3& \$SSOLFDWLRQV RQ 1HWZRUNV
&,6 1HWZRUN €fw£/~SGDUHQW OX
&,6 &UN6,6 @`0000









63 & 3XEOLF 6SHDNLQJ
3+,)XQGDPHQWDOV RI (WKLFV
+,6 &RUH *RDO &RUH *RDO DQG &RUH *RDO

FUHGLW KR

(6 & 0DWHULDO 6DIHW\ DQG
(TXLSPHQW 2YHUYLHZ IRU 1DQRIDEULFDWLRQ
(6 & 1DQRIDEULFDWLRQ 3URFHVVHV
(6 & 7KLQ)LOPV LQ 1DQRIDEULFDWLRQ
(6 & /LWKRJUDSK\ IRU 1DQRIDEULFDWLRQ
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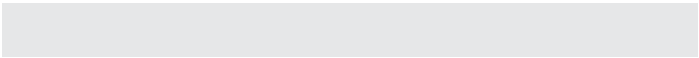
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VWXGHQWV ZKR SODQ WR WUDQVIHU WR D IRXU \HDU FROOHJH RU XQLYHUVL
PDMRU LQ LQIRUPDWLRQ WHFKQRORJ\ 7KLV SURJUDP SURYLGHV D EURDG RY
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UHTXLUH RI DOO HQWU\ OHYHO ,7 SUR
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& ,6 6\ VWHPV \$QDO\VLV 'HVLJQ
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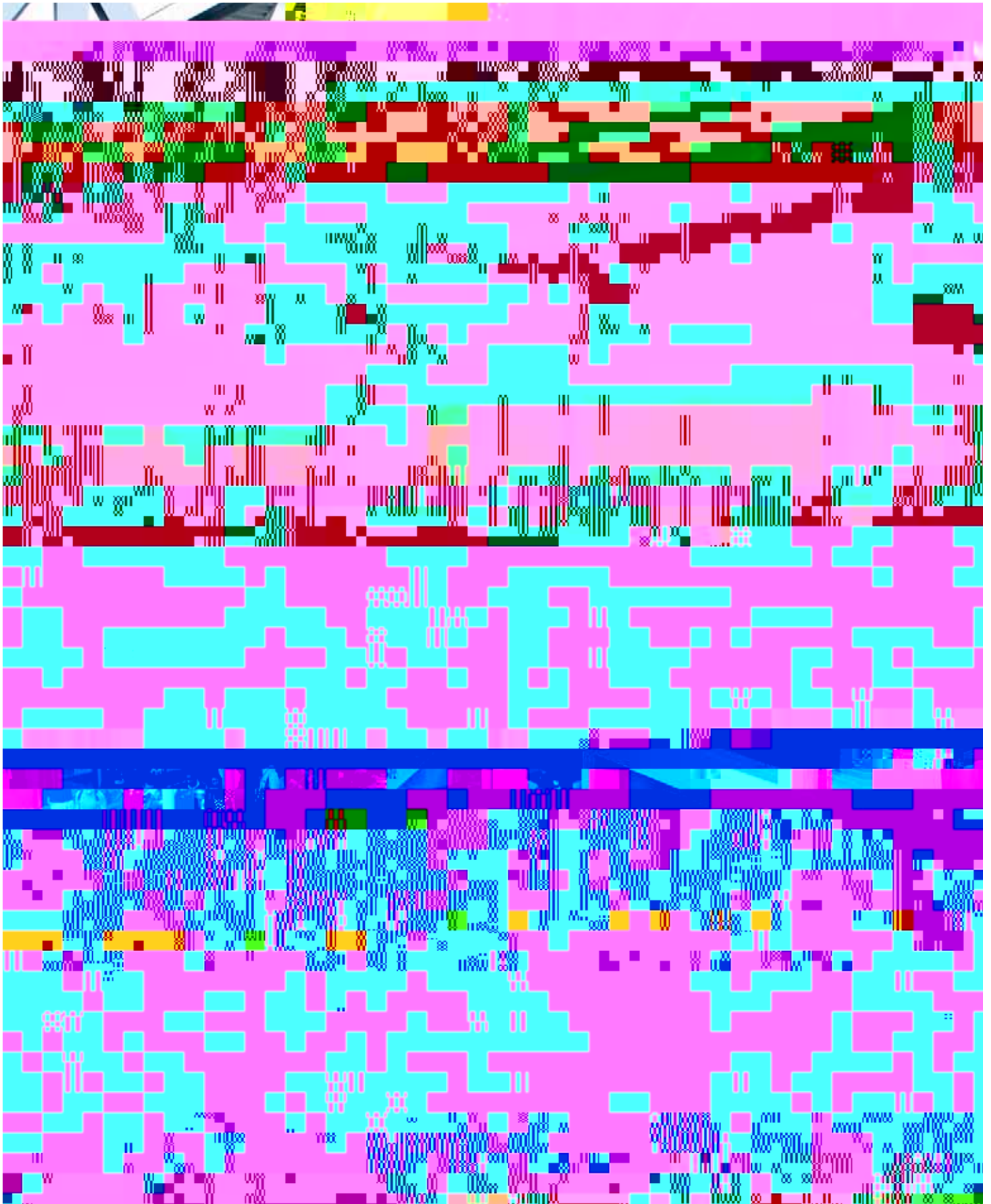
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\$57 'LJLWDO \$UW ,
\$57 &RPSXWHU *UDSKLFV 3DJH /D\RXW 'HVLJQ
\$57 9LVXDO 'HVLJQ IRU WKH 6\ VWHPV ZKR KDYH VXFFHVVIXOO\ R
HQUROO LQ 0RQWJRPHU\ &RXQW\ &RPP
6XSSRUW PD\ EH HOLJLEOH IRU XS WR
WKH &RPSXWHU 1HWZRUNLQJ &HUWLIL

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ZLVK WR JDLQ DQ LQ GHSWK H[SHU XLQ
LQGLYLGXDOO\ GHVLJQHG LQWHQVH FRXUVH RI VWXG\ RI DW OHDVW FUH

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'LVFLSOLQH &RRUGLQDWURU RU 'LUHFWRU D PLQLXP FUHGLW VHTXHGFH RI
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GHVLJQHG)LQDO DSSURYDO RI \RXU 6SHFLDOW\ &HUWLILFDWH SURJUDP DQG
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‡ *DPH 'HVLJQ

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WHUP FDUHHU WUDLQLQJ DQG FRQLQXLQJ HGXFDFWLRQ FUHGLWV :H RIIH
IROORZLQJ SURJUDPV WKDW SURYLGH SUHSDUDWLRQ IRU LQGXFUVU\ FHUWLIL



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HQWU\ OHYHO ,7 MREV LQ JHQHUDO

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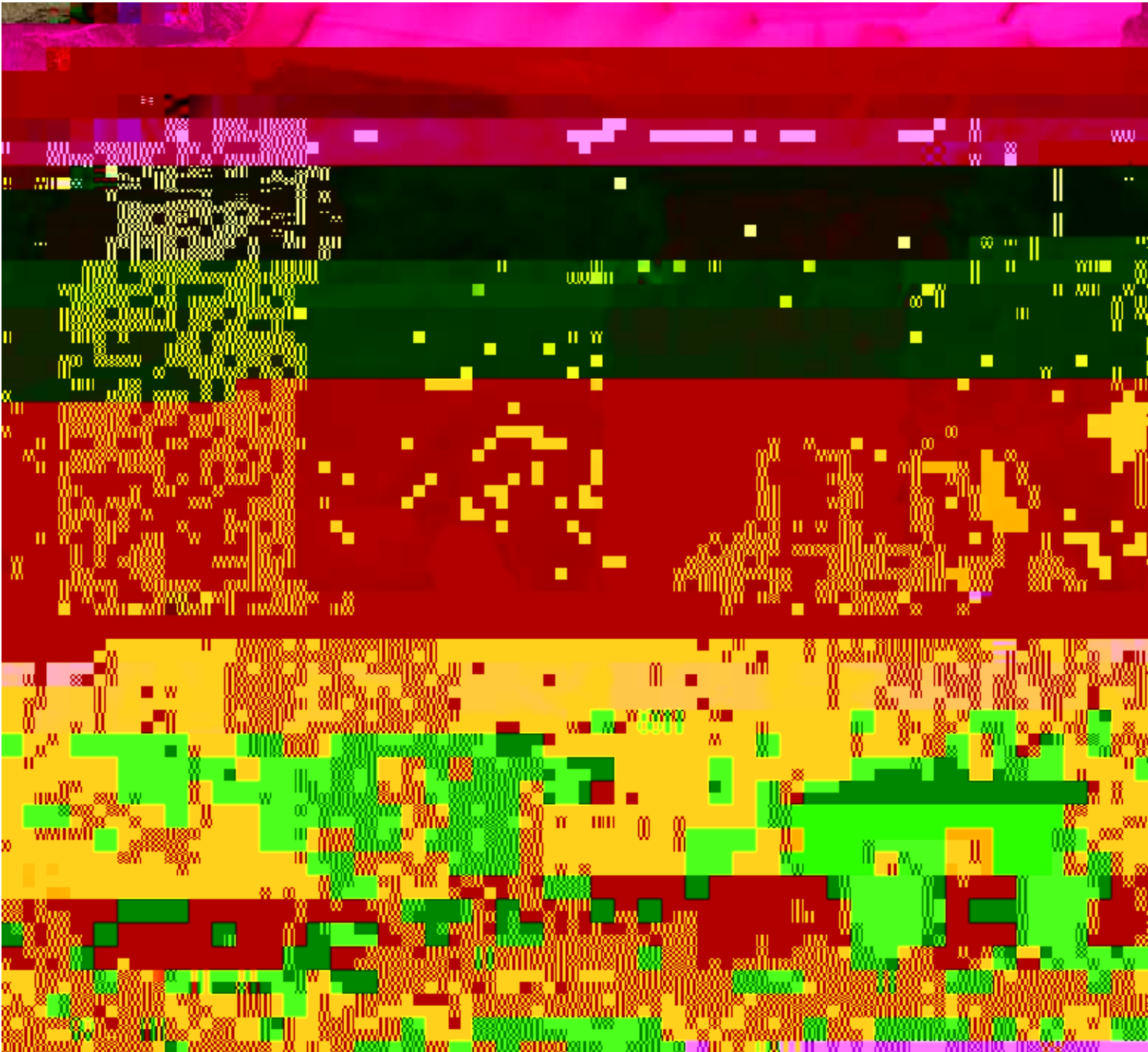
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IRU FHUWLILFDWLRQ IRU VLVWRU WKH FHUWLILFDWLRQ HDP

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DUH



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FUHGLW KR

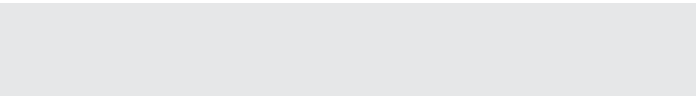
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(OHFWLYH (OHFWLYH
(OHFWLYH (OHFWLYH

FUHGLW KR

(OHFWLYH (OHFWLYH
(OHFWLYH (OHFWLYH
(OHFWLYH (OHFWLYH
%,2 (QYLURQPHQWDO %LRORJ\
(OHFWLYH &RUH *RDO ([HUFLVH +HDOWK 6FLHQFHV

%,2 1 00 FUHGLW KR XUV THIRD SEMESTER (OHFWLYH (OHFWLYQYLURQPHQ
%,2 ,OHFWLYH (OHFWLYQYLURP FUHGLW 0000 P`À`€0•0°€@öp°0``À€`€

%,2 (QYLURQPH AWDO #
%,2 1 00 FUHGLW KR XUV THIRD90EMESTER (OHFWLYH (O ð DP ,9@fðF pÀæíF \$ @



)6&)LUH 'HSW 2UJDQLJDWLRQ \$GPLQ
32/ \$PHULFDQ 1DWLRQDO *RYHUHQJPHQW
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SULYDWH ILUH VHUYLEFHV

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)6&)LUH 3UHYHQWLRQ &RGHQRUHHFHQW &HUWLILFDWH 3URJ
)6&)LUH ,QYHVWLJDWLRQ DXJPHQW WKH &ROOHJH\ GHJUHH FX
(OHFWLYH &RUH *RDO (WKLFDQGDQRORJ\ SUHYLQJUD KLJKO\ U
&+(*HQHUDO &KHPLVWU\ WKRVH DOUHDG\ ZRUNLQJ LQ WKH ILU
FUHGLW KRUV

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FUHGLW KR

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)6& 3XEOLF 6DIHW\ 7HFKQRORJ\
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VHUYLEFHV WKDW GR QRW UHTXLUH D GHJUHH

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FUHGHQWLDO IRU (PHUJHQF\ 0DQDJHPHQW 30DQQQLQJ (03 PDMRUV
ZKR DVSLUH WR VHQLRU DGPLQLVWUDWLYH PDQDJHPHQW RU FRPPDQG
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RI WKH WHFKQLFDO VEHMFW\ HOG SURIHVVLRQDO VNLOOV DQG VWDWH RI
WHFKQLTXHV QHFHVVDU\ WR PDQDJH FRRUGLQDWH DQG SODQ IRU HPHUJHQ
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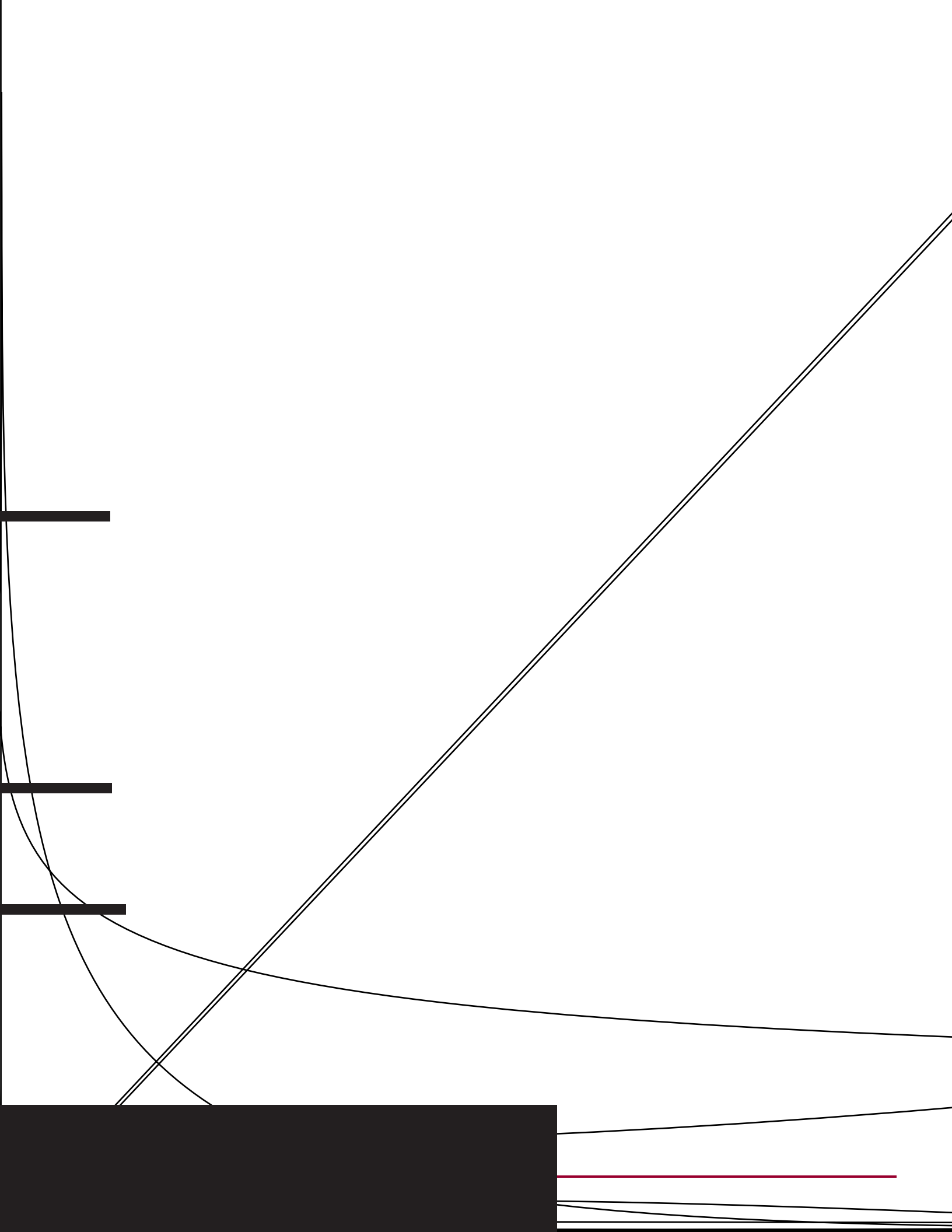
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+6: 62&
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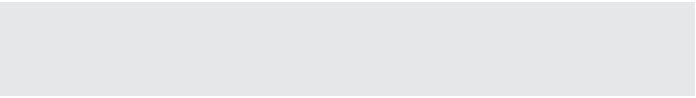
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WKH 3HQQV\OYDQLD &HUWLILFDWLRQ %RDUG 3&% 7KLV SURJUDP LV GHV
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REWDLQ HQWU\ OHYHO HPSOR\PHQW LQ DQ DJHQF\ IDFLOLW\ RU SURJUD
WKH WUHDWPHQW DQG RU SUHYHQWLRQ RI DGGLFWLRQ
‡ 8QGHUVWDQG WKH EDVLFV RI WKH VFUHHQLQJ LQWDNH DQG U
PD G ‡UAD0008Q@





‡ &-6 , QWURGXFWRQ WR &ULPLQD
‡ &-6 &ULPLQDO , QYHVWLJDWLRQ
‡ &-6 \$GPLQLVWHULQJ WKH %XVLQ
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+RPHODQG 6HFXULW\ LV D UDSLGO\ JURZLQJ DUHD RI HPSOR\PHQW
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IDFLOLWDWH D FDUHHU FKDQJH , W PD\ DOVR DSSHDO WR VWXGHQWV ZKR
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ORFDO IHGHUDO DQG LQWHUQDWLRQDO DOUHDG\ DOVR IXOO\ DSS
VHFXULW\ DJHQFLHV LQ IXOILoolQJ WKHLU DFDGHPLF DGYLVRU\ IDFXOW\

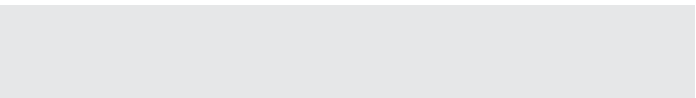
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SHUWLQHQQW WR KRPHODQG VHFXULW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
DQG WKH SULYDWH VHFWRU IOH[LLELW\ WR SHUPLW WKHP WR PH

&RQVWUXFW DQ LQ GHSWK FDVH VWXGHQWV WHUURULVW JURXS R
FRQWHP SRUDU\ WHUURULVW JURXS R RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
LQWHOOLJHQFH FRYHULQJ KLVWRU\ JHRJUDSK\ DQG FXOWXUH LGHRORJY
SROLWLFDO RU VRFLDO REMHFWLYHV OHDGHUVKLS RUJDQLJDWLRQDO VW

DQG ILQDQFHV PDMRU DFWLRQV DOUHDG\ DOVR IXOO\ DSS
LQWHUQDWLRQDO VXSSUHVVLVRQ HIIRUW\ SODLQ UHVHDFK PHWKRGV XVHG
FRQFOXVLRQV GHULYHG IURP WKDW

&UHDWH HIIHFWLYH VWUDWHJLHV IRU ODZ HQIRUFHPHQW DJHQFLHV DLPHG
ODZ HQIRUFHPHQW DJHQFLHV DLPHG SDVVHQJHUV DQG FDUJRV DQG LQWHUQDWLRQDO VXSSUHVVLVRQ HIIRUW\ SODLQ UHVHDFK PHWKRGV XVHG
SDVVHQJHUV DQG FDUJRV DQG LQWHUQDWLRQDO VXSSUHVVLVRQ HIIRUW\ SODLQ UHVHDFK PHWKRGV XVHG
KXPDQ HYHQWV

7KH IRXU FRXUVHV FRPSULVLQJ WKH &HUWLILFDWH RI HPSOR\PHQW
‡ &-6 ± 7HUURULVW &RXQWHUWHU RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
‡ &-6 , QWURGXFWRQ WR +RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
‡ &-6 ± , QWHOOLJHQFH \$QDO\VLV RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
‡ &-6 ± 7UDQVSRUWDWLRQ %RUG RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
‡ 6XPPDULJH WKH LGHDV WKDW DUH
'LVFLSOLQHV ZLWKLQ WKH 6RFLDO 6
RQH 'LVFLSOLQH IURP DQRWKHU



(1* (QJOLVK &RPSRVLWLRQ ,
6HFXULW\ ODQDJHPHQW LV D JURZLQJ ZRUNIRUFH WZHOY
FKDOOHQJLQJ MRE PDUNHW 6SHFLILF HQIRUFHPHQW DJHQFLHV DLPHG
LQGXVWU\ DQG WKH ILQDQFLDO VHUYLCHUW\ LQGXVWU\ RPHODQG 6HFXULW\ HDFK JUDGXDW\ WKH &ROOHJH RIIHUV D IRXU FRXUVH WZHOY
VKRUWDJHV RI ZHOH HGXFDWHG VSHFLILF HQIRUFHPHQW DJHQFLHV DLPHG
WZHOYH FUHGLW FXUULFXOXP ZLOO SUHSDUH VWXGHQWV WR HQWHU WKH
DQG PDQDJHULDO UDQNV LQ WKH SULYDWH DQG SXEOLF VHFXULW\ ILHOG



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' (6 & 5 , 3 7 , 2 1 6

,QVRIDU DV SRVVLEOH DOO FRXUVHV RIIHUG E\ WKH &ROOHJH GXULQJ W
VHPHVWHUV DUH GHVFULEHG RQ WKH IROORZLQJ SDJHV +RZHYHU VLQF
WKH &ROOHJH

\$Q LQWURGXFWRQ WR WKH YLWDTXBNVVLJQ RI ZHE SDJHV DQG LPDJLQJ W
VSHFL¿F WR ZHE EDVHG WHFKQRORJLHV \$ EURDG UDQJH RI VRIWZDUH DSSOL
XVHG LQ EXLOGLQJ YLVXDOO\ G\QDPLF ZHE SDJHV ZLOO EH DGGUHVHVHG ZLW
HPSKDVLV RQ WKH ODWHVW YHUVLRQV RI ODFURPHGLD 'UHDPZHDIYHU DQG)O
7KH PHWKRGV DQG WHFKQLTXHV RI FRPSXWHU EDVHG LPDJLQJ DQG DQLPDW
IRU WKH ZHE ZLOO EH H[SORUHG ZKLOH FKDOOHQJLQJ WKH VWXGHQWV¶ LPD
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GHVLJQ WR EXLOGLQJ D ZHE SDJH
3UHUHTXLVLWHV \$57 \$57 \$57 \$57 RU SHUPLVVLRQ RI WKH LQVWUXFWRU

\$ ³FDSVWRQH´ FRXUVH IRU *UDSKLF 'HVLJQ PDMRUV LQ ZKLFK WKH VWXGH
SUHSDUHV IRU HQWU\ LQWR WKH MRE PDUNHW RU IRU FRQWLQXLQJ WKHLU
(PSKDVLV ZLOO EH SODFHG RQ FUHDWLQJ GLJLWDO SRUWIROLRV IRU GLIH
DQG WKH ZHE 6WXGHQWV ZLOO DOVR OHDUQ WUDGLWLRQDO SRUWIROLR S
WHFKQLTXHV VHOI SURPRWLRQ DQG PDUNHWLQJ DQG WKH VWDQGDUGV D
SUDFWLFHV RI JUDSKLF GHVLJQ SURIHVVLRQDOV
3UHUHTXLVLWHV \$57 \$57 DQG \$57 RU SHUPLVVLRQ RI WKH LQVWUXFWRU

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DQLPDWLRQ &RQFHSWXDO VNLOOV UHODWHG WR WLPLQJ UK\WKP DQG PR
GHYHORSHG WKURXJK H[HUFLVHV LQ GUDZQ DQLPDWLRQ ZLWK D SURJUH
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LQ H[HFXWLRQ \$Q RYHUYLHZ RI WKH KLVWRU\ RI DQLPDWLRQ DQG SURIH
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RU H[FHUSWV RI IHDWXUH OHQJWK FRPPHUFLDO DQG LQGHSHQQGHQW DQLP
ZLOO EH SUHVHQWHG IRU HYDOXDWLRQ DQG GLVFXVVLRQ
3UHUHTXLVLWHV \$57 DQG \$57
&RUHTXLVLWHV \$57 DQG \$57

%HJLQQLQJ PRGHOLQJ LQ FOD\ ZKHUH VWXGLHV DUH PDGH IURP WKUHH
WD 0pÀ p Pð\ 4• DUUS@PðPHP0

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7KLV FRXUVH ZLOO SURYLGH WKH VWXGHQW ZLWK WKH EDVLF VNLOOV WR PDQDJ
FRQWURO FRVWV DQG PDUNHW DQ HVWDEOLVKPHQW WKDW RI IHUV DOFRKROLF
,W ZLOO LQWURGXFH WKH VWXGHQW WR WKH EDVLF SURGXFWLRQ SURFHVVHV DQ
RI DOFRKROLF DQG QRQ DOFRKROLF EHYHJDJHV 7KH FRXUVH ZLOO H[SODLQ OD
SURFHGXUHV UHODWHG WR UHVSQRVLEOH DOFRKRO VHUYLFH 6WXGHQWV VXFFH
FRPSOHWLQJ WKLV FRXUVH ZLOO FRPSOHWH WKH 6HUY6DIH \$OFRKRO H[DP IRU FH
3UH UHTXLVLWH &8/

7KLV FRXUVH SUHVHQWV WKH EDVLF SULQFLSOHV RI IRRG SUHSDUDWLRQ I
UHVWDXUDQW DQG LQGXVWULDO IRRG FDWHULQJ HVWDEOLVKPHQWV 7RSLFV LQFOX
LQFOXGH WKH LGHQWLILFDWLRQ SURGXFWLRQ DQG HYDOXDWLRQ RI NQLI
VWRFNV FODVVLFDQ VDXFHV VRXSU YHJHWDEOHV VDQGZLFKHV VDODGV
VDODG GUVVLQJV 6DQLWDU\ SUDFWLFHV DQG FRPSOLDQFH ZLWK ODZV D
RUGLQDQFH RI WKH 'HSDUWPHQW RI +HDOWK DUH HQIRUFHG 6WXGHQWV
UHTXLUHG WR KDYH D SURIHVVLRQDO FKHI V XQLIRUP WR SDUWLFLSDWH
DFFRUGLQJ WR GHSDUWPHQWDO XQLIRUP SROLFLHV

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LGHQWLILFDWLRQ SURGXFWLRQ DQG HYDOXDWLRQ RI EHHI SRXOWU\ V
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7KH\ ZLOO OHDUQ D YDULHW\ RI WUDGLWLRQDO IHUPHQWDWLRQ WHFKQLTXHV
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ZLOO OHDUQ KRZ WR SURGXFH VSHFLDOW\ EUHDGV IURP D YDULHW\ RI ZRUO
DORQJ ZLWK VHDVRQDO VSHFLDOW\ EUHDGV 6DQLWDU\ SUDFWLFHV DQG FRP
ZLWK ODZV DQG RUGLQDQFH RI WKH 'HSDUWPHQW RI +HDOWK DUH HQIRUFH
6WXGHQWV DUH UHTXLUHG WR KDYH D SURIHVVLRQDO FKHI V XQLIRUP WR SI
LQ FODVV DFFRUGLQJ WR GHSDUWPHQWDO XQLIRUP SROLFLHV
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LQGXVWU\ 7KH FRXUVH GHWDLOV WKH IORZ RI JRRGV LQFOXGLQJ LQYHQ
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3UHUHTXLVLWHV +26 RU &8/

SURGXFH YDULHWLHV RI JDQFKH VXJDU FRQIHFWRQV MHOOLHV DQG QXW
EDVHG FRQIHFWRQV 6DQLWDU\ SUDFWLFHV DQG FRPSOLDQFH ZLWK ODZV D
RUGLQDQFHV RI WKH 'HSDUWPHQWHV R
RL @XFÀRL F D°DQ•L (@ SUF XV HRQTFðSF[H •`0 QSÀSRU@CWF CDUW\FHÀCDUpL (Q

\$GYDQFHG FRPSXWHU DLGHG GUDIWLQJ FRXUVH LV GHVLJQHG WR LQVWUXFW
LQ WHFKQLTXHV IRU FRQJXULQJ SURJUDPV WR PHHW WKH VSHFLDO UHTXLV
RI SDUWLFXODU GLVFLSOLQHV DQG WR LQFUHDVH GUDZLQJ SURGXFWLYLW
3UHUHTXLVLWHV &,6 '5\$ HTXLYDOHQW ZRUN H[SHULHQFH RU
SHUPLVVLRQ RI WKH LQVWUXFWRU

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GUDIWLQJ DQG GHVLJQ LQ WKUHH GLPHQVLRQV 7KH FRXUVH IRFXVHV RQ
XQGHUVWDQGLQJ FRQVWUXFWLRQ DQG PDQLSXODWLRQ RI H[WUXVLRQ ZL
VXUIDFH DQG VROLG PRGHV XVLQJ &\$' 7KH FRXUVH FRYHUV WKHRU\ RI
GLVSOD\LQJ ' PRGHV ' H[WUXVLRQ ZLUHIUDPH VROLG PRGHOLQJ DQG
SUHVHQWDWLRQ RI ' PRGHV SORWWLQJ DQG UHQGHULQJ ' GUDZLQJ
\$XWR&\$' GUDIWLQJ SURJUDP ZLOO EH XVHG \$OVR RIIHUG DV &,6
3UHUHTXLVLWH &,6 RU '5\$ RU HTXLYDOHQW

\$ FRQLQXDWLRQ RI WKH DUFKLWHFWXUDO GUDZLQJ VHTXHQFH WK
H[DPLQHV WKH WRSLFV RI HOHFWULFDO V\VWHPV HQYLURQPHQWDO V
VSHFLILFDWLRQV DQG EXVLQHVV GHDOLQJV DUFKLWHFWXUDO UHQGHU
FRPPHUFLDO DUFKLWHFWXUH &RXUVH RIIHUG GXULQJ)DOO VPHVWHU
3UHUHTXLVLWHV '5\$ RU SHUPLVVLRQ IURP ,QVWUXFWRU

\$ FRXUVH LQ VWUXFWXUDO GUDIWLQJ DQG GHVLJQ 6WHHO ZRRG D
FRQFUHWH DUH H[DPLQH IURP WKH ORDG EHDULQJ DQG VWUHV VWDQGS
E , € ODWKHPDWLFDO FRPSXWHWLRQ—D\ ZHO F DV JUD\$KLÀ UHSU@VHQWDFWLRQ

7 KLV FRXUVH ZLOO GHYHORS DGYDQFHG VNLOOV XVLQJ ODFURPHGLD)ODVK V

LQWHUIDFLQJ DQG , 2 VWUDWHJLHV PHPRU\ DUFKLWHFWXUH D FRPSXWHU
IXQFWLRQDO RUJDQL]DWLRQ DQG PXOWLSURFHVVLQJ 7KH LPSRUW
&38 FORFN VSHHG FDFKH VL]H EXV7KUVDERYDWHRSURDYDQG HXWKHUV
SURFHVVRUV ZLOO DOVR EH GLVFXVVHG FHVVDU\ WR SHUIRUP GD\ WR GD\ D
3UHUHTXLVLWH &,6 RU HTXLYDOHQW ZLWK D JUDGH RI '3&' RU EHWWHU

6WXGHQWV ZLOO OHDUQ WKH -DYDVFULSW SWR JUD@LQJ OS@E@JXPJH GL
WR XVH -DYDVFULSW WR EXLOG G\QDPLF ZHE VLWHV WKDW WDNH DGYDQW
PRGHUQ :HE EURZVHU IHDWXUHV 7RSLFV ZLOO LQFOXGH WKH 'RFXP
2EMHFW ORGHO '20 ;0/ DQG -621 GDWD IRUPDWV +\SHUWH[W 7UDQVIHU
3URWRFRO +773 DQG WKH ;0/+WWS5HTXHVW REMHFW 6WXGHQWV ZLOO O
KRZ WR FRPELQH WKHVH DQG RWKHU WHFKQRORJLHV WR EXLOG \$MD[DSSO
3UHUHTXLVLWHV &,6 % DQG &,6 RU WKHLU HTXLYDOHQWV

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NQRZOHGJH RI WKH FRQYHQWLRQV WHFKQLTXHV DQG WHUPLQR
WKH /LQX[2SHUDWLQJ 6\WHP 6WXGHQWV ZLOO OHDUQ WKH VNLOOV QHF
WR XWLOL]H DGPLQLVWHU DQG LQVWDOO /LQX[LQ ERWK QHWZRUNHG DG
HQYLURQPHQWV 7KH REMHFWLYHV RI WKLV FRXUVH ZLOO DOLJQ ZLWK D P
SURIHVVLHQDO FHUWLILFDWLRQ
3UHUHTXLVLWH &,6 RU HTXLYDOHQW H[SHULHQFH

7KLV FRXUVH SURYLGHV H[WHQG HG NQRZOHGJH RI WKH /LQX[2SHUDWLQJ
\$GYDQFHG IHDWXUHV DQG EHQHILWV RI WKLV RSHUDWLQJ V\WHP LQFOXG
V\WHP DGPLQLVWUDWLRQ QHWZRUNLQJ FRQILJXUDWLRQ FRPPXQLFDWLR
FRQWURO ZLOO EH VWXGLHG 6WXGHQWV ZLOO SDUWLFLSDWH LQ FRPSOH[
DVVLJQPHQWV 7KH REMHFWLYHV RI WKLV FRXUVH ZLOO DOLJQ ZLWK D PD
LQGXVWU\ FHUWLILFDWLRQ H[DP
3UHUHTXLVLWH &,6 RU HTXLYDOHQW H[SHULHQFH

,QWURGXFHV VWXGHQWV WR WKH ODWHVW YHUVLRQV RI OHDGLQJ VRIWZDUH
XVHG LQ WKH ;HOG RI JUDSKLF GHVLJQ LQFOXGLQJ \$ERGH ,OOXVWUDWRU
3KRWRVKRS DQG 4XDUN ;SUHV 6WXGHQWV ZLOO FUHDWH DQG PDQLSXODWH
DQG WH[W DQG OHDUQ WHFKQLTXHV IRU H[SRUWLQJ ;OHV LQWR GLIIHUHQW
XVH DFURVV SODWIRUPV LQ PXOWLSOH DSSOLFDWLRQV DQG IRU WKH ZHE
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GHVNWRS RSHUDWLQJ V\WHPV ZKLFK DUH W\SLFDOO\ VXSSRUWHG RQ D
DUHD QHWZRUN 6RIWZDUH FRYHUHG ZLOO LQFOXGH FRPPDQG OLQH LQWH
([FHO :RUG 3RZHU3RLQW \$FFHV DQG :LQGRZV \$GGLWLRQDO WRSLFV Z
LQFOXGH WKH ,QWHUQHW DOWHUQDWLYH GHVNWRS RSHUDWLQJ V\WHPV
EDVLFV VRIWZDUH OLFHQVLQJ ILOH PDQDJHPHQW KDUGZDUH VHOHFWLR
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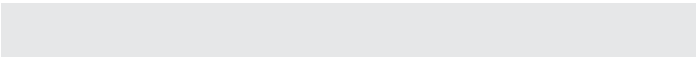
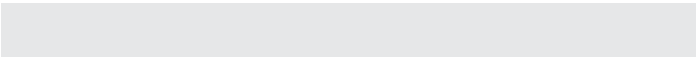
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/\$1 WHFKQRORJ\ E\ WHDFKLQJ WKH IXQGDPHQWDO VNLOOV QHHGHG WR P
D 1RYHOO 1HW:DUH QHWZRUN HIIHFWLYHO\ 1HW:DUH FRQFHSWV DQG XWL
ZLOO EH WDXJKW WKURXJK D FRPELQDWLRQ RI OHFWXUH KDQGV RQ DVVL
DQG SURMHFWV 7KLV FRXUVH LV GHVLJQHG WR SUHSDUH VWXGHQWV WR V
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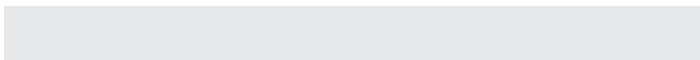


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XQGHUO\LQJ WKH GHYHORSRPHQW RI JDPLQJ VRIWZDUH DOJRULWKPV 7KH\ Z
XVH D UDQJH RI VRIWZDUH SURGXFWV WR LPSOHPHQW WKHVH DOJRULWKPV D
PRGHOLQJ PHWKRGV
3UHUHTXLVLWHV &,6 % ZLWK D & RU EHWWHU

7KLV LV WKH ILUVW RI WKH WZR (OHFWURQLF *DPH 6LPXODWLRQ 'HVLJQ
FDSVWRQH FRXUVHV 6WXGHQWV ZLOO ZRUN LQ WHDPV WR GHVLJQ D JDPH
XVLQJ LQGXVWU\ VWDQGDUG WRROV DQG SURFHGXUHV 7KH GHVLJQ RI OH
FKDUDFWHUV VWRULHV JDPH PHFKDQLFV XVHU LQWHUIDFHV DQG SX]]O
ZLOO EH H[SORUHG LQ GHSWK DORQJ ZLWK WHFKQLTXHV IRU XVDELOLW
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GHVLJQ \$OO PDWHULDOV SURGXFWV LQ WKLV FODVV ZLOO EH XVHG DV WK
IRU GHYHORSRPHQW D FRPSOHWH DQG IXQFWLRQDO JDPH LQ (OHFWURQLF *DP
6LPXODWLRQ 'HVLJQ 3URGXFWLRQ 6WXGLR
&R UHTXLVLWH &,6

7KLV LV WKH VHFRQG RI WZR (OHFWURQLF *DPH 6LPXODWLRQ 0F *DP





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SODQQLQJ DQG SURYLGQLQJ RUDO KHDOWK VHUYLFHV 7RSLFV LQFOXGH Q
FRXQVHOLQJ LQVWUXPHQWDWLRQ SUHYHQWLRQ HGXFDWLRQ DQG FRPPXQL
GHVHQVLRWL]DWLRQ WREDFFRQFHWW\DWLRQHHW KLFV DV ZHOO DV WKH K\JLH
GHQWDO VSHFLDOWLHV)RFXV LV SODFHG RQ WKH VWXGHQW\ V GHYHORSPHQ
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IXQFWLRQLQJ LQ FOLQLF LQ DQ HIIHFWLYH DQG HI;FLHQW PDQQHU 6WXGHQ
HGXFDWLRQDO DQG FOLQLFDO VHUYLFHV ZLWK DQ HPSKDVLV RQ FRPSUHKHQ
IRU FKLOG DQG DGXOW FOLHQWV DW WKH &HQWUDO &DPSXV\ GHQWDO K\JLH
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&RUHTXLVLWHV '+* DQG '+*

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FHOOV WLVVXH DQG RUJDQV RI WKH RUDO FDYLW\ %XLOGQLQJ RQ WKH F
JHQHUDO KLVWRORJ\ DQG HPEU\RORJ\ WKH QDWXUH RI GLVHDVH LV DGGU
ZLWK UHVSHFW WR HWLRORJ\ PHFKDQLVP RI GLVHDVH IRUPDWLRQ DQG WK
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WKDW DIIHFW WKH RUDO FDYLW\ DQG WKH FOLQLFDO DQG KLVWRORJLFDO
RUDO QHRSODVLD DUH HPSKDVL]HG
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RI QRUPDO WLVVXH WKH VWXGHQWV ZLOO OHDUQ WR UHFRJQL]H WKH FK
RFFXU LQ SHULRGRQWDO GLVHDVH DW WKH FOLQLFDO DQG PLFURVFRSLF OHY
ZLOO DSSO\ WKLV EDFNJURXQG NQRZOHGJH WR FODVVL\ SHULRGRQWDO GLVH
WKH \$PHULFDQ \$FDGHP\ RI 3HULRGRQRORJ\ &ODVVL;FDWLRQ 6\VVHP
3UHUHTXLVLWHV \$OO ILUVW VPHVWHU FRXUVHV LQ WKH 'HQWDO +\JLHQH 3URJUDP RI
&RUHTXLVLWH '+*

7KLV FRXUVH SURYLGHV VROLG IRXQGDWLRQ RI VNLOOV WR VROYH HQJLQJ
SUREOHPV 6WXGHQWV GHPRQVWUDWH SUREOHP VROYLQJ WHFKQLTXHV ZL
VSUHDGKHHWV GLPHQVLRQV DQG XQLWV XVH PRGHOLQJ WHFKQLTXHV D
LQWHUSUHW YDOLGLW\ RI H[SHULPHQWDO UHVXOWV 6WXGHQWV GHVLJQ
RQ PXOWL GLVFLSOLQH WHDPV 7KH FRXUVH LQWURGXFHV SURIHVVLRQDO
VRFLHWDO LVVXHV DSSURSULDWH WR HQJLQHULQJ 9DULRXV IRUPV RI W
FRPPXQLFDWLRQ DUH HPSKDV]HG
3UHUHTXLVLWH 6WXGHQWV PXVW KDYH VXFFHVVIXOO\ FRPSOHWHG RU WHVWHG RXW RI
DQG 5(\$

,Q HQJLQHULQJ HQYLURQPHQWV LW LV FULWLFDO WR UHFRJQL]H Z
KRZ D FRPSXWHU FDQ DVVLVW LQ WKH DQDO\VLV RI D SUREOHP 7KLV FRX
LQWURGXFH WKH NH\ FRQFHSW RI JRRG SURJUDPPHQJ SUDFWLFH DQG VKR
FRPSXWHU SURJUDPPHQJ GLUHFWO\ UHODWHV WR VROYLQJ HQJLQHULQJ S
OXOWLSOH SURJUDPPHQJ HQYLURQPHQWV DUH XVHG HDFK RQH HPSKDV]H
WKH VDPH FRUH FRQFHSW \HW FXVWRPL]HG WR VXSSRUW D VSHFLILF FD
RI HQJLQHULQJ SUREOHP DSSOLFDFWLRQ
3UHUHTXLVLWH 0\$7 RU HTXLYDOHQW

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FRQFHSWLRQ WKURXJK WR ILQDO SURGXFW 'UDZLQJ GLPHQVLRQLQJ DQG
WROHUDQFLQJ DUH DOVR GLVFXVVHG DV LV WKH VROXWLRQ WR ' SUREOH
VSDWDO DQDO\VLV WKURXJK GHVFULSWLYH JHRPHWU\
3UHUHTXLVLWH 0\$7 RU HTXLYDOHQW

7KLV FRXUVH GHVFULEHV WKH PHFKDQLFDO EHKDYLRU RI PDWHULDOV DQG
LQ HTXLOLEULXP XVLQJ 1HZWRQ\ V ODZV RI PRWLRQ 6WXGHQWV ZLOO OHI
SULQFLSOHV RI IRUFH DQG PRPHQW HTXLOLEULXP FRQVWUXFWLRQ DQG D
RI IUHH ERG\ GLDJUDPV XQGHUVWDQGLQJ GLVWULEXWHG IRUFHV IULFWL
VWUXFWXUDO UHVSQRVH
3UHUHTXLVLWH (*5 (*5 0\$7 RU HTXLYDOHQW DQG 3+<

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FXUYLOLQH DU PRWLRQ RI SDUWLFOHV DQG ULJLG ERGLHV DV GHVFULEHG
UHFWDQJXODU SRODU DQG SDWK FRRUGLQDWHV DQG WKH VWXG\ RI WKH
SURGXFW VXFK PRWLRQ DV GHVFULEHG WKURXJK WKH DSSOLFDFWLRQ RI 1H
VHFRQG ODZ RI PRWLRQ ZRUN HQUJ\ UHODWLRQVKLSV DQG LPSXOVH DQ
PRPHQWXP SULQFLSOHV LQFOXGLQJ ULJLG ERG\ URWDWLRQ DQG UHODWLY
3UHUHTXLVLWHV (*5 &R UHTXLVLWH 0\$7

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GHVLJQHG DV D IRXQGDWLRQ FRXUVH IRU WKRVH SXUVXLQJ VWXGLHV OHD
GHJUHH LQ HOHFWULFDO HOHFWURQLFV RU FRPSXWHU HQJLQHULQJ
3UHUHTXLVLWHV (*5 DQG 3+<

7KLV FRXUVH FRYHUV WKH IXQGDPHQWDO ODZV DQG SURFHGXUHV RI HOHFWUL
DQDO\VLPLW OHFWUL «

3UHUHTXLVLWHV 3ODFHPHQW WHVW VFRUH VNLOOV WDXJKW LQ (1* DQG UHVH
 3ODFHPHQW LQWR GHYHORSHPHQWDO FRXUVH WKH WREFVULFRQJHJHWO FRQDFRQWUM
 FRPPXQLFDWLRQ OHVWHUV DQG PHP
 UHSRUW WKH DUWLFOH DQG WKH WH
 (1* \$ XVHV ZULWLQJ DQG UHGLQJ DV DSWFXYRUPDOPDPPDUK WHQWKLQFHW
 VWUXFWXUH SDUDJUDSK GHYHORSHPHQWDO (QJOLVK XVDJH D
 LQWHQVLYH SDUDJUDSK ZULWLQJ 7KH FRXUVH UHTXLZLWU DRUDQD VVW
 ZKR VH VFRUH RQ WKH SODFHPHQW WHSDWLFHQWDDWSDRQD D GRRW ZRQW D Q
 RI EDVLF ZULWLQJ VNLOOV (1* \$ SODQDQV RUDVW DNRQDDFXD UHPUVWVWV
 FRXUVH 7KLV SUHFROOHJH OHYHO FRXUVH FDQQRW EH XVHG WR IXOILOO
 UHTXLUHPHQW QRU LV LW FDOFXODWHG LQ D VWXGHQW V *UDGH 3RLQW
 *3\$ KRZHYHU WKH FUHGLWV ELOOHG LQ ERUDS OLQHV WR DQG GQGXVWU
 ILQDQFLDO DLG HQUROOPHQW VWDW XHQD Q ELXQGHM QF RPPV X F DUVLFRQ
 1DWLRQDO 6WXGHQW &OHDULQJ KRXV VWXGHQWV SODQLQJ D FDUHHU LQ E
 3UHUHTXLVLWH V 3ODFHPHQW WHVW VFRUH VWXGRU RI WKH PHFKDQLFV IRUP VWI
 PHPRV UHSRUWV SURSRVDOV DQG H

(1* HPSKDV LJHV VHQWHQFH VWUXFWXUH SDUDJUDSK GHYHORSHPHQW
 IXQGDPHQWDO (QJOLVK XVDJH DQG LQWHQVLYH WHU SDXIDHU DVSKXZHUQMLQWR W
 FRXUVH LV UHTXLUH G RI DOO VWXGHQW WLWZKRXUHV FRWKH VQXV KH Q VS ODFHPHQ
 LQGLFDWH D QHHG IRU LQWHQVLYH UHVLHZRILE DMLP ZQQWUQD VNNDOO\ WK
 DOVR EH WDNHQ DV D UHIUVKHU FRXUVH WKLV USUDFRLOOHJH Q D GHPDULFRQV
 EH XVHG WR IXOILOO D GHJUHH UHTXLUWPHHQW QXU W D ELOW FRQFXODOLFH Q W LQ
 *UDGH 3RLQW \$YHUDJH *3\$ KRZHYHU WKH VFRXQGWV ELOOHG WLUODG EMLR
 WRZDUGV D VWXGHQW V ILQDQFLDO DLG HQUROOPHQW PHQW D QG VXF XUDG V HQUR
 UHSRUWHG WR WKH 1DWLRQDO 6WXGHQW &OHDULQJ KRXV WKH KURXJK LQWHUYI
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(1* LV EDVHG RQ WKH SUPLVH WKDW FULWLFDO WKLQNLQJ JHQHUDWHV
 ZULWLQJ ,Q WKLW FRXUVH WKH VWXGHQWV GHQUROROROLV DQ WHUDGH FRLW Q D Q D Q K
 LQYROYHV GLVWLQJXLVKLQJ FHQWUDQKHGHRFRFURPV VXSRSUWLQJ PDKHUHD
 LGHQWLILQJ DQ DXWKRU TV SXUSRVH RDNV XPSW LRVXG LHV W RW XGKHLUD Q G W
 \$GGLWLRQDO\ WKH VWXGHQW LQ (S'KLOFRHDSKLV DOZFRQW QJWSURFHVW WK
 LQYROYHV JHQHUDWLQJ LGHDV GUDILWUHQJ *RDRPSRVLQJ UHVLVLQJ DQG H
 7KH VWXGHQW DOVR OHDUQV WR ORFDWUHTXLVH W D Q G D PFXUWVW HQ Q UHIHURQ
 VRXUFHV RI LQIRUPDWLRQ
 &RUH *RDOV D DQG
 3UHUHTXLVLWHV 6WXGHQWV PXVW KDYH V \$FFKURORORRFRS DOWH XRYHWHRW HQ JDLW R
 RU 5(\$ (6/ RU (1* ZLWK D JUDGH RI W *H R U H V W W H W 7KH HPSKDV LV LV RQ I
 7KLV FRXUVH KDV DQ +RQRUV YHUVLRQ ,W RI IHUV XHQD Q ELXQGHM QF DQ DRG SRUW X
 FRPSOHWH D PRUH LQWHQVLYH YHUVLRQ RI WKH FRXUVH JRDOV LQ D VPDOO FODVVURRP
 6WXGHQWV VKRXOG H[SHFW PRUH LQ GHSWK UHTXLQJ ZULWLQJ DQG ERWHQ D V L J Q P H W
 FODVVURRP GLVFXVLRQ

(1* IRFXVHV RQ ZULWLQJ WKH FROOHJH OHYHO UHVLHZRILE DMLP ZQQWUQD VNNDOO\ WK
 GHYHORSV HDFK VWXGHQW TV PDVWHU WKH FRPPXQLFDWLRQ OHVWHUV DQG WKH WH
 DQG DQDO\WLF VNLOOV ZLWK HPSKDV OLWVSHUDUJ YDOLW DQG LQIRUPDWLRQ
 PHWKRGV 6WXGHQWV XVH ZULWLQJ 3UHUHTXLVH W D Q G D PFXUWVW HQ Q UHIHURQ
 VNLOOV XQGHUVWDQG RUJDQLJHQ UHFFLHY DQG FRQYH LQIRUPDW
 8VLQJ UHVHDFK JOHDQHG IURP GLYHUVH VRXUFHV VWXGHQWV HPSOR\ OI
 UHVRQLQJ DQG DQDO\VLV WR FUDIW HHHFWLYH HVVDIV
 &RUH *RDOV D DQG
 3UHUHTXLVLWH 6WXGHQWV PXVW KDYH V \$FFHVVIXOO\ FRPSOHWHG RU WHVWHG RXW RI
 ZLWK D JUDGH RI 3 & RU EHVWHU 7KLV FRXUVH KDV DQ KRQRUV YHUVLRQ ,W RI IHUV T
 VWXGHQWV DQ RSSRUWXQLW\ WR FRPSOHWH D PRUH LQWHQVLYH YHUVLRQ RI WKH FRXUVH
 VPDOO FODVVURRP VHWWLQJ 6WXGHQWV VKRXOG H[SHFW PRUH LQ GHSWK UHGLQJ ZU
 RUDO DVVLJQPHQWV DQG FODVVURRP GLVFXVLRQ

:ULWLQJ IRU 7HFKQLFDO &RPPXQLFDWLRQ HQWDLOV WKH DSSOLFDWLRQ RI

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6FLHQFH DQG :HOOQHVV 7KH FRXUVH LV GHVLJQHG DV DQ HQWU\ OHYHO FRXUV
PDMRUV ,W SURYLGHV DQ LQWURGXFWRQ WR WKH SURIHVVLRQ WKURXJK D EU
FODVVURP SUHVHQWDWRQ DQG ¿HOG H[SHULHQFHV LQ VHYHUDO DUHDV RI S
VSHFLDOL]DWLRQ VXFK DV WHDFKLQJ H[HUFLVH VFLHQFH VSRUW PDQDJPH
DQG KHDOWK DQG ZHOORHVV 7KH FRXUVH SUHSDUHV (6: PDMRUV WR GHYHORS
HGXFWRQDQDO DQG SURIHVVLRQDQDO SODQ 2SHQ WR PDMRUV DQG QRQ PDMRUV
&RUH *RDOV DQG

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H[HUFLVH DQG D VHOHFWLRQ RI DHURELF DFWLYLWLHV DQG H[HUFLVHV WK
GHYHORS WKH VWXGHQW WR D KLJKHU OHYHO RI SK\VLFDO ILWQHVV ZLWK
NQRZOHGJH RI WKH SULQFLSOHV RI H[HUFLVH 'LVFXVVRQV ZLOO GHDO ZI
WRSLFV DV FDUGLRYDVFXODU HQGXUDQFH PXVFXODU VWUHQRJWK QHXURP
FRRUGLQDWLRQ IOH[LELOLW\ ZDUP XS ZRUNRXW SURJUHVVLRQ FRRO GRZQ
ERG\ QXWULWLRQ IRU SHUIRUPDQFH
&RUH *RDO

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SUDFWLFHV RI =XPED)LWQHVV DQG VXSSRUW WKH VWXGHQW V GHYHORS PHQ
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RI H[HUFLVH 'LVFXVVRQV ZLOO DGGUHV VXFK WRSLFV DV FDUGLRYDVFX
HQGXUDQFH PXVFXODU VWUHQRJWK QHXURPXVFXODU FRRUGLQDWLRQ À[LELO
XS ZRUNRXW SURJUHVVLRQ FRRO GRZQ DQG ERG\ QXWULWLRQ IRU SHUIRUPDQ
&RUH *RDO
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RU (6/ (1* RU (6/ 5(\$ RU 5(\$ 5(\$ RU 5(\$

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LQ WKH VNLOOV RI UDFTXHWEDOO DQG EDGPLQWRQ ,QVWUXFWLRQ DQG SU
HPSKDVL]H UHILQLQJ WKH PHFKDQLFV RI WKH VWURNHV ZLWKLQ WKH EDV
DGYDQFHG VKRWV RI SOD\ 6WXGHQWV ZLOO EH JLYHQ WKH RSSRUWXQLW\
DQG DSSO\ WKH JDPH VWUDWHJ\ WR VLQJOHV DQG GRXEOHV
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LQQDWH FDSDFLW\ IRU H[SUHVVLYH PRYHPHQWV 7KH FRXUVH H[SORUHV PR
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ZRUN LQ LQWHUSUHWLYH PRYHPHQW

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RI JROI LQFOXGLQJ JULS VWDQFH VZLQJ UXOHV DQG HWLTXHWWH (PSH
JLYHQ WR VZLQJ PHFKDQLFV RI WKH LURQV ZRRGV DQG SXWWLQJ ZLWK
SOD\ RQ ORFDO JROI FRXUVHV
&RUH *RDO

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D SURJUHVVLYH LQGLYLGXDO H[HUFLVHV MRJ UXQ SURJUDP
ZLOO SURYLG D WKRURXJK RYHUYLHZ RI D ZDON MRJ UXQ SURJUDP LQF
WHFKQLTXHV WUDLQLQJ PHWKRGV SK\VLORRORJLFDO DQG SV\FKRORJLFDO H
UHVRXQFLV •WR •ZDÀ

H[HUFLVH 6SHFLDO WRSLFV WR EH DGGUHVHVG LQFOXGH WUDLQLQJ WHFK
HUJRJHQLF DLGV LQ VSRUW DQG SHUIRUPDQFH DW HQYLURQPHQWDO H[WU
&RUH *RDOV DQG
3UHUHTXLVLWHV %,2 ZLWK JUDGH RI 3&' RU EHWWHU 25 %,2 \$1' %,2 ZLWK
JUDGH RI 3&' RU EHWWHU LQ HDFK FRXUVH

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SK\VLFDL ILWQHVV VWDWXV RI WKH DSSDUHQWO\ KHDOWK\ SRSXODWLRQ
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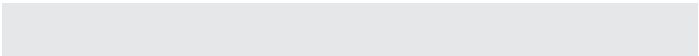
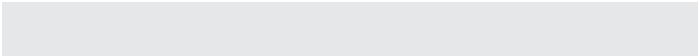


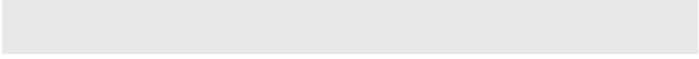




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VHYHUDO PHDOV GXULQJ WKH VPHVWHU WKDW DUH VROG WR WKH SXEOLF
3UHUHTXLVLWH V +26 RU SHUPLVVLRQ RI &RRUGLQDWRU LQVWUXFWRU

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SHUVRQDO GHYHORSPHQW DQG VHOI NQRZOHGJH LQ WKH FRQWH[W RI WKH O
DQG WR H[SORUH IHHOLQJV DERXW WKH DJLQJ SURFHVV &ODVVURRP H[SHUL
WKDW IRFXV RQ HQKDQFLQJ FRPPXQLFDWLRQV VNLOOV ZLOO EH GHVLJQHG W
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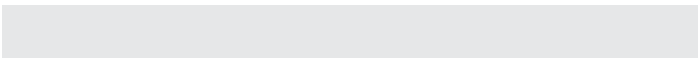
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WULJRQRPHWULF IXQFWLRQV FXUYH VNHWFKLQJ DQG DSSOLFDWLRQV \$ JUI
FDOFXODWRU LV UHTXLUHG IRU FODVV KRPHZRUN DQG WHVWLQJ &ODVVURR
LQVWUXFWLRQ DQG SURJUDPV ZLOO EH SUHVHQWHG XVLQJ D 7, 3OXV
&RUH *RDOV DQG
3UHUHTXLVLWHV 0DWK SODFHPHQW WHVW OHYHO UHFRPPHQGDWLRQ RU 0\$7 DQG 0\$7
RU 0\$7 ZLWK D PLQLXP JUDGH RI 3&`

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HQJLQHHULQJ RU EXVLQHVV 7RSLFV LQFOXGH GLIIHUHQWLDWLRQ DQG LQWH
RI H[SRQHQLDO ORJDULWKPLF WULJRQRPHWULF DQG K\SHUEROLF IXQFWL
LQWHJUDWLRQ WHFKQLTXHV LPSURSHU LQWHJUDOV VHTXHQFHV DQG VHULH
7D\ORU\ IRUPXOD /+RSLWDO\ UXOH DQG DSSOLFDWLRQV \$ JUDSKLQJ FD
LV UHTXLUHG IRU FODVV KRPHZRUN DQG WHVWLQJ &ODVVURR LQVWUXFWL
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EXVLQHVV 7RSLFV LQFOXGH SRODU FRRUGLQDWHV YHFWRU DQDO\VLV VROLG
JHRPHWU\ SDUWLDO GHULYDWLYHV DQG PXOWLSOH LQWHJUDOV ZLWK DSSOLF
JUDSKLQJ FDOFXODWRU LV UHTXLUHG IRU FODVV KRPHZRUN DQG WHV
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9R\DJH
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DEVWUDFWLRQ DQG DQ LQWURGXFWRQ WR WKH ODQJXDJH RI PDWKHPDWLF
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WKHRU\ DSSO\LQJ DSSURSULDWH SURRI WHFKQLTXHV UHODWLRQV DQG IXQF
LQFOXGLQJ WKH &DUWHVLDQ SURGXFW DQG LWV DSSOLFDWLRQV FRH
WURLFDO 008Å Å `7 ZLWK@•

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WKH WUDQVLWLRQ IURP VWXGHQW WR SUDFWLFLQJ 0HGLFDO \$VVLVWDQW
WKH VWXGHQW ZLWK WKH RSSRUWXQLW\ WR DSSO\ WKH VNLOOV OHDUQH
FODVVURRP DQG ODERUDWRU\ WR PHGLFDO DVVLVWLQJ SUDFWLFH LQ WKH
RIILFH 7KLV LPSRUWDQW SDUW RI WKH VWXGHQW\ V WRWDO HGXFDWLRQ
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6WXGHQWV PXVW KDYH VXFFHVVIXOO\ FRPSOHWHG RU WHVWHG RXW RI 5(\$ RU 5(\$
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RI WKH JXLWDU DV DQ DFFRPSDQ\LQJ DQG VROR LQVWUXPHQW 7KLV FRX
ZLOO HQKDQFH SUH H[LVWLQJ VNLOOV RQ WKH JXLWDU ZKLOH SURYLGLQJ
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WR JXLWDU UHSHUWRU\ 6WXGHQWV ZLOO EH LQWURGXFHG WR WKH IXQG
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ZLOO DOVR OHDUQ DERXW WKH KLVWRU\ DQG UHSHUWRU\ RI WKH JXLWDU
ZHVWHUQ DQG RWKHU FXOWXUHV
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(1* 5(\$ DQG 5(\$

*XLWDU &ODVV LV D FRXUVH GHVLJQHG WR FRQLQXH WR GHYHORS VNLO
LQWURGXFHG LQ *XLWDU &ODVV 7KH FRXUVH LV DOVR RSHQ WR VWXGH
FDQ GHPRQVUDWH IOXHQF\ ZLWK WKH JXLWDU FRPSDUDEOH WR WKDW DF
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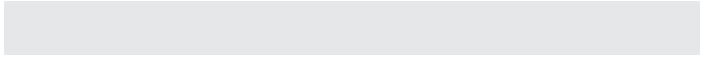
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DFTXLUH RQ WKHLU RZQ RU LQ *XLWDU , FODVV 7KLV FRXUVH ZLOO LQV
LQWHUPHGLDWH WHFKQLTXHV IRFXVLQJ RQ SOHFWUXP VW\OH JXLWDU SOD
-D]] &RPPHUFDO JHQHUV 6WXGHQWV ZLOO GHYHORS WKH QHFHVVDU\
IXQFWLRQ DV D JXLWDULVW E\ OHDUQLQJ WR SOD\ D YDULHW\ RI DFFRPS
VW\OHV LPSURYLVH XVLQJ VFDOHV DQG DUSHJJLR SDWWHUQV FRP
ZLWK D NQRZOHGJH RI FKRUG VFDOH UHODWLRQV KLSV UHGD FKRUG
DQG PHORG\ OLQHV DQG SHUIRUP D FRQLQXDOO\ H[SDQGLQJ UHSHUWR
1 DQG 5@ \$0
dò @ „P0À 0` p0€ÀDU pEu`00•D`O@ \$€`0@ QG Á•€pB€ \$€`0@ pG€@EB€ 0` ÀZ...u` €Utp@



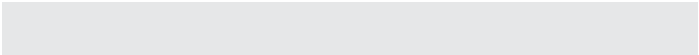
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H[SORUDWLRQ RI VHOHFWHG KHDOWK SUDFWLFHV VXFK DV KHUEDO UHPHG
KRPHRSDWK\ KHDOLQJ WRXFK WKHUDSLHV FKLURSUDFWLF DQG (DVWHUQ
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EH HYDOXDWHG LQ WKH FRQWH[W RI PDQDJLQJ KHDOWK FRQGLWLRQV VXFK
ZHLJKW DGGLFWLRQV DQG JHQGHU VSHFLILF LVVXH 7KLV FRXUVH ZLOO
XVH RI FRPSOHPHQWU\ DQG DOWHUQDWLYH KHDOWK SUDFWLFHV LQ WHUP
HIIHFWLYHQHV DQG LQWHJUDWLRQ LQWR RQH V RZQ OLIHVW\OH DQG ZRU
RWKHUV \$OVR RIIHUG DV (6:
&RUH *RDO

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ZLOO EH DQ HPSKDVLV RQ LQFUHDVLRQ DXWRQRP\ ZLWKLQ DQ H[SDQG HG VFRS
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&R UHTXLVWLHV 185



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&RUH *RDO



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 QHZ YRFDEXODU\ IURP WKHLU WH[W 7KLV SUHFROOHJH OHYHO FRXUVH FD
 XVHG WR IXOILOO D GHJUHH UHTXLUHPHQW QRU LV LW FDOFXODWHG LQ D
 *UDGH 3RLQW \$YHUDJH *3\$ KRZHYHU WKH FUHGLWV ELOOHG ZLOO EH D
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 &RUH *RDO
 3UHUHTXLVLWHV 6WXGHQWV PXVW KDYH VXFFHVVIXOO\ FRPSOHWHG RU WHVWHG RXW R
 RUH 5(\$ ZLWK D PLQLXP JUDGH RI D 3&´

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 EXVLQHVV RI UHDO HVWDWH (PSKDVLV LV RQ WKH XQGHUOLQJ FRQFHSW
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 JRYHUQ WKH FRQYH\DQFH RI WKHVH ULJKWV 7KLV LV RQH RI WKH WZR FR
 UHTXLUHG E\ WKH 6WDWH RI 3HQQV\OYDQLD IRU OLFHQVXUH DV D UHDO H

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HQWHUSULVH FULPH LQ FRPSDUDWLYH SHUVSHFWLYH 7RSLFV ZLOO LQFO
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3UHUHTXLVLWHV &-6 RU 62& RU SHUPLVLRQ RI WKH 'LYLVRQ 'HDQ

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&RUH *RDO
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DQDO\JHG /HFWXUHV FODVV GLVFXVVLRQ ILOPV DQG RWKHU DXGLRYLVX
ZHOO DV LQGLYLGXDO UHVHDFK ZLOO EH XVHG

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LQWR (6/ FRXUVHV

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&KDUOHV .DKQ -U ± (PHULWXV

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.DUHQ \$ 6WRXW

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5HYHUHQG 3DWWL 7KRPDV †

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-RKQ &DSHULOOD †

\$V WKH WD[H[HPSW GHVLJQDWHG FKDULWDEOH DUP RI WKH &ROOHJH
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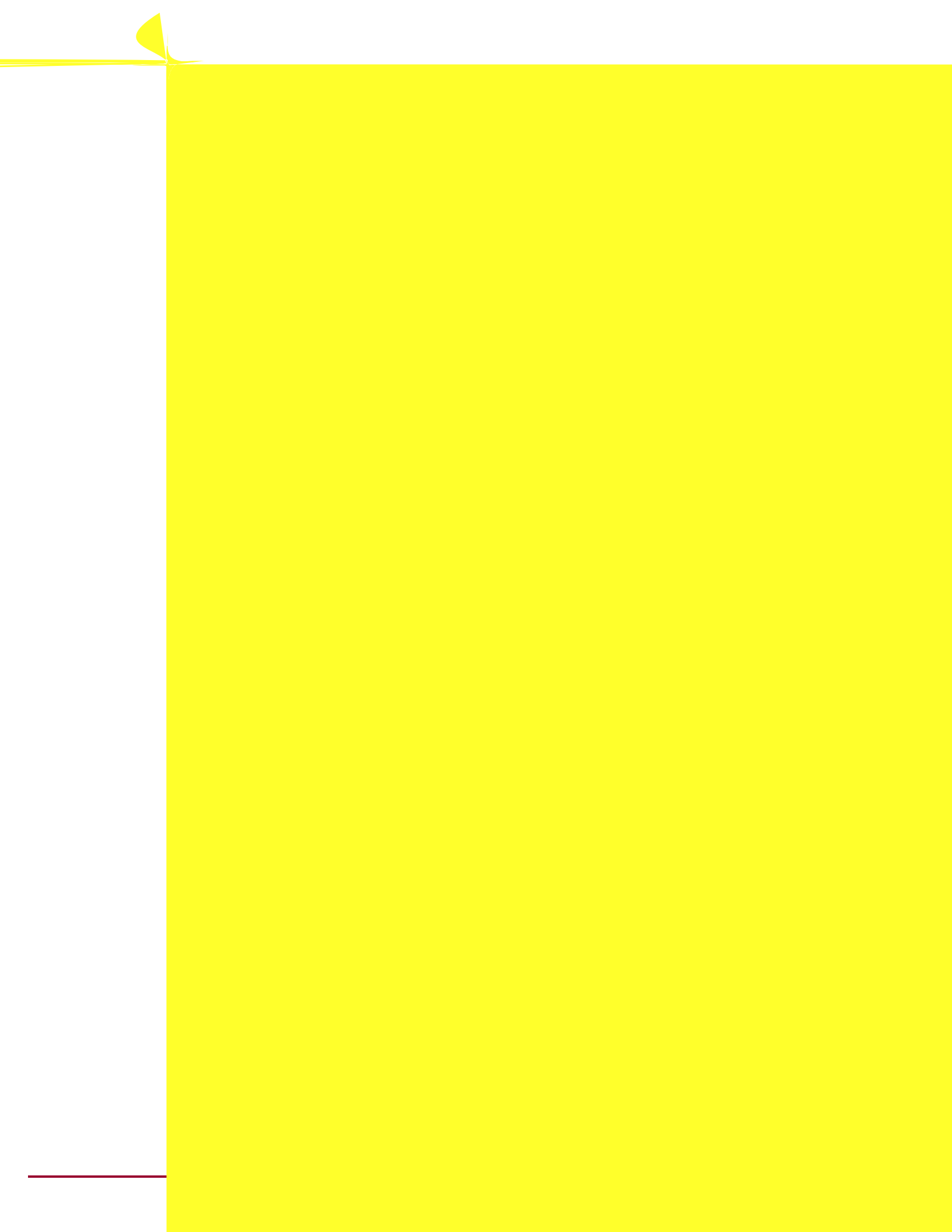
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‡ 'HYHORS DQ H[HPSODU\ SDWWHUQ' RQJHQLQJ HHHWVWLQJ D VWDQGDUG R
H[FHOHQFH IRU VXSSRUW IURP &ROOHJH/DQGDUGV DOXPQL DQG IULHQGV

‡ 3URYLGH HGXFWRQRQD DQG FXOWXUD\HQGHV WKH &ROOHJH
IDPLO\ DQG FRPPXQLW\ 6DUDK 0XQVRQ †

‡)LQDQFH VFKRODUVKLSV IRU GHVHULYFKRQVWXLQWV LQ QHHG
‡ (QFRXUDJH FUHDWLYLW\ DQG LQQFRVORR WHQRHJK†DQ LQWHUQDO JUD

SURJUDP IRU IDFXOW\ DGPLQLVWUDVWV:RWDH†DQ VWXGHQWV
%LOO =LHJOHU †





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% 6 *D]L 8QLYHUVLW\
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L GVR *DWH*D\ WR &ROOHJH çUDQW UHVR8UFH bSXFLDOÂaPðE
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7LPRWK\ &RQQHOO\ $VVLVWDQW 3URIHVVRU RI (QJOLVK
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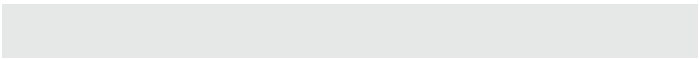
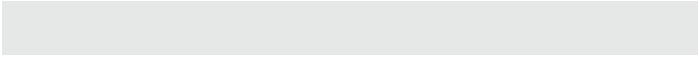


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% 6 -XQLDWD &ROOHJH
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% 6 0 6 7KRPDV -HIIHUVRQ 8QLYHUVLW\
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% $ 0 $ 8QLYHUVLW\ RI .DQVDV
0 'LY (GHQ 6HPLQDU\
0DUWLQD :DUH 5 1 $VVRFLDWH 3URIHVVRU RI 1XUVLQ
% 6 1 (DVW 6WURXGVEXUJ 8QLYHUVLW\
0 6 1 8QLYHUVLW\ RI 3HQQV\OYDQLD
6FKRRO 1XUVH &HUWLILFDWH /D6DOOH 8QLYHUVLW\
-DVRQ $ :HUW] $VVLVWDQW 3URIHVVRU RI &RPSXWHU 6FLHQFH
% $ (OL]DEHWKWRZQ &ROOHJH
0 6 3KLODGHOSKLD 8QLYHUVLW\
'DYLG 0 :KDOHQ $VVLVWDQW 3URIHVVRU RI %LRORJ\
% $ 0 6 &ROOHJH RI :LOOLDP DQG 0DU\
0LFKDHO :KLVWHU $VVLVWDQW 3URIHVVRU RI 7KH'DWHU
% $ 8QLYHUVLW\ RI 3HQQV\OYDQLD
0 ) $ 1HZ <RUN 8QLYHUVLW\
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% 6 'HODZDUH 9DOOH\ &ROOHJH
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+RVSLWDO DQG 0HGLQD &HQWHU 6FKRRO RI 6XUJLQD 7HFQRORJ\
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% ) $ 8QLYHUVLW\ RI 0LQDPL
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0 6 3K ' 6RXWKHUQ ,OOLQLV 8QLYHUVLW\
0 6 9LOODQRYD 8QLYHUVLW\

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 %HYHUO\ :HOKDQ -RKQ)ULVFLD
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 0LFKDHOD -RKQVRQ
 3DWULFLD .LQJ
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 %LOO *UDQW 6KDXQD /D0DJQD
 'DYLQ - *UHHQ %ULDQD /XQGHQ
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 'HEUD +XQW *LQD 1DVK
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 -DPHV \$ /\QFK &KDUOHV 3ODXJKHU
 &\QWKLD \$ 0DEOH'HEUD 3RHOKXLV
 -RKQ 0XOKDOO)UDQN 3\QH
 3KLOLS 1HHGOHV 1DQHWWH 5REHUWV
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 0DU\ \$OLFH 6Q\GHU
 *UHJRU\ 6ROWQHU
 &DURO &DUXVR 7UDFH\ 7ZLWW\
 5RQDOG &RPHU .LP :HEHU
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 -HQQLIHU (OOLV 7R\FD :LOOLDPV
 (ULF *ROGVWHLQ 5RVDO\Q :LWWHU
 (ODLQH *UHHQ
 'LDQH +DDU
 'RQDOG .OLQH
 -RDQQH .OLQH -HII &RKHQ
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 0DXUHHQ 5RVH 0DULH &RYHUGDOH
 (OOD 5RXVK 0HJDQ 'DO\
 \$DURQ 6KDWJPDQ 'HEUD /\QQ (FNPDQ
 6KHUU\ 6LNRUD 7HUHVD (QJODQG /HZLV
 5REHUW 6PLWK %DUEDUD *LDQQLQL
 3DXO 7RWK .DUHHQ +DUWZLJ
 0DU\ /RX :KLWHKLOQ\FH +LOO
 1DQF\ :LHPDQ .R\ à °@\$œ P T À
 0Q 6P@ð`HEHU
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 %DUEDUD \$GDPV
 5XWK %HQILHOG
 7KHUHVD %ULQFNPDQ
 0DULRQ %XFFL
 /LVD &DVVLG\ /DZOUHU.pUDÀQ NURSING 0 Tw 0
 5RELQ &DYDOOR • 0 • 0 IàA.DUHÖHUô Ôð &R@ P 0`À



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big.®

0RQWJRPHU\ &RXQW\ &RPPXQLW\ &ROOHJH LV \RXU EHVW ORFD
FDPSXVHV LQ %OXH %HOO DQG 3RWWVWRZQ WKH FROOHJH LV
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&HQWUDO &DPSXV 'H.DOE 3LNH %OXH %HOO 3\$ ‡ :HVW &DPSXV &ROOHJH