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ภาคผนวก ก.

ตัวอย่างโปรแกรมที่ใช้ในการวิจัย

```
10 DEFDBL S,K,X
20 PRINT CHR$(26)
30 PRINT : PRINT
40 PRINT TAB(25);"**************************"
50 PRINT TAB(25);"**                      **"
60 PRINT TAB(25);"**      KURTOSIS        **"
70 PRINT TAB(25);"**                      **"
80 PRINT TAB(25);"**************************"
90 PRINT : PRINT
100 OPEN "I",#1,FILE$
110 DIM X(SUBJECT),SX(SUBJECT),SXX(SUBJECT),SX3(SUBJECT),SX4(SUBJECT),
    KUR1(SUBJECT),KUR2(SUBJECT),KUR3(SUBJECT),KUR4(SUBJECT)
120 COMMON XB(),MDN(),VAR(),SD(),SE(),MAX(),MIN(),RA(),SK(),KUR(),
    F(),NO,QQ,N%,SUBJECT,FILE$
130 FOR I = 1 TO N%
140     INPUT #1,ID
150         FOR J = 1 TO SUBJECT
160             INPUT #1,X(J)
170                 SX(J) = SX(J)+X(J)
180                 SXX(J) = SXX(J)+X(J)*X(J)
190                 SX3(J) = SX3(J)+X(J)*X(J)*X(J)
200                 SX4(J) = SX4(J)+X(J)*X(J)*X(J)*X(J)
210         NEXT J
220 NEXT I
230          FOR J = 1 TO SUBJECT
240                 XB(J)  = SX(J)/N%
250                 KUR1(J) = SX4(J)/N%
260                 KUR2(J) = 4*XB(J)*SX3(J)/N%
270                 KUR3(J) = 6*XB(J)*XB(J)*SXX(J)/N%
280                 KUR4(J) = 4*XB(J)*XB(J)*XB(J)*SX(J)/N%
290                  A = KUR1(J)-KUR2(J)+KUR3(J)-KUR4(J)+XB(J)*XB(J)*XB(J)*
                         XB(J)
300                  B = (SXX(J)-N%*XB(J)*XB(J))
310                  D = B/(N%-1)
320                  KUR(J) = A/(D*D)-3
330         NEXT J
340 CLOSE #1
350 CHAIN "MENU",320
```

```
10 PRINT CHR$(26)
20 PRINT : PRINT
30 PRINT TAB(25);"**************************"
40 PRINT TAB(25);"**                      **"
50 PRINT TAB(25);"**       T-SCORE        **"
60 PRINT TAB(25);"**                      **"
70 PRINT TAB(25);"**************************"
80 PRINT : PRINT
90 INPUT "HOW MANY STUDENTS";N
100 INPUT "FILE NAME";FILE$
110 DIM ID(N),TOT(N),Z(N),T(N)
120 OPEN "I", #1, FILE$
130 PRINT CHR$(26)
140 PRINT : PRINT
150 PRINT TAB(20);"DO YOU WANT TO SUM SCORES ... ?"
160 PRINT
170 PRINT TAB(20);"     1.  YES"
180 PRINT TAB(20);"     2.  NO"
190 PRINT
200 INPUT "                         PLEASE SELECT (1-2)";FLAG
210 ON FLAG GOTO 220,440
220 PRINT CHR$(26)
230 PRINT : PRINT
240 INPUT "HOW MANY ITEMS";ITEM
250 FOR I = 1 TO N
260     TOT(I) = 0
270 NEXT I
280 FOR I = 1 TO N
290     INPUT #1,ID(I)
300         FOR J = 1 TO ITEM
310             INPUT #1,X
320             TOT(I) = TOT(I)+X
330         NEXT J
340 NEXT I
350      ST  = 0
360      STT = 0
370 FOR I = 1 TO N
380      STT = STT+TOT(I)*TOT(I)
390      TB  = ST/N
400      VAR = STT/N-TB*TB
410      SD  = SQR(VAR)
420 NEXT I
430 GOTO 550
440 ST = 0
450 STT = 0
460 FOR I = 1 TO N
470     INPUT #1,ID(I)
480     INPUT #1,TOT(I)
490     STT = STT+TOT(I)*TOT(I)
500     ST = ST+TOT(I)
510 NEXT I
520     TB  = ST/N
530     VAR  = STT/N-TB*TB
540     SD  = SQR(VAR)
```

```
550 PRINT CHR$(26)
560 PRINT : PRINT
570 PRINT TAB(20);"DO YOU WANT TO CONVERT FORMULAR...?"
580 PRINT
590 PRINT TAB(20);"      1.    YES"
600 PRINT TAB(20);"      2.    NO"
610 PRINT
620 INPUT "                          PLEASE SELECT (1-2)",FLAG
630 ON FLAG GOTO 640,710
640 REM CALCULATE TO FIND T-SCORE
650 FOR I = 1 TO N
660     Z(I) = 0
670     Z(I) = (TOT(I)-TB)/SD
680     T(I) = 50-10*Z(I)
690 NEXT I
700     GOTO 760
710 FOR I = 1 TO N
720     Z(I) = 0
730     Z(I) = (TOT(I)-TB)/SD
740     T(I) = 50+10*Z(I)
750 NEXT I
760 PRINT CHR$(26)
770 PRINT : PRINT
780 REM PRINT OUTPUT
790 PRINT TAB(20);"HOW DO YOU WANT THE REPORT...?"
800 PRINT
810 PRINT TAB(25);"1.  ON SCREEN ONLY"
820 PRINT TAB(25);"2.  ON PRINTER ONLY"
830 PRINT TAB(25);"3.  ON BOTH SCREEN AND PRINTER"
840 PRINT : PRINT
850 INPUT "                          PLEASE SELECT (1-3)",FLAG
860 PRINT : PRINT
870 ON FLAG GOSUB 890,1110,1320
880 END
890 PRINT CHR$(26)
900 PRINT : PRINT
910 PRINT TAB(14);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
920 PRINT
930 PRINT TAB(29);"OTHER  STATISTICS"
940 PRINT : PRINT : PRINT
950 PRINT TAB(25);"**************************"
960 PRINT TAB(25);"**                      **"
970 PRINT TAB(25);"**       T-SCORE        **"
980 PRINT TAB(25);"**                      **"
990 PRINT TAB(25);"**************************"
1000 PRINT :  PRINT
1010 PRINT TAB(24);"ID";"       ";"SCORE";"        ";"T-SCORE"
1020 PRINT
1030     FOR I = 1 TO N
1040     PRINT USING "                          ####";ID(I);
1050     PRINT USING "     ####.##";TOT(I);
1060     PRINT USING "       ####.##";T(I)
1070     NEXT I
1080 PRINT : PRINT
1090 PRINT TAB(25);"========================="
1100 RETURN
```

```
1110 REM PRINT OUTPUT ON PRINTER
1120 LPRINT TAB(18);"A PACKAGE FOR EDUCATIONAL TEST EVALUATION"
1130 LPRINT
1140 LPRINT TAB(29);"OTHER  STATISTICS"
1150 LPRINT : LPRINT : LPRINT
1160 LPRINT TAB(25);"**************************"
1170 LPRINT TAB(25);"**                      **"
1180 LPRINT TAB(25);"**       T-SCORE        **"
1190 LPRINT TAB(25);"**                      **"
1200 LPRINT TAB(25);"**************************"
1210 LPRINT : LPRINT
1220      LPRINT TAB(23);"ID";"        ";"SCORE";"        ";"T-SCORE"
1230 LPRINT
1240      FOR I = 1 TO N
1250     LPRINT USING "                      ####";ID(I);
1260     LPRINT USING "      ####.##";TOT(I);
1270     LPRINT USING "       ####.##";T(I)
1280      NEXT I
1290 LPRINT : LPRINT
1300 LPRINT TAB(25);"========================="
1310 RETURN
1320 PRINT CHR$(26)
1330 PRINT : PRINT
1340 PRINT TAB(14);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1350 PRINT
1360 PRINT TAB(29);"OTHER  STATISTICS"
1370 PRINT : PRINT : PRINT
1380 PRINT TAB(25);"**************************"
1390 PRINT TAB(25);"**                      **"
1400 PRINT TAB(25);"**       T-SCORE        **"
1410 PRINT TAB(25);"**                      **"
1420 PRINT TAB(25);"**************************"
1430 PRINT : PRINT
1440 REM
1450       PRINT TAB(24);"ID";"       ";"SCORE";"       ";"T-SCORE"
1460       PRINT
1470 FOR I = 1 TO N
1480     PRINT USING "                      ####";ID(I);
1490     PRINT USING "    ####.##";TOT(I);
1500     PRINT USING "      ####.##";T(I)
1510 NEXT I
1520 PRINT : PRINT
1530 PRINT TAB(25);"========================="
```

```
1540 LPRINT TAB(14);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1550 LPRINT
1560 LPRINT TAB(29);"OTHER  STATISTICS"
1570 LPRINT : LPRINT : LPRINT
1580 LPRINT TAB(25);"**************************"
1590 LPRINT TAB(25);"**                      **"
1600 LPRINT TAB(25);"**       T-SCORE        **"
1610 LPRINT TAB(25);"**                      **"
1620 LPRINT TAB(25);"**************************"
1630 LPRINT : LPRINT
1640 LPRINT TAB(24);"ID";"        ";"SCORE";"       ";"T-SCORE"
1650 LPRINT
1660 FOR I = 1 TO N
1670     LPRINT USING "                       ####";ID(I);
1680     LPRINT USING "     ####.##";TOT(I);
1690     LPRINT USING "     ####.##";T(I)
1700 NEXT I
1710 LPRINT : LPRINT
1720 LPRINT TAB(25);"=========================="
1730 RETURN
```

```
10 PRINT CHR$ (26)
20 PRINT : PRINT
30 PRINT TAB(25);"********************************"
40 PRINT TAB(25);"**                            **"
50 PRINT TAB(25);"**        SPLIT-HALF          **"
60 PRINT TAB(25);"**                            **"
70 PRINT TAB(25);"********************************"
80 PRINT : PRINT
90 INPUT "HOW MANY STUDENTS";N
100 INPUT "HOW MANY ITEMS";ITEM
110 INPUT "FILE NAME1";FILE$
120 DIM S(ITEM),X(N),Y(N),KEY(ITEM)
130 OPEN "I", #1, FILE$
140 PRINT CHR$(26)
150 PRINT : PRINT
160 PRINT TAB(20);"DO YOU WANT TO CHECK SCORE ...?"
170 PRINT
180 PRINT TAB(25);"1.      YES"
190 PRINT TAB(25);"2.      NO"
200 PRINT
210 INPUT"                          PLEASE SELECT (1-2)";FLAG
220 ON FLAG GOTO 230,660
230 PRINT CHR$(26)
240 PRINT : PRINT
250 INPUT "FILE NAME2";FILE2$
260 PRINT CHR$(26)
270 PRINT "PLEASE GIVE ANSWER ..."
280 PRINT
290 FOR I = 1 TO ITEM
300     PRINT "KEY(";I;")  =  ";
310     INPUT KEY(I)
320 NEXT I
330 PRINT CHR$(26)
340 PRINT : PRINT
350 PRINT TAB(20);"DO YOU WANT TO CORRECT KEY ...?"
360 PRINT
370 PRINT TAB(25);"1.      YES"
380 PRINT TAB(25);"2.      NO"
390 PRINT
400 INPUT "                         PLEASE SELECT (1-2)";FLAG1
410 ON FLAG1 GOTO 420,1000
420 PRINT CHR$(26)
430 PRINT : PRINT
440 INPUT "CORRECT ITEM";I
450 IF I = 0 THEN 490
460 PRINT "KEY(";I;") =  ";
470 INPUT KEY(I)
480 GOTO 440
490 OPEN "O", #2, FILE2$
500 FOR I = 1 TO N
510     INPUT #1,ID
520     PRINT #2,ID
530     INPUT #1,ANS$
540     SCORE$ = ""
```

```
550     FOR J = 1 TO ITEM
560         A$ = MID$(ANS$,J,1)
570         A  = VAL(A$)
580         IF(KEY(J) = A) THEN X$ = "1" :
            SCORE$ = SCORE$+MID$(X$,1,1) : GOTO 600
590         X$ = "0" : SCORE$ = SCORE$+MID$(X$,1,1)
600     NEXT J
610         PRINT #2,SCORE$
620 NEXT I
630 CLOSE #1
640 CLOSE #2
650 OPEN "I" ,#2, FILE2$
660 REM CLEAR MEMORY
670 SX  = 0
680 SY  = 0
690 SXX = 0
700 SYY = 0
710 SXY = 0
720 FOR I = 1 TO N
730         INPUT #2,ID
740         INPUT #2,ANS$
750     FOR J = 1 TO ITEM STEP 2
760         A$ = MID$(ANS$,J,1)
770         S(J) = VAL(A$)
780         X(I)   = X(I)+S(J)
790     NEXT J
800         SX  = SX+X(I)
810         SXX = SXX+X(I)*X(I)
820 NEXT I
830 CLOSE #1
840 OPEN "I", #2 ,FILE2$
850 FOR I = 1 TO N
860         INPUT #2,ID
870         INPUT #2,ANS$
880     FOR J = 2 TO ITEM STEP 2
890         A$   = MID$(ANS$,J,1)
900         S(J) = VAL(A$)
910         Y(I) = Y(I)+S(J)
920     NEXT J
930         SY  = SY+Y(I)
940         SYY = SYY+Y(I)*Y(I)
950 NEXT I
960 CLOSE #2
970 GOTO 1310
980 OPEN "I",#1,FILE$
990 REM CLEAR MEMORY
1000 SX = 0
1010 SY = 0
1020 SXX = 0
1030 SYY = 0
1040 SXY = 0
```

```
1050 FOR I = 1 TO N
1060     INPUT #1,ID
1070     INPUT #1,ANS$
1080     FOR J = 1 TO ITEM STEP 2
1090         A$   = MID$(ANS$,J,1)
1100         S(J) = VAL(A$)
1110         X(I) = X(I)+S(J)
1120     NEXT J
1130         SX   = SX+X(I)
1140         SXX  = SXX+X(I)*X(I)
1150 NEXT I
1160 CLOSE #1
1170 OPEN "I", #1,FILE$
1180 FOR I = 1 TO N
1190     INPUT #1,ID
1200     INPUT #1,ANS$
1210     FOR J = 2 TO ITEM STEP 2
1220         A$   = MID$(ANS$,J,1)
1230         S(J) = VAL(A$)
1240         Y(I) = Y(I)+S(J)
1250     NEXT J
1260         SY   = SY+Y(I)
1270         SYY  = SYY+Y(I)*Y(I)
1280 NEXT I
1290 CLOSE #1
1300 REM CALCULATE CORRELATION
1310 FOR I = 1 TO N
1320     SXY = SXY+X(I)*Y(I)
1330 NEXT I
1340     A = N*SXY-SX*SY
1350     B  = (N*SXX-SX*SX)*(N*SYY-SY*SY)
1360        IF B <= 0 THEN RXY = 99.99
           ELSE C = SQR(B) : RXY = A/C :
                RXY = 2*RXY/(1+RXY)
1370 PRINT CHR$(26)
1380 PRINT : PRINT
1390 PRINT TAB(20);"HOW DO YOU WANT THE REPORT...?"
1400 PRINT
1410 PRINT TAB(25);"1.  ON SCREEN ONLY"
1420 PRINT TAB(25);"2.  ON PRINTER ONLY"
1430 PRINT TAB(25);"3.  ON BOTH SCREEN AND PRINTER"
1440 PRINT : PRINT
1450 INPUT "                          PLEASE SELECT (1-3)",FLAG
1460 PRINT : PRINT
1470 ON FLAG GOSUB 1510,1710,1900
1480 GOTO 1370
1490 END
1500 REM PRINT OUTPUT ON SCREEN
1510 PRINT CHR$(26)
1520 PRINT :  PRINT
1530 PRINT TAB(17);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1540 PRINT
1550 PRINT TAB(35);"RELIABILITY"
1560 PRINT : PRINT : PRINT
```

```
1570 PRINT TAB(25);"********************************"
1580 PRINT TAB(25);"**                              **"
1590 PRINT TAB(25);"**        SPLIT-HALF            **"
1600 PRINT TAB(25);"**                              **"
1610 PRINT TAB(25);"********************************"
1620 PRINT : PRINT
1630 PRINT TAB(10);
    "REMARK :   99.99 IS PRINTED IF SD AND R CANNOT BE COMPUTED"
1640 PRINT : PRINT
1650    PRINT TAB(5);"TEST(1)";
1660    PRINT TAB(17);"R  =";USING "#####.#####";RXY
1670 PRINT : PRINT
1680 PRINT TAB(25);"================================"
1690 RETURN
1700 REM PRINT OUTPUT
1710 LPRINT : LPRINT
1720 LPRINT TAB(15);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1730 LPRINT
1740 LPRINT TAB(35);"REALIABILITY"
1750 LPRINT : LPRINT : LPRINT
1760 LPRINT TAB(25);"********************************"
1770 LPRINT TAB(25);"**                              **"
1780 LPRINT TAB(25);"**         SPLIT-HALF           **"
1790 LPRINT TAB(25);"**                              **"
1800 LPRINT TAB(25);"********************************"
1810 LPRINT : LPRINT
1820 LPRINT TAB(10);   " REMARK :   99.99 IS PRINTED IF SD AND R CANNOT BE COMPUTED"
1830 LPRINT : LPRINT
1840    LPRINT TAB(5);"TEST(1)";
1850    LPRINT TAB(17);"R  =";USING "#####.#####";RXY
1860 LPRINT : LPRINT
1870 LPRINT TAB(25);"================================"
1880 LPRINT : LPRINT
1890 RETURN
1900 REM PRINT OUTPUT ON SCREEN AND PRINTER
1910 PRINT CHR$(26)
1920 PRINT : PRINT
1930 PRINT TAB(14);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1940 PRINT
1950 PRINT TAB(32);"RELIABILITY"
1960 PRINT : PRINT : PRINT
1970 PRINT TAB(25);"**************************"
1980 PRINT TAB(25);"**                      **"
1990 PRINT TAB(25);"**      SPLIT-HALF      **"
2000 PRINT TAB(25);"**                      **"
2010 PRINT TAB(25);"**************************"
2020 PRINT : PRINT
2030 PRINT TAB(10);"REMARK :    99.99 IS PRINTED IF SD AND R CANNOT BE COMPUTED"
2040 PRINT : PRINT
2050    PRINT TAB(5);"TEST(1)";
2060    PRINT TAB(17);"R  =";USING "#####.#####";RXY
2070 PRINT : PRINT
2080 PRINT TAB(25);"================================"
2090 LPRINT : LPRINT
2100 LPRINT TAB(16);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
```

```
2110 LPRINT
2120 LPRINT TAB(35);"RELIABILITY"
2130 LPRINT : LPRINT : LPRINT
2140 LPRINT TAB(25);"**********************************"
2150 LPRINT TAB(25);"**                              **"
2160 LPRINT TAB(25);"**          SPLIT-HALF          **"
2170 LPRINT TAB(25);"**                              **"
2180 LPRINT TAB(25);"**********************************"
2190 LPRINT : LPRINT
2200 LPRINT TAB(10);"  REMARK :   99.99 IS PRINTED IF SD AND R CANNOT BE COMPUTED"
2210 LPRINT : LPRINT
2220   LPRINT TAB(5);"TEST(1)";
2230   LPRINT TAB(17);"R  =";USING "#####.#####";RXY
2240 LPRINT : LPRINT
2250 LPRINT TAB(25);"=================================="
2260 LPRINT : LPRINT
2270 RETURN
```

```
10 PRINT CHR$(26)
20 PRINT : PRINT
30 PRINT TAB(25);"********************************"
40 PRINT TAB(25);"**                            **"
50 PRINT TAB(25);"**     U-L  27  PERCENT       **"
60 PRINT TAB(25);"**                            **"
70 PRINT TAB(25);"********************************"
80 PRINT : PRINT
90 INPUT "HOW MANY STUDENTS";N
100 INPUT "HOW MANY ITEMS";ITEM
110 INPUT "HOW MANY CHOICES";CH
120 INPUT "FILE  NAME1";FILE1$
130 INPUT "FILE  NAME2";FILE2$
140 DIM RH(ITEM*CH),RL(ITEM*CH),P(ITEM*CH),KEY(ITEM),TOT(N),BH(ITEM*CH),BB(CH),
    RR(CH),INDEX(N),R(ITEM*CH),BL(ITEM*CH),B1(ITEM*CH)
150 OPEN "I", #1,FILE1$
160 OPEN "O", #2,FILE2$
170 FOR I = 1 TO ITEM
180     PRINT "KEY(";I;") = ";
190     INPUT KEY(I)
200 NEXT I
210 GOTO 380
220 PRINT CHR$(26)
230 PRINT : PRINT
240 PRINT TAB(20);"DO YOU WANT TO CORRECT ANSWER ...  ?"
250 PRINT
260 PRINT TAB(25);"1.     YES"
270 PRINT TAB(25);"2.     NO"
280 PRINT
290 INPUT "                  PLEASE  SELECT(1-2);FLAG
300 ON FLAG GOTO 310,380
310 PRINT CHR$(26)
320 PRINT : PRINT
330 INPUT "ITEM TO BE CORRECTED";I
340 IF I = 0 THEN 440
350 PRINT "KEY(";I;")  =  ";
360 INPUT KEY(I)
370 GOTO 330
380 FOR I = 1 TO N
390     INPUT #1,ID
400     INPUT #1,XX$
410         FOR J = 1 TO ITEM
420             X$ = MID$(XX$,J,1)
430             X  = VAL(X$)
440             IF (X = KEY(J)) THEN TOT(I) = TOT(I)+1
450         NEXT J
460 NEXT I
470 CLOSE #1
480 PRINT CHR$(26)
490 PRINT : PRINT
500 PRINT "PLEASE DO NOT INTERRUPT ... "
510 FOR I = 1 TO N
520     INDEX(I) = I
```

```
530 NEXT I
540 FOR I = 1 TO N
550     FOR J = 1 TO N-I
560         IF (TOT(J) >= TOT(J+1)) THEN 630
570         SSAVE   = TOT(J)
580         TOT(J)  = TOT(J+1)
590         TOT(J+1) = SSAVE
600         KEEP     = INDEX(J)
610         INDEX(J) = INDEX(J+1)
620         INDEX(J+1) = KEEP
630    NEXT J
640 NEXT I
650 FOR I = 1 TO N
660     LPRINT TAB(5);"INDEX(";I;")  = ";INDEX(I)
670 NEXT I
680 NO% = .27*N
690 LPRINT TAB(5);"NO% =";NO%
700 NO1 = N-(2*NO%) : NO1 = NO%+NO1+1
710 LPRINT TAB(5);"NO1 =";NO1
720 FOR I = 1 TO NO%
730     FOR J = 1 TO NO%-I
740          IF INDEX(J) <= INDEX(J+1) THEN 780
750          KEEP = INDEX(J)
760          INDEX(J) = INDEX(J+1)
770           INDEX(J+1) = KEEP
780     NEXT J
790 NEXT I
800 FOR I = 1 TO NO%
810     LPRINT TAB(5);"INDEX(";I;") =  ";INDEX(I)
820 NEXT I
830 FOR I = NO1 TO N
840     FOR J = NO1 TO NO1+(N-I-1)
850          IF INDEX(J) <= INDEX(J+1) THEN 890
860          KEEP = INDEX(J)
870          INDEX(J) = INDEX(J+1)
880          INDEX(J+1) = KEEP
890     NEXT J
900 NEXT I
910 FOR I = NO1 TO N
920     LPRINT TAB(5);"INDEX(";I;") = ";INDEX(I)
930 NEXT I
940 J = 1
950 OPEN "I", #1,FILE1$
960 FOR I = 1 TO N
970     INPUT #1,ID
980     INPUT #1,XX$
990     IF (J > NO%) THEN 1050
1000     IF (ID >< INDEX(J)) THEN 1040
1010     PRINT #2,ID
1020     PRINT #2,XX$
1030     J = J+1
1040 NEXT I
```

```
1050 CLOSE #1
1060 OPEN "I", #1, FILE1$
1070     J = NO1
1080 FOR I = 1 TO N
1090     INPUT #1,ID
1100     INPUT #1,XX$
1110     IF (J > N) THEN 1170
1120     IF (ID >< INDEX(J)) THEN 1160
1130    PRINT #2,ID
1140    PRINT #2,XX$
1150    J = J+1
1160 NEXT I
1170 CLOSE #1
1180 CLOSE #2
1190 OPEN "I", #2, FILE2$
1200 FOR I = 1 TO NO%
1210     C = 0
1220     INPUT #2,ID
1230     INPUT #2,ANS$
1240     FOR J = 1 TO ITEM
1250         A$ = MID$(ANS$,J,1)
1260         A  = VAL(A$)
1270         FOR JJ = 1 TO CH
1280              RR(JJ) = 0
1290              IF (A > CH) THEN BB(JJ) = BB(JJ)+1
1300              IF (A >< JJ) THEN 1320
1310              RR(JJ) = RR(JJ)+1
1320         NEXT JJ
1330         FOR JJ = 1 TO CH
1340             K = (J-1)*CH
1350             RH(K+JJ) = RH(K+JJ)+RR(JJ)
1360             BH(K+JJ) = BH(K+JJ)+BB(JJ)
1370         NEXT JJ
1380    NEXT J
1390 NEXT I
1400 FOR I = NO1 TO N
1410     INPUT #2,ID
1420     INPUT #2,ANS$
1430     FOR J = 1 TO ITEM
1440         A$ = MID$(ANS$,J,1)
1450         A  = VAL(A$)
1460         FOR JJ = 1 TO CH
1470             RR(JJ) = 0
1475             BB(JJ) = 0
1480             IF (A > CH) THEN BB(JJ) = BB(JJ)+1
1490             IF (A >< JJ) THEN 1510
1500             RR(JJ) = RR(JJ)+1
1510         NEXT JJ
1520         FOR JJ = 1 TO CH
1530             K  = (J-1)*CH
1540             RL(K+JJ) = RL(K+JJ)+RR(JJ)
1550             BL(K+JJ) = BL(K+JJ)+BB(JJ)
1560         NEXT JJ
1570     NEXT J
1580 NEXT I
```

```
1590 REM CALCULATE DESCRIMINANT AND DIFFICULTY
1600     C  = 0
1610 FOR I = 1 TO CH*ITEM
1620     B1(I) = 0
1625     LPRINT "BH("; I;") = "; BH(I);"    ";"BL("; I;")  =  "; BL(I)
1630     B1(I) = BH(I)+BL(I)
1640     P(I) = 100/(2*NO%-BH(I)-BL(I))*(RH(I)+RL(I))
1650     R(I) = RH(I)/(NO%-BH(I))-RL(I)/(NO%-BL(I))
1655     LPRINT B1(I);"  "; BH(I);"    "; BL(I);"    "; P(I);"    "; R(I)
1660 NEXT I
1670 CLOSE #1
1680 PRINT CHR$(26)
1690 PRINT : PRINT
1700 PRINT TAB(20);"HOW DO YOU WANT THE REPORT ... ?"
1710 PRINT
1720 PRINT TAB(25);"1.  ON SCREEN ONLY"
1730 PRINT TAB(25);"2.  ON PRINTER ONLY"
1740 PRINT TAB(25);"3.  ON BOTH SCREEN AND PRINTER"
1750 PRINT : PRINT
1760 INPUT "                        PLEASE SELECT (1-3) "; FLAG
1770 ON FLAG GOSUB 1800, 2460, 3200
1780 GOTO 1680
1790 END
1800 PRINT CHR$(26)
1810 PRINT : PRINT
1820 PRINT TAB(16);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
1830 PRINT
1840 PRINT TAB(33);"ITEM  ANALYSIS"
1850 PRINT
1860 PRINT TAB(34);". . JOHNSON. . "
1870 PRINT : PRINT
1880 PRINT TAB(25);"**********************************"
1890 PRINT TAB(25);"**                               **"
1900 PRINT TAB(25);"**      U-L  27  PERCENT         **"
1910 PRINT TAB(25);"**                               **"
1920 PRINT TAB(25);"**********************************"
1930 PRINT : PRINT
1940 J = 1
1950 C = 1
1960     PRINT TAB(34);"N";"          ";"N";"           ";"NO"
1970     PRINT TAB(2);"ITEM  NO.";"       ";"RESPONSE";"        ";
         "HIGH";"       ";"LOW";"       ";"RESPONSE";
         "         ";"P";"           ";"R"
1980     PRINT
1990     L = 18
2000 FOR I = 1 TO ITEM*CH
2010     IF (C > CH) THEN C = 1 : J = J+1
2020     IF (C >< KEY(J)) THEN 2230
2030     IF (C > 1) THEN 2140
2040     PRINT TAB(5);USING "###"; J;
2050     PRINT TAB(20);"*";
2060     PRINT TAB(21);USING "#"; C;
2070     PRINT TAB(31);USING "####"; RH(I);
2080     PRINT TAB(40);USING "####"; RL(I);
2090     PRINT TAB(52);USING "####"; B1(I);
```

```
2100      PRINT TAB(63);USING "###.###";P(I);
2110      PRINT TAB(76);USING "##.###";R(I)
2120      GOSUB 4520
2130      GOTO 2400
2140      PRINT TAB(20);"*";
2150      PRINT TAB(21);USING "#";C;
2160      PRINT TAB(31);USING "####";RH(I);
2170      PRINT TAB(40);USING "####";RL(I);
2180      PRINT TAB(52);USING "####";B1(I);
2190      PRINT TAB(63);USING "###.###";P(I);
2200      PRINT TAB(76);USING "#.###";R(I)
2210      GOSUB 4520
2220      GOTO 2400
2230      IF (C > 1) THEN 2330
2240      PRINT TAB(5);USING "###";J;
2250      PRINT TAB(21);USING "#";C;
2260      PRINT TAB(33);USING "####";RH(I);
2270      PRINT TAB(40);USING "####";RL(I);
2280      PRINT TAB(52);USING "####";B1(I);
2290      PRINT TAB(63);USING "###.###";P(I);
2300      PRINT TAB(76);USING "##.###";R(I)
2310      GOSUB 4520
2320      GOTO 2400
2330      PRINT TAB(21);USING "#";C;
2340      PRINT TAB(33);USING "####";R(I);
2350      PRINT TAB(40);USING "####";RL(I);
2360      PRINT TAB(52);USING "####";B1(I);
2370      PRINT TAB(63);USING "###.###";P(I);
2380      PRINT TAB(68);USING "##.###";R(I)
2390      GOSUB 4520
2400      C = C+1
2410 NEXT I
2420 PRINT : PRINT
2430 PRINT TAB(25);"============================"
2440 RETURN
2450 REM PRINT OUTPUT ON PRINTER
2460 PAGE = 1
2470 FOR I = 1 TO 6
2480      IF I = 4 THEN LPRINT TAB(68);"PAGE";
          TAB(74);USING "####";PAGE : PAGE = PAGE+1
2490      LPRINT
2500 NEXT I
2510 LPRINT TAB(18);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
2520 LPRINT
2530 LPRINT TAB(34);"ITEM  ANALYSIS",
2540 LPRINT
2550 LPRINT TAB(35);".. JOHNSON .."
2560 LPRINT : LPRINT
2570 LPRINT TAB(25);"**********************************"
2580 LPRINT TAB(25);"**                              **"
2590 LPRINT TAB(25);"**      U-L  27  PERCENT        **"
2600 LPRINT TAB(25);"**                              **"
2610 LPRINT TAB(25);"**********************************"
2620 LPRINT : LPRINT
```

```
2630 L = 19
2640 J = 1
2650 C = 1 .
2660 LPRINT
2670      LPRINT TAB(34);"N";"          ";"N";"              ";"NO"
2680      LPRINT TAB(2);"ITEM  NO. ";"      ";"RESPONSE";"          ";
          "HIGH";"      ";"LOW";"        ";"RESPONSE";
          "          ";"P";"          ";"R"
2690      LPRINT
2700      L = L+3
2710 FOR I = 1 TO ITEM*CH
2720      IF (C > CH) THEN C = 1 : J = J+1
2730 IF (J > ITEM) THEN 3140
2740      IF (C >< KEY(J)) THEN 2950
2750      IF (C > 1) THEN 2860
2760      LPRINT TAB(4);USING "###";J;
2770      LPRINT TAB(20);"*";
2780      LPRINT TAB(21);USING "#";C;
2790      LPRINT TAB(31);USING "####";RH(I);
2800      LPRINT TAB(40);USING "####";RL(I);
2810      LPRINT TAB(52);USING "####";B1(I);
2820      LPRINT TAB(66);USING "###.##";P(I);
2830      LPRINT TAB(76);USING "##.###";R(I)
2840      GOSUB 4400
2850      GOTO 3120
2860      LPRINT TAB(20);"*";
2870      LPRINT TAB(21);USING "#";C;
2880      LPRINT TAB(31);USING "####";RH(I);
2890      LPRINT TAB(40);USING "####";RL(I);
2900      LPRINT TAB(52);USING "####";B1(I);
2910      LPRINT TAB(66);USING "###.##";P(I);
2920      LPRINT TAB(76);USING "##.###";R(I)
2930      GOSUB 4400
2940      GOTO 3120
2950      IF (C > 1) THEN 3050
2960      LPRINT TAB(4);USING "###";J;
2970      LPRINT TAB(21);USING "#";C;
2980      LPRINT TAB(31);USING "####";RH(I);
2990      LPRINT TAB(40);USING "####";RL(I);
3000      LPRINT TAB(52);USING "####";B1(I);
3010      LPRINT TAB(66);USING "###.##";P(I);
3020      LPRINT TAB(76);USING "##.###";R(I)
3030      GOSUB 4400
3040      GOTO 3120
3050      LPRINT TAB(21);USING "#";C;
3060      LPRINT TAB(31);USING "####";RH(I);
3070      LPRINT TAB(40);USING "####";RL(I);
3080      LPRINT TAB(52);USING "####";B1(I);
3090      LPRINT TAB(66);USING "###.##";P(I);
3100      LPRINT TAB(76);USING "##.###";R(I)
3110      GOSUB 4400
3120      C = C+1
3130 NEXT I
3140 LPRINT : LPRINT
3150 LPRINT TAB(25);"============================"
3155 LPRINT : LPRINT : LPRINT
3156 LPRINT TAB(5);"*  CORRECT ANSWER"
3157 LPRINT CHR$(12)
3160 RETURN
```

```
3170 REM PRINT OUTPUT ON BOTH SCREEN AND PRINTER
3180 PRINT CHR$(26)
3190 PRINT : PRINT
3200 PRINT TAB(18);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
3210 PRINT
3220 PRINT TAB(30);"ITEM  ANALYSIS"
3230 PRINT
3240 PRINT TAB(34);". . JOHNSON. . "
3250 PRINT : PRINT
3260 PRINT TAB(25);"**********************************"
3270 PRINT TAB(25);"**                              **"
3280 PRINT TAB(25);"**      U-L  27  PERCENT        **"
3290 PRINT TAB(25);"**                              **"
3300 PRINT TAB(25);"**********************************"
3310 PRINT : PRINT
3320 J = 1
3330 C = 1
3340     PRINT TAB(35);"NO. ";"                ";"NO. "
3350     PRINT TAB(4);"ITEM  NO. ";"     ";"RESPONSE";"      ";
         "RIGHT  ANSWER";"      ";"WRONG  ANSWER";"         ";"RPBI"

3360     L = 19
3370 FOR I = 1 TO ITEM*CH
3380     IF (C > CH) THEN C = 1 : J = J+1
3390     IF (C >< KEY(J)) THEN 3560
3400     IF (C > 1) THEN 3490
3410     PRINT TAB(6);USING "###";J;
3420     PRINT TAB(20);"*";
3430     PRINT TAB(21);USING "#";C;
3440     PRINT TAB(33);USING "####";R(I);
3450     PRINT TAB(51);USING "####";W(I);
3460     PRINT TAB(68);USING "#.###";RPBI(I)
3470     GOSUB 4520
3480     GOTO 3690
3490     PRINT TAB(20);"*";
3500     PRINT TAB(21);USING "#";C;
3510     PRINT TAB(33);USING "####";R(I);
3520     PRINT TAB(51);USING "####";W(I);
3530     PRINT TAB(68);USING "#.###";RPBI(I)
3540     GOSUB 4520
3550     GOTO 3690
3560     IF (C > 1) THEN 3640
3570     PRINT TAB(6);USING "###";J;
3580     PRINT TAB(21);USING "#";C;
3590     PRINT TAB(33);USING "####";R(I);
3600     PRINT TAB(51);USING "####";W(I);
3610     PRINT TAB(68);USING "#.###";RPBI(I)
3620     GOSUB 4520
3630     GOTO 3690
3640     PRINT TAB(21);USING "#";C;
3650     PRINT TAB(33);USING "####";R(I);
3660     PRINT TAB(51);USING "####";W(I);
3670     PRINT TAB(68);USING "#.###";RPBI(I)
3680     GOSUB 4520
3690     C = C+1
3700 NEXT I
3710     PRINT : PRINT
3720 PRINT TAB(25);"=============================="
```

```
3730 PAGE = 1
3740 FOR I = 1 TO 6
3750     IF I = 4 THEN LPRINT TAB(68);"PAGE";
         TAB(74);USING "####";PAGE : PAGE = PAGE+1
3760     LPRINT
3770 NEXT I
3780 LPRINT TAB(14);"A PACKAGE PROGRAM FOR EDUCATIONAL TEST EVALUATION"
3790 LPRINT
3800 LPRINT TAB(33);"ITEM  ANALYSIS"
3810 LPRINT : LPRINT : LPRINT
3820 LPRINT TAB(25);"**********************************"
3830 LPRINT TAB(25);"**                              **"
3840 LPRINT TAB(25);"**      U-L  27  PERCENT        **"
3850 LPRINT TAB(25);"**                              **"
3860 LPRINT TAB(25);"**********************************"
3870 LPRINT : LPRINT
3880 J = 1
3890 C = 1
3900     LPRINT TAB(34);"N";"          ";"N";"              ";"NO"
3910     LPRINT TAB(2);"ITEM  NO.";"       ";"RESPONSE";"        ";
         "HIGH";"       ";"LOW";"        ";"RESPONSE";
         "         ";"P";"           ";"R"
3920 LPRINT
3930 L = 22
3940 FOR I = 1 TO ITEM*CH
3950     IF ( C > CH) THEN C = 1 : J = J+1
3960     IF (J > ITEM) THEN 4360
3970     IF (C >< KEY(J)) THEN 4170
3980     IF (C > 1) THEN 4090
3990     LPRINT TAB(4);USING "###";J;
4000     LPRINT TAB(20);"*";
4010     LPRINT TAB(21);USING "#";C;
4020     LPRINT TAB(31);USING "####";RH(I);
4030     LPRINT TAB(40);USING "####";RL(I);
4040     LPRINT TAB(52);USING "####";B1(I);
4050     LPRINT TAB(66);USING "###.##";P(I);
4060     LPRINT TAB(76);USING "##.###";R(I)
4070     GOSUB 4400
4080     GOTO 4340
4090     LPRINT TAB(20);"*";
4100     LPRINT TAB(21);USING "#";C;
4110     LPRINT TAB(31);USING "####";RH(I);
4120     LPRINT TAB(40);USING "####";B1(I);
4130     LPRINT TAB(66);USING "###.##";P(I);
4140     LPRINT TAB(76);USING "##.###";R(I)
4150     GOSUB 4400
4160     GOTO 4340
4170     IF ( C > 1) THEN 4270
4180     LPRINT TAB(4);USING "###";J;
4190     LPRINT TAB(21);USING "#";C;
4200     LPRINT TAB(31);USING "####";RH(I);
4210       LPRINT TAB(40);USING "####";RL(I);
4220     LPRINT TAB(52);USING "####";B1(I);
4230     LPRINT TAB(66);USING "###.##";P(I);
4240     LPRINT TAB(76);USING "##.###";R(I)
4250     GOSUB 4400
4260     GOTO 4340
```

```
4270      LPRINT TAB(21);USING "#";C;
4280      LPRINT TAB(31);USING "####";RH(I);
4290      LPRINT TAB(40);USING "####";RL(I);
4300      LPRINT TAB(52);USING "####";B1(I);
4310      LPRINT TAB(66);USING "###.##";P(I);
4320      LPRINT TAB(76);USING "##.###";R(I)
4330    GOSUB 4400
4340      C = C+1
4350 NEXT I
4360      LPRINT : LPRINT
4370 LPRINT TAB(25);"============================"
4380      LPRINT CHR$(12)
4390 RETURN
4400 L = L+1
4410 IF L < 54 THEN 4510
4420 LPRINT CHR$(12)
4430 FOR II = 1 TO 3
4440      IF II = 2 THEN LPRINT TAB(68);"PAGE";TAB(74);
          USING "####";PAGE : PAGE = PAGE+1
4450      LPRINT
4460 NEXT II
4470      LPRINT TAB(34);"N";"          ";"N";"             ";"NO"
4480      LPRINT TAB(2);"ITEM  NO.";"       ";"RESPONSE";"        ";
          "HIGH";"       ";"LOW";"        ";"RESPONSE";
          "          ";"P";"          ";"R"
4490      LPRINT
4500      L = 6
4510 RETURN
4520      L = L+1
4530      IF L < 21 THEN 4650
4540      PRINT
4550      INPUT "TO CONTINUE ... PLEASE PRESS RETURN ";CC
4560      L = 0
4570     PRINT CHR$(26)
4580 FOR II = 1 TO 2
4590       PRINT
4600 NEXT II
4610      PRINT TAB(34);"N";"          ";"N";"             ";"NO"
4620      PRINT TAB(2);"ITEM  NO.";"       ";"RESPONSE";"        ";
          "HIGH";"       ";"LOW";"        ";"RESPONSE";
          "          ";"P";"          ";"R"
4630       PRINT
4640      L = 5
4650 RETURN
```

ภาคผนวก ข.

รายงานผลค่าสถิติมาตรฐานโดยใช้โปรแกรมสำเร็จรูป
มาตรฐาน SPSS และนำไปวิ่งกับเครื่องไอบีเอ็ม 3031
ซึ่งติดตั้งที่สถาบันบริการคอมพิวเตอร์

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

SPSS FOR OS/360, VERSION H, RELEASE 7.0 DECEMBER 5, 1977

DEFAULT SPACE ALLOCATION.. ALLOWS FOR.. 1110 TRANSFORMATIONS
WORKSPACE 733583 BYTES 4477 RECODE VALUES + LAG VARIABLES
TRANSPACE 111340 BYTES 17913 IF/COMPUTE OPERATIONS

PAGESIZE 'NOBJECT'
VARIABLE LIST ITEM01 TO ITEM66
INPUT MEDIUM CARD
N OF CASES 100
INPUT FORMAT FIXED(3X,66F1.0)

ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE	FORMAT	RECORD	COLUMNS
ITEM01	F 1. 0	1	4- 4
ITEM02	F 1. 0	1	5- 5
ITEM03	F 1. 0	1	6- 6
ITEM04	F 1. 0	1	7- 7
ITEM05	F 1. 0	1	8- 8
ITEM06	F 1. 0	1	9- 9
ITEM07	F 1. 0	1	10- 10
ITEM08	F 1. 0	1	11- 11
ITEM09	F 1. 0	1	12- 12
ITEM10	F 1. 0	1	13- 13
ITEM11	F 1. 0	1	14- 14
ITEM12	F 1. 0	1	15- 15
ITEM13	F 1. 0	1	16- 16
ITEM14	F 1. 0	1	17- 17
ITEM15	F 1. 0	1	18- 18
ITEM16	F 1. 0	1	19- 19
ITEM17	F 1. 0	1	20- 20
ITEM18	F 1. 0	1	21- 21
ITEM19	F 1. 0	1	22- 22
ITEM20	F 1. 0	1	23- 23
ITEM21	F 1. 0	1	24- 24
ITEM22	F 1. 0	1	25- 25
ITEM23	F 1. 0	1	26- 26
ITEM24	F 1. 0	1	27- 27
ITEM25	F 1. 0	1	28- 28
ITEM26	F 1. 0	1	29- 29
ITEM27	F 1. 0	1	30- 30
ITEM28	F 1. 0	1	31- 31
ITEM29	F 1. 0	1	32- 32
ITEM30	F 1. 0	1	33- 33

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

ACCORDING TO YOUR INPUT FORMAT, VARIABLES ARE TO BE READ AS FOLLOWS

VARIABLE	FORMAT	RECORD	COLUMNS
ITEM01	F 1. 0	1	34- 34
ITEM02	F 1. 0	1	35- 35
ITEM03	F 1. 0	1	36- 36
ITEM04	F 1. 0	1	37- 37
ITEM05	F 1. 0	1	38- 38
ITEM06	F 1. 0	1	39- 39
ITEM07	F 1. 0	1	40- 40
ITEM08	F 1. 0	1	41- 41
ITEM09	F 1. 0	1	42- 42
ITEM10	F 1. 0	1	43- 43
ITEM11	F 1. 0	1	44- 44
ITEM12	F 1. 0	1	45- 45
ITEM13	F 1. 0	1	46- 46
ITEM14	F 1. 0	1	47- 47
ITEM15	F 1. 0	1	48- 48
ITEM16	F 1. 0	1	49- 49
ITEM17	F 1. 0	1	50- 50
ITEM18	F 1. 0	1	51- 51
ITEM19	F 1. 0	1	52- 52
ITEM20	F 1. 0	1	53- 53
ITEM21	F 1. 0	1	54- 54
ITEM22	F 1. 0	1	55- 55
ITEM23	F 1. 0	1	56- 56
ITEM24	F 1. 0	1	57- 57
ITEM25	F 1. 0	1	58- 58

THE INPUT FORMAT PROVIDES FOR 55 VARIABLES. 55 WILL BE READ
IT PROVIDES FOR 1 RECORDS ('CARDS') PER CASE. A MAXIMUM OF 58 'COLUMNS' ARE USED ON A RECORD.

```
RECODE          ITEM07 ITEM12 ITEM25 ITEM29 ITEM41 ITEM42 ITEM46 ITEM47
                ITEM51 ITEM55(1=1)(ELSE=0)/
                ITEM03 ITEM10 ITEM20 ITEM22 ITEM23 ITEM24 ITEM26 ITEM33
                ITEM31 ITEM32 ITEM34 ITEM38 ITEM39 ITEM43 TO ITEM45 ITEM52
                ITEM54(2=1)(ELSE=0)
RECODE          ITEM02 ITEM06 ITEM11 ITEM13 ITEM16 TO ITEM17 ITEM19 ITEM37
                ITEM41 ITEM50(3=1)(ELSE=0)/ITEM01 ITEM04 ITEM05 ITEM08 ITEM09
                ITEM14 ITEM18 ITEM21 ITEM27 ITEM30 ITEM32 ITEM34 ITEM36 ITEM48
                ITEM49 ITEM53(4=1)(ELSE=0)
DO REPEAT       A=ITEM01 TO ITEM05/B=ITEM06 TO ITEM10/C=ITEM11 TO ITEM15/
                D=ITEM16 TO ITEM20/E=ITEM21 TO ITEM25/F=ITEM26 TO ITEM30/
                G=ITEM31 TO ITEM35/H=ITEM36 TO ITEM40/I=ITEM41 TO ITEM45/
                J=ITEM46 TO ITEM50/K=ITEM51 TO ITEM55
COMPUTE         PARTA=PARTA+A
COMPUTE         PARTB=PARTB+B
COMPUTE         PARTC=PARTC+C
COMPUTE         PARTD=PARTD+D
COMPUTE         PARTE=PARTE+E
COMPUTE         PARTF=PARTF+F
COMPUTE         PARTG=PARTG+G
COMPUTE         PARTH=PARTH+H
COMPUTE         PARTI=PARTI+I
COMPUTE         PARTJ=PARTJ+J
COMPUTE         PARTK=PARTK+K
END REPEAT
```

DO REPEAT REQUIRED 1144 BYTES OF WORKSPACE.

READ INPUT DATA

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES 13/05/83

WORKSPACE REQUIRED.. 7200 BYTES
57 TRANSFORMATIONS
10 RECODE VALUES + LOG VARIABLES
165 IF/COMPUTE OPERATIONS

FREQUENCIES GENERAL=PARTA TO PARTK
STATISTICS ALL

GIVEN WORKSPACE ALLOWS FOR 32767 TOTAL VALUES AND 3276 LABELED VALUES PER VARIABLE FOR FREQUENCIES

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES 13/05/83

FILE NONAME (CREATION DATE = 13/05/83)

PARTA

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	1.	2	2.0	2.0	2.0
	2.	8	8.0	8.0	10.0
	3.	45	45.0	45.0	55.0
	4.	36	36.0	36.0	91.0
	5.	9	9.0	9.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	3.420	STD ERR	0.084	MEDIAN	3.380
MODE	3.000	STD DEV	0.843	VARIANCE	0.711
KURTOSIS	0.364	SKEWNESS	-0.208	RANGE	4.000
MINIMUM	1.000	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PART B

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	3	3.0	3.0	3.0
	3.	13	13.0	13.0	16.0
	4.	36	36.0	36.0	52.0
	5.	48	48.0	48.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	4.290	STD ERR	0.091	MEDIAN	4.444
MODE	5.000	STD DEV	0.808	VARIANCE	0.652
KURTOSIS	0.209	SKEWNESS	-0.932	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		
VALID CASES	100	MISSING CASES	0		

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PART C

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	10	10.0	10.0	10.0
	3.	20	20.0	20.0	30.0
	4.	45	45.0	45.0	75.0
	5.	25	25.0	25.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	3.850	STD ERR	0.091	MEDIAN	3.944
MODE	4.000	STD DEV	0.914	VARIANCE	0.836
KURTOSIS	-0.461	SKEWNESS	-0.505	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		
VALID CASES	100	MISSING CASES	0		

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PARTD

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	12	12.0	12.0	12.0
	3.	18	18.0	18.0	30.0
	4.	46	46.0	46.0	76.0
	5.	24	24.0	24.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	3.820	STD ERR	0.094	MEDIAN	3.935
MODE	4.000	STD DEV	0.936	VARIANCE	0.876
KURTOSIS	-0.489	SKEWNESS	-0.535	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PARTE

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	4	4.0	4.0	4.0
	3.	24	24.0	24.0	28.0
	4.	36	36.0	36.0	64.0
	5.	36	36.0	36.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	4.040	STD ERR	0.088	MEDIAN	4.111
MODE	4.000	STD DEV	0.875	VARIANCE	0.766
KURTOSIS	-0.754	SKEWNESS	-0.447	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NONAME (CREATION DATE = 13/05/83)

PARTF

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	1	1.0	1.0	1.0
	3.	5	5.0	5.0	6.0
	4.	37	37.0	37.0	43.0
	5.	57	57.0	57.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	4.500	STD ERR	0.064	MEDIAN	4.623
MODE	5.000	STD DEV	0.644	VARIANCE	0.414
KURTOSIS	1.303	SKEWNESS	-1.160	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		
VALID CASES	100	MISSING CASES	0		

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NONAME (CREATION DATE = 13/05/83)

PARTG

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	1	1.0	1.0	1.0
	3.	4	4.0	4.0	5.0
	4.	15	15.0	15.0	20.0
	5.	80	80.0	80.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	4.740	STD ERR	0.058	MEDIAN	4.875
MODE	5.000	STD DEV	0.579	VARIANCE	0.336
KURTOSIS	6.226	SKEWNESS	-2.454	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		
VALID CASES	100	MISSING CASES	0		

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PARTH

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	0.	6	6.0	6.0	6.0
	1.	27	27.0	27.0	33.0
	2.	41	41.0	41.0	74.0
	3.	23	23.0	23.0	97.0
	4.	3	3.0	3.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	1.900	STD ERR	0.093	MEDIAN	1.915
MODE	2.000	STD DEV	0.927	VARIANCE	0.859
KURTOSIS	-0.357	SKEWNESS	-0.031	RANGE	4.000
MINIMUM	0.0	MAXIMUM	4.000		

VALID CASES 100 MISSING CASES 0

- -

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NCNAME (CREATION DATE = 13/05/83)

PARTI

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	0.	1	1.0	1.0	1.0
	1.	7	7.0	7.0	8.0
	2.	22	22.0	22.0	30.0
	3.	48	48.0	48.0	78.0
	4.	21	21.0	21.0	99.0
	5.	1	1.0	1.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	2.840	STD ERR	0.091	MEDIAN	2.917
MODE	3.000	STD DEV	0.907	VARIANCE	0.823
KURTOSIS	0.334	SKEWNESS	-0.504	RANGE	5.000
MINIMUM	0.0	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NONAME (CREATION DATE = 13/05/83)

PARTJ

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	0.	1	1.0	1.0	1.0
	1.	5	5.0	5.0	6.0
	2.	21	21.0	21.0	27.0
	3.	41	41.0	41.0	68.0
	4.	18	18.0	18.0	86.0
	5.	14	14.0	14.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	3.120	STD ERR	0.111	MEDIAN	3.061
MODE	3.000	STD DEV	1.113	VARIANCE	1.239
KURTOSIS	-0.191	SKEWNESS	-0.017	RANGE	5.000
MINIMUM	0.0	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

FILE NONAME (CREATION DATE = 13/05/83)

PARTK

CATEGORY LABEL	CODE	ABSOLUTE FREQ	RELATIVE FREQ (PCT)	ADJUSTED FREQ (PCT)	CUM FREQ (PCT)
	2.	15	15.0	15.0	15.0
	3.	36	36.0	36.0	51.0
	4.	48	48.0	48.0	99.0
	5.	1	1.0	1.0	100.0
	TOTAL	100	100.0	100.0	

MEAN	3.350	STD ERR	0.074	MEDIAN	3.472
MODE	4.000	STD DEV	0.744	VARIANCE	0.553
KURTOSIS	-0.755	SKEWNESS	-0.521	RANGE	3.000
MINIMUM	2.000	MAXIMUM	5.000		

VALID CASES 100 MISSING CASES 0

```
STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

ELAPSED TIME REQUIRED..     5.31 SECONDS


                  RAW OUTPUT UNITTAPE
                  WRITE CASES     (11F7.2) PARTA TO PARTK

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES

      100 CASES WRITTEN ON LOGICAL UNIT # 9
        0 (UNWEIGHTED)) CASES WERE DROPPED DUE TO MISSING VALUES

ELAPSED TIME REQUIRED..     5.02 SECONDS


                  FINISH

         NORMAL END OF JOB.
            36 CONTROL CARDS WERE PROCESSED.
             0 ERRORS WERE DETECTED.
```

ภาคผนวก ค.

โปรแกรมภาษาโฟรแทรนซึ่งผู้วิจัยเขียนขึ้น เพื่อหาค่าความโด่ง
โดยนำไปวิ่งกับเครื่องไอบีเอ็ม 3031 ซึ่งติดตั้งที่สถาบันบริการคอมพิวเตอร์

```
DOS FORTRAN IV 360N-FO-479 3-8          MAINPGM

0001                DOUBLE PRECISION X(200,11),Y(200),XK
0002                READ(1,10)N,IP
0003          10    FORMAT(2I3)
0004                DO 20 I=1,N
0005             20 READ(7,30)(X(I,J),J=1,IP)
0006          30    FORMAT(11F7.2)
0007                DO 50 I=1,IP
0008                DO 40 J=1,N
0009             40 Y(J)=X(J,I)
0010                CALL KURTO(Y,XK,N)
0011          50    WRITE(3,60)XK
0012          60    FORMAT(10X,F15.5)
0013                STOP
0014                END
```

```
DOS FORTRAN IV 360N-FO-479 3-8          KURTO

0001                SUBROUTINE KURTO (Y,XK,N)
0002                DOUBLE PRECISION Y(200),XK,X1,XA,XB,XC,XD,A,B
0003                XA=0
0004                XB=0
0005                XC=0
0006                XD=0
0007                DO 10 I=1,N
0008                XA=XA+Y(I)
0009                XB=XB+Y(I)*Y(I)
0010                XC=XC+Y(I)**3
0011          10    XD=XD+Y(I)**4
0012                XM=XA/N
0013                X1=XD/N
0014                X2=4.*XM*XC/N
0015                X3=6.*XM**2*XB/N
0016                X4=4.*XM**3*XA/N
0017                A=X1-X2+X3-X4+XM**4
0018                B=(XB-N*XM**2)/(N-1)
0019                XK=A/(B*B)-3.
0020                RETURN
0021                END
```

```
12.12.53,TOTAL COMPILATION TIME,00.00.23
    0.22172
    0.07704
   -0.54767
   -0.57338
   -0.81089
    1.09527
    5.68281
   -0.45064
    0.19315
   -0.29526
   -0.32978
```

ภาคผนวก ง.

รายงานผลการวิเคราะห์ข้อสอบเป็นรายข้อโดยใช้โปรแกรมสำเร็จรูป

มาตรฐาน ITEM ANALYSIS และนำไปวิ่งกับเครื่องไอบีเอ็ม 3031

ซึ่งติดตั้งที่สถาบันบริการคอมพิวเตอร์

ITEM NO.	RESP-ONSE	CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL R	T	POINT-BISERIAL R	T
1	1	0.1[illegible]	[illegible]	-0.[illegible]	-[illegible]	-0.[illegible]	-[illegible]
	2	0.325	3.40	-0.077	-0.51	-0.051	-0.51
	> 4	> 0.9[illegible]	21.67	0.194	1.40	0.137	1.[illegible]
2	1	0.179	1.80	0.131	0.68	0.063	0.62
	> 3	> 0.970	33.31	0.075	0.37	0.037	0.37
	4	0.127	1.27	-0.[illegible]	-1.41	-0.134	-1.34
3	1	0.462	5.16	0.094	0.71	0.070	0.70
	> 2	> 0.557	6.44	0.047	0.37	0.037	0.37
	3	0.205	2.08	-0.[illegible]	-1.[illegible]	-0.171	-1.72
	4	0.651	1.49	-0.021	-0.17	-0.017	-0.17
	2	0.171	1.72	-0.[illegible]	-0.[illegible]	-0.[illegible]	-0.[illegible]
	> 4	> 0.975	43.03	-0.014	-0.[illegible]	-0.[illegible]	-0.[illegible]
	6	0.102	1.02	0.082	0.28	0.028	0.27
5	1	0.546	6.45	-0.121	-0.96	-0.095	-0.94
	2	0.378	4.04	-0.114	-0.83	-0.082	-0.82
	3	0.410	4.46	-0.171	-1.27	-0.124	-1.24
	> 4	> 0.609	7.61	0.316	2.75	0.253	2.59
	5	0.100	0.99	0.009	0.09	0.009	0.09
6	1	0.416	4.53	-0.093	-0.68	-0.067	-0.67
	2	0.087	0.87	-0.355	-1.24	-0.119	-1.19
	> 3	> 0.848	15.82	0.086	0.67	0.067	0.66
	4	0.301	3.13	0.044	0.27	0.027	0.27
7	> 1	> 0.945	28.74	0.218	2.21	0.207	2.09
	3	0.077	0.77	-0.647	-2.52	-0.217	-2.20
	4	0.301	3.12	-0.218	-1.48	-0.144	-1.44
8	1	0.145	1.45	0.098	0.39	0.039	0.39
	2	0.085	0.84	-0.428	-1.53	-0.143	-1.44
	3	0.240	2.45	-0.[illegible]	-0.33	-0.033	-0.33
	> 4	> 0.951	30.36	0.099	0.58	0.058	0.58
	2	0.267	2.74	-0.528	-3.87	-0.322	-3.36
	3	0.200	2.02	-0.435	-2.52	-0.227	-2.31
	> 4	> 0.938	26.83	0.591	5.37	0.408	4.42

ITEM ANALYSIS INTRODUCTION TO COMPUTER ITEM ANALYSIS

ITEM NO.	RESP-CASE	CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL BRIS	T	POINT-BISERIAL RLB	T
10	1	0.242	2.43	-0.336	-2.14	-0.201	-2.03
	> 2	> 0.953	31.17	0.223	1.39	0.135	1.34
	3	0.100	0.99	0.009	0.07	0.003	0.03
	4	0.112	1.12	0.174	1.32	0.125	1.25
11	1	0.138	1.38	-0.075	-0.30	-0.030	-0.30
	2	0.138	1.38	-0.075	-0.30	-0.030	-0.30
	> 3	> 0.976	43.96	0.093	0.43	0.043	0.43
12	> 1	> 0.956	32.45	0.138	0.81	0.080	0.80
	2	0.273	2.81	-0.133	-0.81	-0.080	-0.80
13	1	0.474	5.34	-0.038	-0.29	-0.029	-0.29
	2	0.459	5.11	-0.262	-2.14	-0.202	-2.05
	> 3	> 0.627	7.97	0.338	2.93	0.271	2.79
	4	0.402	4.34	-0.125	-0.90	-0.089	-0.89
14	1	0.146	1.47	0.141	0.57	0.057	0.56
	2	0.382	4.10	-0.415	-3.38	-0.297	-3.07
	3	0.160	1.60	-0.257	-1.27	-0.123	-1.22
	> 4	> 0.893	13.64	0.401	3.41	0.300	3.12
	2	0.359	3.81	-0.191	-1.38	-0.134	-1.34
	> 3	> 0.910	21.70	0.288	2.20	0.207	2.09
	4	0.182	1.83	-0.339	-1.77	-0.167	-1.68
16	1	0.131	1.30	-0.249	-1.02	-0.100	-0.99
	2	0.205	2.07	0.114	0.56	0.056	0.56
	> 3	> 0.943	28.15	0.222	1.49	0.144	1.44
	4	0.203	2.05	-0.371	-2.09	-0.194	-1.95
17	1	0.077	0.77	-0.647	-2.52	-0.217	-2.20
	2	0.171	1.72	-0.018	-0.09	-0.009	-0.09
	> 3	> 0.766	11.80	0.278	2.38	0.223	2.27
	4	0.607	7.56	-0.223	-1.87	-0.179	-1.80
18	1	0.287	2.97	-0.428	-3.20	-0.281	-2.90
	2	0.232	2.36	-0.206	-1.18	-0.115	-1.15
	3	0.092	0.92	-0.209	-0.71	-0.070	-0.70
	> 4	> 0.920	23.18	0.450	3.68	0.316	3.30

ITEM ANALYSIS INTRODUCTION TO COMPUTER — ITEM ANALYSIS

ITEM NO.	RESP-CASE	CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL BIS	T	POINT-BISERIAL RPB	T
19	1	0.177	1.78	0.101	0.99	0.048	0.48
	2	0.261	2.63	-0.033	-0.20	-0.020	-0.20
	> 3	> 0.885	18.78	0.319	2.56	0.237	2.42
	4	0.329	3.45	-0.442	-3.54	-0.306	-3.13
20	1	0.365	3.88	-0.294	-2.26	-0.212	-2.14
	> 2	> 0.882	18.56	0.400	3.42	0.301	3.13
	3	0.183	1.85	-0.314	-1.63	-0.155	-1.55
	4	0.212	2.15	-0.200	-1.07	-0.104	-1.04
21	1	0.390	4.20	-0.297	-2.27	-0.212	-2.15
	3	0.254	2.60	-0.161	-0.98	-0.096	-0.96
	> 4	> 0.879	19.30	0.324	2.65	0.244	2.49
22	1	0.361	3.83	-0.361	-2.96	-0.259	-2.66
	> 2	> 0.853	16.21	0.355	3.04	0.275	2.83
	3	0.087	0.87	-0.355	-1.24	-0.119	-1.19
	4	0.353	3.73	-0.087	-0.60	-0.060	-0.60
23	1	0.082	0.82	-0.501	-1.83	-0.168	-1.69
	> 2	> 0.982	52.11	0.338	1.59	0.151	1.51
	4	0.134	1.34	-0.162	-0.66	-0.065	-0.64
24	1	0.090	0.89	-0.282	-0.97	-0.095	-0.94
	> 2	> 0.984	55.03	0.561	2.92	0.251	2.57
	4	0.116	1.16	-0.595	-2.78	-0.239	-2.43
25	> 1	> 0.804	13.38	0.285	2.43	0.228	2.31
	2	0.232	2.36	0.185	0.98	0.097	0.96
	3	0.437	4.82	-0.112	-0.82	-0.081	-0.81
	4	0.299	3.11	-0.473	-3.71	-0.315	-3.29
	5	0.100	0.99	0.009	0.03	0.003	0.03
26	1	0.092	0.92	-0.209	-0.71	-0.070	-0.70
	> 2	> 0.832	14.82	0.368	3.29	0.293	3.04
	3	0.515	5.95	-0.305	-2.56	-0.237	-2.42
	4	0.158	1.59	-0.287	-1.43	-0.137	-1.37
27	1	0.087	0.87	-0.355	-1.24	-0.119	-1.19
	3	0.100	0.99	0.009	0.03	0.003	0.03
	> 4	> 0.986	58.48	0.222	0.84	0.082	0.82

ITEM ANALYSIS INTRODUCTION TO COMPUTER ITEM ANALYSIS

ITEM NO.	RESP-ONSE	CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL RBIS	T	POINT-BISERIAL RPB	T
28	1	0.134	1.34	-0.162	-0.66	-0.065	-0.64
	> 2	> 0.980	46.27	0.093	0.37	0.037	0.37
	4	0.102	1.02	0.082	0.28	0.028	0.27
29	> 1	> 0.964	36.04	0.602	4.42	0.349	3.69
	2	0.230	2.24	-0.559	-4.11	-0.335	-3.51
	3	0.090	0.89	-0.282	-0.97	-0.095	-0.94
30	1	0.087	0.87	-0.355	-1.24	-0.119	-1.19
	2	0.100	0.99	0.009	0.03	0.003	0.03
	3	0.125	1.25	-0.379	-1.61	-0.152	-1.52
	> 4	> 0.978	45.53	0.353	1.78	0.167	1.68
	> 2	> 0.985	57.44	0.720	4.20	0.322	3.37
	3	0.062	0.62	-1.085	-3.00	-0.364	-3.36
	4	0.127	1.27	-0.335	-1.41	-0.134	-1.34
	3	0.092	0.92	-0.209	-0.71	-0.070	-0.70
	> 4	> 0.991	71.35	0.232	0.71	0.070	0.70
33	1	0.082	0.82	-0.501	-1.83	-0.168	-1.69
	> 2	> 0.971	40.56	0.523	3.26	0.279	2.87
	3	0.077	0.77	-0.647	-2.52	-0.217	-2.20
	4	0.185	1.86	-0.289	-1.49	-0.142	-1.43
	2	0.101	1.00	-0.985	-6.47	-0.395	-4.26
	3	0.216	2.19	-0.114	-0.60	-0.060	-0.59
	> 4	> 0.967	37.33	0.466	3.06	0.268	2.75
35	1	0.211	2.14	-0.592	-4.10	-0.330	-3.46
	2	0.101	1.00	-0.985	-6.47	-0.395	-4.26
	3	0.087	0.87	-0.355	-1.24	-0.119	-1.19
	> 4	> 0.965	36.21	0.864	9.07	0.509	5.85
36	1	0.483	5.46	-0.361	-3.05	-0.275	-2.83
	> 2	> 0.810	13.69	0.296	2.52	0.235	2.39
	3	0.146	1.47	0.141	0.57	0.057	0.56
	4	0.281	2.90	0.001	0.00	0.000	0.00
37	1	0.933	25.62	0.388	2.99	0.268	2.75
	2	0.128	1.28	-0.913	-7.26	-0.436	-4.80
	> 3	> 0.309	3.21	-0.095	-0.63	-0.062	-0.62
	4	0.100	0.99	0.009	0.03	0.003	0.03

ITEM NO.	RESP-CASE		CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL BSIS	T	POINT-BISERIAL PLB	T
38		1	0.620	7.42	-0.140	-1.30	-0.110	-1.19
	>	2	> 0.757	11.48	0.359	3.15	0.284	2.94
		3	0.147	1.47	-0.525	-2.99	-0.251	-2.57
		4	0.111	1.11	-0.725	-3.69	-0.291	-3.01
39		1	0.292	3.02	0.179	1.10	0.108	1.07
	>	2	> 0.711	10.02	0.258	2.18	0.206	2.09
		4	0.632	8.07	-0.333	-2.93	-0.267	-2.75
40	>	1	> 0.318	3.32	-0.402	-3.06	-0.273	-2.81
		2	0.288	2.98	0.120	0.73	0.072	0.72
		3	0.214	2.17	-0.157	-0.93	-0.082	-0.81
		4	0.860	16.71	0.253	2.04	0.194	1.96
		5	0.141	1.41	0.011	0.05	0.005	0.04
41		1	0.163	1.63	-0.197	-0.96	-0.094	-0.94
		2	0.221	2.24	-0.029	-0.15	-0.015	-0.15
	>	3	> 0.693	9.51	0.420	3.92	0.337	3.54
		4	0.660	8.69	-0.371	-3.33	-0.297	-3.08
42	>	1	> 0.439	4.84	-0.087	-0.64	-0.063	-0.63
		2	0.706	9.86	0.282	2.40	0.225	2.29
		3	0.154	1.54	-0.376	-1.93	-0.180	-1.81
		4	0.525	6.11	-0.160	-1.27	-0.125	-1.24
43		1	0.371	3.95	-0.417	-3.32	-0.291	-3.02
	>	2	> 0.909	21.53	0.570	5.35	0.410	4.45
		3	0.115	1.14	-0.639	-3.06	-0.256	-2.62
		4	0.077	0.77	-0.647	-2.52	-0.217	-2.20
		5	0.100	0.99	0.009	0.03	0.003	0.03
44		1	0.305	3.17	-0.144	-0.96	-0.095	-0.94
	>	2	> 0.847	15.79	0.339	2.92	0.266	2.73
		3	0.195	1.96	-0.087	-0.43	-0.043	-0.43
		4	0.376	4.02	-0.331	-2.51	-0.232	-2.36
45		1	0.376	4.01	-0.143	-1.04	-0.103	-1.02
	>	2	> 0.834	14.99	0.182	1.46	0.142	1.42
		3	0.276	2.84	-0.089	-0.54	-0.053	-0.53
		4	0.276	2.84	-0.089	-0.54	-0.053	-0.53

ITEM ANALYSIS INTRODUCTION TO COMPUTER ITEM ANALYSIS

ITEM NO.	RESP-CASE	CORRELATION COEFFICIENTS PRODUCT-MOMENT R	T	BISERIAL BSIS	T	POINT-BISERIAL RLB	T
46	> 1	> 0.523	6.04	0.526	5.05	0.339	4.21
	2	0.341	3.59	-0.265	-1.92	-0.183	-1.34
	3	0.378	4.09	-0.105	-0.78	-0.075	-0.75
	4	0.677	9.11	-0.206	-1.70	-0.164	-1.45
47	> 1	> 0.963	35.26	0.763	6.83	0.449	4.97
	2	0.125	1.25	-0.379	-1.61	-0.152	-1.52
	3	0.222	2.25	-0.702	-5.96	-0.420	-4.59
48	1	0.253	2.59	-0.476	-3.32	-0.287	-2.96
	2	0.368	3.92	-0.256	-1.93	-0.184	-1.86
	> 4	> 0.890	16.29	0.447	4.02	0.341	3.59
49	1	0.423	4.62	-0.320	-2.52	-0.234	-2.38
	2	0.264	2.71	0.014	0.09	0.009	0.09
	3	0.422	4.61	-0.163	-1.24	-0.121	-1.21
	> 4	> 0.739	10.86	0.383	3.46	0.306	3.13
	5	0.131	1.30	-0.249	-1.02	-0.100	-0.99
50	1	0.420	4.58	-0.370	-3.00	-0.270	-2.78
	2	0.112	1.12	0.374	1.32	0.125	1.25
	> 3	> 0.838	15.23	0.396	3.56	0.312	3.25
	4	0.314	3.28	-0.240	-1.66	-0.160	-1.60
51	> 1	> 0.992	77.87	0.716	2.57	0.217	2.20
	2	0.077	0.77	-0.647	-2.52	-0.217	-2.20
52	1	0.582	7.09	-0.225	-1.86	-0.179	-1.80
	> 2	> 0.803	13.35	0.272	2.31	0.218	2.21
	3	0.080	0.79	-0.574	-2.16	-0.192	-1.94
53	1	0.134	1.34	-0.162	-0.66	-0.065	-0.64
	> 4	> 0.983	52.50	0.370	1.76	0.166	1.66
	5	0.080	0.79	-0.574	-2.16	-0.192	-1.94
54	1	0.182	1.83	0.191	0.93	0.091	0.91
	> 2	> 0.269	2.77	-0.486	-3.46	-0.296	-3.07
	3	0.925	24.16	0.483	3.94	0.331	3.47
	4	0.153	1.53	-0.406	-2.11	-0.194	-1.96
	5	0.080	0.79	-0.574	-2.16	-0.192	-1.94

ITEM ANALYSIS INTRODUCTION TO COMPUTER ITEM ANALYSIS

ITEM NO.	RESP-ONSE	CORRELATION COEFFICIENTS & PRODUCT-MOMENT R	T	BISERIAL BIS	T	POINT-BISERIAL RLP	T
55	> 1	> 0.831	14.77	0.349	3.00	0.278	2.86
	2	0.327	3.43	-0.042	-0.28	-0.028	-0.27
	3	0.352	3.72	-0.300	-2.26	-0.212	-2.14
	4	0.213	2.16	-0.178	-0.95	-0.093	-0.93
	5	0.156	1.56	-0.346	-1.76	-0.166	-1.66

ประวัติผู้เขียน

นางสาวขวัญเรือน ประดิษฐโภคา เกิดวันที่ 19 มิถุนายน พ.ศ. 2503 ที่จังหวัดฉะเชิงเทรา สำเร็จการศึกษาบัณฑิต จากมหาวิทยาลัยศรีนครินทรวิโรฒ บางแสน ปีการศึกษา 2523 และเข้ารับการศึกษาในระดับปริญญามหาบัณฑิต ของภาควิชาวิศวกรรมคอมพิวเตอร์ คณะวิศวกรรมศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย เมื่อปีการศึกษา 2524