TEST SCORING BY THE 602A CALCULATING PUNCH

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SUMMARY. A procedure for test scoring with the help of 602A Calculating Punch is described in this paper.

Leonard Staugas (1954) has given a method using the ESM, for the same purpose. Although the 602A Punch is a slower machine compared to the ESM, it is hoped that in installations where the ESM is not available, or under other conditions in which the 602A may be preferred, that the present method would be of value. Also, when the number of candidates and tests is small (e.g., when the total number of cards involved is less than 2000) the relative handling time becomes lower than in the ESM method.

Statement of the problem. Suppose for a particular test there are 50 questions. Each question has several alternative answers numbering 1 through 5 of which only one is correct. An examinee just ticks off the answer for each question. The answers (i.e., the numbers ticked off) are then transferred into punched cards according to a suitable design. The ultimate end is to find out the total number of right scores for each candidate.

Machine Operations. The detailed steps are stated below :

(1) *Card design.* Individual cards are punched for each candidate, according to the following card design :

CARD DESIGN

sl. no.	description		card column	remark
1.	candidate number		1 — 3	
2.	test number		4 — 5	
3.	question 1		6	
.	. . .		.	
.	. . .		.	
.	. . .		.	
52.	question 50		55	
53.	total of the scores for questions	1–10(= a)	56—57	to be punched by 602A
54.	,, ,, ,,	11–20(= b)	58—59	
55.	,, ,, ,,	21–30(= c)	60—61	
56.	,, ,, ,,	31–40(= d)	62—63	
57.	,, ,, ,,	41–50(= e)	64—65	
58.	grand total ($a+b+c+d+e$)		66—67	

For convenience of drawing the wiring diagram, the following arrangement of questions are taken.

Questions	Code for correct answer
1–10	1
11–20	2
21–30	3
31–40	4
41–50	5

(2) *Computation on 602A.* The method of wiring is as follows :

Read Cycle. The columns for which code for correct answer is '1' (Q1-10), are entered in storages, 1L, 1R, 2L, 2R, 3L taking only two columns in one storage. These storages are impulsed to "Read in".

Programmes 1 to 5. Through jack plugging storage, R.O. hubs are connected to common hubs of two digit selectors. Digit selector '1' hubs are connected to immediate pick up of pilot selectors 1 and 2. Then common hubs of corresponding pilot selectors are connected to digit emitter '1' and transfer to counters 1 and 2 respectively. At subsequent programmes, storages are read out but only one at a time and this is continued until all the storages are exhausted. Counters 1 and 2 are impulsed to add at each programme step.

Programmes 6 and 7. Cross-footing and punching of a are done in programmes 6-7. The wiring diagram for punching a, which will be of interest is given below :

The procedure is repeated for calculating b, c, d and e. Corresponding digit hubs from digit selectors are connected to P.U. hubs of pilot selectors. A final cross-footing gives the total score $(a+b+c+d+e)$.

Remark. A model case consisting of 50 questions and answer codes 1 through 5 has been dealt with here. The number of questions or codes may be different in different problems. It is easily seen how the plugging will then have to be altered accordingly.

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REFERENCE

STAUGAS, LEONARD (1954) : A rapid method for scoring tests punched in IBM cards. *Educational and Psychological Measurement*, **14**, 1, pp. 101–105.

Paper received : April, 1958.

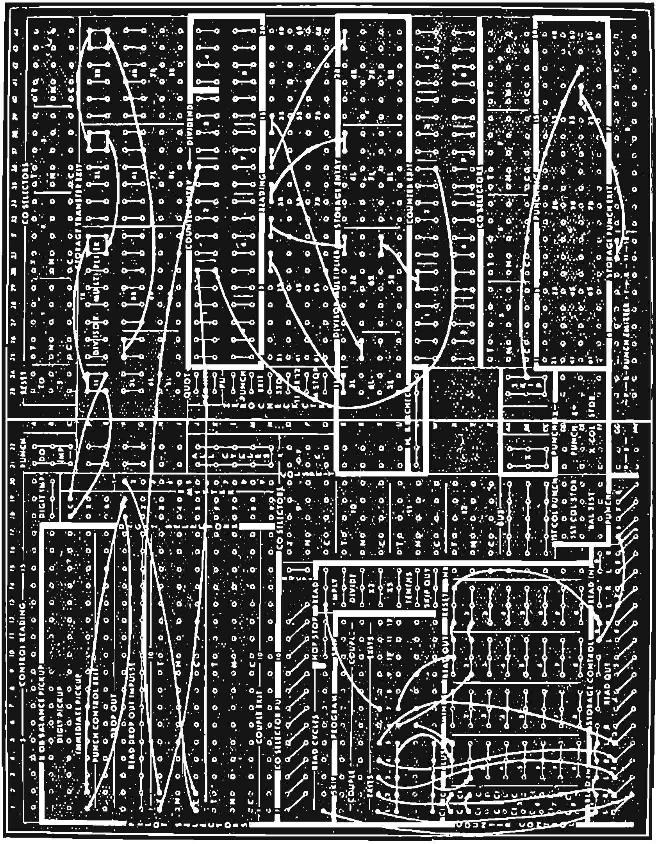

Figure 1. Wiring Diagram

CORRIGENDA

Unbiassed Minimum Variance Estimation in a Class of Discrete Distributions : By J. Roy and S. K. Mitra. *Sankhyā*, **18,** 376-378.

The following corrections are to be made in Table 2.

(t, n)	Incorrect	Correct
9,6	0.950	0.906
11,9	0.419	0.429
12,8	0.980	0.896
20,9	1.006	1.906
30,9	3.121	3.212
32,9	3.334	3.455
32,10	2.950	3.062
44,9	4.957	4.857
53,9	5.807	5.876
71,8	8.784	8.874
76,10	7.379	7.397

Almost Unbiased Ratio Estimates Based on Interpenetrating Sub-Sample Estimates : By M. N. Murthy and N. S. Nanjamma, *Sankhyā*, **21**. 381-392

Equation (4.2) : $n^{3/2}$, outside the curly bracket in the numerator instead of n.

Footnote line 4. p. 385 : $(v(\bar{x})+nx^2)^3$ instead of $(v(\bar{x})+nx^2)$ in the denominator of the second term.

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