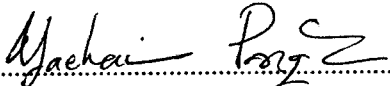THESIS · : A CONSTRUCTION OF THE SCHOLASTIC APTITUDE TEST

FOR INDUSTRIAL ENGINEERING STUDENTS.

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## ABSTRACT

The purposes of this study were to construct the Aptitude Test for Industrial Engineering Students at certificate level , and to conduct for the multiple regression equation and the predictive validity for Industrial Engineering Students. The random subjects were Mattayom Suksa IV students who were studying the first semester of academic year 1998 studying Mathematics-Science Program and Industrial Engineering Program in the educational region 9, 10 and 11 in which the multi-stage sampling was used. The numbers of 240 students' test scores were used calculate for the item analysis in order to select and revise the test items which comprised of the two paralleled sets of seven tests ; by determining the indices of difficulty and discrimination. The investigation of the test construct validity and predictive validity were employed with two sampling groups which were 640 Mattayom Suksa IV students and 370 students of a first-year industrial certificate students from Rajamangala Institute of Technology Khon Kaen Campus, Kalasin Campus and Sakonnakorn Campus. The criterion of predictive achievement was gained from the grade-point average of the first semester of academic year 1998.

The study of the seven subtests which were Mathematical Reasoning, Mechanics, Components, Assembly, Tables and Scales Interpretation, Planning and Patterns found that the difficulty index was ranged from .19-.87 and discrimination index was ranged from .19-.70. The reliability was ranged from .66-.91.

The factor analysis which were used to investigate the test construct validity revealed seven principle components of seven subtests. The six principle components were consisted of the six subtests ranged from 2-4 , only one principle component was consisted of the Patterns Test.

The multiple regression coefficient (R ) for the full model of the Aptitude Test for Industrial Engineering students was .85479 with the statistical significance at .05 level.
The square multiple correlation coefficient ($R^2$) accounted of seven subtests was for 73.06 percent of the grade-point average of the first semester. When the stepwise analysis was conducted , six subtests revealed as the important predictors consequently Components, Patterns, Mathematical Reasoning, Assembly, Mechanics and Tables and Scales Interpretation Tests.