

Analysis of Understanding Qualification of the MIIT Students on Mathematics

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Abstract– This paper examines the understanding qualification of students given in each period of an academic year from the mathematical points of view based on exam results. Then the raw data were rearranged in descending order of marks and then transformed into the data to which was modified equally balanced to 100. Afterwards, the transformed data were grouped for different levels such as A (>87), A-(76-87), B+(60-75), C (50-59), D (34-49), F (<34) according to the ranges designated five exam-results of three batches in 2017-2018 are used and examined by using composite index. According to the composite index the understanding qualifications of lectures are determined. The result indicates that the highest understanding qualification is found in Test I, the second highest in Mid-Term, the third highest in Final Exam and the lowest in Test II, the second lowest in Test III. In this result, we discussed to improve the student's qualification of the MIIT students.

Keywords– levels, generalization unit, percentage, descending order, points, composite index

I. INTRODUCTION

This paper examined Students' understanding qualification of lectures given periodically among the five examinations of the three batches during the educational academic year of 2017-2018. MIIT's 110 students are in 2015 Batch, 116 students in 2016 Batch and 126 students in 2017 Batch in the academic year. However, all these students did not sit for each examination, some students were absent in an examination. Besides, MIIT's examinations frequencies are different from those of other universities. There are five examinations in each semester, two are exams and three are tests, like the exam. Test duration takes one hour, mid-term exam duration of each semester lasts two hours and final exam takes three hours. In this paper we used the composite index because need to denote the standard level. The composite index called the

functions used the one more time. In this paper first time use calculated the percentage of the student's exam marks. Second time used denoted the standard level. So determined the understanding qualification of the students on periodical lectures fair.

II. METHODOLOGY

At first primary data of student population and their individual marks obtained in each test and each examination of the 2017-2018 Academic Year were collected for the Three Batches of MIIT. Then the raw data rearranged in descending order of marks and then transformed into the data which modified equally balanced to 100. Afterwards, the transformed data grouped for different levels such as A (>87), A-(76-87), B+(60-75), C(50-59), D(34-49), F(<34) according to the ranges designated as before. The student population figures. that fall in relevant levels changed into percentage as a unit for distinctly visible comparison. Then the percentages of different result levels displayed to the graphs and the conditions found in different levels compared and examined. Finally, understanding qualification of lectures given periodically among the five examinations of the three batches interpreted from the graph. Firstly, arranged the descending order of these percentages and then denoted the descending order levels called points. Secondly, we calculated the average of these points called composite index.

III. DATA

In this research, necessary data are collected from the Faculty of Computing. The data collected are the results of 2015 Batch, 2016 Batch and 2017 Batch. They are described in the following tables (No.1 to No.6). Based on

these tables, student population shown in the results is changed into percentage of population by each level and the percentages are displayed in column graphs (Figure 1 to Figure 6).

TABLE I

Result of 2015 Batch(MATH-3010) in the First Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	7	15	25	17	29
D	7	20	19	14	22
C	2	13	14	16	5
B+	20	21	9	35	19
A-	14	17	21	10	11
A	59	24	22	15	24
Absentee	1	0	0	3	0
Total Students	110	110	110	110	110

TABLE II

Result of 2016 Batch(MATH-1010) in the First Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	49	57	32	47	18
D	15	12	19	14	22
C	6	7	20	5	10
B+	22	11	15	21	15
A-	9	6	14	8	10
A	10	23	16	20	40
Absentee	5	0	0	1	1
Total Students	116	116	116	116	116

TABLE III

Result of 2017 Batch(MATH-1010) in the First Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	4	2	6	4	1
D	10	7	18	10	0
C	5	10	12	6	5
B+	26	29	29	22	17
A-	19	22	37	24	15
A	60	53	24	56	86
Absentee	2	3	0	4	2
Total Students	126	126	126	126	126

TABLE IV

Result of 2015 Batch(MATH-3020) in the Second Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	4	17	4	17	15
D	7	22	11	20	30

C	8	9	13	16	21
B+	20	24	21	23	22
A-	16	6	20	11	19
A	53	27	40	14	1
Absentee	2	5	1	9	2
Total Students	110	110	110	110	110

TABLE V

Result of 2016 Batch(MATH-2020) in the Second Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	6	11	3	36	18
D	3	5	9	18	18
C	5	9	6	9	18
B+	10	22	14	24	20
A-	7	15	20	11	19
A	75	46	57	3	16
Absentee	4	2	1	9	1
Total Students	110	110	110	110	110

TABLE VI

Result of 2017 Batch(MATH-1020) in the Second Semester Exam in 2017-2018

Grade	Test I	Test II	Mid-Term Exam	Test III	Final Exam
F	9	83	7	40	25
D	20	26	16	28	37
C	22	2	16	14	24
B+	41	2	35	17	27
A-	18	-	32	10	6
A	10	-	14	7	1
Absentee	5	12	5	9	5
Total Students	125	125	125	125	125

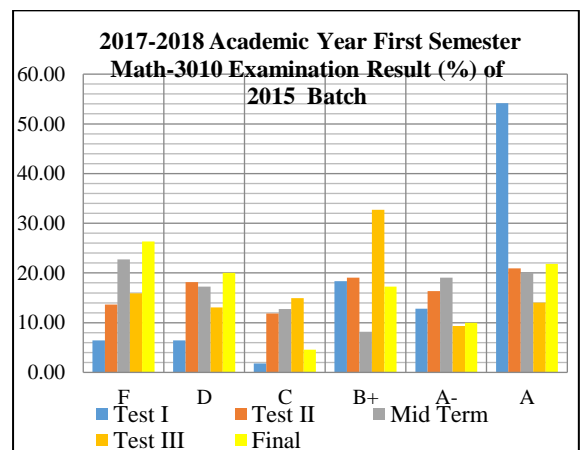


Figure 1: 2017-2108 Academic year first semester MATH-3010 examination result (%) of 2015 batch

This graphical analysis shows that, out of the five examinations in First Semester 2015, the smallest exam-disqualifiers are found in the Test I, the second smallest number in Test III, the third smallest number in Test II, the largest number of disqualifiers in the First Semester Final exam and the second largest exam-disqualifiers in Mid-Term Exam. This indicates that 95 students (87.16%) got 50 and > 50 marks in Test I, i.e., most of the students understood well the lessons studied in the period from the beginning of the academic year up to the Test I. Another noteworthy one is Test II result. It shows that 75 students (68.18%) got ≥ 50 marks in Test II, i.e., out of 110 students, 75 students well understood the lessons taught in the period between Test I and Test II. Moreover, the Test III results reveal that 76 students (71.03%) got ≥ 50 marks in Test III and well understood the lessons taken in the period between Mid-Term and Test III. Regarding the lectures given for the Mid-Term Exam and Final Exam, the exams' results pointed out that the students could not understand the lectures, as well as, in order of merit, those for Test I, Test III, and Test II. Based on these results, understanding qualification of the students on periodical lectures can be drawn as follow:

Test I > Test III > Test II > Mid-Term > Final Exam, for the First Semester, 2015 batch.

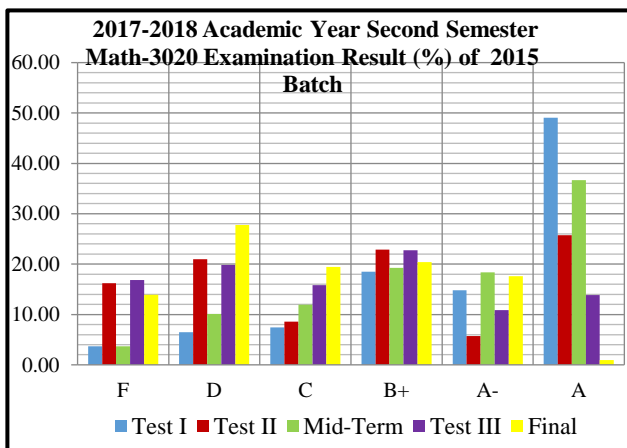


Figure 2: 2017-2018 Academic year second semester MATH-3020 examination result (%) of 2015 batch

Figure 2 shows that, out of the five examinations on MATH-3020 (for the 2015 Batch) in the Second Semester of 2017-2018, the smallest exam-disqualifiers are found in the Test I, the second smallest number in Mid-term, the third smallest number in Test III, the largest number of disqualifiers in the Final Exam of the Second Semester and the second largest exam-disqualifiers in Test II Exam. This indicates that 97 students (89.81%) got ≥ 50 marks in Test I, i.e., most of the students understood well the lessons

studied up to the Test I from the beginning of the 2017-2018 academic year. Another distinct one is Mid-Term Exam result. It shows that 94 students (86.24%) got ≥ 50 marks in the Mid-Term Exam, i.e., out of 110 students, 94 students well understood the lessons taught in the period between Test I and Mid-Term Exam. Moreover, the Test III results reveal that 64 students (63.37%) got ≥ 50 marks in Test III and understood the lessons taken in the period between Test II and Test III. Regarding the lectures given for Test III and Final Exam, the exams' results indicate that 63 students (58.33%) got ≥ 50 marks and understood well only just over half of the lessons taken in the period between Test III and Final Exam. Overall, Figure (2) shows that the students understood the lectures well for Test I, then in descending order of understanding, those for Mid-Term, Test III, Test II and Final. From these results, understanding qualification of the students on periodical lectures can be drawn as follow:

Test I > Mid-Term > Test III > Test II > Final Exam, for the Second Semester, 2015 batch.

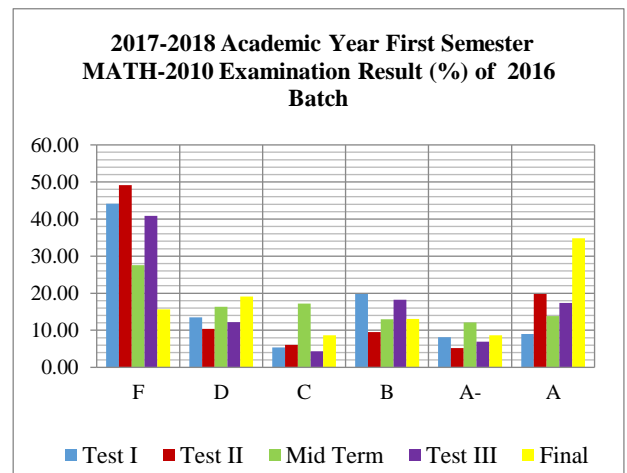


Figure 3: 2017-2018 Academic year first semester MATH-2010 examination result (%) of 2016 batch

Figure 3 displays that, out of the five examinations on Math-2010 (for the 2016 Batch) in the First Semester of 2017-2018, the smallest exam-disqualifiers are found in the Final Exam, the second smallest number in Mid-term, the third smallest number in Test III, the largest number of disqualifiers in the First Semester Test II and the second largest exam-disqualifiers in Test I Exam. This indicates that 75 students (65.22%) got ≥ 50 marks in Final exam, that is, more than half of the students understood well the lessons studied up to the Final Exam from the Test III of the 2017-2018 academic year. Another distinct one is Mid-Term Exam result. It shows that 65 students (56.03%) got

≥ 50 marks in the Mid-Term Exam, i.e., out of 116 students, 65 students well understood the lessons taught in the period between Test II and Mid-Term Exam. Moreover, the Test III results describe that 54 students (47.0%) got ≥ 50 marks in Test III and that nearly half of the students understood the lessons taken in the period between Mid-Term and Test III. Regarding the lectures given for Test I, the exams' results indicate that only 47 students (42.3%) got ≥ 50 marks and understood well the lessons taken in the period between Test I and the beginning of the 2017-2018 academic year. As a whole, Figure 3 displays that the students understood the lectures well for the Final exam, then in descending order of understanding, those for Mid-Term, those for Test III, then for Test I and Test II. From these results, understanding qualification of the students on periodical lectures can be drawn as follow:

Final Exam > Mid-Term > Test III > Test I > Test II, for the First Semester, 2016 batch.

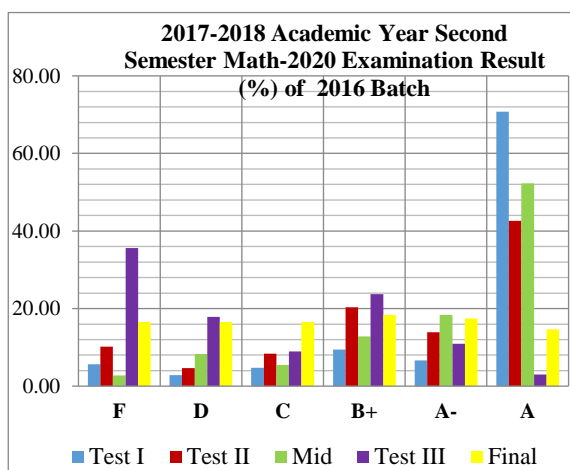


Figure 4: 2017-2018 Academic year first semester math-2020 examination result (%) of 2016 batch

This graphical analysis Fig.4 shows that, out of the five examinations on Math-2020 subject in the Second Semester for 2016 batch, the smallest exam-disqualifiers are found in the Test I, the second smallest number in Mid-Term Exam, the third smallest number in Test II, the largest number of disqualifiers in the Second Semester Test III and the second largest exam-disqualifiers in Final Exam. This points out that 97 students (91.51%) got 50 and > 50 marks in Test I, i.e., most of the students understood well the lessons studied up to the Test I. Another noteworthy one is Mid-Term result. It shows that 97 students (89.99%) got ≥ 50 marks in the mid-Term Exam, i.e., out of 110 students, 97 students well understood the lessons taught in the period between Test II and Mid-Term Exam. Moreover, the Test

III results reveal that 47 students (46.53%) got ≥ 50 marks in Test III and only nearly half of the students well understood the lessons taken in the period between Mid-Term and Test III. Regarding the lectures given for the Final Exam, the exams' results pointed out that 66.97 % of the students understood the lectures given for the Final Examination. Based on these results, understanding qualification of the students on periodical lectures in 2017-2018 for the 2016 batch can be drawn as follow:

Test I > Mid-Term > Test II > Final Exam > Test III, for the Second Semester, 2016 batch

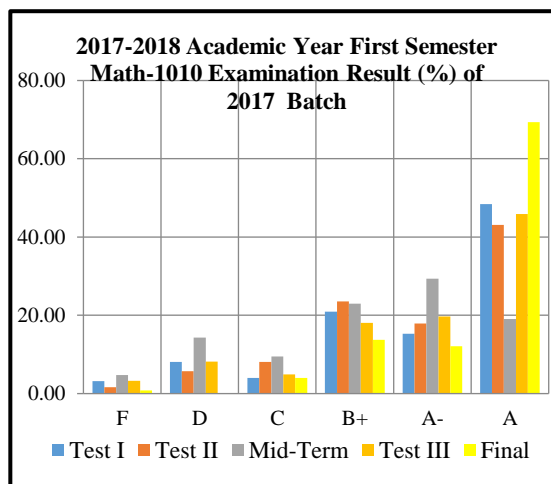


Figure 5: 2017-2018 Academic year first semester MATH-1010 examination result (%) of 2017 batch

Figure 5 displays that, out of the five examinations on MATH-1010 (for the 2017 Batch) in the First Semester of 2017-2018, the smallest exam-disqualifiers are found in the Final Exam, the second smallest number in Test II, the third smallest number in Test I, the largest number of disqualifiers in the First Semester in Mid-Term and the second largest exam-disqualifiers in Test III Exam. This reveals that 123 students (99.19%) got ≥ 50 marks in Final exam, that is, nearly all of the students understood well the lessons studied up to the Final Exam from the Test III of the 2017-2018 academic year. Another significant one is Test II Exam result. It shows that 114 students (92.68%) got ≥ 50 marks in the Test II Exam, i.e., out of 126 students, 114 students well understood the lessons taught in the period between Test I and Test II Exam. In addition, the Test I results display that 110 students (88.71%) got ≥ 50 marks in Test I. This means that most of the students understood the lessons taken in the period between Test I and the beginning of the 2017-2018 academic year. Regarding the lectures given for the Mid-Term Exam, the exams' results indicate that 102 students (80.95%) who got

≥ 50 marks understood well the lectures taken in the period between Test II and the Mid-Term Exam. As a whole, Figure (5) displays that the students understood the lectures well for the Final exam, then in descending order of understanding, those for Test II, those for Test I, then for Test III and for Mid-Term. From these results, the conclusion on understanding qualification of the students on periodical lectures can be drawn as follow: Final Exam > Test II > Test I > Test III > Mid-Term, for the First Semester, 2017 batch.

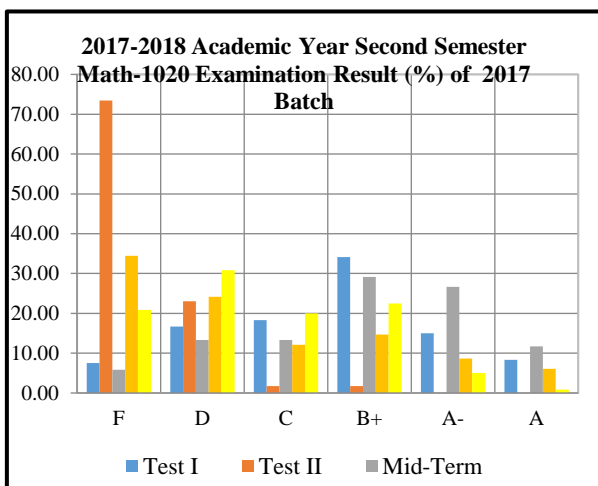


Figure 6: 2017-2018 Academic year second semester math-1020 examination result (%) of 2017 batch

Figure 6 describes that, out of the five examinations on MATH-1020 (for the 2017 Batch) in the Second Semester of 2017-2018, the smallest exam-disqualifiers are found in Mid-term, the second smallest number in the Test I, the third smallest number in Final Exam, the largest number of disqualifiers in the Second Semester in Test II and the second largest exam-disqualifiers in Test III Exam. This indicates that 97 students (80.83%) got ≥ 50 marks in Mid-Term Exam, i.e., most of the students understood well the lectures given up to the Mid-Term Exam from the Test I. Another significant one is Test I result. It shows that 91 students (75.83%) got ≥ 50 marks in the Test I, i.e., out of 125 students, 91 students well understood the lectures given in the period between Test I and Mid-Term Exam. Moreover, the Final Exam results indicate that 58 students (48.33%) got ≥ 50 marks in the Final Exam and understood the lessons taken in the period between the Final Exam and Test III. Regarding the lectures given for Test III and Test II, the exams' results indicate that 48 students (41.38%) got ≥ 50 marks and understood the lessons taken in the period between Test III and Test II. Overall, Figure (6) shows that

the students understood the lectures well for the Mid-Term Exam, then in descending order of understanding, those for Test I, Final exam, Test III and Test II. From these results, a conclusion on understanding qualification of the students on periodical lectures can be drawn as follow: Mid-Term Exam > Test I > Final Exam > Test III > Test II, for the Second Semester, 2017 batch.

IV. CONCLUSIONS

In consideration of all exams of all batches under the one generalization we need to designate the unit for each position (First, Second, Third, Fourth, Fifth). Supposed that 5 points are given to 1st position, 4 points to second position, 3 points to third position, 2 points to fourth position and 1 point to fifth position. Before giving points, the positions on Tests and Exams are summarized as follows.

Test I > Test III > Test II > Mid-Term > Final Exam, for the First Semester, 2015 batch.

Test I > Mid-Term > Test III > Test II > Final Exam, for the Second Semester, 2015 batch.

Final Exam > Mid-Term > Test III > Test I > Test II, for the First Semester, 2016 batch

Test I > Mid-Term > Test II > Final Exam > Test III, for the Second Semester, 2016 batch.

Final Exam > Test II > Test I > Test III > Mid-Term, for the First Semester, 2017 batch

Mid-Term Exam > Test I > Final Exam > Test III > Test II, for the Second Semester, 2017 batch. According to the positions of the exams, points are given below and described in the following table.

In the above-mentioned result, to improve the student’s qualification, a few free days should be given for private study. Moreover, not only revision exercises but also revised teachings should be carried on repeatedly and unknown ones should be discussed well just before the exam so that the students will learn to understand well and will be able to answer the exam questions

TABLE VII

Composite Index of Each Examination for all Batches

Name of Exam	Points given according to the definition						Composite Index
	5	4	3	2	1	0	
Test I	5	5	2	5	3	4	4
Test II	3	2	1	3	4	1	2.33

Mid-Term	2	4	4	4	1	5	3.33
Test III	4	3	3	1	2	2	2.5
Final	1	1	5	2	5	3	2.833

According to the table, understanding skill of the lectures given in different period can be drawn into a conclusion as $4.3 > 3.3 > 2.83 > 2.5 > 2.33$. Therefore, Test I > Mid-Term > Final > Test III > Test II. According to the table, composite indices of the exams for two semesters, the highest C.I values of 4 indicates that most of students understood well the lectures given from the beginning of the school to Test I, for all batches. Next to it, the well understood one is the lectures given from the beginning of the school to Mid-Term. It is indicated by the second highest C.I value of 3.3. It is inferred that the smaller the value of the index is, the less in the understanding qualification.

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