

## CHAPTER 2

### SYSTEM ANALYSIS

#### I. SYSTEM NAME AND BACKGROUND

##### **Examination Generating and Automated Examination System of College of Medicine**

The existing system of the College of Medicine in Pamanatasan ng Lungsod ng Maynila as regards to the examination system, uses scantron machine which is responsible for checking the exams and generation of report regarding the examinee ranking and item analysis report. The college of medicine has requested an examination system that can comply with the specifications they desire.

In process of generating a questionnaire, faculties are asked to generate draft questionnaires to be used for the official questionnaires, as per the request of the chairman. The college of medicine conducts a total of four shifting exam annually. The faculties are tasked to create a questionnaire draft, each draft usually consists of 100-200 questions. Each questions must then be checked whether it existed at a previous existing exam. If it does, the faculty will have to check whether the question is valid.

Inaccurate system analysis report creates a possibility of mistake in evaluating the examinations. The scantron machine generates a report after the examination proper that will be evaluated by the heads. They review the results of the examination like the; scores, mean, standard deviation, reliability index and standard error for analyzing its efficiency. It determines whether the examination satisfies the blueprint's objective or not. The higher officials usually don't rely on the results of the item analysis because they prefer the results of the standard method which they will manually do.

Statistical reports are incomplete. After the examination, the scantron machine will generate the statistical analysis which includes the Discrimination index, Difficulty index and Examinee Ranking. The faculty will distribute the reports for documentation to the heads. The students will also receive their scores for them to determine whether they passed or failed. The statistical analysis is only for the benefit of the quality of the questions for the next examination.

In compliance to the request of the PLM-CM, the researchers are hereby proposing a system that will lessen the time consumption of generating a questionnaire for the examination. The system will follow the standard computation of reliability index as a basis for the item analysis so that any inaccuracy between the reports generated by the scantron machine and the college standard computation will be prevented and that the main basis will be the standard. Likewise, the researchers are planning to create a complete statistical report to generate more efficient data computed/consolidated which is helpful for the faculty, to analyse and monitor their student's ranking/performance.

## **II. SYSTEM ANALYSIS TOOLS**

### **SYSTEM OUTLINE:**

#### **I. Official Questionnaire**

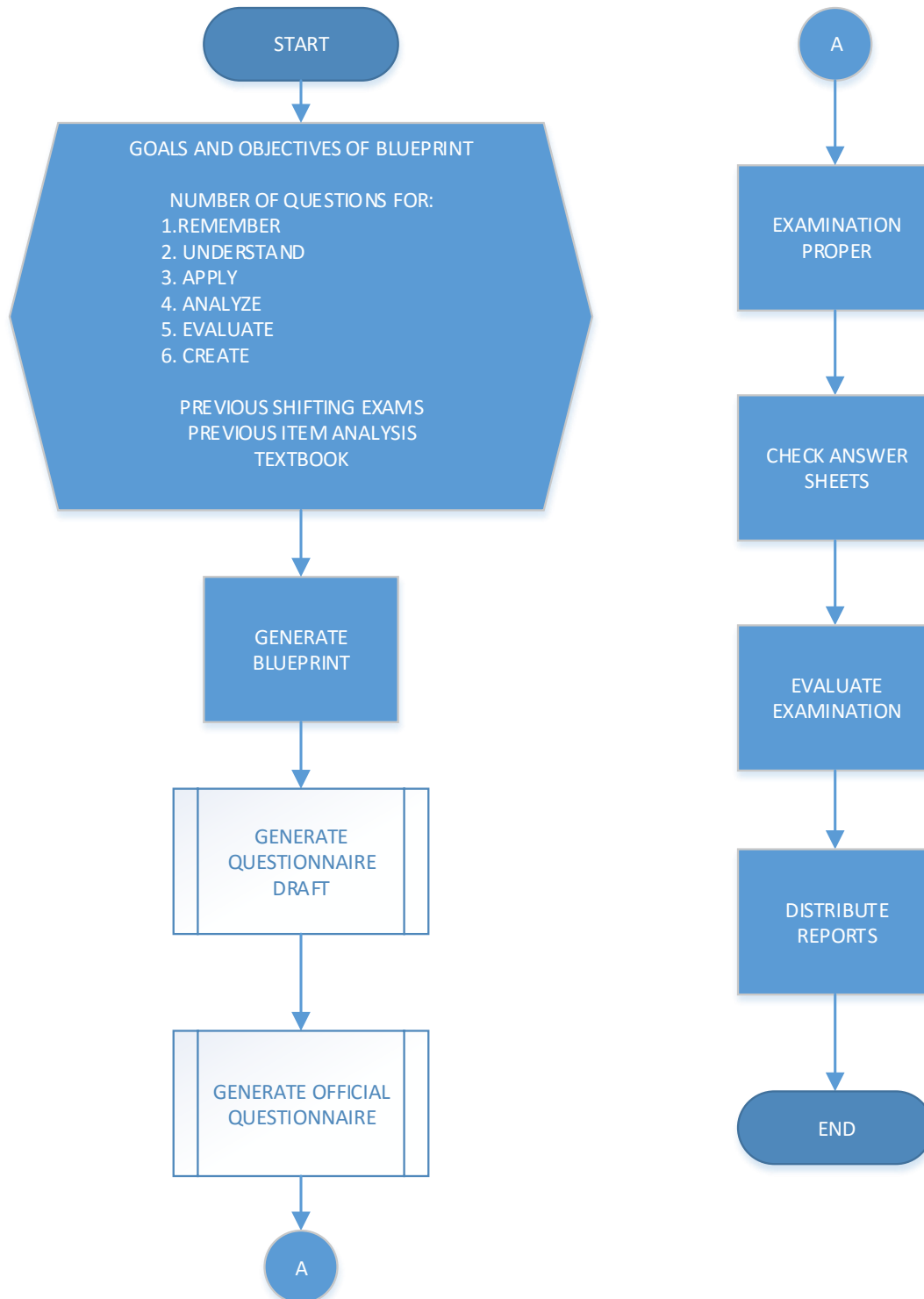
1. Faculty members will receive the blueprint from the chairman of their respective department.
2. Faculty members will then proceed to gather and create questions that will satisfy the blueprint.
3. The questionnaire drafts created by the faculty members will be submitted to the chairman of their respective department for evaluation.
4. After evaluating, the questionnaire will be given to the faculty members to be used for the examination proper.

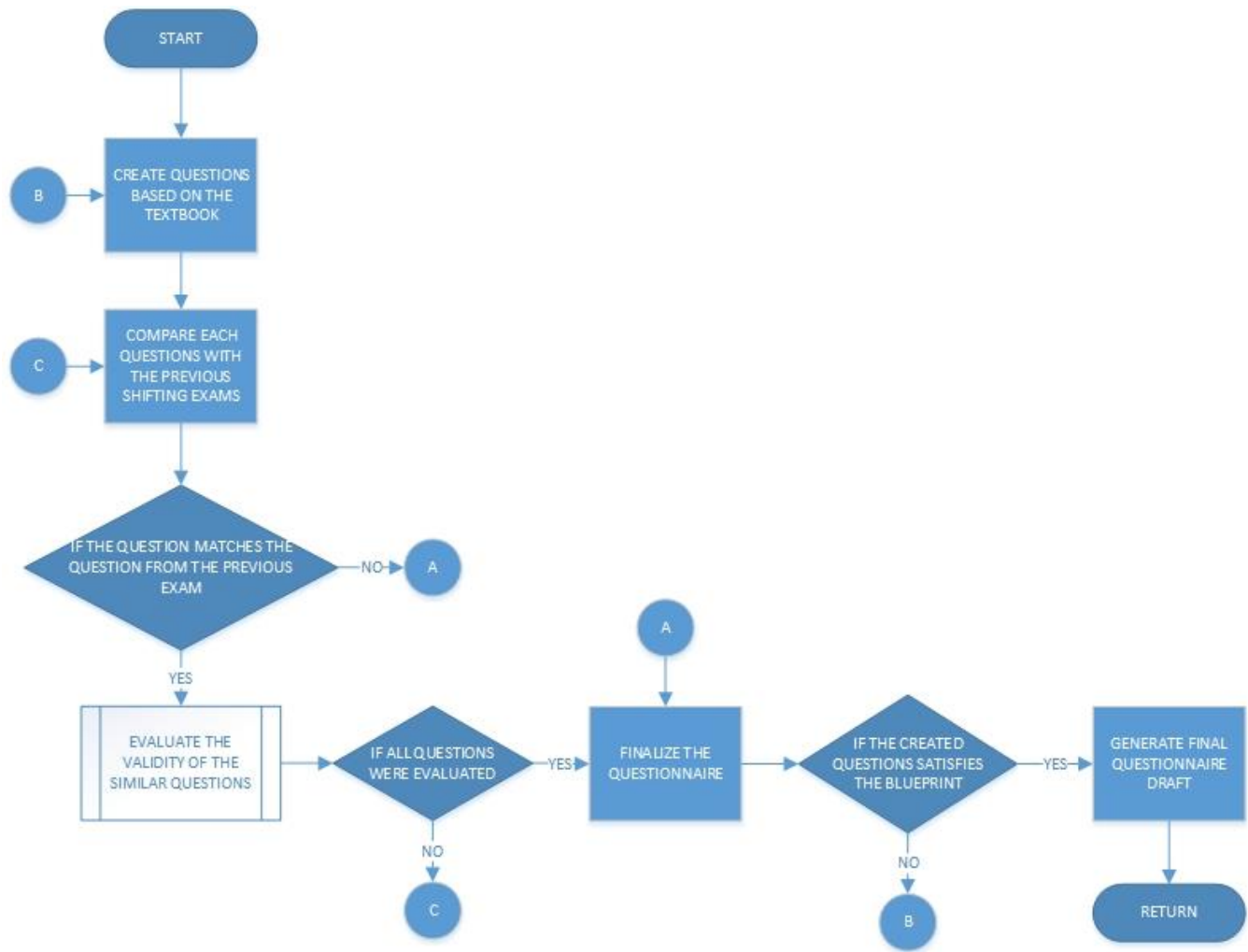
#### **II. Generating Reports**

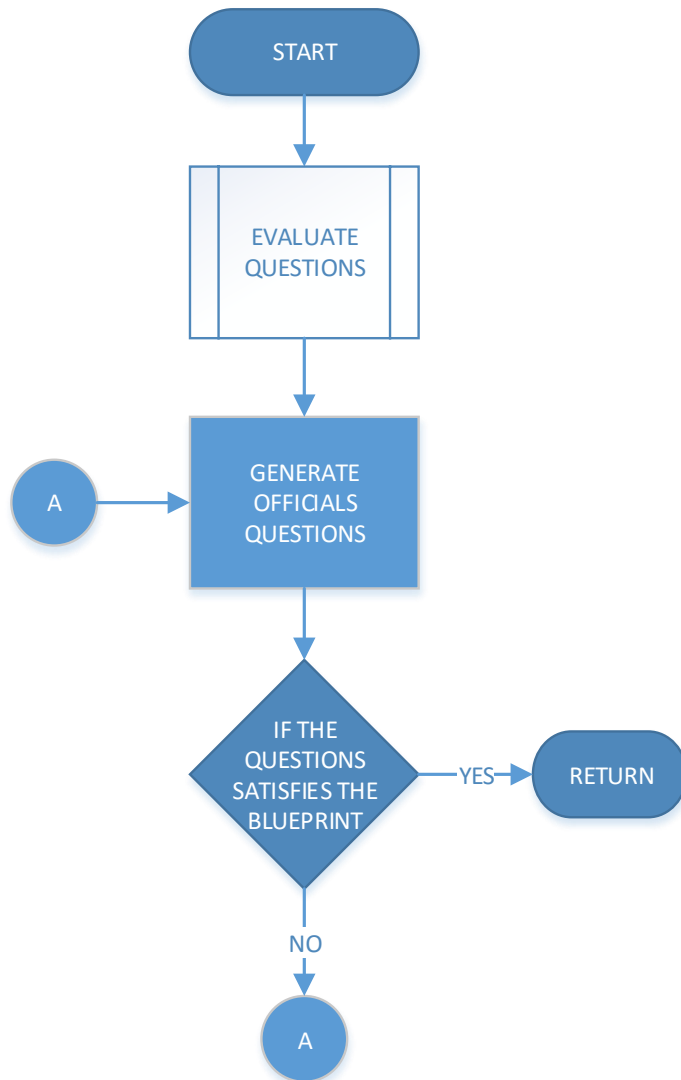
1. After examination, the scantron machine generates an item analysis report.
2. The scantron machine will generate a report of examinee ranking and item analysis.
3. Faculty members prefer to use the standard computation of item analysis than the item analysis generated by the system.
4. Faculty members and heads notice that there's an inaccuracy between the scantron machine and standard.

#### **III. Completion of Statistical Report**

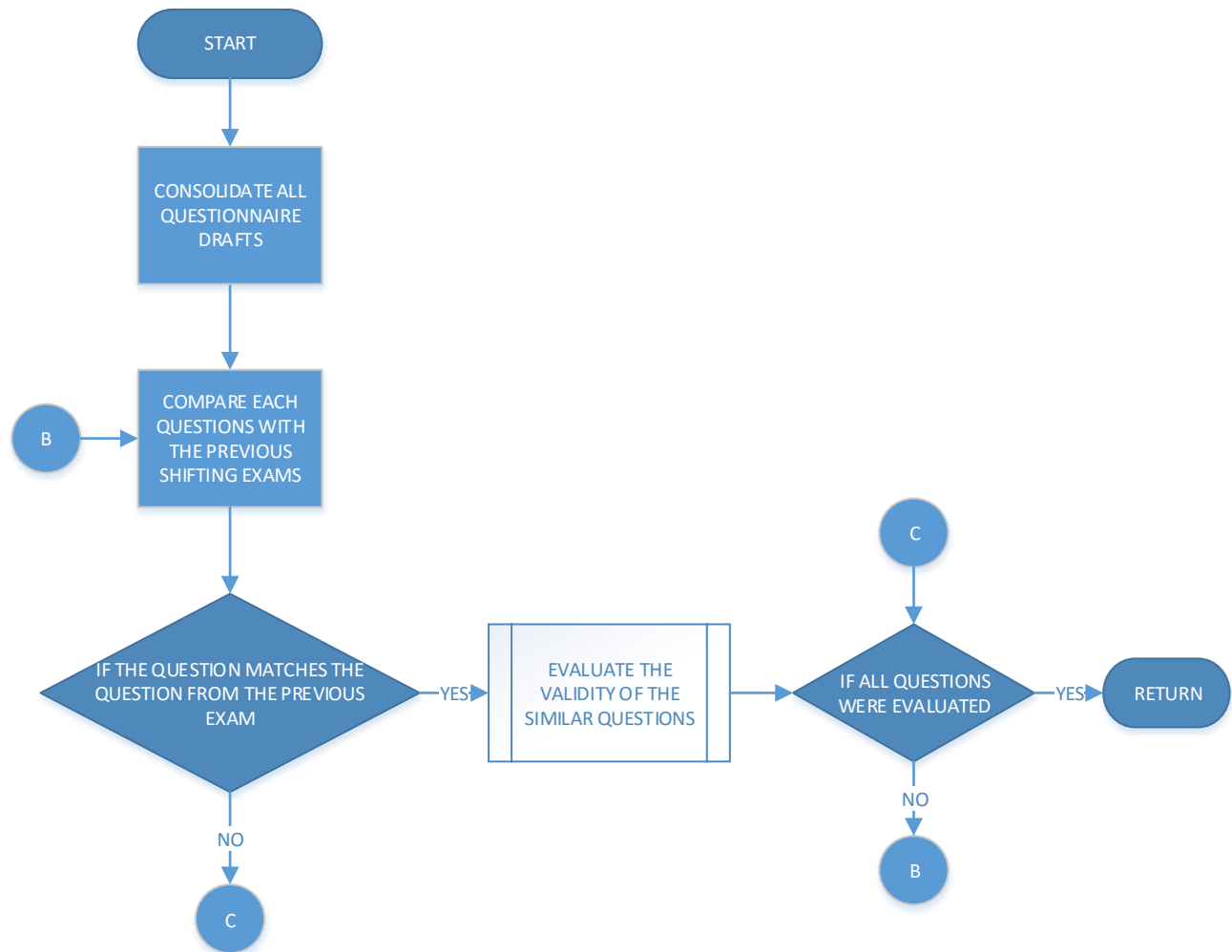
1. The faculty members use the item analysis generated by the scantron machine as basis reference for future examinations.
2. Faculty members and heads figured that the report generated by the scantron machine lacks in information.
3. Faculty members and heads are having difficulty on predicting how many will do well, how many will pass, how many will fail, on the coming examinations.
4. The statistical report can be used to identify whether a student has a high chance of passing or not on the major examinations such as board exams.

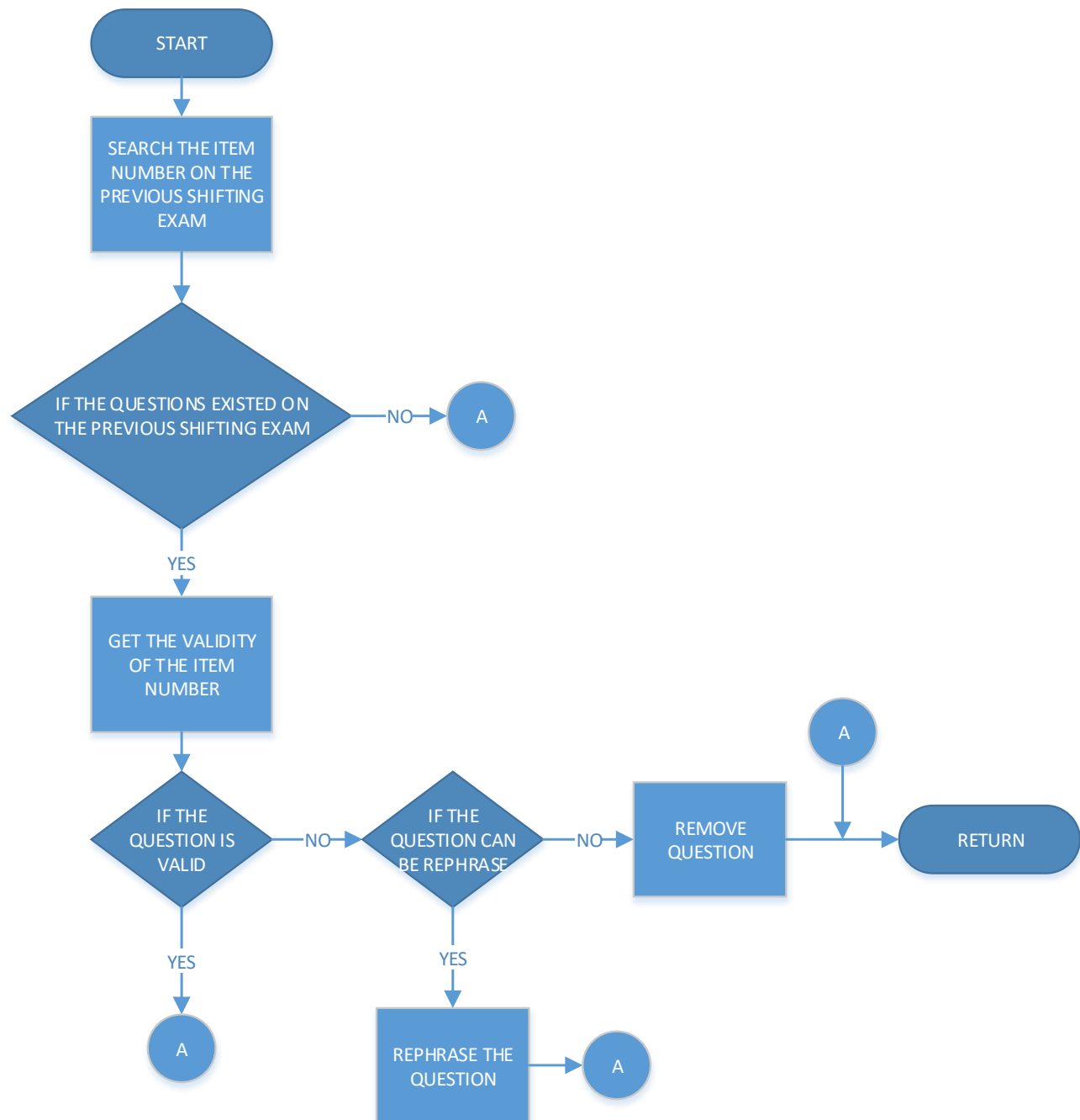
**SYSTEM FLOWCHART:****MAIN FLOW**

**GENERATE QUESTIONNAIRE DRAFT**

**GENERATE OFFICIAL QUESTIONNAIRE**

## EVALUATE QUESTIONS



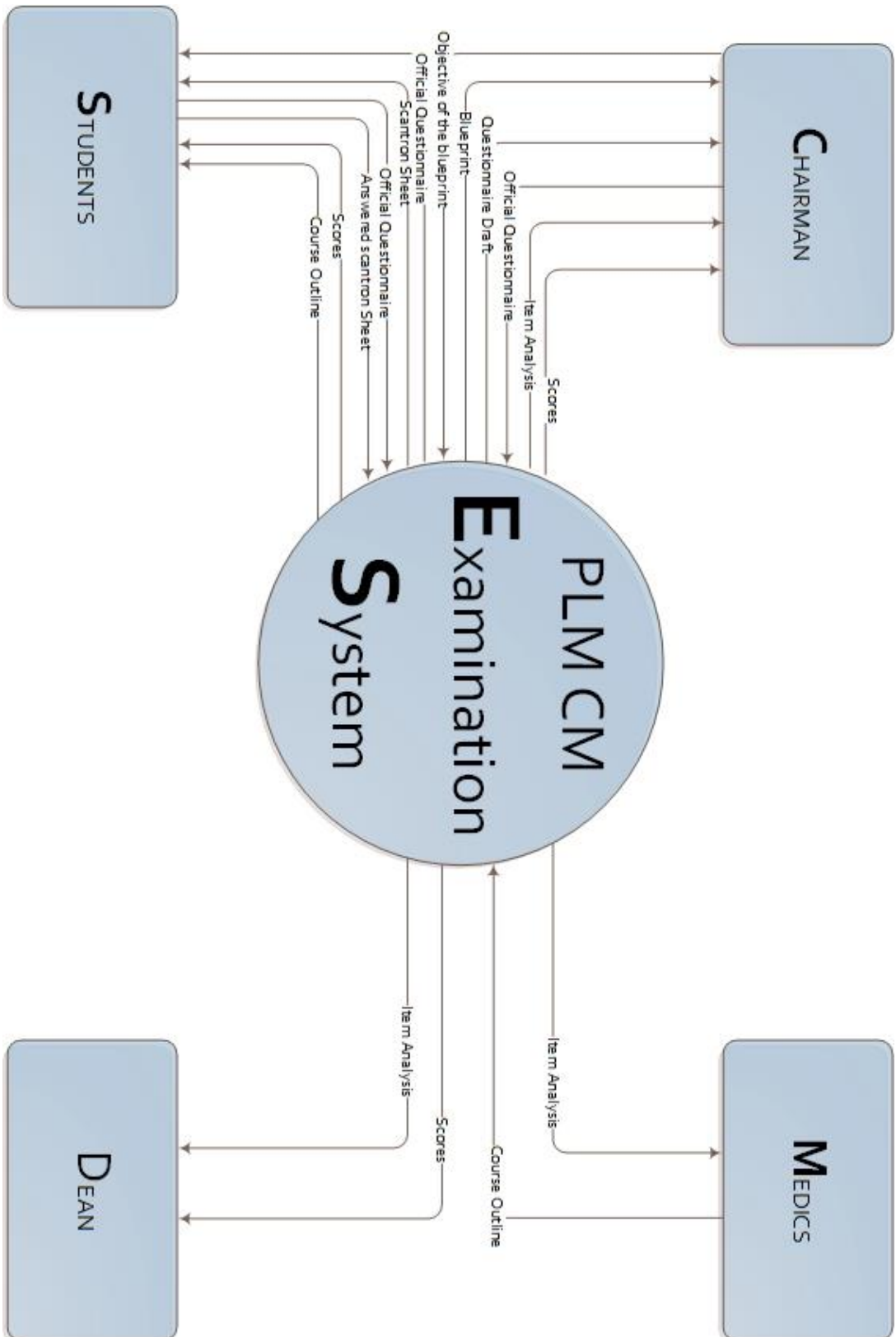
**EVALUATE THE VALIDITY OF THE SAME QUESTIONS**



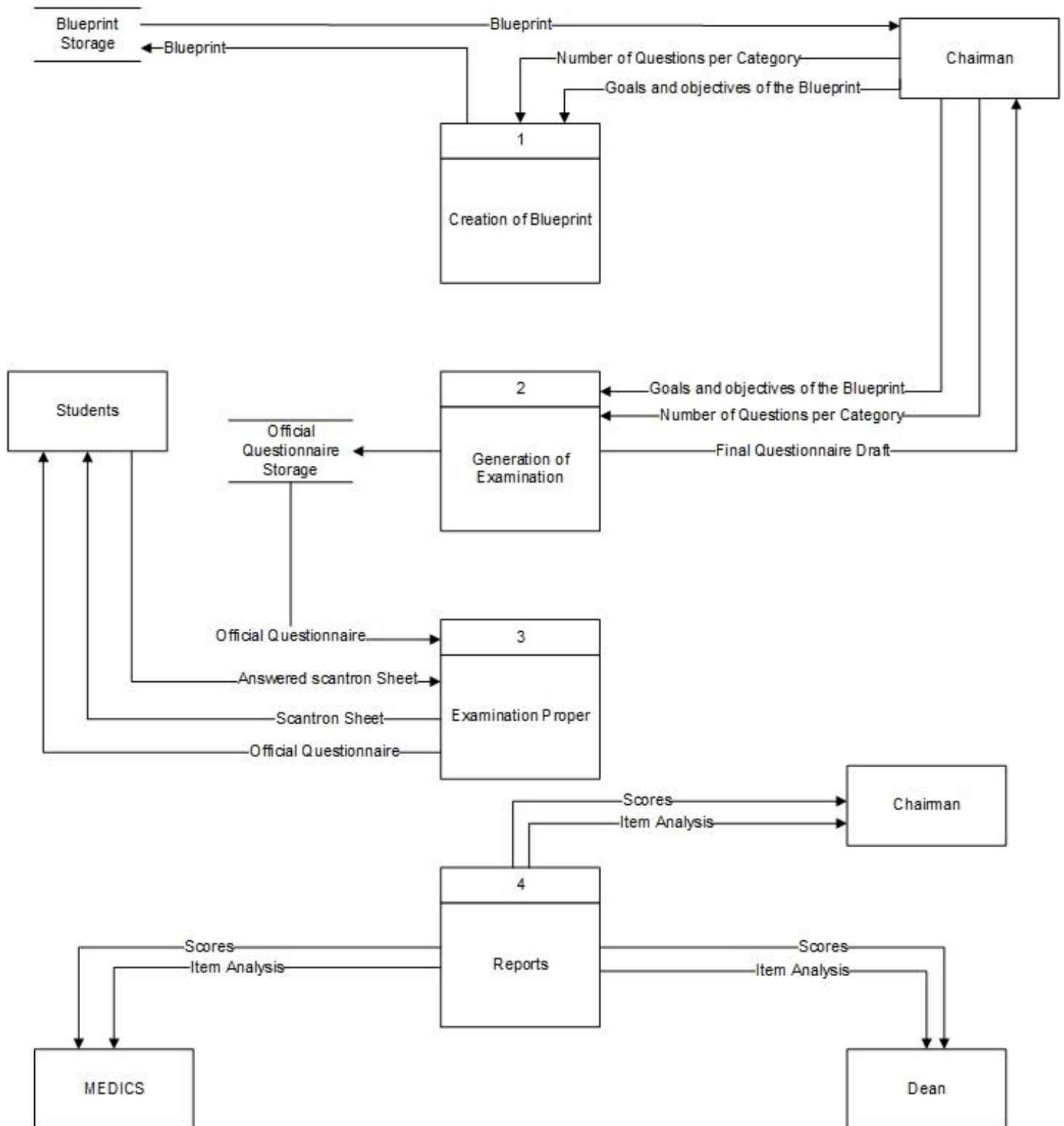
**GRID CHART:**

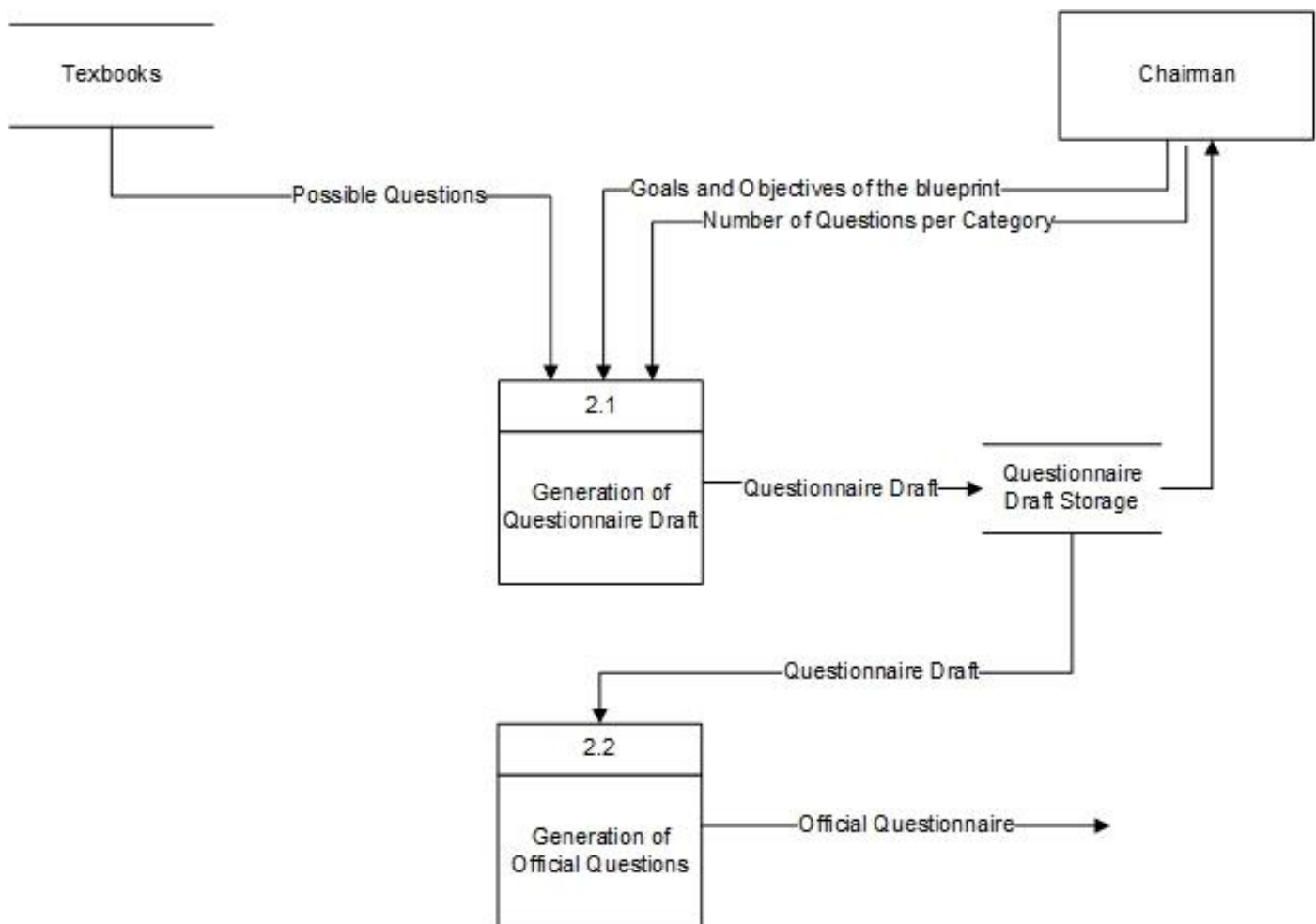
	Chairman	MEDICS	Dean	Students
Blueprint	1	16		
Questionnaire Draft	2			
Official Questionnaire	3	4		5
Answer Key	6	7		
Scantron Sheet				8
Scores	9	10	11	12
Item Analysis	13	14	15	

**CONTEXT DIAGRAM:**



## DATA FLOW DIAGRAM: Level 0



**DATA FLOW DIAGRAM: Level 1**

**DATA DICTIONARY:****SYLLABUS**

Field Name	Field type	Length	Description
Department	Alphabetic	50	College of Medicine Department
Course Title	Alphabetic	30	Subject Syllabus Title
Course Code	Alphanumeric	10	Subject Code
Course Rationale	Alphabetic	-	
Course Description	Alphabetic	-	Brief description of the subject
Credit	Alphanumeric	10	Number of units
Total number of hours	Alphanumeric	10	Total hours per subject
Pre-requisites	Alphanumeric	-	Subject cannot be taken after failing the subject
Terms	Alphanumeric	20	Semester and Year level
Faculty Members	Alphabetic	-	Faculty Names
Course Objectives	Alphabetic	-	Weekly objectives
Specific Objectives	Alphabetic	-	Daily Objectives

**BLUEPRINT**

Field Name	Field type	Length	Description
Remember	Alphabetic	30	Category #1 for Cognitive Processes dimension
Understand	Alphabetic	70	Category #2 for Cognitive Processes dimension
Apply	Alphabetic	30	Category #3 for Cognitive Processes dimension
Analyze	Alphabetic	50	Category #4 for Cognitive Processes dimension
Evaluate	Alphabetic	30	Category #5 for Cognitive Processes dimension
Create	Alphabetic	30	Category #6 for Cognitive Processes dimension

**QUESTIONNAIRE DRAFT**

Field Name	Field type	Length	Description
Department	Alphabetic	50	College of Medicine Department
Course Title	Alphabetic	30	Subject Title
Course Code	Alphanumeric	10	Subject Code
Exam	Alphanumeric	30	Type of Shifting or Comprehensive Examination
Deadline	Numeric	10	Date of the Last Submission of Draft
Question	Alphabetic	200	Questions that satisfies the Blueprint
Professor Name	Alphabetic	30	Professor's Name

Chairman Name	Alphabetic	30	Chairman's Name
Date submitted	Alphanumeric	10	Date of the Submitted draft

**OFFICIAL QUESTIONNAIRE**

Field Name	Field type	Length	Description
Department	Alphabetic	50	College of Medicine Department
Course Title	Alphabetic	30	Subject Title
Course Code	Alphanumeric	10	Subject Code
Exam	Alphabetic	30	Shifting or Comprehensive Examination
Batch	Alphanumeric	30	Course, Batch number, type of exam, school year
Module	Alphabetic	30	Course, Batch number, type of exam, school year
Student Name	Alphabetic	30	Student's Name
Course	Alphabetic	10	Course code
Year	Alphanumeric	3	Year level
Block	Numeric	1	Block Section
Date	Alphanumeric	10	Date of the examination proper
Score	Numeric	3	Number of Right Answer
Question	Alphanumeric	200	Questions that passed the evaluation of the chairman

**EXAMINEE RANKING**

Field Name	Field type	Length	Description
Department	Alphabetic	50	College of Medicine Department
Batch Title	Alphanumeric	30	Course, Batch number, type of exam, school year
Batch	Alphanumeric	30	Course, Batch number, type of exam, school year
Module	Alphanumeric	30	Course, Batch number, type of exam, school year
Rank	Numeric	2	Ranking of scores of the students from highest to lowest
Student Name	Alphabetic	30	Student's Name
Code	Numeric	10	Code of the Scantron Sheet
SN	Numeric	6	Serial number of the Scantron Sheet
Score	Numeric	3	Number of Right Answer
Grade	Numeric	3	Number of Right Answer
Date	Alphanumeric	30	Day, Date(Month, Day, Year)



**ITEM ANALYSIS**

Field Name	Field type	Length	Description
Department	Alphabetic	50	College of Medicine Department
Batch Title	Alphanumeric	30	Course, Batch number, type of exam, school year
Batch	Alphanumeric	30	Course, Batch number, type of exam, school year
Module	Alphanumeric	30	Course, Batch number, type of exam, school year
Item	Numeric	3	Question Number
Answer	Alphabetic	1	Answer key
Difficulty	Alphabetic	20	Difficulty Status
Difficulty index	Numeric	5	Difficulty Value
Discrimination	Alphabetic	20	Discrimination Status
Discrimination Index	Numeric	5	Discrimination Value
Mean (P)	Numeric	10	Mean Percentage Value
Standard Deviation (P)	Numeric	10	Standard Deviation Percentage Value
Mean	Numeric	10	Mean Value
Standard Deviation	Numeric	10	Standard Deviation Value
Reliability index	Numeric	10	Reliability index Value
Standard Error	Numeric	10	Standard Error Value
Date	Alphanumeric	20	Day, Date(Month, Day, Year)

**USER REQUIREMENTS:****A. Selection of scope for examination**

The chairman and faculty will decide for the selection of scope for the examination. In this form the two of them have the access on the system.

**B. Generation of exam form**

The chairman has the only access on this part, he/she is the one who will decide on what are the questions will be included on the official questionnaire.

**C. Item analysis**

It determines the discrimination and difficulty index of a question item.

**D. Statistical analysis**

It creates the general information needed for the monitoring of college progress, competitiveness and medical student performance.

**E. Question management**

The user, is allowed to add, delete, rephrase or revise the questions. Depending on how the question index varies.

**F. History Report**

This report must have a bank of previous examinations