

## EduQGen: AI - Based Question paper Generation System

Nitin A. Vishwakarma<sup>1\*</sup>, Anas Faiz<sup>2\*</sup>, Bhargav Gosiya<sup>3\*</sup>, Shridattakumar Hajare<sup>4\*</sup>  
NAAC, Computer Engineering, Sinhgad College of Engineering, Pune, Maharashtra, India

Prof. Kirti. S. Patil, Department of Computer Engineering, Sinhgad College of Engineering, Pune, Maharashtra, India

**Abstract**— In the evolving landscape of education, the traditional process of manually creating question papers is often time-consuming, prone to bias, and lacks adaptability. This project, titled EduQGen: AI-Based Question Paper Generation System, proposes an intelligent solution to automate and optimize question paper creation using artificial intelligence and natural language processing (NLP). The system enables dynamic generation of question papers based on user-defined parameters such as subject, difficulty level, question type, and Bloom's Taxonomy levels. EduQGen extracts questions from a curated database and applies machine learning algorithms to classify, rank, and assemble them into balanced papers. The system ensures uniqueness, coverage of syllabus, and adherence to examination guidelines. Additionally, the interface allows educators to review, regenerate, or edit questions as per academic needs. The implementation uses Python, NLP libraries, and a modular database structure to store categorized questions. Testing and evaluations indicate that EduQGen significantly reduces manual effort, maintains paper quality, and adapts to various academic frameworks.

**Keywords**— *Question Paper Generation, Artificial Intelligence, Natural Language Processing, Machine Learning, Educational Technology, Automated Assessment, Question Classification, Bloom's Taxonomy.*

### INTRODUCTION

The shift towards digital solutions in education presents a significant opportunity to automate and optimize the generation of question papers, a critical aspect of student knowledge assessment, thereby enhancing the fairness and quality of examinations. EduQGen is an AI-based system that automates the creation of balanced, diverse, syllabus-oriented question papers using AI, NLP, and ML. It selects and organizes questions based on user-specified parameters, ensuring comprehensive assessment and maintaining academic standards. EduQGen aims to reduce educator burden, improve efficiency, and standardize evaluations. It's scalable, user-friendly, and flexible, with potential for future enhancements like automated question generation or integration with Learning Management Systems.

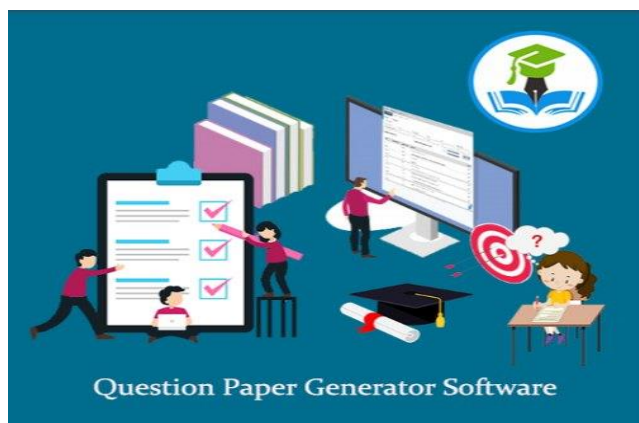


Figure 1.1: Educational Institutions

The EduQGen system is a solution to the time-consuming and resource-intensive task of designing and generating question

papers in the educational landscape. It uses Artificial Intelligence and Natural Language Processing to automate the process, ensuring accuracy and compliance with educational standards. The AI-driven approach generates balanced question papers, free from human errors and bias, and can produce various question types, such as multiple-choice, short-answer, and essay-based questions, tailored to different difficulty levels. This allows educators to focus on teaching rather than administrative burdens. EduQGen also allows dynamic adjustment of question difficulty based on predefined parameters, promoting fairness and objectivity in the examination process.



Figure 1.2: AI-Based Question Paper Generation System

In the evolving educational landscape, the task of designing and generating question papers remains one of the most time-consuming and resource-intensive activities. Traditional methods of paper creation involve manual efforts from educators, which often lead to inconsistencies, errors, and unintended bias in question construction. Additionally, the

manual approach fails to efficiently accommodate the diverse curriculum requirements, resulting in a mismatch between the syllabus coverage and the questions posed in the examination papers. These challenges are further compounded by the growing demand for assessments that cater to a wide range of learning objectives, difficulty levels, and formats. With the rapid advancements in Artificial Intelligence (AI) and Natural Language Processing (NLP), there is a significant opportunity to automate and enhance the question paper generation process. AI-powered systems can intelligently understand the intricacies of the syllabus, adapt to varying curriculum structures, and create a diverse set of questions that maintain fairness, relevance, and objectivity. The EduQGen system is a response to this need, leveraging state-of-the-art NLP and machine learning techniques to automate the creation of question papers, ensuring both accuracy and compliance with educational standards.

The AI-driven approach of EduQGen allows for the creation of balanced question papers that are free from human errors, bias, and inconsistencies. By automatically generating questions that are aligned with the syllabus, the system can produce a variety of question types—such as multiple-choice, short-answer, and essay-based questions—tailored to different difficulty levels. This not only improves the efficiency of paper generation but also enables educators to focus more on teaching rather than the administrative burden of assessment preparation. Furthermore, EduQGen offers the potential to dynamically adjust question difficulty based on predefined parameters, ensuring that the assessments cater to the varied learning abilities of students. The ability to generate question papers in a time-efficient manner allows educational institutions to save valuable resources, while also promoting fairness, objectivity, and consistency in the examination process.

## LITRETURE REVIEW

**Vaishnavi Mate et al., “Automatic Question Paper Generator” Volume 7, IJFMR, 2025.**

The system is an intelligent question paper generation tool for universities, allowing quick creation of balanced papers with varying difficulty levels (Easy, Medium, and Hard). Administrators input questions and assign weightage and complexity to each, which are stored in a database. The system randomly selects questions that match the complexity level, ensuring a total weightage of 100 marks. The system automates the manual process, ensuring easy storage and access to academic data, while minimizing human effort and errors.

**Darshan S et al., “Auto QP Gen –Automatic Question Paper Generator” Volume 13, IJCRT 2025.**

The project streamlines the process of creating question papers in educational institutions by providing an intuitive interface, customizable templates, course outcomes setting, difficulty mapping, and predefined marking schemes. It uses modern

web technologies, integrates multiple question formats, and exports in PDF and DOCX

**G. Kalaivani et al., “Question Gen: An Automated and Customizable Question Paper Generation System for Educational Institutions” International Journal of Research Publication and Reviews, Vol 5, 2024.**

Question papers are used in educational settings to evaluate students' knowledge and skills. Traditionally, these papers are created manually by teachers, but the Online Question Paper Generation System automates this process. The system allows teachers to build question banks, categorize questions by subject, topic, and difficulty level, and randomize the order of questions. Developed using Python, the system includes features like user authentication, question bank management, and result analysis. It aims to simplify the process, reduce teacher workload, and improve education quality.

**D. Manoj et al., “Natural language processing-based question and answer generator” Vol. 11, IARJSET 2024.**

The Question Paper Generator (QPG) is a system that uses Natural Language Processing (NLP) to create question papers tailored to specific educational domains. It uses tasks like text summarization, keyword extraction, and semantic analysis to understand educational materials. The QPG ensures questions adhere to curriculum and learning objectives, and allows educators to specify question types, difficulty levels, and topic preferences. It compares generated question papers with manual ones, assesses accuracy, diversity, and relevance, and gathers user feedback to refine the system. The QPG is executed using Flask framework.

**N. vijaya Lakshmi et al., “DEEPQUEST: A Deep Learning Approach for Generating Questions in Paper Format for Context Relevant Data” Vol. 11, IJARSET 2024.**

The proposed system uses advanced Deep Learning algorithms to analyze input text context and identify key concepts. It allows educators to input question styles and preferences, enhancing the quality and relevance of generated questions. This adaptive approach reduces time and effort required for question paper creation, contributing to the evolution of educational assessment systems. The system can handle multiple user input data and generate questions in PDF format for instant teaching purposes.

**Mr.P.P. Gadekar “Automatic Question Paper Generator” Vol-10, IJARIE 2024.**

Education is crucial, and exams are essential for students' learning. Traditional manual methods can be biased and security-conscious. An automated system is proposed to create secure, non-repetitive question papers. This system automates tasks, eliminates storage space, and randomizes questions. It restricts user access, prevents duplication, and allows educational institutions to specify courses, semesters,

syllabus, and patterns. This system benefits companies with limited staff and resources, ensuring rapid operations, data storage, and strong security.

**Dr. Deevi Hari Krishna et al., "AI-Powered Question Paper Generation With NLP: Streamlining Assessment In Education" Volume 11, IJCRT 2023.**

This paper introduces an innovative approach to question paper generation using Artificial Intelligence and Natural Language Processing techniques. The system extracts key concepts and learning objectives from educational materials, textbooks, and curriculum guidelines, creating diverse questions spanning different difficulty levels and cognitive skills. This AI-enhanced system adapts to different educational levels and subjects, making it a versatile tool for educators and institutions.

**Swasti Sudha Panytyima et al., "Smart Question Paper Generator" International Journal of Research Publication and Reviews, Vol 4,2023.**

Knowledge is crucial for society's progress, especially for engineers. Educational institutions need to reinvent teaching and learning processes to create competent youth. Assessments, such as tests and examinations, help identify the impact of teaching and learning. As technology advances, it will blend with assessment design, making it more efficient, effective, fast, streamlined, randomized, and secure. This system ensures total randomization of questions, benefiting educational institutions.

**Nithya M et al., "Automatic Question Generation" Volume 7, IJISRT 2022.**

The Covid situation has accelerated internet learning, allowing learners to access resources anytime, anywhere. Assessment is crucial, but manual question preparation can be time-consuming. To reduce this, an automatic question generator method is used, applicable in both private and government sectors.

**Pranav Thigale et al., "Automatic Question Paper Generator System by Keyword based Shuffling Algorithm using Randomization technique" IJARCCCE, Vol. 10, 2021.**

The proposed Automatic Question Paper Generator System aims to streamline the process of generating exam papers by storing different sets of question papers and diagrams in a database. It uses a Keyword-based Shuffling Algorithm with Randomization, preventing duplication and repetition, and maintaining syllabus coverage, ultimately improving exam assessment quality.

**Kanchan Babaji Dhomse et al., "Automatic Question Paper Generation using ML: A Review" Turkish Journal of Computer and Mathematics Education, Vol.12, 2021.**

Educational programs face challenges in creating question papers with changed questions due to lack of standardization. A framework is needed to produce these in seconds. A legitimate examination paper and organization are essential for students' journeys. Traditional manual methods are time and cost-consuming, so a programed address paper can be beneficial for educational establishments.

**Shubham Aghade et al., "Automatic question paper generator" Volume: 08, IRJET 2021.**

The Automatic Question Paper Generator system automates college officials from a database of questionnaires, reducing tedious manual work and making it quick and effective for small and medium-sized institutions. It generates random papers without repetition, ensuring a comprehensive and efficient questionnaire process.

**M.M Mane et al., "Automatic Question Paper Generator" Volume 8, IJIRT 2021.**

The proposed Automatic Question Paper Generator system aims to improve the examination process by automating the preparation of exam questions. The system includes modules for admin, subject selection, difficulty level specification, question entry, question management, and paper generation. Teachers can select difficulty levels, number of questions, and subject names, and download the generated question paper in PDF format. The system offers simple operation, usability, security, and stability.

**Usharvi Naik et al., "Question Paper Generation System" International Journal of Trend in Research and Development, Volume 8, 2021.**

Automatic Question Paper Generation is a system that generates question papers based on exam feedback, allowing administrators and faculty to manage tasks like adding faculty, evaluating courses, assigning reports, assigning teachers, selecting question papers, updating syllabuses, and adding course outcomes. This method is fast, smooth, random, and secure, replacing the ineffective, repetitive, and security concerns of traditional methods.

**Gajalakshmi D et al., "Automatic Question Paper Generator Using Bloom's Taxonomy" Journal of Computing and Intelligent Systems, 2020.**

The proposed system in Java aims to improve the quality of examinations by generating efficient question papers. It uses a string tokenization strategy to tokenize sentences, allowing for the creation of question papers based on user-provided information. The system aims to enhance the nature of inquiry

papers by utilizing Bloom's cognitive level and transferring inquiries through a framework

**Aprajita Seth et al., "Automatic Exam Paper Generator" Volume 7, 2020.**

Exam Paper Generator is an associate degree golem application that generates challenging, well-framed exams at intervals. It includes modules like admin, user, and question entry, making it easy to generate and save.pdf files for personal or administrative use.

**DIMPLE VALAYIL PAUL et al., "Automatic Question Paper Pattern Generation using GA Approach" v. 19, INFOCOMP 2020.**

This paper explores question paper template generation for dynamic examination question paper generation using Genetic Algorithm (GA) and educational taxonomies. It analyzes initial population generation, chromosome encoding, genetic manipulations, and experimentally proves the generated templates are best suited, outperforming traditional random generation algorithms.

**Dubey Harish et al., "Automatic Question Paper Generator System" Volume: 07, IRJET 2020.**

This paper presents a fuzzy logic-based Python model for autonomous paper generation, enabling college authorities to generate customized question papers based on examination levels and syllabus chapters. The software generates random question papers, ensuring no repetitions, making it a powerful tool for creating personalized and efficient question papers

### Aim:

The project aims to create an AI-based question paper generation system, EduQGen, that streamlines examination paper creation by efficiently selecting, organizing, and generating questions from a digital question bank, ensuring compliance with educational standards.

### Objectives

- To develop an intelligent system that generates question papers based on defined criteria such as subject, difficulty level, and Bloom's Taxonomy.
- To integrate Natural Language Processing (NLP) techniques for automated question categorization and generation.
- To ensure that the generated question papers meet academic standards, including syllabus coverage, question type distribution, and appropriate difficulty levels.

- To create a user-friendly interface for educators to interact with and review the generated question papers.
- To evaluate the system's effectiveness through user feedback and system performance analysis.

### Problem statement

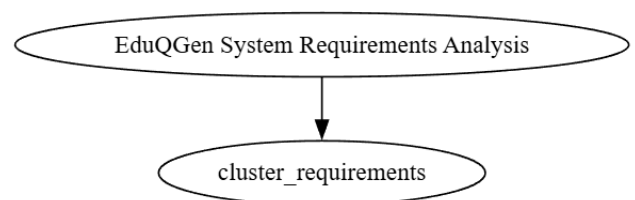
The traditional process of manual question paper setting presents several critical challenges that hinder the effectiveness and efficiency of assessments. Educators often struggle with maintaining consistency in question difficulty, leading to papers that may be either too easy or too difficult for students. Furthermore, there is frequently a lack of comprehensive syllabus coverage, resulting in questions that may not adequately assess all relevant areas of the curriculum. This discrepancy in coverage can lead to imbalanced exams, which fail to provide a fair evaluation of student knowledge.

### RESEARCH METHODOLOGY

The EduQGen system uses Artificial Intelligence to automate question paper creation, enhancing efficiency, accuracy, and fairness in assessment. It interacts with a digital question bank, selects questions based on syllabus, curriculum guidelines, and difficulty levels, and supports multiple-choice, short-answer, and essay-based formats. The system allows customization of parameters, reduces manual effort, and promotes fairness and student development.

#### EduQGen System Overview

- Automates question paper generation using interviews, surveys, and university examination patterns.
- Includes multiple-choice, short-answer, and essay-based questions.
- Complies with educational standards for comprehensive syllabus coverage.
- Uses AI and Natural Language Processing to reduce bias and bias.
- Aims to enhance academic assessment quality and fairness.



### Performance Optimization

In this section, the performance optimization strategies employed in the EduQGen system are discussed. Given the computational complexity involved in question paper generation and the need to handle multiple concurrent users, several techniques were applied to ensure the system's responsiveness and efficiency.

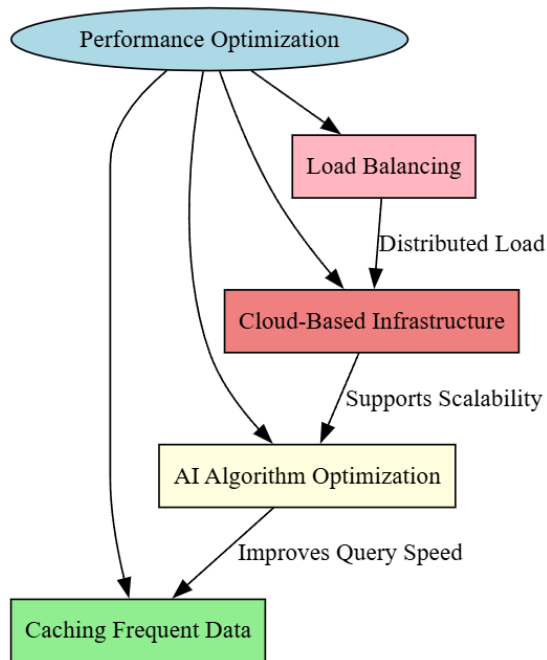


Figure 1.3: Performance Optimization

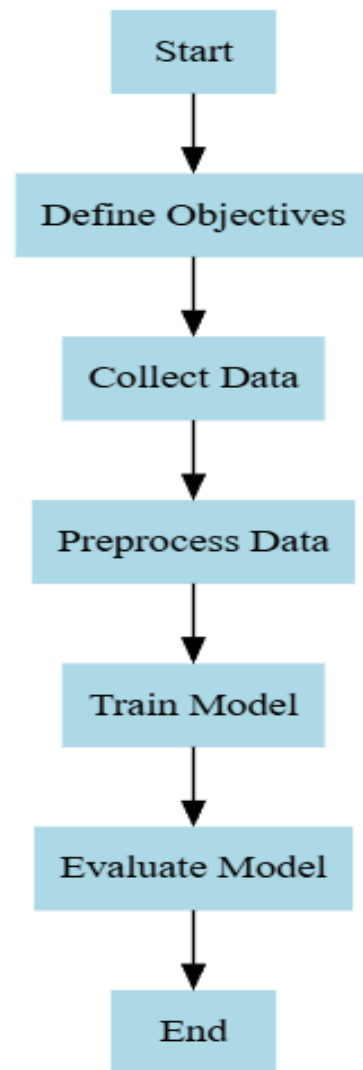


Figure 1.4: Methodology flow chart



## RESULT

## Result and analysis

EduQGenDashboard Subjects Topics Questions Question Sets Generate Questions Logout

## Question Sets

Create and manage your question sets for exams

Cancel

Name\*

SET 1

Description

SET 1

Institution Name

Sinhgad College of Engineering

Header Information

Attempt all Questions

Select Questions\*

☐ Summarize the main idea about punched cards.  
Understand Hard

☐ How does Cambridge work?  
Understand Hard

☐ How does ENIAC work?

EduQGenDashboard Subjects Topics Questions Question Sets Generate Questions Logout

## Welcome, Nitin Arvind Vishwakarma!

Here's an overview of your EduQGen activity

## Quick Stats

1	0
Subjects	Question Sets

## Quick Actions

Manage Subjects	Question Bank	Generate Questions
Create and manage your subjects and topics	Browse and manage your question repository	Create AI-generated questions based on your content

EduQGen

Dashboard Subjects Topics Questions Question Sets Generate Questions Logout

## Questions

Generate Questions

Subject: Business Intelligence Topic: All Topics Taxonomy Level: Create Difficulty: All Difficulties ☐ Verified Questions Only

Create a plan for implementing the loop.

Answer:  
This question requires critical thinking and evaluation. Consider the following context: SINCE 1993 Savitribai Phule Pune UniversityAs per Revised Syllabus of T.E. (Computer Engineering) Semester - VIChoice Based Credit System (CBCS) Formerly Assistant Professor in P.E.S. and formulate your response based on evidence and reasoning.

Business Intelligence Create Hard

Develop a strategy for the <strong> tag.

Answer:  
This question requires critical thinking and evaluation. Consider the following context: SINCE 1993 Savitribai Phule Pune UniversityAs per Revised Syllabus of T.E. (Computer Engineering) Semester - VIChoice Based Credit System (CBCS) Formerly Assistant Professor in P.E.S. and formulate your response based on evidence and reasoning.

Business Intelligence Create Easy

EduQGen

Login Register

## Login to EduQGen

Invalid username or password

Username

nvs0108

Password

\*\*\*\*\*

Login

Don't have an account? [Register here](#)

## Sinhgad College of Engineering

Attempt all questions

Note: SET 1

## Questions:

- Who is The objective? [1 M]  
BL - (L1): remember  
Difficulty: medium
- List the main the lowest level mentioned in the text. [2 M]  
BL - (L1): remember  
Difficulty: hard
- How would you use user information in a real-world scenario? [4 M]  
BL - (L3): apply  
Difficulty: medium
- Describe the relationship between The web application and The head element. [3 M]  
BL - (L2): understand  
Difficulty: medium
- Summarize the main idea about Tim Berners Lee. [3 M]  
BL - (L2): understand  
Difficulty: medium
- What patterns can you identify in the bottom? [6 M]  
BL - (L4): analyze  
Difficulty: medium
- Analyze the relationship between the browser window and background color. [6 M]  
BL - (L4): analyze  
Difficulty: medium
- Analyze the relationship between rapid front-end development and global.properties files. [4 M]  
BL - (L4): analyze

Successfully generated 4 questions!

Text Input PDF Upload

Subject\*

ComputerScience

Topic (Optional)

History

Upload PDF\*

Choose File Operating\_Systems\_History.pdf

Selected file: Operating\_Systems\_History.pdf (4 KB)

Taxonomy Levels\*

☒ Remember ☒ Understand ☐ Apply ☐ Analyze ☐ Evaluate ☐ Create

Difficulty Levels\*

☒ Easy ☒ Medium ☐ Hard

Number of Questions

5

Question Generation Method

☒ Use OpenAI (if unchecked, NLTK-based generation will be used)

Generate Questions

## Generated Questions

Save All Questions

## Generated Questions

Save All Questions

Apply the concept of gates to solve this problem: Tractatus Logico-Philosophicus

## Answer:

Based on the context: The earliest known tool for use in computation was the abacus, developed in the period between 2700 and 2300 BCE in Sumer. [3] The Sumerians' abacus consisted of a table of successive columns which delimited the successive orders of magnitude of their sexagesimal number system. [4]:11 Its original style of usage was by lines drawn in sand with pebbles. This requires analysis of the given information and application of relevant concepts.

Apply Hard

What would happen if Muslim engineers was implemented in scientists?

## Answer:

Based on the context: The earliest known tool for use in computation was the abacus, developed in the period between 2700 and 2300 BCE in Sumer. [3] The Sumerians' abacus consisted of a table of successive columns which delimited the successive orders of magnitude of their sexagesimal number system. [4]:11 Its original style of usage was by lines drawn in sand with pebbles. This requires analysis of the given information and application of relevant concepts.

Apply Medium

What are the causes of Konrad Zuse?

## Answer:

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Analyze Hard

EduQGen Login Register

# Login to EduQGen

Username

nvs0108

Password

.....

Login

Don't have an account? [Register here](#)

## Questions

Generate Questions

Subject Topic Taxonomy Level Difficulty ☐ Verified Questions Only

All Subjects All Topics All Levels All Difficulties

ComputerScience Computer Networks

Summarize the main idea about punched cards.

Answer:

The earliest foundations of what would become computer science predate the invention of the modern digital computer. Machines for calculating fixed numerical tasks such as the abacus have existed since antiquity, aiding in computations such as multiplication and division.

ComputerScience History Understand Hard

How does Cambridge work?

Answer:

The earliest foundations of what would become computer science predate the invention of the modern digital computer. Machines for calculating fixed numerical tasks such as the abacus have existed since antiquity, aiding in computations such as multiplication and division.

ComputerScience History Understand Hard

## Questions

Generate Questions

Subject Topic Taxonomy Level Difficulty ☐ Verified Questions Only

Computer Networks All Topics All Levels All Difficulties

Remember Understand Apply Analyze Evaluate Create

List the main Computers mentioned in the text.

- 1940s: The earliest commercial operating systems.

Computer Networks Network Layers Nonlinear Easy

When did General Motors OS occur?

Answer:

Notable Development - IBM's General Motors OS (1956) for the IBM 701 is often considered the first OS.

Computer Networks Network Layers Remember Medium

List the main Computers mentioned in the text.

## Questions

Generate Questions

Subject: Computer Networks Topic: All Topics Taxonomy Level: All Levels Difficulty: All Difficulties ☐ Verified Questions Only

List the main Computers mentioned in the text.

**Answer:**  
- 1940s: The earliest computers like the ENIAC had no operating systems.

Computer Networks Network Layers Remember Easy

When did General Motors OS occur?

**Answer:**  
Notable Development - IBM's General Motors OS (1956) for the IBM 701 is often considered the first OS.

Computer Networks Network Layers Remember Medium

List the main Computers mentioned in the text.

## Questions

Generate Questions

Subject: All Subjects Topic: All Topics Taxonomy Level: All Levels Difficulty: All Difficulties ☐ Verified Questions Only

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**Answer:**  
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Computer Science History Understand Hard

How does Cambridge work?

**Answer:**  
The earliest foundations of what would become computer science predate the invention of the modern digital computer. Machines for calculating fixed numerical tasks such as the abacus have existed since antiquity, aiding in computations such as multiplication and division.

Computer Science History Understand Hard

How does ENIAC work?

## Question Sets

Create and manage your question sets for exams

Create New Question Set

**Question Set1**

Attempt any 5 questions

Created: 6/5/2025 Institution: Sinhgad Institute Of Technology

View Paper Export PDF

## Create an Account

**Username\***

Choose a username

**Email\***

Enter your email

**Full Name**

Enter your full name

**Password\***

Create a password

**Confirm Password\***

Confirm your password

**Role**

Educator

**Institution**

Enter your institution name

Register



## Subjects

Add New Subject

ComputerScience

Computer Science Description

Computer Networks

Computer networks information

Primary

Text Input

PDF Upload

Subject\*

ComputerScience

Topic (Optional)

History

Content Context\*

the mathematical foundations and tools for digital system design in almost all areas of modern technology.[43]

While taking an undergraduate philosophy class, Shannon had been exposed to Boole's work, and recognized that it could be used to arrange electromechanical relays (then used in telephone routing switches) to solve logic problems. His thesis became the foundation of practical digital circuit design when it became widely known among the electrical engineering community during and after World War II.[44]

Taxonomy Levels\*

☐ Remember ☐ Understand ☒ Apply ☒ Analyze ☒ Evaluate ☐ Create

Difficulty Levels\*

☐ Easy ☒ Medium ☒ Hard

Number of Questions

5

Generating...

## Topics

Add New Topic

Filter by Subject: ComputerScience

History

ComputerScience

## Topics

Add New Topic

Filter by Subject:

ComputerScience

All Subjects

ComputerScience

Computer Networks

History

ComputerScience

## Question Set1

Back

Export PDF

Attempt any 5 questions

Question 1

Summarize the main idea about punched cards.

Bloom's Level: Understand Difficulty: Hard

Question 2

Break down the components of Harvard Mark I.

Bloom's Level: Analyze Difficulty: Hard

Question 3

What would happen if research facilities was implemented in an office environment?

Bloom's Level: Apply Difficulty: Medium

Question 4

How does ENIAC work?

Bloom's Level: Understand Difficulty: Medium

Question 5

Demonstrate how Computer science can be applied to Bernoulli.

Bloom's Level: Apply Difficulty: Hard

## CONCLUSION

The EduQGen system marks a significant leap forward in the automation of the question paper generation process, showcasing the transformative potential of artificial intelligence in education. By seamlessly integrating rule-based filtering, advanced natural language processing (NLP), and Bloom's taxonomy classification, the system ensures that each generated paper is not only academically rigorous but also balanced and aligned with specific educational objectives. This intelligent approach to question paper creation substantially reduces the time, effort, and human bias that typically accompanies traditional paper-setting methods. EduQGen empowers educators by providing a scalable, efficient, and reliable tool for generating high-quality question papers, thus addressing the common challenges of

consistency, difficulty distribution, and syllabus adherence. The system's modular architecture and exceptional performance metrics underscore its robustness, while the overwhelmingly positive feedback from users demonstrates its practical applicability and ease of use in real-world educational environments.

In essence, EduQGen represents a significant step toward the future of education, offering an AI-driven solution that enhances the efficiency and quality of the academic examination process, making it a valuable asset for educational institutions worldwide.

### Future Scope

**Multilingual Support:** To cater to a wider audience, integrating language translation and NLP models for regional languages like Marathi, Hindi, and others is crucial. This enhancement would ensure that the system is accessible to educators and students across various linguistic backgrounds, making it more inclusive.

**Question Complexity Grading:** The incorporation of advanced AI models to automatically assess and score the complexity of questions would add a layer of sophistication. This feature would enable the system to generate papers with a more accurate balance of difficulty levels, ensuring that assessments are appropriately challenging.

**Support for Images and Diagrams:** Currently, the system does not support image-based or diagram-based questions. By enabling educators to add such questions, the system would be able to cater to subjects that require visual elements, such as science, mathematics, and engineering, thereby expanding its versatility.

**Customizable Export Templates:** Allowing users to design their own paper formats would significantly enhance the system's flexibility. Educators would be able to add institutional branding, logos, and custom headers to the question papers, making the output more personalized and aligned with their institution's standards.

**Cloud Deployment:** Hosting EduQGen on scalable cloud platforms would not only ensure remote access to the system but also enable real-time collaboration between multiple users. This cloud-based infrastructure would allow for greater scalability, ensuring that the system can handle a growing number of users and data.

**Integration with Learning Management Systems (LMS):** Integrating EduQGen with popular Learning Management Systems (LMS) like Moodle would facilitate seamless data exchange, allowing educators to import course materials, automatically generate question papers, and conduct online tests within the same platform. This integration would streamline the workflow for educational institutions, reducing the need for manual intervention.

### Limitations

**Limited Language Support:** Currently, the system supports only English, which restricts its usability in multilingual educational environments. Expanding the system to accommodate additional languages would increase its applicability and broaden its user base.

**NLP Misclassifications:** Although the natural language processing (NLP) algorithms are effective in classifying questions according to Bloom's taxonomy, there were instances of misclassification, particularly with complex or ambiguous questions. This limitation arises from the system's reliance on predefined linguistic rules and machine learning models that may not fully grasp context-specific nuances in some questions.

**Image/Diagram Support:** The system does not yet support the inclusion of image-based or diagram-based questions, which are common in certain subjects such as mathematics, engineering, and sciences. The ability to generate such questions would significantly enhance the system's utility in diverse academic fields.

**Static Templates:** The formatting of the generated question papers is limited to predefined templates, which restricts customization. Users currently cannot modify or create dynamic paper templates, limiting flexibility for educators who may have specific formatting needs.

### ACKNOWLEDGEMENT

It gives me an immense pleasure and satisfaction to present this Research Paper on "*EduQGen: AI - Based Question paper Generation System* " which is the result of unwavering support, expert guidance and focused direction of my guide Prof. Kirti S. Patil, to whom I express my deep sense of gratitude and humble thanks to Dr. M. P. Wankhade, H.O.D. for his valuable guidance throughout the presentation work. The success of this Research Paper has throughout depended upon an exact blend of hard work and unending co-operation and guidance, extended to me by the supervisors at our college. Further I am indebted to our principal Dr. S. D. Lokhande whose constant encouragement and motivation inspired me to do my best. Last but not the least, I sincerely thank to my colleagues, the staff and all other who directly or indirectly helped me and made numerous suggestions which have surely improved the quality of my work.

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