

Enhanced Assessment Preparation Through Automated Question Paper Generation System

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Abstract — Many academic institutions face problems in creating assessment question papers, which is a manual process and a time-consuming task. A lot of time is required for choosing questions, arranging them in a proper way, and following a standard exam pattern. Problems such as inconsistent formatting, duplication of questions, structural mistakes, and challenges in efficiently reusing existing content are commonly encountered during the process. To overcome these challenges, an automated question paper generation system is introduced that will speed up, simplify, and improve the dependability of the assessment preparation process. The system automatically arranges and generates question papers in accordance with predetermined exam requirements, such as mark distribution, question type, and exam pattern, using a modular design and rule-based technique. The system's ability to automatically maintain a uniform format and structure for all generated question papers is one of its main advantages. The evaluation of the system shows that question paper preparation time is reduced while improving consistency and minimizing human errors. The system helps improve productivity and makes the academic assessment process simpler and more efficient, especially for the proposed 14 institutions of examinations and evaluations.

Index Terms— Automatic Question Paper Generator, Paper Creation, Questions Generation, AI-Based Question Paper, Assessment Management System, Centralized Assessment Platform.

I. INTRODUCTION

The suggested system solves issues in the conventional assessment setup at academic institutions, where manual drafting, repeated formatting, question gathering, and staff coordination are usually slow and labor-intensive. When these tasks are automated, the whole process becomes quicker, better structured, and simpler to control with fewer mistakes and repeated questions. It also strengthens data protection by restricting access to approved staff only, allowing institutions to handle

exam records more securely. Administrators and lecturers are provided with a clear separation of responsibilities and support through dedicated dashboards. Moreover, the auto-generation tool minimizes manual work by structuring well-designed question papers, saving faculty time and ensuring precise papers. The evaluation results show that the system performs well in real-time situations and provides good usability, reliability, and scalability. Smooth interaction between different modules makes the assessment process more efficient and manageable, especially for institutions handling large-scale examinations. Furthermore, the system provides a strong base for future enhancement, such as advanced question selection methods and support for different question formats and sets, making it an important step toward modernizing and automating academic assessment preparation. The challenges associated with preparing traditional question papers in educational institutions can be effectively and securely addressed by the suggested system. The issues were successfully resolved, including the time-consuming nature of producing papers, repetitive formatting tasks, manual question compilation, and a lack of coordination between administrators and lecturers. To strengthen the institutions' data security and governance by providing authorized users with safe and controlled access. Dedicated dashboards were introduced, allowing for improved workflows and a clear division of duties between administrative and lecturer roles. By organizing documents, the automated question paper creation greatly minimizes manual efforts. This saves academic staff members valuable time in addition to improving accuracy and consistency. The system evaluation shows that the suggested system works well in real-time situations to guarantee scalability, usability, and reliability. The assessment process is made more efficient and manageable by the system's streamlined workflow and smooth module interaction, strengthening the system. Additionally, it establishes the foundation for

upcoming enhancements such as the addition of more sophisticated question selection algorithms and support for various question formats and sets. It is a better step toward modernizing and automating the assessment preparation process.

II. LITERATURE SURVEY

Numerous research exploration have focused on automating question paper generation using basic techniques. Fenil Kiran et al. in [1] developed a system where question papers are generated by randomly selecting questions from a question bank. Selvapriya and Ganesh in [2] proposed a system to create varied question papers to reduce repetition with randomization-based approach. Bhonde et al. in [3] introduced a machine learning-based approach to categorize questions based on difficulty and topic. Sanap et al. in [4] designed a system using NLP and genetic algorithms to generate MCQs from textual content. Nwafor and Onyenwe in [5] designed a system that generates multiple-choice questions automatically by extracting keywords from text.

Subsequent studies have explored different algorithmic and analytical approaches for question generation. Das et al. in [6] conducted a survey on rule-based, template-based, and machine learning approaches for question generation. Palve and Birari in [7] proposed a system that uses text mining techniques such as topic modeling and POS tagging to generate MCQs. Bhowmick et al. in [8] developed an AI-based system using transformer models for context-based question generation. Li et al. in [9] introduced a deep learning-based topic-controlled question generation model. Rao et al. in [10] designed a database-driven system to generate question papers using predefined templates and stored questions.

Various architectures have also been proposed, focusing on structured paper generation and formatting. Sharma et al. in [11] developed a template-based system where it generates question papers following predefined formats. Gupta et al. in [12] proposed a system using random algorithms to generate exam papers quickly. Patel et al. in [13] created a web-based system for generating and downloading question papers online. Singh et al. in [14] architected a system that categorizes questions by considering difficulty levels for balanced paper generation. Kumar et al. in [15] developed a rule-

based system to generate questions from educational text.

Recent works have focused on improving the usability and accessibility of such systems. Verma et al. in [16] developed a web application for managing question banks and generating exam papers. Iyer et al. in [17] proposed an AI-based system that generates questions from lecture notes. Choudhary et al. in [18] engineered a programmatic system for generating question paper using random selection based on exam patterns. Mehta et al. in [19] introduced a cloud-based system for remote question paper generation. Reddy et al. in [20] designed a web-based system that outputs exam papers using templates and random selection.

Even with recent progress, the current system still misses essential functions needed for actual use in institutions, like strong login security, permission-based access, unified question handling, and smooth collaboration between admins and faculty. Most platforms only create MCQs and pick them randomly without handling descriptive questions or managing the full assessment process. The proposed system provides OTP-based authentication, a specialized dashboard, centralized question storage, descriptive question handling, and fully formatted question papers. This provides a safe and easily workable approach for handling academic assessments in this digital era of education.

III. METHODOLOGY

This methodology is fully focused on improving a safe and automated platform for preparing a question paper in a more organized manner. It uses a component-based design with separated modules for login, user handling, question control, and auto paper creation, so each part works well together and stays properly connected. In the initial phase of development of the system, the essentialities were carefully studied, analyzed, and marked the regular issues faced during the traditional method of assessment paper preparation. The issues were handpicking questions, doing the same formatting over and over, weak communication between staff and admin, the chances of losing questions, and a lack of security while setting papers. To solve these issues, the system was planned as an automated tool that boosts security, cuts down manual work, and brings a more organized and independent method for managing questions and creating papers. Through the

overall study on the drawbacks of the traditional system in preparing question papers, the design of the proposed system was built in order to facilitate better management and safety. The system is designed mainly for two specific user roles, namely Admin and Lecturer, where their responsibilities and activities are specifically assigned. Admin duties include adding lecturers, allocating departments, handling subjects, checking created papers, and updating college records. On the other hand, lecturers are allowed to generate question papers, edit questions if needed, and submit them for admin approval, and also all the selected, used, and unused data can be stored for future use. For the easy accessibility of the system, separate and specific dashboards are provided for both admins and lecturers. The dashboards let users handle their work easily, speed up processes, and keep everything better organized while using the platform. A centralized database stores lecture information, department details, subjects, generated questions, question papers, and login-related data. This feature of the system improves trust in the security of the system. Storing all data centrally simplifies management and allows quick retrieval of questions and exam details at any time. It has separate sections for logging, admin tasks, lecturer question handling, paper creation, and file export. It aims to increase speed, keep assessment papers uniform, and enhance security using an organized system where user roles and duties are clearly set. This system is built with modern web technologies, which makes the system easy to access and provides efficient results with all the features described above.

IV. PROPOSED MODEL

The system aims to increase productivity and enhance data protection via a well-structured setup with distinct roles and permissions for each user. It emphasizes a systematic framework for preparing assessment papers using an organized platform, even in limited time schedules.

A. Overview

The system follows a centralized and web-based architecture, and other features like authentication, user management, question handling, and document generation are integrated into this system. Displacing traditional hands-on techniques with an automated workflow to minimize human efforts and errors is key to designing this system.

Two primary roles through which the model operates are:

- Admin
- Lecturer

To ensure controlled access and smooth coordination between users, functionalities are specified for each role.

B. System Architecture

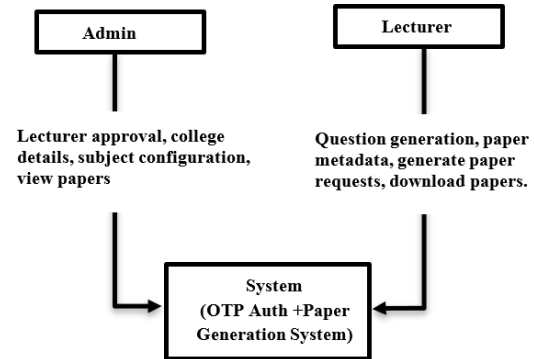


Figure (1): System Architecture

The above Figure (1) represents the core components of the proposed model, which are as follows

1. Authentication Module

This module is programmed to provide secure utilization of system by verifying the username and password along with an OTP-based authentication process. Only authorized admins and lecturers with valid login credentials and OTP verification are allowed to access the system, which is specialized in the negation of illicit access and improves overall security.

2. Admin Module

The Admin is responsible for managing and controlling the overall activities of the system. The main responsibilities of admins include handling lecturer registrations, assigning department access, maintaining institutional and subject details, and monitoring and approving the question papers submitted by lecturers. Through these activities, the system features the capacity to operate in a secure, organized, and properly controlled manner.

3. Lecturer Module

This module helps lecturers handle question creation and question paper preparation with less manual effort and better flexibility during the assessment process. Lecturers can create and store descriptive questions, modify or refine existing questions whenever needed, maintain unused questions for

future use, and select appropriate questions while preparing question papers.

4. Question Repository

To maintain the structure and categories of questions, a centralized database is used that stores all of the questions so that duplication of content is prevented. It also enables easy retrieval and reusability for questions.

5. Question Paper Generation Module

The automatic question paper creation process is handled by this module by collecting the metadata of assessments, such as subject, semester, date and time, maximum marks, and number of questions to attend, so that the marks for questions are distributed correctly, and the selection of questions from the repository, and automatic organization of questions into a standardized format so that a balanced, well-structures papers is created without manual formatting.

6. Document Generation and Approval Module

After the successful generation of the question paper, it is formatted into a professional document, and then it can be downloaded or sent to the admin for reviews and approvals for the paper to ensure quality and standardization.

C. Working of the system

System workflow is as follows

1. Admin adds lecturers' registration IDs and assigns departments
2. The lecturer uses their credentials and OTP verification to log in to the system
3. The lecturer generates and saves questions in the repository
4. Providing Exam details for question generation and question selection is done by the lecturer
5. A formatted question paper is generated by the system.
6. The generated paper is sent to Admin for approval
7. Final document is approved and ready for use

This makes the assessment preparation smoother.

V. MODEL EVALUATION

A. Evaluation Approach

In the proposed system, functional and scenario-based testing were used to evaluate how it performs in real-time assessment preparation. Rather than using just fixed data, various real-world use cases were built to see how the system handles questions and autogenerated assessment papers in live situations. The testing of the system focused on permission-based logging, OTP checks, question setup, and handling auto paper creation. In these, the system is checked to ensure that it runs properly and helps streamline exam-related processes. Admin and Faculty accounts were both tested to confirm users can actually access only the features assigned to their role. During the evaluation process, system usability, data consistency, and accuracy of generated question papers were also taken into consideration. The review also looked at ease of use, data reliability, and how correctly the papers were created.

B. Test Scenarios

To assess the system, various scenarios were considered. Faculty could add, modify, and organize essay-type questions to test how well the question bank performs. After saving several questions, we verified that the system kept all data intact with no missing details. Auto paper creation was tested with faculty inputting subject, semester, exam date, duration, total marks, and chosen questions from the bank. Using that data, papers were produced to see if the system assembled questions properly and kept the layout and formatting consistent. System security was checked using OTP login to confirm access is limited to approved users only. Repeated login tests were run to make sure the system blocks unauthorized entry and keeps authentication safe. Role-based access was checked by signing in as Admin and Lecturer to ensure each sees only their allowed features. Admin tasks like adding faculty, handling subjects, and approving papers were tested to confirm they work as intended. Lecturers could easily create, update, and handle exam papers using the system. The database kept questions safe and made them available for reuse anytime.

VI. RESULTS AND DISCUSSION

Lecturers could easily create, update, and handle exam papers using the system. The database kept questions safe and made them available for reuse anytime. The paper generation tool neatly arranged chosen questions into a clean, formatted document, saving manual formatting time and keeping papers

uniform. For security, the OTP login worked consistently and restricted system access to verified users. Also, role-based control properly divided and protected Admin and Lecturer features. The platform showed easy collaboration between roles, with lecturers sending papers to Admins for approval hassle-free. In general, it made exam paper setup faster, more precise, better organized, and more secure.

A. Snapshots of the System

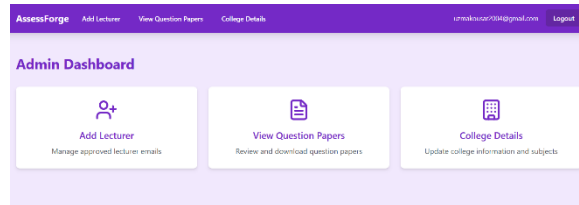


Figure (2): Admin Dashboard

Figure (2) demonstrates the Admin module of the system that enables administrators to manage lecturer access, review generated question papers, download approved papers, and update college-related details required for assessment preparation.

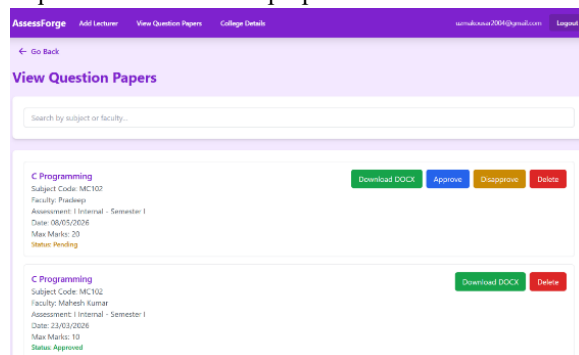


Figure (3): View Question Paper Module

Figure (3) shows the Admin module screen in View Question Papers section using which the admin can view all question papers submitted by lecturers with details such as subject, faculty, date, marks, and status, and perform actions like downloading, approving, disapproving, or deleting them.

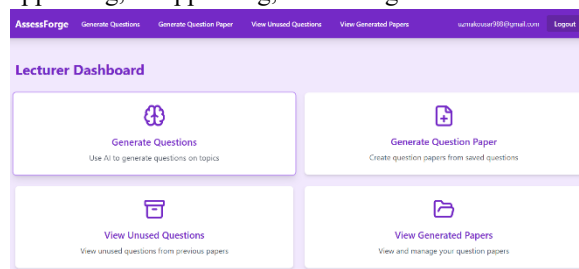


Figure (4): Lecturer Dashboard

Figure (4) shows the Lecturer Dashboard, where the lecturer can access main functions such as generating questions using AI, creating question papers from saved questions, viewing unused questions from

previous papers, and managing all generated question papers through a simple card-based interface.

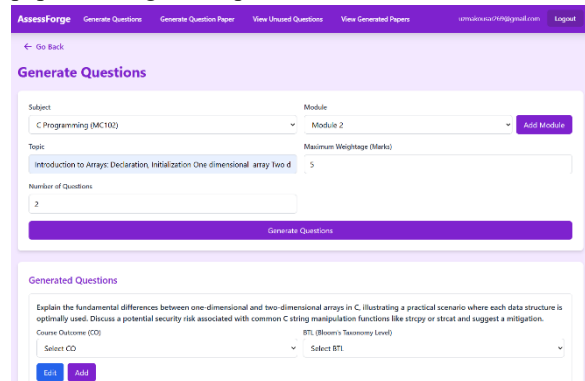


Figure (5): Generate Question Module

Figure (5) shows the Generate Question module of Lecturer Dashboard where Lecturer can generate question on specific subjects they can alter the questions if needed and they can add the questions to repository for further question paper generation.

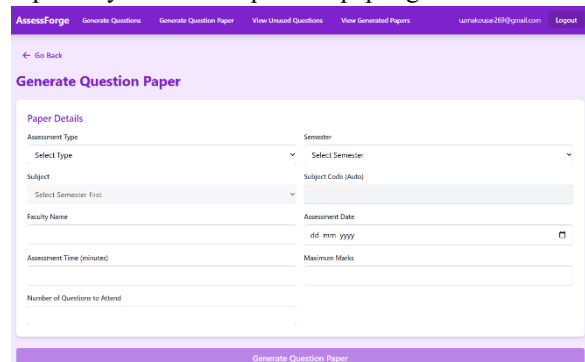


Figure (6): Generate Question Paper Module

Figure (6) shows the Generate Question Paper Module of Lecturer Dashboard, where lecturers fill the input fields required for the question paper, and then based on the maximum marks and number of questions, the marks will be divided for each question, and selected questions will get formatted for the assessment question paper format.

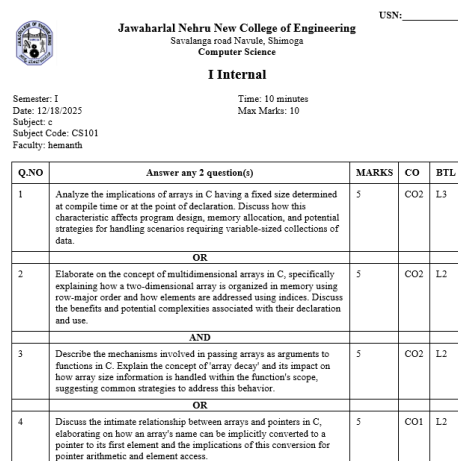


Figure (7): Generated Question Paper

Figure (7) shows the outcome of the proposed model, a well-organized question paper for assessments.

VII. CONCLUSION

The old way of setting exam papers in colleges has many problems, mainly heavy manual work, long time requirements, and uneven formatting. This system fixes those problems by auto-generating papers, which cuts repetitive tasks and boosts speed. It improves task flow by giving secure, role-specific access to admin and faculty, helping keep papers consistent and error-free. Being more dependable, flexible, and user-friendly, the system makes exam setup simpler and better structured. It's ready for upgrades like smarter question picking and more question types, and different sets of papers helping update how academic exams are managed. In addition, the system reduces the chances of human mistakes and improves the overall accuracy of question paper preparation. It also helps institutions save time and resources by managing questions in a centralized and organized manner. With its scalable design and modern approach, the system can easily adapt to future academic and technological requirements.

REFERENCES

- [1] F. K. Gangar, H. G. Gori, and A. Dalvi, "Design and Development of an Automated Question Paper Generation Framework," *International Journal of Computer Applications*, Vol. 166, No. 10, pp. 42–47, 2017.
- [2] R. Selvapriya and K. Ganesh, "A Smart System for Automatic Question Paper Preparation," *International Journal of Trend in Scientific Research and Development*, Vol. 3, No. 3, pp. 138–139, 2019.
- [3] M. Palav, P. Singh, P. Vishwakarma, P. Pandit, and N. Phadnis, "Intelligent Question Paper and Answer Evaluation System Using Information Retrieval Techniques," *International Journal of Computer Trends and Technology*, Vol. 67, No. 4, pp. 5–15, 2019.
- [4] P. Pisat, S. Rewagad, D. Modi, G. Sawant, and D. Chaturvedi, "Natural Language Processing Based Question Paper Creation System," *International Journal of Engineering Research & Technology*, Vol. 10, No. 5, pp. 1–4, 2021.
- [5] D. Prabhu, "Artificial Intelligence Based Automated Question Paper Generation," *International Journal of Scientific Research in Engineering and Management*, Vol. 8, No. 4, pp. 1–5, 2024.
- [6] M. M. Mane, S. B. Nikam, T. Singh, and L. B. Nisar, "Development of an Automatic Examination Paper Generator," *International Journal of Innovative Research in Technology*, Vol. 8, No. 3, pp. 740–745, 2021.
- [7] P. Shah, U. Faquih, R. Devkar, and Y. Shahare, "Randomized Algorithm Approach for Intelligent Question Paper Generation," *International Journal of Engineering Research & Technology*, Vol. 11, No. 4, pp. 1–6, 2022.
- [8] A. S. Khairnar, B. C. Jadhav, R. Birkhade, and P. Patil, "Automated Examination Question Paper Generator," *International Journal for Technological Research in Engineering*, Vol. 4, No. 9, pp. 1837–1840, 2017.
- [9] A. Narendra, M. Agarwal, and R. Shah, "Automatic Generation of Cloze-Type Questions," *International Journal of Advanced Computer Science and Applications*, Vol. 5, No. 11, pp. 120–125, 2014.
- [10] M. Liu and R. A. Calvo, "G-Asks: A Smart Automatic Question Generation System for Academic Support," *IEEE Transactions on Learning Technologies*, Vol. 4, No. 3, pp. 226–237, 2011.
- [11] A. S. Khairnar, B. C. Jadhav, R. Birkhade, and P. Patil, "Template Driven Question Paper Generation System," *International Journal for Technological Research in Engineering*, Vol. 4, No. 9, pp. 1837–1840, 2017.
- [12] K. Naik, S. Sule, S. Jadhav, and S. Pandey, "Question Paper Generation Through Randomization Techniques," *International Journal of Engineering and Technical Research*, Vol. 2, No. 12, pp. 45–49, 2014.
- [13] A. S. Mathew and V. N., "Implementation and Analysis of an Automatic Question Paper Generator," *International Research Journal of Engineering and Technology*, Vol. 6, No. 2, pp. 1012–1015, 2019.
- [14] G. Nalawade and R. Ramesh, "Semantic Tagging Based Automatic Question Paper Generation," in *Proceedings of the IEEE International Conference on Technology for Education*, pp. 1–6, 2016.
- [15] R. Bhirangi and S. Bhoir, "Design of an Automated Examination Question Generator," *International Journal of Engineering Research & Technology*, Vol. 5, No. 3, pp. 1–5, 2016.

- [16] H. Dubey, H. Tamore, S. Padhi, and M. Bharambe, "Automated System for Generating Examination Papers," *International Research Journal of Engineering and Technology*, Vol. 7, No. 5, pp. 2345–2349, 2020.
- [17] A. Jain, G. S. C. Aiyer, H. Goel, and R. Bhandari, "Development of an Automatic Question Generation Framework," *International Journal of Innovations in Engineering Research*, Vol. 5, No. 2, pp. 78–82, 2018.
- [18] A. Jain, G. S. C. Aiyer, H. Goel, and R. Bhandari, "Advanced Automatic Question Paper Generator System," *International Journal of Advanced Research*, Vol. 6, No. 4, pp. 112–118, 2018.
- [19] P. Cholke, R. Narwade, A. Dharashivkar, and A. Patil, "Modern Automated Question Paper Generation System," *Journal of Emerging Technologies and Innovative Research*, Vol. 12, No. 1, pp. 1–6, 2025.
- [20] A. S. Khairnar et al., "Smart Automatic Question Paper Generation Technique," *International Journal for Technological Research in Engineering*, Vol. 4, No. 9, pp. 1837–1840, 2017.