BUSINESS REQUIREMENTS DOCUMENT

1. Executive Summary

This project aims to develop a question paper repository web application where students can upload scanned question papers, and admins can approve or reject them based on authenticity. The system will include features such as search functionality, personalized recommendations, notifications, and a credit-based access system for viewing answers. It will also support automated scanning of uploaded papers to extract relevant metadata and ensure quality control. The platform will manage server load fluctuations during exam periods and provide secure login via college email IDs. This project aims to develop a question paper repository web application where students can upload scanned question papers, and admins can approve or reject them based on authenticity.

Key Features:

- Automated metadata extraction (academic year, semester, course code, exam type).
- Credit-based system to incentivize high-quality uploads and prevent low-quality submissions.
- Advanced search functionality for retrieving individual questions or full papers.
- Recommendation engine for similar question papers.
- Notifications for users when searched questions become available later.
- Referral system to attract new users.
- Scalable server architecture to handle exam-time traffic spikes.
- Secure authentication via college email verification.

This platform aims to enhance academic collaboration and provide students with efficient access to past exam resources.

2. Project Objectives

The primary objectives of this project are:

1. Seamless Question Paper Upload & Verification

- Students should be able to scan and upload question papers easily.
- Extract metadata like academic year, semester type, exam type, and course code automatically.
- Admins will verify the availability and readability of uploaded papers.

2. Credit-Based System for User Engagement

- Reward students with credits for uploading unique and high-quality question papers.
- Reduce credits for students who upload garbage or duplicate papers.
- Users must spend credits to access answers.

3. Advanced Search & Retrieval System
- Users can search questions by course code, year, semester, and keywords.
- Extract individual questions from uploaded papers and store them separately.

4. Recommendation & Notification System
- Implement a basic recommendation engine to suggest similar question papers.
- Notify users when relevant questions become available later.

5. User Growth & Referral System
- Introduce a referral system to attract more users and encourage uploads.

6. Scalable Infrastructure & Security Measures
- Optimize server management to handle traffic spikes during exams.
- Secure user login using college email authentication.

3. Project Scope

In Scope:
✔ Development of a web application with student and admin roles.
✔ Question paper upload system with scanning and metadata extraction.
✔ Admin dashboard for review, approval, and rejection of papers.
✔ Credit-based system for rewarding/punishing students.
✔ Search functionality for retrieving questions & papers.
✔ Recommendation system for similar question papers.
✔ Notification system for new uploads.
✔ Referral system to increase engagement.
✔ Scalability measures for peak server load times.
✔ Secure authentication with college email verification.

Out of Scope:
✖ Development of a mobile app (initial phase will focus on web).
✖ AI-based automated grading of answers.
✖ Offline functionality for accessing the repository.

4. Business Requirements

Functional Requirements

1. User Management:
- Students should be able to register and log in using their college email IDs (OAuth 2.0 integration).
- Administrators should have access to manage users, review uploaded papers, and manage the credit system.

2. Paper Upload and Processing:

- Students should be able to scan and upload exam papers (image or PDF format).
- The system should automatically extract metadata (academic year, semester, exam type, course code) using OCR.
- The system should provide a verifi cation workfl ow for administrators to review uploaded papers for readability and accuracy.

3. Question Extraction and Storage:
- The system should automatically segment scanned papers into individual questions.
- Questions should be stored with associated metadata.

4. Search and Retrieval:
- Students should be able to search for questions or papers based on metadata (course code, semester, keywords).
- Search results should display relevant questions or links to full papers.

5. Recommendation System:
- The system should recommend similar questions based on metadata and content.

6. Notification System:
- Students should receive notifications when new papers are uploaded or when a previously unavailable paper becomes available.

7. Credit System:
- Students should earn credits for uploading high-quality and unique papers.
- Students should be able to use credits to access papers.
- The system should track student credits.

8. Referral System:
- Students should be able to refer other students and earn rewards.

9. Reporting and Analytics (Admin Features):
- Administrators should have access to reports on uploads, downloads, user activity, and credit usage.

Non-Functional Requirements

1. Performance: The system should be responsive and handle a large number of users and uploads, especially during peak exam periods.
2. Scalability: The system should be scalable to accommodate future growth in users and data.
3. Security: The system should protect user data and prevent unauthorized access.
4. Usability: The system should be easy to use and navigate for both students and administrators.
5. Availability: The system should be available with minimal downtime.
6. Maintainability: The system should be easy to maintain and update.

5. Key Stakeholders

Stakeholder	Role & Responsibility
Students	Upload papers, earn/spend credits, search for questions
Admin	Verify and approve/reject papers
Developers	Build & maintain the web application
Project Manager	Oversee project execution & delivery
Clients (University/College)	Review and approve project features

6. Project Assumptions

- The college will provide access to student email addresses for authentication.
- Exam papers follow a relatively consistent format, which will aid in OCR accuracy.

7. Project Constraints

- Server Load: Traffic spikes during exams, minimal usage otherwise.
- Data Quality: Poor-quality uploads may affect search and recommendations.
- Security & Authentication: Only verified college emails should be allowed.
- User Engagement: Requires incentives to encourage uploads.
- Storage & Performance: Efficient storage and indexing for fast retrieval.

Constraint/Risk	Description	Mitigation Strategy
Server Load	Traffic spikes during exams	Auto-scaling on cloud hosting
Data Quality	Poor-quality uploads may affect search and recommendations	Admin verification & credit system
Security & Authentication	Only verified college emails should be allowed	College email authentication
User Engagement	Requires incentives to encourage uploads	Reward-based credit system & referral system
Storage & Performance	High volume of scanned documents	Efficient compression & indexing of stored papers

8. Cost-Benefit Analysis

Costs

- Development Costs: Web app development, database setup.
- Server Costs: Hosting, storage, scaling for peak loads.
- Security Measures: Email authentication, user data protection.

Benefits

- Increases accessibility to past question papers for students.
- Encourages knowledge sharing through credits & referrals.
- Improves search effi ciency by storing individual questions.
- Automates metadata extraction for better organization.
- Potential for monetization through subscriptions.

Return of Investment (ROI)

- Subscription Model: Premium users can pay for unlimited access.
- Institution Licensing: Universities can integrate & pay for access.

9. Conclusion

The Question Paper Repository Web Application will provide a structured, secure, and scalable solution for students to upload, access, and search past exam papers effi ciently. This credit-based, recommendation-driven platform will enhance academic resources and boost student participation.