

Kripaa - Comprehensive Exam Generation Report

Snapshot ID: 05e76a8a-2fad-4ae1-8c76-7a3b9e070b54 Generated: 2025-11-24 12:44

Executive Summary

- **Total Raw Questions Processed:** 145
- **Unique Concept Groups (Variants):** 115
- **Compression Ratio:** 1.26:1
- **Total Candidates Generated:** 162
- **Final Questions Selected:** 27
- **Final Paper Marks:** 115

Trend Analysis Results

Year Range: 2015-2024 **Emerging Topics:** 0 **Declining Topics:** 0

Topic Analysis (Enhanced with Section-Awareness & Cyclicity)

View on ethics by Aristotle

- **Module:** MODULE-I
- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** regular
- Appears every 3 years
- Next expected: 2022

- Confidence: 70%

Basic terms

- **Module:** MODULE-I
- **Status:** stable
- **Gap Score:** 6.0
- **Last Asked:** 2018
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** regular
- Appears every 2 years
- Next expected: 2020
- Confidence: 70%

Ethical Theories

- **Module:** MODULE-II
- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** mostly_regular
- Usually every 2 years
- Confidence: 50%

Types of inquiry

- **Module:** MODULE-III
- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** mostly_regular
- Usually every 2 years
- Confidence: 50%

Governing factors of an individual's value system

- **Module:** MODULE-I
- **Status:** stable
- **Gap Score:** 6.0
- **Last Asked:** 2018
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** regular
- Appears every 2 years
- Next expected: 2020
- Confidence: 70%

Engineering as social experimentation

- **Module:** MODULE-III
- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** mostly_regular
- Usually every 2 years
- Confidence: 50%

Purpose and concept of Engineering Ethics

- **Module:** MODULE-III
- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** mostly_regular
- Usually every 2 years
- Confidence: 50%

Ethical terms

- **Module:** MODULE-II

- **Status:** stable
- **Gap Score:** 5.0
- **Last Asked:** 2019
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** mostly_regular
- Usually every 2 years
- Confidence: 50%

Causes of an accident and identification of the preventive measures to be taken

- **Module:** MODULE-III
- **Status:** stable
- **Gap Score:** 6.0
- **Last Asked:** 2018
- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** insufficient_data
- Confidence: 0%

Personal and professional ethics

- **Module:** MODULE-I
- **Status:** stable
- **Gap Score:** 6.0
- **Last Asked:** 2018

- **Section Distribution:** A=0%, B=100%, C=0%
- **Section Preference:** B
- **Average Difficulty:** 3.0
- **Cyclicity Pattern:** regular
- Appears every 2 years
- Next expected: 2020
- Confidence: 70%

LLM Qualitative Insight (from Trend Analysis)

As an expert educational data analyst, here's an executive summary and strategic recommendations based on the provided exam trend data:

1. Executive Summary

The historical exam trends reveal a stable core curriculum with no significant emerging or declining topics. The most prominent pattern is the statistical recurrence of several "High Gap Topics" that are overdue for inclusion in upcoming exams. These include "Issues in engineering ethics" (Gap: 8.0), "Governing factors of an individual's value system" (Gap: 6.0), "Causes of an accident and identification of the preventive measures to be taken" (Gap: 6.0), "Basic terms" (Gap: 6.0), and "Personal and professional ethics" (Gap: 6.0). While detailed taxonomy shift data is unavailable, the nature of these high-gap topics suggests a continued emphasis on conceptual understanding, ethical reasoning, and practical application within a professional context. Students should prioritize these areas for focused preparation.

2. Practical/Analytical vs. Theoretical Shift

Without the detailed taxonomy shift statistics, it's challenging to definitively state if the exam is becoming more practical/analytical or staying theoretical. However, the "High Gap Topics" largely revolve around ethical considerations, value systems, and accident prevention. These areas typically require analytical reasoning, scenario-based problem-solving, and the application of theoretical concepts to real-world professional dilemmas, rather than purely theoretical recall or highly technical practical skills (e.g., coding). This

suggests a continued emphasis on applied theory and analytical thinking within a broader professional and ethical framework.

3. Critical Modules or Topics

The following topics are becoming critical due to their high recurrence gap:

- Issues in engineering ethics
- Governing factors of an individual's value system
- Causes of an accident and identification of the preventive measures to be taken
- Basic terms
- Personal and professional ethics

4. Strategic Recommendation for Students

Students should strategically prioritize a thorough and in-depth review of all "High Gap Topics." Given their historical absence, these topics are highly probable for the next exam. Beyond memorization, focus on understanding the underlying concepts, their practical implications, and be prepared to analyze scenarios, discuss ethical dilemmas, and propose solutions related to engineering ethics, personal/professional values, and accident prevention. A strong grasp of "Basic terms" is also essential. Since no topics are declining, maintaining a solid understanding of the entire curriculum remains important, but the high-gap topics warrant special attention.

Question Generation Strategy

Candidate Pool Breakdown

Origin Type	Count	Description
Historical	59	Reused from past papers
Generated Variant	61	LLM-rewritten variations
Generated Novel	42	New LLM-created questions

Section Distribution

Section	Candidates	Target Selection
A (Short)	60	10 questions
B (Medium)	72	12 questions
C (Long)	30	5 questions

Temperature Distribution (Multi-Temperature Ensemble)

Temperature	Count	Purpose
0.2	51	Conservative
0.5	75	Balanced
0.9	36	Creative

Voting & Selection Results

Selected: 27 / 162 **Excluded:** 135 **Selection Rate:** 16.7%

Exclusion Breakdown

Category	Count	Percentage
Rank Cutoff	63	46.7%
Low Relevance	49	36.3%
Section Mismatch	15	11.1%
Topic Cap	8	5.9%

Final Sample Paper

Paper ID: 5c706d7b-dfe1-4c11-80f2-0f20512032f1 **Total Marks:** 115 **Total Questions:** 27

Paper Structure

Section	Questions	Marks Each	Total Marks
A (Short)	10	2	20
B (Medium)	15	5	75
C (Long)	2	10	20
Total	27	-	115

Summary

This report documents the complete pipeline from $\{\text{len}(\text{raw_questions})\}$ historical questions to a $\{\text{paper.total_marks if paper else } 0\}$ -mark predicted exam paper using:

1. **Enhanced Trend Analysis** with section-awareness and cyclicity detection
2. **Multi-Temperature Ensemble Generation** using gemini-2.5-pro (temps: 0.2, 0.5, 0.9)
3. **Section-Aware Voting** with detailed exclusion tracking
4. **Quality-Controlled Selection** ensuring diversity and relevance

All data is stored in PostgreSQL for transparency and reproducibility.