TCET | THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Approved by AICTE & Govt. of Maharashtra | Affiliated to University of Mumbai (UoM)
• Conferred Autonomous Status by UGC for 10 years w.e.f. A.Y. 2019-20
• Accredited with 'A' Grade by National Assessment & Accreditation Council (NAAC)
• Programmes Accredited by National Board of Accreditation (NBA)
• Empowered Autonomous Status Conferred by University of Mumbai for 10 years w.e.f. A.Y. 2025-26

IN-SEMESTER EXAMINATION-I

BE (Semester-VII)

SUBJECT – PE III- Web Analytics & Information Retrieval

Branch: IT
Div.: ALL
Duration: 60 Minutes

Date: 14/07/2026
Timing: 04:30pm to 05:30pm
Maximum Marks: 20

Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels
	a.	Analyze the role of indexing in an Information Retrieval system.	2	CO1	AN
	b.	Illustrate the use of web metrics in evaluating website performance.	2	CO1	A
	c.	Analyze the significance of document representation in Information Retrieval.	2	CO1	AN
	d.	Demonstrate Key Performance Indicator (KPI) in Web Analytics with example.	2	CO2	A
	e.	Illustrate how event tracking can be used to monitor user interactions on a website.	2	CO2	A
	f.	Analyze the impact of bounce rate on website SEO performance.	2	CO3	AN
	g.	Apply on-page SEO techniques to improve the visibility of a webpage.	2	CO3	A
Q.2	a.	Analyze different website traffic sources and their impact on business performance.	5	CO2	AN
		OR			
	b.	A website has 50,000 sessions, 2,500 conversions, and ₹5,00,000 revenue. Evaluate the campaign performance by calculating the Conversion Rate and interpreting the result.	5	CO2	E
Q.3	a.	A webpage received 24,000 impressions and 1,920 clicks in Google Search results. Calculate the Click-Through Rate (CTR) and evaluate whether the SEO campaign is effective.	5	CO3	E
		OR			
	b.	Analyze different SEO techniques and recommend the most suitable strategy for improving website visibility.	5	CO3	AN

IN-SEMESTER EXAMINATION-II

BE (Semester-VII)

SUBJECT – PE-III: Web Analytics and Information Retrieval

Branch: IT **Date: 02/09/2026**
Div.: ALL **Timing: 4:00 pm to 5:00 pm**
Duration: 60 Minutes **Maximum Marks: 20**
Instructions –

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Answer any 5 of the following questions	Marks	Course Outcomes	Learning Levels	PI
	a.	Implement the Vector Space Model to represent a document and a query in an Information Retrieval system.	2	CO4	A	1.7.1
	b.	Apply the PageRank algorithm to determine the importance of a web page in a linked web structure.	2	CO4	A	1.7.1
	c.	Analyze the influence of ranking parameters on the position of web pages in search results.	2	CO4	AN	2.4.4
	d.	Assess the importance of Key Performance Indicators (KPIs) in evaluating website performance.	2	CO5	E	5.6.1
	e.	Analyze the role of A/B testing in evaluating user engagement across webpage designs.	2	CO5	AN	4.1.3
	f.	Differentiate between batch processing and stream processing with respect to web analytics applications.	2	CO6	AN	2.2.4
	g.	Analyze clickstream data to determine the sequence of actions performed by a user on a website.	2	CO6	A	4.3.2
Q.2	a.	Evaluate the role of CRO and personalization strategies in improving user engagement and conversion rates.	5	CO5	E	1.6.1
		OR				
	b.	Design a basic recommendation system for an online shopping platform by integrating content-based and collaborative filtering techniques.	5	CO5	A	3.4.1
Q.3	a.	Analyze clickstream data to determine user navigation patterns and evaluate its usefulness in understanding website behaviour.	5	CO6	AN	4.3.2
		OR				
	b.	A university plans to implement semantic search for its digital library. Evaluate Word2Vec and BERT embeddings based on their ability to capture semantic meaning and retrieve relevant documents.	5	CO6	E	5.6.1

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END SEMESTER EXAMINATION, October 2026

B.E. SEMESTER VII (CBCGS-HME 2023)

Branch:	**IT**	**Q.P. Code:**	**E7C4P31D64-1**
Subject:	**PE-III (Web Analytics and Information Retrieval)**	**Duration:**	**2 hours**
Subject Code:	**PEC- IT 7023**	**Max. Marks:**	**60**

Instructions:
1. **All sections are compulsory**
2. **Figures to the right indicate full marks.**
3. **Assume suitable data if necessary and state the assumptions clearly.**

Section-I **Short Answer Questions (Answer any 05 questions out of 06)** **(10 Marks)**
(Fundamental, Core Types)

Q. No.		Marks	CO	RBT Level	PI
1	Analyze the significance of document representation in Information Retrieval.	2	CO1	AN	2.5.2
2	Analyze the importance of traffic acquisition reports in evaluating website performance.	2	CO2	AN	2.8.2
3	Illustrate how keyword optimization improves search engine ranking.	2	CO3	A	5.4.1
4	Apply the Vector Space Model to represent a document and a query in an IR system.	2	CO4	A	1.6.1
5	Analyze the difference between content-based filtering and collaborative filtering in recommendation systems.	2	CO5	AN	2.4.2
6	Apply clickstream data to identify the sequence of actions performed by a user on a website.	2	CO6	A	1.6.1

Section-II **Descriptive Answer Questions (Answer any 04 out of 06)** **(20 Marks)**
(Descriptive, Comprehension Types)

1	Apply the concepts of web analytics to improve website performance using suitable examples.	5	CO1	A	2.6.3
2	A website recorded 12,000 sessions during a month. The total number of page views was 48,000, including 9,600 repeated page views. Calculate:(i) Unique Page Views(ii) Average Page Views per Session(iii) Interpret the website's user engagement based on the calculated metrics.	5	CO2	E	4.6.2
3	A webpage received 24,000 impressions and 1,920 clicks in Google Search results. Calculate the Click-Through Rate (CTR) and evaluate whether the SEO campaign is effective.	5	CO3	E	2.8.2
4	Evaluate the HITS algorithm with respect to its identification of hubs and authorities in a web network.	5	CO4	E	2.4.2
5	Analyze session-based recommendation systems and explain how user sessions can be used to generate relevant recommendations.	5	CO5	AN	1.6.1
6	Analyze the role of social media and mobile analytics in supporting real-time decision-making.	5	CO6	AN	1.6.1

TCET/EXAM/FRM/IP-03/06

REVISION: B

Section-III	Long Answer Question (Answer any 03 out of 05) (Application, Analytical, Evaluation, Design Type)				(30 Marks)
1	Evaluate the effectiveness of different web analytics tools (Google Analytics, Matomo, Adobe Analytics) for enterprise-level website performance evaluation.	10	CO2	E	5.6.1
2	Apply web traffic analysis techniques to recommend improvements for increasing user engagement and reducing bounce rate.	10	CO3	A	2.6.2
3	Evaluate different search intents - informational, navigational, and transactional and explain how understanding search intent can improve the effectiveness of a search engine.	10	CO4	E	2.4.2
4	Create a web analytics and optimization framework for an e-commerce website that integrates data collection, KPI monitoring, user behavior analysis, A/B testing, CRO, and personalization.	10	CO5	C	1.6.1
5	Evaluate the importance of privacy, user consent, and cookie policies in web analytics.	10	CO6	E	2.4.2