

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - III EXAMINATION - WINTER 2025

Subject Code: BE03000241

Date: 24-12-2025

Subject Name: Indian Knowledge System for Engineering

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

	Marks
Q.1 (a) Define Indian Knowledge System and explain its importance in engineering education	03
(b) Describe the methodological approaches used for studying ancient Indian engineering practices	04
(c) Discuss the engineering innovations and water management systems of the Indus Valley Civilization with suitable examples	07
Q.2 (a) Explain the contributions of Vedic and Post-Vedic periods toward civil and architectural engineering	03
(b) Describe the technological advancements achieved during the Gupta period and their influence on modern Indian architecture	04
(c) Analyze the socio-political factors that shaped irrigation and water management systems during the Chola and Delhi Sultanate periods	07
OR	
(c) Evaluate the role of fort and temple architecture during the Medieval Period as symbols of technological and cultural excellence	07
Q.3 (a) Explain the impact of British rule on the transformation of Indian engineering education	03
(b) Discuss the establishment and contribution of Thomason College of Civil Engineering (Roorkee) to modern civil engineering in India	04
(c) Evaluate the engineering achievements and national development projects undertaken in post-independence India	07
OR	
(a) Write a short note on the evolution of Public Sector Enterprises in India's industrialization	03
(b) Analyze the technological innovations in India's space and nuclear programs since independence	04
(c) Examine the significance of Sir M. Visvesvaraya's contributions toward India's industrial and infrastructural development	07

- Q.4 (a)** List major challenges faced by Indian engineers in the 21st century **03**
- (b)** Discuss the impact of AI, IoT, and robotics on the future of Indian engineering and smart city initiatives **04**
- (c)** Critically assess India's advancements in green and sustainable engineering with reference to renewable energy technologies **07**

OR

- (a)** What is "Public Sector Engineering Enterprise"? Give two examples and their major achievements **03**
- (b)** Evaluate how HAL and DRDO exemplify India's technological progress in aeronautical and defense engineering **04**
- (c)** Propose engineering strategies to address climate change and sustainability challenges in Indian infrastructure **07**
- Q.5 (a)** How has the modernization of the manufacturing sector improved India's global competitiveness? **03**
- (b)** Explain the interrelationship between industrial automation, materials engineering, and sustainability **04**
- (c)** Critically evaluate the relevance of India's indigenous knowledge systems in promoting "Atmanirbhar Bharat" and "Make in India" initiatives. **07**

OR

- (a)** Mention any three key features of India's "Make in India" initiative relevant to engineers **03**
- (b)** Examine how indigenous knowledge can help reduce dependency on imported technologies **04**
- (c)** Suggest sustainable engineering models that integrate traditional wisdom with modern innovation for the next decade **07**
