Semester: 7th			
Paper code: OAE421T	**L**	**T/P**	**Credits**
Subject: Digital & Smart Cities	**4**	**0**	**4**

Marking Scheme:

1. Teachers Continuous Evaluation: As per university examination norms from time to time
2. End Term Theory Examination: As per university examination norms from time to time

INSTRUCTIONS TO PAPER SETTERS: Maximum Marks: As per university norms

1. There should be 9 questions in the end term examination question paper.
2. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions.
3. Apart from Question No. 1, the rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, students may be asked to attempt only 1 question from each unit.
4. The questions are to be framed keeping in view the learning outcomes of course/paper. The standard/ level of the questions to be asked should be at the level of the prescribed textbooks.
5. The requirement of (scientific) calculators/ log-tables/ data-tables may be specified if required.

Course Objectives:

1.	To familiarize students with the fundamental concepts and components of smart cities.
2.	To explore the role of AI, ML, and IoT in building innovative smart city solutions.
3.	To provide insights into the challenges and opportunities in the digital infrastructure of smart cities.
4.	To promote an understanding of the social, ethical, and governance aspects of smart city development.

Course Outcomes:

CO1	Acquire a comprehensive understanding of the concepts, technologies, and challenges associated with smart cities.
CO2	Develop the ability to apply AI and IoT technologies in designing smart city solutions and addressing urban challenges.
CO3	Gain knowledge of digital infrastructure components necessary for building smart cities, including data management and cybersecurity.
CO4	Appreciate the importance of sustainable and inclusive development principles in smart city planning and implementation.

Course Outcomes (CO) to Programme Outcomes (PO)

Mapping (Scale 1: Low, 2: Medium, 3: High

CO/ PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1	2	3	2	-	-	1	1	1	1	1	1	2
CO2	2	2	-	3	3	-	-	-	-	-	-	2
CO3	2	2	2	3	3	-	1	-	1	-	-	-
CO4	2	2	-	3	3	-	-	-	-	-	1	-

Course Overview:

This course provides students with an in-depth understanding of digital and smart cities. It covers the fundamental concepts of smart cities, the role of AI, ML, and IoT in enabling smart solutions, and the importance of digital infrastructure and governance. Through case studies and real-world examples, students will gain insights into the challenges and opportunities in building sustainable and inclusive smart cities in the context of Indian and global scenarios.

UNIT I **[10]**

Unit 1: Introduction to Smart Cities: Introduction to smart cities: Concepts, components, and characteristics, Role of AI, ML, and IoT in enabling smart city solutions. Case studies of successful smart city implementations in India and worldwide.

UNIT II **[10]**

Digital Infrastructure for Smart Cities: Urban sensing and data collection technologies. Cloud computing, edge computing, and data centers in smart cities. Cybersecurity and privacy challenges in smart city infrastructures.

UNIT III **[10]**

AI and IoT Applications in Smart Cities: Smart transportation systems and traffic management. Energy-efficient buildings and smart grids. Healthcare and public safety solutions. Waste management and environmental monitoring.

UNIT IV **[10]**

Smart Governance and Citizen Engagement: E-governance and digital services for citizens. Open data initiatives and data-driven decision-making. Community engagement and participatory platforms. Social and ethical considerations in smart city development.

Text Books:

1. "Smart Cities: Digital Transformations, Smart Urban Infrastructures and Digital Innovation" by Matteo Zignani, Vincenzo Mighali, and Raffaele Giaffreda.
2. "Smart Cities: Foundations, Principles, and Applications" by Hossam Gabbar.

Reference Books:

1. "Smart Cities: Big Data Prediction Methods and Applications" by Robert J. Howlett and Lakhmi C. Jain.
2. "Internet of Things for Smart Cities: Technologies, Big Data and Security" by Fadi Al-Turjman.
3. "Artificial Intelligence and IoT for Smart Cities: Applications and Security" by Fahim Ahmed Shaikh.

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