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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 1

Winter Semester: 2021 - 22

Course Code: CIV 2006

Course Name: Infrastructure Systems for Smart Cities

Program & Sem: B. Tech. (IV Sem) & B. Des. (VI Sem)

Date: 27 April 2022

Time: 03:00 PM to 04:00 PM

Max Marks: 30

Weightage: 15%

Instructions:

(i) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.

(05Qx 02M= 10M)

1. Define Infrastructure. List examples of Hard and Soft Infrastructure.
(C.O.No.1) [Knowledge]
2. The presence of digital layer or data layer is the main point that differentiates a smart city from a traditional city. Explain in brief about the digital or data layer.
(C.O.No.1) [Knowledge]
3. Efficient infrastructure is the backbone of any smart city. List the core infrastructure elements in a smart city.
(C.O.No.1) [Knowledge]
4. Autonomous buildings are a way to manage energy efficiently in the Smart Cities. Mention any four features of the same.
(C.O.No.1) [Knowledge]
5. The Smart Cities Mission of the Government is a bold, new initiative It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country. List any four objectives of Smart city development.
(C.O.No.1) [Knowledge]

Part B [Thought Provoking Questions]

Answer both the Questions. Each question carries FOUR marks

(2Qx4M=8M)

6. If you are given the responsibility of preparing a Smart city proposal for your city (or the nearest city to your town/village), what would be the aspects of area-based development you would propose if the city aims to adopt the retrofitting model.
(C.O.No.1) [Comprehension]
7. The city selection process is based on the idea of Cooperative and Competitive Federalism. The city selection process follows a Challenge method in two stages, in conjunct, to select cities. Describe the City selection process in Stage-II of City Challenge competition using a flow chart.
(C.O.No.1) [Comprehension]

Part C [Problem Solving Questions]

Answer both the Questions. Each question carries SIX marks.

(2Qx6M=12M)

8. Betting on the technology and its best practices being embraced by smart cities, India has set big goals for urban development, expanding the successful projects and new age practices to 4,000 cities with a population of 5,00,000 each by running the mission into a movement in the next two years or before its deadline ending in 2023. This plan and promise of smart cities across the country though promising is riddled with challenges. Enumerate the key challenges in smart city development and suggest the measures required to overcome these challenges.

(C.O.No.1) [Comprehension]

9. Smart cities use intelligent technology, connected devices, and instantaneous data to solve real-world problems. From reducing energy use to alleviating traffic congestion, smart cities are positively changing the lives of urban residents worldwide. To address these, cities are implementing smart technologies in everything from street lamps and drones to robotics and building information modeling (BIM). Additionally, with the expansion of the Internet of Things (IoT), the value of IoT in smart cities is expected to reach \$330.1 billion by 2025—up 316 percent from 2018. Briefly explain the anatomy of Smart cities with associated smart features.

(C.O.No.1) [Comprehension]



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST 2

Winter Semester: 2021 - 22

Course Code: CIV 2006

Course Name: Infrastructure Systems for Smart Cities

Program & Sem: B. Tech. (IV Sem) & B. Des. (VI Sem)

Date: 2nd JUNE 2022

Time: 03:00PM to 04:00PM

Max Marks: 30

Weightage: 15%

Instructions:

- (i) *Read the all questions carefully and answer accordingly.*

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.

(5Qx2M=10M)

1. Identify among the below the need for inclusive planning approach for smart cities development.

- [a] Economic disparity [b] Social exclusion [c] Lack of basic facilities [d] All the above

(C.O.No.2) [Knowledge]

2. Large volumes of rich data (structured data, sensor data, audio, video) that form the lifeblood of smart solutions is called

- [a] Big data [b] Critical data [c] Raw data [d] None of the above

[02 M] (C.O.No.1) [Knowledge]

3. Citizen Engagement Framework to prepare a strategic plan for Smart cities consists of the following set of Steps "1. Design, 2. Prioritize, 3. Analyze, 4. Define, 5. Implement, 6. Understand". Arrange these steps in order

- [a] 1, 6, 2, 3, 4, 5 [b] 4, 6, 2, 3, 5, 1 [c] 1, 6, 2, 3, 5, 4 [d] 4, 6, 3, 2, 1, 5

[02 M] (C.O.No.2) [Knowledge]

4. In smart governance area of Government 3.0, the Smart City concept is intrinsically connected to

- [a] Big data and data analytics [b] IoT solutions [c] Cloud computing [d] All of the above

[02 M] (C.O.No.1) [Knowledge]

5. Which of the following is not an initiative under G2C type of interaction in E-governance.

- [a] Bhoomi project [b] Khajane project [c] FRIENDS [d] Gyandoot

[02 M] (C.O.No.2) [Knowledge]

Part B [Thought Provoking Questions]

Answer both the Questions. Each question carries FOUR marks.

(2Qx4M=8M)

6. The concept of inclusive urban planning is derived from the integrated development approach for accessible, resilient, affordable and sustainable urban livelihood. Discuss the components of Inclusive planning and Development. (C.O.No.2) [Comprehension]
7. Disruptive technology is an innovation that significantly alters the way that consumers, industries, or businesses operate. A disruptive technology sweeps away the systems or habits it replaces because it has attributes that are recognizably superior. Define Big data and describe the 3Vs of Big data. (C.O.No.1) [Comprehension]

Part C [Problem Solving Questions]

Answer both the Questions. Each question carries SIX marks.

(2Qx6M=12M)

8. Cities are estimated to support more than 40% of India's population and more than 75% of the national GDP by 2030. Smart city development is required to manage environmental impact, urban resilience and financing due to increasing urbanization and different dimensions of smart city will help to develop the smart city in right direction. In this context, explain any 3 Key dimensions of Smart city development. (C.O.No.1) [Comprehension]
9. The central E Governance is to make government services efficient, accessible and convenient. The use of E governance is to overcome the boundaries that is of a traditional paper-based system. It is the enhancement of current government and it also helps to provide better government services to the citizen. Hence, E governance delivers SMART government. Classify the types of interactions that takes place in the Smart Governance and Explain G2B interaction with examples of the initiative. (C.O.No.2) [Comprehension]



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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

END TERM EXAMINATION

Winter Semester: 2021 - 22

Course Code: CIV 2006

Course Name: Infrastructure Systems for Smart Cities

Program & Sem: B.Tech (IV Sem) & B.Des (VI Sem)

Date: 1st July 2022

Time: 9:30 AM to 12:30 PM

Max Marks: 100

Weightage: 50%

Instructions:

(ii) Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries TWO marks.

(15Qx2M = 30M)

1. The Centre announced the names of cities & towns to be developed as smart cities on 27th Aug 2015. Which state gets the maximum number of aspirant smart cities?
A) Maharashtra B) Tamil Nadu C) Uttar Pradesh D) Madhya Pradesh
(C.O.No.1) [Knowledge]
2. Identify challenges to developing smart cities
A) Security and privacy B) Infrastructure C) Inclusiveness D) All of the above
(C.O.No.1) [Knowledge]
3. Sensors are a key in fitting out an Internet of Things network. What can such a network monitor?
A) Vehicular and pedestrian traffic B) Congestion hot spots and offer alternative routing
C) Air quality D) All of the above
(C.O.No.2) [Knowledge]
4. A digital inclusion is
A) An algorithm to attract people to the network website
B) Improve access for all of the population to digital tools
C) Full participation by government and business in a digital platform
D) B and C
(C.O.No.2) [Knowledge]
5. What does "smart city" mean to you?
A) A new buzzword only for rich countries which will soon pass
B) A local authority that uses digital technology as a tool for its sustainable and inclusive urban development strategy
C) An automated and data-controlled city, made of sensors and servers sold by digital firms
D) All of the above
(C.O.No.1) [Knowledge]

6. What does “open data” mean?
- A) Authorize everyone to produce their own databases freely
 - B) Allow all contributors to feed a single public database
 - C) Offer the public, to all without discrimination, digitized data that is accessible and can be freely (re)used
 - D) Only Government can access
- (C.O.No.1) [Knowledge]
7. The core element of architecture of smart city is
- A) Mobile Unified service
 - B) Urban application form
 - C) Management Centre
 - D) Integrated development
- (C.O.No.2) [Knowledge]
8. Consider the following statements
- a) A 'smart city' is an urban region that is highly advanced in terms of overall infrastructure, sustainable real estate, communications and market viability.
 - b) It will provide real time information on parking, traffic congestion, public transport
 - c) Smart cities will be energy efficient and will have low carbon foot print
- Which of the above statements is/are correct?
- A) 1,2
 - B) 2,3
 - C) 1,3
 - D) All are correct
- (C.O.No.1) [Knowledge]
9. Which of the following is not an Indian Smart Cities mission strategy?
- A) Pan-city initiative in which at least one Smart Solution is applied city-wide
 - B) Develop areas step-by-step – three models of area-based developments
 - C) Greenfield
 - D) Adequate water supply
- (C.O.No.1) [Knowledge]
10. Which of the following is not an indicator of smart city?
- A) Exclusive society
 - B) Smart Governance
 - C) Smart environment
 - D) Smart Living
- (C.O.No.2) [Knowledge]
11. A technology in which the connectivity between physical objects along with controllers, actuators and sensors synchronized over an Internet is
- A) Cloud
 - B) Big data
 - C) IoT
 - D) Block chain
- (C.O.No.2) [Knowledge]
12. Smart Environment is a product designed to detect different parameters and gas pollutants that impact in the air quality. Identify the features of Smart Environment products
- A) Interoperability
 - B) Any cloud platform
 - C) High accuracy sensors
 - D) All the above
- (C.O.No.2) [Knowledge]
13. Identify the correct sequence of Smart City Development stage/Maturity model.
- A) Initial, Integral, Intentional, Transformed
 - B) Transformed, Intentional, Initial, Integral
 - C) Initial, Intentional, integral, Transformed
 - D) Initial, Transformed, Intentional, Integral
- (C.O.No.2) [Knowledge]
14. A system of managing Solid waste that can solve the conventional methods like door-to-door, curb-side, block, community bins collections and Transportation to Transfer station is called

- A) Incineration
C) Solid waste management
- B) Automatic Waste Collection System
D) None of the above

(C.O.No.2) [Knowledge]

15. Various cities joined networks of common interests to provide with intelligence their urban spaces or to structure virtual teams of collaborative people is called

- A) Smart city IoT B) Smart cities group C) Smart Network D) All of the above

(C.O.No.1) [Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries TEN marks.

(4Qx10M = 40M)

16. The concept of smart cities emerged in the mid-1990s as the internet and information infrastructure became widespread. America Online (AOL) first suggested the concept of a smart city in which services are provided through a network. With the advent of the internet, telecommunications companies began offering new service models and testing pilot projects. Discuss the developmental stages of Smart Cities over time and elaborate on at least two Smart City models. (C.O.No.1) [Comprehension]

17. Smart governance and good governance are two sides of the same coin. The use of the internet and digital technology is creating a progressive government - public partnership, strengthening government institutions and integrating all sections of society. Information and Communication Technology (ICT) has become an integral part of our lifestyle. Describe the various curves in Government 3.0 and also mention any two Benefits, drawbacks and challenges of Smart Governance. (C.O.No.2) [Comprehension]

18. Urbanization obviously has its own challenges, including tracking and measuring smart city performance, collecting and analyzing city information with geographic location, processing big data, and uncovering hidden patterns and trends in urban regions for the decision-makers and for the city managers. Describe the factors influencing a Traffic Dashboard design with the help of a block diagram. (C.O.No.2) [Comprehension]

19. There are many areas of action of the Smart Environment and its benefits for citizens, including smart cities that are committed to the efficient management of energy and natural resources, with the aim of achieving energy efficiency, optimising consumption and increasing and optimising the use of renewable energies, as well as reducing CO₂ emissions. Indicate any 4 benefits of IoT in the Environment. Describe the features of any two Hardware requirements for building IoT devices for Smart Environment. (C.O.No.3) [Comprehension]

Part C [Problem Solving Questions]

Answer both the Questions. Each question carries 15 marks.

(2Qx15M = 30M)

20. The smart city proposal of each shortlisted city includes either one or a combination of the area-based development and pan-city initiatives featuring smart solution(s). A key feature in the smart city plan is to try to ensure that there is a sense of inclusiveness among citizens. Elaborate on the Area based proposal, Implementation plan and Financial plan presented in the Smart City Proposal of the City allotted to you for your assignment. (C.O.No. 1) [Comprehension]

21. Smart mobility is a core element of smart city initiatives. Urban mobility is a major “pain point” for many city dwellers, due to frequent traffic congestion and long commuting times. On the other

hand, various innovative solutions in this area have already progressed to the implementation stage. Existing projects include traffic guidance systems, parking spaces with sensors (which enable online usage verification), congestion forecasting integrated with intelligent traffic lights, car and bike sharing systems, and autonomous public and private transportation. Explain any 5 Intelligent technologies that enables Smart Mobility. (C.O.No. 3) [Comprehension]