

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-7 SEMESTER – OLD PAPER – S22 TO S25 – QUESTION BANK

Subject Name & Code:

Infrastructure for smart Cities- 3170628

Unit 1 - Fundamental of Smart City & Infrastructure

Repeated Questions:

1. **What are the objectives/goals of a smart city?**
 - Appeared in: S22 (Q1a, 03 marks), W22 (Q1a, 03 marks), S23 (Q4a, 03 marks), S24 (Q1a, 03 marks), S25 (Q1a, 03 marks)
2. **Explain the concept of a Smart City. / What do you understand by a smart city?**
 - Appeared in: S22 (Q1c, 07 marks), W22 (Q1c, 07 marks), W23 (Q1a, 03 marks), S25 (Q1a, 03 marks)
3. **Describe the features of a smart city.**
 - Appeared in: S22 (Q1b, 04 marks), S24 (Q1b, 04 marks)
4. **Give the advantages and disadvantages of a smart city.**
 - Appeared in: S22 (Q2c-OR, 07 marks), W22 (Q1b, 04 marks), S24 (Q2c-OR, 07 marks)
5. **What are the smart city challenges and measures? (Explain in Indian context)**
 - Appeared in: W22 (Q2c-OR, 07 marks), W23 (Q2c, 07 marks), W24 (Q1c, 07 marks)
6. **Explain the history of the smart city project in India. / Briefly describe the history of Smart Cities in India.**
 - Appeared in: W22 (Q2c, 07 marks), S25 (Q1b, 04 marks)

Other Important Questions:

1. **Write the difference between a city and a smart city.**
 - Appeared in: W24 (Q1a, 03 marks)
2. **What are the factors required to become a smart city? / What are the requirements of smart cities?**
 - Appeared in: S22 (Q1c, 07 marks), S24 (Q1c, 07 marks)
3. **Explain the key challenges in managing infrastructure in India. Suggest suitable solutions.**
 - Appeared in: S25 (Q1c, 07 marks)
4. **Explain the various types of infrastructure systems.**
 - Appeared in: S24 (Q2c, 07 marks)
5. **What is Infrastructure Need Assessment?**

- Appeared in: S24 (Q3b, 04 marks), S23 (Q3b-OR, 04 marks)
- 6. **Give a brief history of the smart city project in India.**
 - Appeared in: W22 (Q2c, 07 marks)
- 7. **Give targets laid down by GOI for the development of smart cities.**
 - Appeared in: S23 (Q5a-OR, 03 marks)
- 8. **List down the procedure for the selection of a smart city in India.**
 - Appeared in: S23 (Q4b, 04 marks)
- 9. **Explain various steps for the selection of a smart city.**
 - Appeared in: W23 (Q5c, 07 marks)
- 10. **What is a smart city challenge?**
 - Appeared in: S22 (Q5a-OR, 03 marks), S24 (Q5a-OR, 03 marks)
- 11. **Give SWOT analysis of any one smart city of India.**
 - Appeared in: W23 (Q1c, 07 marks)
- 12. **Write a note on LAVASA: India's first fully planned Hill City.**
 - Appeared in: W22 (Q2b, 04 marks), W23 (Q2b, 04 marks)

Unit 2 - Planning and Development of Smart City Infrastructure

Repeated Questions:

1. **What is a green building? Explain the concept of a green building.**
 - Appeared in: S22 (Q2b, 04 marks), S24 (Q2b, 04 marks), W22 (Q3a, 03 marks)
2. **Write about the economic benefits of green building. / What are the advantages of green building?**
 - Appeared in: S22 (Q2a, 03 marks), S24 (Q2a, 03 marks), W23 (Q1b, 03 marks)
3. **Explain Smart Grid.**
 - Appeared in: S24 (Q3a, 03 marks), W22 (Q3a-OR, 03 marks), W23 (Q5b-OR, 04 marks)
4. **Explain public safety and security in a smart city.**
 - Appeared in: S24 (Q4b-OR, 04 marks), S23 (Q3b, 04 marks)
5. **What are the different phases of the disaster management cycle? / Explain Disaster Management Cycle.**
 - Appeared in: S24 (Q3a-OR, 03 marks), S23 (Q2c-OR, 07 marks), W23 (Q2c-OR, 07 marks)
6. **Explain different types of cyber threats. / What are the major threats related to cyber security in Smart Cities?**
 - Appeared in: S22 (Q4a, 03 marks), W24 (Q3b-OR, 04 marks), S25 (Q2b, 04 marks)

Other Important Questions:

1. **Define sustainable green buildings.**
 - Appeared in: S25 (Q2a, 03 marks)
2. **List out the objectives of a green building?**
 - Appeared in: W24 (Q2a, 03 marks)
3. **Discuss key technologies needed for a smart city.**
 - Appeared in: S22 (Q2c, 07 marks), W22 (Q2a, 03 marks)
4. **Explain energy and ecology in the context of a Smart City. / Discuss the role of solar energy and ecology in the development of Smart Cities.**
 - Appeared in: W22 (Q3b, 04 marks), S25 (Q2c, 07 marks)
5. **Describe the aim and objects of a Solar Smart City. / What are the Aim and objectives of solar smart cities?**
 - Appeared in: W22 (Q3c, 07 marks), S23 (Q2b, 04 marks)
6. **Describe how safety, security, and disaster management are integrated in Smart City planning.**
 - Appeared in: S25 (Q2c-OR, 07 marks)
7. **Give various cyber safety tips.**
 - Appeared in: W23 (Q2a, 03 marks)

8. **Discuss current security and privacy protection technologies for a Smart City.**
 - Appeared in: W22 (Q3c-OR, 07 marks)
9. **Describe the desired criteria for housing in Smart Cities. / Explain the criteria for housing in a smart city.**
 - Appeared in: W22 (Q3b-OR, 04 marks), W23 (Q5c-OR, 07 marks)
10. **What is Early Warning System (EWS)? Write a short note on it.**
 - Appeared in: S24 (Q5b, 04 marks), S23 (Q1b, 04 marks)
11. **List out different agencies with their areas for monitoring and early warning in India.**
 - Appeared in: W24 (Q2c, 07 marks)
12. **What are the four basic elements of an early warning system (EWS)?**
 - Appeared in: W23 (Q5a-OR, 03 marks)
13. **What are the challenges and solutions for solar power plants? / What are the issues and challenges for solar power plants in India? How to overcome the challenges?**
 - Appeared in: W23 (Q5b, 04 marks), W24 (Q2c-OR, 07 marks)
14. **Explain various forms of solar energy in which it can be harnessed? Also, give benefits of solar energy.**
 - Appeared in: S23 (Q5c-OR, 07 marks)

Unit 3 - Intelligent Transport Systems

Repeated Questions:

1. **What is an Intelligent Transportation System (ITS)? Define ITS. Write its objectives.**
 - Appeared in: S22 (Q3a, 03 marks), W23 (Q3b, 04 marks), W24 (Q3c-OR, 07 marks)
2. **Give purpose and application of Intelligent Transportation System.**
 - Appeared in: S23 (Q1a, 03 marks)
3. **Enlist various applications of GIS in Transportation Engineering. / Write about the application of GIS in transportation.**
 - Appeared in: S24 (Q4b, 04 marks), W22 (Q4b, 04 marks), S22 (Q3b-OR, 04 marks)
4. **Describe GPS in transportation system management.**
 - Appeared in: S24 (Q4c-OR, 07 marks), W22 (Q4c, 07 marks)
5. **Explain the concept of E-ticketing.**
 - Appeared in: S24 (Q3c-OR, 07 marks), S22 (Q3c-OR, 07 marks), S23 (Q4c, 07 marks)
6. **Write a short note on Traffic safety management.**
 - Appeared in: S24 (Q3b-OR, 04 marks), S23 (Q3a, 03 marks)
7. **Give your views on road safety policies. Explain National Road Safety Policy (2010).**
 - Appeared in: S24 (Q3c, 07 marks), S22 (Q3c, 07 marks), W24 (Q3c, 07 marks)
8. **What do you understand about Solar vehicles?**
 - Appeared in: S24 (Q4a, 03 marks), S23 (Q4a-OR, 03 marks)

Other Important Questions:

1. **What is the role of GPS in intelligent transportation systems? / Describe the function of GPS and GIS in managing urban traffic.**
 - Appeared in: S25 (Q3a, 03 marks), S25 (Q3b, 04 marks)
2. **What are the key features of Intelligent Transport Systems (ITS)?**
 - Appeared in: S25 (Q3b-OR, 04 marks)
3. **Describe the integration of traffic safety management, mobility services, and e-ticketing in Smart City transportation planning.**
 - Appeared in: S25 (Q3c, 07 marks)
4. **Define smart vehicles. / What is a smart car? Give features of smart cars. / Explain any three features of smart cars. / Enlist the features of a Smart Car.**
 - Appeared in: S25 (Q3a-OR, 03 marks), S22 (Q4b-OR, 04 marks), W23 (Q3a, 03 marks), W22 (Q4a, 03 marks)
5. **Explain the importance of clean fuels and electric vehicles in sustainable urban transport systems. / Write in brief about fuels for the future. / Write short note on: Fuels of Future.**
 - Appeared in: S25 (Q3c-OR, 07 marks), W24 (Q3b, 04 marks), W22 (Q4a-OR, 03 marks)

6. Write a short note on Fuel Cell Electric Vehicle.

- Appeared in: W23 (Q4b, 04 marks)

7. What is smart mobility and how can it be improved?

- Appeared in: S22 (Q3b, 04 marks), S23 (Q5b-OR, 04 marks)

8. List out various smart transport systems for smart cities.

- Appeared in: W24 (Q3a-OR, 03 marks)

9. What are the key drivers and tools of ITS?

- Appeared in: W23 (Q4a, 03 marks)

10. What do you understand by Satellite Navigation system? Explain NavIC in detail.

- Appeared in: W23 (Q3c, 07 marks)

11. Give recommendations for infrastructure improvement and vehicle technology for traffic safety.

- Appeared in: S22 (Q4c-OR, 07 marks)

12. Explain GIS for transportation engineering in detail.

- Appeared in: S23 (Q3c-OR, 07 marks)

Unit 4 - Management of Water Resources and Related Infrastructure

Repeated Questions:

1. **What do you mean by smart water management? / Enlist the goals and tools of Smart Water Management.**
 - Appeared in: S22 (Q5a, 03 marks), S24 (Q5a, 03 marks), W22 (Q5a, 03 marks)
2. **Describe innovative sanitation solutions for smart cities. / Explain Innovative sanitation Solutions for smart cities.**
 - Appeared in: S24 (Q5c, 07 marks), W24 (Q4b, 04 marks), W23 (Q3b-OR, 04 marks)
3. **Discuss the issues and challenges with the existing urban sanitation system?**
 - Appeared in: S22 (Q4b, 04 marks), W24 (Q4c-OR, 07 marks)
4. **Give some suggestions to improve the existing water conveyance system.**
 - Appeared in: S22 (Q4a-OR, 03 marks), S24 (Q4a-OR, 03 marks)
5. **What is flood management in urban planning? / Explain causes of floods. / What are the causes of flood?**
 - Appeared in: S25 (Q4a, 03 marks), W23 (Q3c-OR, 07 marks), S23 (Q2a, 03 marks)
6. **Describe various flood mitigation measures. / Write a short note on flood mitigation measure.**
 - Appeared in: S22 (Q5c, 07 marks), S23 (Q4b-OR, 04 marks)

Other Important Questions:

1. **Explain the Water Smart City (WSC) concept. / What are the benefits of the Water Smart City (WSC) approach?**
 - Appeared in: W24 (Q4a, 03 marks), W23 (Q4b-OR, 04 marks)
2. **What are the benefits associated with water and wastewater management?**
 - Appeared in: S24 (Q4c, 07 marks)
3. **Write about the IOT-based smart wastewater management system.**
 - Appeared in: S22 (Q4c, 07 marks), S23 (Q5c, 07 marks)
4. **Explain the free flow and pressurized water conveyance system.**
 - Appeared in: W24 (Q4c, 07 marks)
5. **What is a water conveyance system?**
 - Appeared in: S25 (Q4a-OR, 03 marks)
6. **Discuss the planning and development of water storage and conveyance systems in Smart Cities.**
 - Appeared in: S25 (Q4c, 07 marks)
7. **How does a sewerage system contribute to public health?**
 - Appeared in: S25 (Q4b-OR, 04 marks)

8. **Explain various water conservation systems and their role in sustainable urban development. / Discuss methods for water resources conservation system in India. / Write a note on water resources conservation.**
 - Appeared in: S25 (Q4c-OR, 07 marks), S23 (Q3c, 07 marks), S22 (Q5c-OR, 07 marks)
9. **What are the objectives of Rain Water Harvesting? / Write a short note on the advantages of rain water harvesting.**
 - Appeared in: W23 (Q4a-OR, 03 marks), W24 (Q4b-OR, 04 marks)
10. **Enlist various methods of water resource conservation, and explain in details (i) River Linking (ii) Increasing forest cover.**
 - Appeared in: W23 (Q4c-OR, 07 marks)
11. **Describe sustainable water sanitation and discuss the challenges of urban sanitation. / Briefly describe sustainable sanitation practices in Smart Cities.**
 - Appeared in: W22 (Q5c, 07 marks), S25 (Q4b, 04 marks)
12. **Explain in details integrated flood management system.**
 - Appeared in: W24 (Q5c-OR, 07 marks)
13. **Describe flood forecasting and warning systems in India.**
 - Appeared in: S22 (Q5b-OR, 04 marks)
14. **Write a note on water-meters.**
 - Appeared in: W24 (Q5a, 03 marks)

Unit 5 - Infrastructure Management System & Policy for Smart City

Repeated Questions:

1. **What is an Integrated Infrastructure Management System (IIMS)? / What is the need for an integrated approach to infrastructure management?**
 - Appeared in: S25 (Q5a, 03 marks), S23 (Q3a-OR, 03 marks)
2. **What are the benefits of an Integrated Infrastructure Management System (IIMS)? / Give advantages of IIMS.**
 - Appeared in: W23 (Q5a, 03 marks), S23 (Q3a-OR, 03 marks)
3. **Write a detailed case study of any one Smart City in India (e.g., Pune, Bhubaneswar, or Surat). / Give case studies for smart cities (1) Ahmedabad (2) Surat.**
 - Appeared in: S25 (Q5c, 07 marks), S23 (Q1c, 07 marks)
4. **Write a short note on the Delhi – Mumbai Industrial corridor.**
 - Appeared in: S24 (Q5b-OR, 04 marks), S23 (Q5b, 04 marks)
5. **Write a short note on the Smart Cities Mission of India. / Describe the Smart Cities Mission policy and its guidelines issued by the Government of India.**
 - Appeared in: S25 (Q5b, 04 marks), S25 (Q5c-OR, 07 marks)

Other Important Questions:

1. **List any two features of India's Smart City Guidelines. / Enlist guidelines for Smart City in INDIA.**
 - Appeared in: S25 (Q5a-OR, 03 marks), W22 (Q5a-OR, 03 marks)
2. **Briefly describe one international policy or approach to Smart Cities.**
 - Appeared in: S25 (Q5b-OR, 04 marks)
3. **Describe Integrated Infrastructure Management System (IIMS) for a Smart City.**
 - Appeared in: W22 (Q5c-OR, 07 marks)
4. **Write a case study of a smart city with SWOT analysis for Ahmedabad.**
 - Appeared in: W24 (Q5c, 07 marks)
5. **Write in brief about a pan-city project. / Discuss various PAN city projects undertaken by Smart City Ahmedabad.**
 - Appeared in: W24 (Q5a-OR, 03 marks), W22 (Q5b-OR, 04 marks)
6. **Write a short note on the Gift city project.**
 - Appeared in: W24 (Q5b, 04 marks)
7. **List out the application of GPS in transportation.**
 - Appeared in: W24 (Q5b-OR, 04 marks)
8. **List out various infrastructure for a smart city.**
 - Appeared in: W24 (Q4a-OR, 03 marks)
