



32403

7E1821

Roll No. _____

Total No. of Pages: 2**7E1821****B. Tech. VII - Sem. (Main / Back) Exam., Nov-Dec 2025****Computer Science & Engineering****7CS4-01 Internet of Things****CS, CSD, CSR****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 What do you mean by Internet of Things (IoT)?
Q.2 Explain communication API in context of IoT.
Q.3 Define sensor and actuator.
Q.4 Explain LiteOS.
Q.5 Define REST in context of IoT.
Q.6 Mention two design challenges faced when building IoT devices.
Q.7 What is Software Defined Networks (SDN)?
Q.8 Explain Network Function Virtualization (NFV).
Q.9 What type of sensors are commonly used in environmental IoT systems?
Q.10 How can IoT improve fleet management?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Explain the role of the data processing functional block in the logical design of IoT system.
- Q.2 How does cloud computing support IoT in terms of data storage and processing?
- Q.3 Explain Arduino and its applications.
- Q.4 Define IoT reference model and its importance.
- Q.5 State some major differences between IoT and M2M.
- Q.6 Differentiate SDN and NFV in context of IoT.
- Q.7 How does IoT support predictive maintenance in industrial automation systems?

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Describe different communication models used in IoT systems. Discuss the advantages and disadvantages of each model and explain which one is more suitable for real-time applications like a smart healthcare system?
 - Q.2 Explain how Contiki OS can be used to build a smart water distribution network. Discuss node communication, data aggregation and system scalability.
 - Q.3 Write a detailed note on the role of Uniform Resource Identifiers (URIs) in IoT systems. Explain how they help to identify and interact with resources. Give some examples of URIs used in smart home or industrial IoT systems.
 - Q.4 Explain different communication technologies used in M2M systems. Discuss how these technologies enable automation in industrial and healthcare applications.
 - Q.5 Describe the applications of IoT in the retail sector. Explain how IoT helps in inventory management, personalized shopping experiences, supply chain optimization and store automation. Discuss the benefits to both businesses and customers with examples.
-



22124

7E1811

Roll No. _____

Total No. of Pages: 2**7E1811****B. Tech. VII - Sem. (Main / Back) Exam., Nov-Dec 2025****Open Elective - I****7AG6-60.2 Environmental Engineering and
Disaster Management****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 State the per capita domestic water requirement for urban and rural areas in India.
- Q.2 List two main sources of surface water supply.
- Q.3 What is the function of intake structure?
- Q.4 State the desirable values/range of pH, TDS, NO₃ and turbidity as per BIS standards for drinking water.
- Q.5 Define BOD of wastewater.
- Q.6 Name any two types of sewers.
- Q.7 Give one example of primary treatment of wastewater.
- Q.8 Define air pollution.
- Q.9 List two gaseous air pollutants.
- Q.10 What is the full form of NDMA? What is its main function?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Compare domestic water requirements of urban and rural areas in India with suitable examples.
- Q.2 Describe the role and working mechanism of sedimentation tanks in water treatment.
- Q.3 Write a note on BIS drinking water quality standards (IS 10500 : 2012).
- Q.4 Explain the significance of hydraulic design of sewers.
- Q.5 Discuss the major physical, chemical and biological characteristics of wastewater.
- Q.6 Describe composting as a method of solid waste management.
- Q.7 Explain the concept of disaster preparedness and its importance.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Explain different sources of water supply and factors influencing the choice of a source for urban water supply schemes.
- Q.2 Explain the various stages in conventional water treatment including their functions and significance.
- Q.3 Describe in detail the methods of solid waste disposal and their suitability under Indian conditions.
- Q.4 Discuss various types of air pollutants, their sources and health/environmental impacts.
- Q.5 Explain the importance of disaster management in India and discuss different phases (prevention, preparedness, response, recovery).



23926

7E1812

Roll No. _____

Total No. of Pages: 2**7E1812****B. Tech. VII - Sem. (Main / Back) Exam., Nov-Dec 2025****Civil Engineering****7CE4-01 Transportation Engineering****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Define the highway geometry.
- Q.2 Write the role of transportation in the economic and social activities of the country.
- Q.3 What do you mean by state highway and major district roads?
- Q.4 Define the camber and its objective.
- Q.5 Define passenger car unit.
- Q.6 Differentiate between kerb parking and offset parking.
- Q.7 Define WBM roads.

- Q.8 State different types of gauges.
- Q.9 State different types of sleepers.
- Q.10 Define airport classifications.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Define the highway alignment. Explain the requirements of an ideal highway alignment.
- Q.2 Explain the desirable properties of bitumen. Compare tar and bitumen.
- Q.3 Explain total reaction time of driver by 'PIEV' theory.
- Q.4 Explain the term superelevation in pavement.
- Q.5 Define the term extrawidening at curves and transition curves.
- Q.6 Mention the requirements of an ideal permanent way.
- Q.7 Explain the factors which influence the airport site selection.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Calculate the length of transition curve and shift using following data –
Design speed = 80 kmph and radius of circular curve is 300 metre.
Allowable rate of introduction of superelevation is 1 in 150.
Pavement width including extra widening = 7.5 metre.
- Q.2 Describe the method for constructing a WBM road.
- Q.3 What are the various flexible pavement design methods? Explain each one in brief.
- Q.4 Define creep. What are the possible causes and effect of creep?
- Q.5 What are the various factors affecting the necessary size of an airport?
