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**Question Paper Code : 91535**

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2025.

Sixth/Seventh/Eighth Semester

Civil Engineering

OCS 352 – IoT CONCEPTS AND APPLICATIONS

(Common to : Aeronautical Engineering/Aerospace Engineering/Automobile Engineering/Electrical and Electronics Engineering/Environmental Engineering/Geoinformatics Engineering/Industrial Engineering/ Industrial Engineering and Management/Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Materials Science and Engineering/Mechanical Engineering/ Mechanical Engineering (Sandwich)/Mechanical and Automation Engineering/Mechatronics Engineering/Petrochemical Engineering/Production Engineering/Robotics and Automation/Safety and Fire Engineering/Agricultural Engineering/Biotechnology/Biotechnology and Biochemical Engineering/Chemical Engineering/ Chemical and Electrochemical Engineering/Fashion Technology/Food Technology/Handloom and Textile Technology/Petrochemical Technology/Petroleum Engineering/Pharmaceutical Technology/Plastic Technology/Textile Chemistry/Textile Technology)

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term Internet of Things (IoT).
2. What does IoTWF stand for, and what is its purpose?
3. List any two sensors used in IoT and their applications.
4. Differentiate between Bluetooth and Zigbee in IoT communication.
5. What is the significance of IPv6 in IoT?
6. Name two IoT protocols and their specific applications.
7. Define GPIO pins and their purpose in IoT programming.
8. What is the role of open platforms in IoT development?

9. Mention any two applications of IoT in surveillance.
10. Mention any two benefits of IoT in transportation.

**PART B — (5 × 13 = 65 marks)**

11. (a) Explain the evolution of the Internet of Things with suitable examples.  
Or  
(b) Discuss in detail the oneM2M IoT architecture.
12. (a) Explain the functional blocks of an IoT ecosystem with examples.  
Or  
(b) Discuss how do GPS and WiFi contribute to the functionality of IoT systems.
13. (a) (i) Explain the role of IPv6 in enabling IoT communication. (6)  
(ii) Compare CoAP and MQTT protocols for IoT applications. (7)  
Or  
(b) (i) Illustrate the significance of RFID technology in IoT. (6)  
(ii) Discuss the challenges in implementing embedded systems for IoT. (7)
14. (a) Explain the architecture of Raspberry Pi and its role in IoT deployment.  
Or  
(b) Discuss how GPIO pins are used to interface sensors and actuators in IoT.
15. (a) Discuss IoT applications in agriculture and their benefits. Also evaluate the challenges and opportunities of IoT in smart agriculture.  
Or  
(b) Discuss the architecture and functionality of IoT-based home automation systems.

**PART C — (1 × 15 = 15 marks)**

16. (a) Consider a smart parking system for a city. Explain how IoT architectures like Fog and Cloud computing can work together to optimize parking availability and reduce congestion in urban areas.  
Or  
(b) Design an IoT-based smart irrigation system for a farm using sensors, actuators and GSM modules. Explain the workflow and benefits.