

# 22679

**24225**

**3 Hours / 70 Marks**

Seat No. 

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answer with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

- 1. Attempt any FIVE of the following:** **10**
- a) List any four characteristics of IoT?
  - b) List different types of IP addresses?
  - c) List steps in IoT design.
  - d) List features of Raspberry Pi?
  - e) Draw a labelled diagram of IoT based smart lighting w.r.t. home automation system.
  - f) Draw a block diagram of RFID system components.
  - g) Draw IoT functional block diagram.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State and explain the characteristics of IoT. (Any four)
  - b) Explain SCADA middleware architecture with neat diagram.
  - c) State the “Purpose and requirement specification for IoT design methodology.”
  - d) Explain following cloud based IoT platforms –
    - i) Google
    - ii) IBM
    - iii) AWS
    - iv) Oracle.
- 3. Attempt any THREE of the following:** **12**
- a) Explain things in IoT with neat diagram.
  - b) Draw and explain the WSN middle ware architecture.
  - c) Explain operational view specification w.r.t. IoT design methodology.
  - d) List and explain Raspberry Pi-interfaces.
- 4. Attempt any THREE of the following:** **12**
- a) Explain security challenges of IoT w.r.t. lack of encryption, insufficient testing and updating, IoT malware and ransomware IoT botnet aiming at crypto currency.
  - b) Describe information model of the home automation of IoT system.
  - c) State the role of cloud computing in IoT.
  - d) Explain renewable energy system application using IoT.
  - e) Draw and explain the block diagram of IoT based greenhouse monitoring.

- 5. Attempt any TWO of the following:** **12**
- a) Explain IoT level six with neat diagram w.r.t. IoT based home automation based application.
  - b) Differentiate IoT and M2M w.r.t. connection type, communication protocol, data sharing, internet, type of communication and scope.
  - c) Illustrate how to interface a LED to raspberry Pi and write a program to blink LED.
- 6. Attempt any TWO of the following:** **12**
- a) Explain the following key concepts of WAMP –
    - i) Transport
    - ii) Session
    - iii) Client
    - iv) Router.
  - b) Explain IoT based health and fitness monitoring?
  - c) Explain IoT based smart water management system with neat diagram.
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