

**(Duration: 3Hours)**

**[Total Marks: 80]**

- N.B.:** (1) Question No. 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) Each question carries 20 marks and sub-question carry equal marks.  
(4) Assume suitable data if required.

1. Attempt any **FOUR** of the following.
- (a) What is difference between IoT and M2M? (05)
  - (b) Compare Request-Response, Push-Pull, Publish-Subscribe and Exclusive Pair communication model in IoT. (05)
  - (c) Write short note on Medium Access Control (MAC). List down various MAC protocols used in IOT. (05)
  - (d) Explain the concept of Piconet in wireless communication. (05)
  - (e) Compare Arduino and Raspberry Pi platform for IoT development. (05)
2. (a) Define IoT. List & Explain Characteristics of IoT. (10)  
(b) Explain the significance of privacy and security measures in IoT based systems. Explain few privacy and security measures. (10)
3. (a) What are the real-world design constraints while designing IoT system. (10)  
(b) What is IoT Operating System? Explain in brief various operating systems used in IoT. (10)
4. (a) Explain the Zigbee and Z-Wave protocols. Provide examples of real-world applications where each protocol is commonly employed. (10)  
(b) List various cloud based IoT platforms and explain any 3 in detail. (10)
5. (a) Explain Bluetooth BLE. How Bluetooth BLE is different than classical Bluetooth? (10)  
(b) Explain the flow of development of mobile App for IoT system. (10)
6. (a) Describe fog computing, illustrate it with a clear diagram. Also identify few industries/applications where fog computing is applied. (10)  
(b) Draw and explain system design diagram of a home automation system using IoT to control devices like light, TV, house climate and home appliances. Explain with respect to the software, hardware, sensors, protocols, and platforms used to design this system. (10)

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