09-06-2026 BE ELECTRICAL SEM-VII C SCHEME IOT QP CODE: 20013978

Time: 3 Hours **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 (Each question carry 5 Marks)
   (a) Compare IoT and M2M. (5)
   (b) What are the real-world design constraints while designing IoT system. (5)
   (c) Write short note on Medium Access Control (MAC). List down various MAC protocols used in IOT. (5)
   (d) List various cloud based IOT platforms and explain any 1 in detail. (5)
   (e) Compare Arduino and Raspberry Pi IoT platform. (5)

2. (a) List and explain the characteristics of IoT. (10)
   (b) Draw and explain in detail the functional block diagram of IoT. (10)

3. (a) List and explain different communication models used in IoT. (10)
   (b) What is the role of IoT operating systems in IoT? Briefly describe some of the popular IoT operating systems. (10)

4. (a) Explain MQTT protocol with neat diagram. (10)
   (b) Explain Zigbee and Z-wave protocols. Provide examples of real-world applications where these protocols are used. (10)

5. (a) Explain the terms: (i) REST (ii) CoAP (iii) BLE (10)
   (b) Explain protocol stack of mobile app for IoT. (10)

6. (a) Design a smart irrigation system using IoT. Draw its block diagram, list down the sensors, actuators, micro-controllers to be used. (10)
   (b) How can IoT be employed for eHealth monitoring to continuously track vital signs like heart rate, blood pressure, blood glucose level etc. and trigger automated alerts or actions in case of abnormal readings? Draw system design diagram and explain with respect to sensors, hardware, software, protocols, and platforms used to design this system. (10)

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