No. of Printed Pages : **2**

Sl. No.

B2.5-R5 : CLOUD COMPUTING AND INTERNET OF THINGS (IoT)

NOTE :

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Total Time : 3 Hours **Total Marks : 100**

1. (a) What is cloud computing and how does it work ?

(b) What are some of the security and privacy challenges in cloud computing ?

(c) What is an IoT device and what are its components ?

(d) Explain the ARM Cortex M series and its role in IoT.

(e) What is the difference between Zigbee and Zwave as IoT connectivity standards ?

(f) What is the purpose of 6lowPAN in IoT transport layer protocols ?

(g) What is the IoT analytics life cycle and what are its stages ?

(7x4)

2. (a) Explain the difference between IaaS, SaaS, and PaaS in cloud architecture.

(b) What is the difference between public, private, and hybrid cloud deployment models ?

(c) Write in brief about overview of open-source hardware platforms for IoT.

(6+6+6)

3. (a) What is a low power microcontroller and why is it important for IoT nodes ?

(b) How are sensors and actuators interfaced with Cortex M series controllers ?

(c) What are the various network topologies in IoT ? **(6+6+6)**

4. (a) What are the different generations of Bluetooth technology and their key features ?

(b) What are the benefits of using IPv6 standards in IoT ?

(c) How can IoT be used in the agriculture industry for crop monitoring and plant health assessment ? **(8+6+4)**

5. (a) How does big data play a role in the use cases for IoT in agriculture, manufacturing, and healthcare ?

(b) How does scalability and security play a role in IoT architecture ?

(c) What is Industry 4.0 and how does it use IoT and remote monitoring in manufacturing ?

(7+6+5)

6. (a) Describe the IoT architecture reference model and its components.

(b) Explain clearly about the following application layer Protocols :

(i) MQTT (Message Queue Telemetry Transport)

(ii) CoAP (Constrained Application Protocol)

(c) What is the role digital twin in IoT ? **(6+8+4)**

7. (a) What are the benefits of combining cloud computing in IoT ?

(b) What factors should be considered when selecting a hardware platform for IoT devices ?

(c) Write short note on NBIoT. **(9+5+4)**

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