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Question Paper Code : 81374

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2025.

Sixth Semester

Electronics and Communication Engineering

ET 3491 — EMBEDDED SYSTEMS AND IOT DESIGN

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the applications of microcontrollers?
2. List 8051 addressing modes.
3. What is meant by supervisor mode? How is it useful?
4. Why ARM processors are preferred over Intel processors?
5. What is multirate systems?
6. List the inter-process communication mechanisms.
7. Expand MQTT, XMPP.
8. Draw IOT 3 layer architecture.
9. What programming languages supported by Raspberry Pi?
10. How IoT is used for environment?

PART B — (5 × 13 = 65 marks)

11. (a) Explain 8051 architecture in detail. Explain its serial ports.

Or

- (b) Explain various 8051 addressing modes in detail.

12. (a) Explain ARM architecture in detail. Mention the advantage of using ARM based processors. Why ARM based processors are preferred?

Or

- (b) How do you design embedded system? Explain compilation techniques and program level performance analysis.
13. (a) What is the structure of real time system? Explain task assignment and scheduling in detail.

Or

- (b) Write notes on pre-emptive RTOS and priority based scheduling.
14. (a) What is the taxonomy or reference architecture of IoT? What are the issues and challenges in designing an IoT for any Realtime application?

Or

- (b) Discuss how do you manage IoT system management with NETCONF and YANG?
15. (a) Write a detailed note on Raspberry Pi.

Or

- (b) Discuss about applications of IoT in healthcare.

PART C — (1 × 15 = 15 marks)

16. (a) How IoT used home automation? What sensors are used? How is it useful in day to day activities?

Or

- (b) Design an IoT for agriculture use. Explain about this case study in detail.