Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 90527

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2022.

Sixth/Seventh/Eighth Semester

Electrical and Electronics Engineering

EE 8691 — EMBEDDED SYSTEMS

(Common to Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give two features that differ an embedded processor from a general purpose processor.

2. What are role of watchdog timer and real time clock?

3. What is voltage arbitration in Bus communication?

4. Name the Bus suitable for broadcast and for peer to peer Communication.

5. Why does program complexity increase with reduced number of DFGs and increasing nodes?

6. What is use of simulator in a development phase?

7. Compare in-system (ISP) and In-Application Programming(IAP).

8. What are the cause for deadlock situation in RTOS?

9. Why are Tasks ranked in a RTOS based system?

10. Why are digital keys used by smart cards stored in PROM?

PART B — (5 × 13 = 65 marks)

11. (a) Draw neatly discuss on the internal block diagram of a Typical Embedded processor and on memory devices for it. (13)

Or

(b) Write on any TWO to explain the added advantage achieved by inclusion of (13)

  (i) DMA for peripheral interface (5)

  (ii) Cache memory replacement policy (4)

  (iii) Associative mapping (4)

12. (a) Describe the IIC type of the serial communication BUS with describing its frame format in communication. (13)

Or

(b) Describe the CAN Bus , frame formats and communication protocol features of CAN that make it an error free field bus. (13)

13. (a) Discuss on (6 + 7)

  (i) Controlled data flow graph (6)

  (ii) Sequential Program Model (7)

Or

(b) Explain briefly on the different phases of EDLC. (13)

14. (a) Write briefly on *any two*: (13)

  (i) Semaphores (4)

  (ii) Task process and threads (5)

  (iii) Message, Mail (4)

Or

(b) Write briefly on : (13)

  (i) Round Robin Scheduling (7)

  (ii) Preemptive Scheduling (6)

15. (a) Considering an example of a Digital Camera discuss on how RTOS deployment with it improves the performance. (13)

Or

(b) Considering one example of either a ATM machine/ Washing machine discuss on the embedded automation for the chosen case study. (13)

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PART C — (1 × 15 = 15 marks)

16. (a)   Explain briefly on how to involve Scheduling and Interprocess Communication involvement by considering the example of a Automotive application.   (15)

Or

     (b)   Discuss briefly on Integrated Development with compiler and Debugger for the design of one typical embedded application.   (15)

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