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B.TECH. DEGREE EXAMINATION, MAY 2016

Eighth Semester

Branch : Applied Electronics and Instrumentation Engineering

AI 010 804 L03—EMBEDDED SYSTEMS (Elective III) (AI)

(New Scheme—2010 Admission onwards)

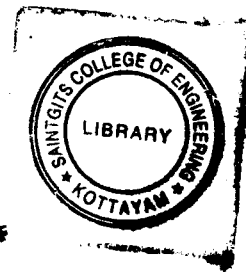[Regular/Supplementary]

Time : Three Hours   Maximum : 100 Marks

Part A

*Answer **all** questions.*
Each question carries 3 marks.

1. What are the requirements of an embedded system ?

2. What are the preprocessor directives used in embedded C program ?

3. Define UART and HDLC.

4. What is Watchdog Timer ?

5. What are the different states of a task ?

(5 × 3 = 15 marks)

Part B

*Answer **all** questions.*
Each question carries 5 marks.

6. Write a note on classification of embedded system.

7. What are the advantages of high level programming languages ?

8. What are the different states in Timer ?

9. Briefly explain AT Key board.

10. How do functions differ from ISRs, tasks, processes and threads ?

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*
Each question carries 12 marks.

11. How are embedded systems implemented in consumer electronics like Control systems, handhel computers and biomedical systems ?

Or

12. List the few applications of embedded systems and Explain SoC in detail.

13. Write a note on the following :

   (a) Embedded C Compiler.

   (b) Code optimization.

Or

14. Give the hardware architecture of an embedded system and briefly explain the development process.

15. Explain three modes of serial communication, synchronous, iso- synchronous and asynchronous from the serial devices with one example each.

Or

16. How is computer parallel communication between the networked I/O multiple devices achieved ? Explain in detail.

17. Explain how to interface a LCD display to a microcontroller with the program.

Or

18. Explain with an embedded C program and circuit diagram, how to interface a stepper motor to a microcontroller.

19. Explain the following with respect to RTOS :

   (a) Mailboxes.

   (b) Pipes.

   (c) Semaphore functions.

Or

20. List the features of P and V semaphores and how these are used as a resource key, as counting semaphore and as a mutex ?

(5 × 12 = 60 marks)