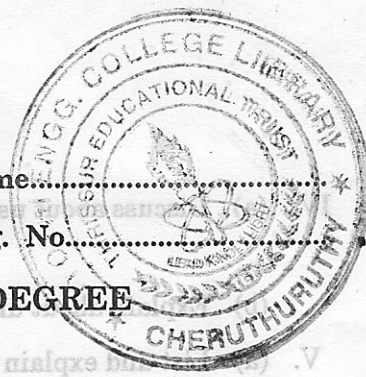


C 14747

(Pages : 2)

Name.....

Reg. No.....



**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, DECEMBER 2010**

**CS/IT 04 601—EMBEDDED SYSTEM**

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

- I. (a) List the features of sophisticated embedded system.  
(b) Name the different types of processor chip or core that are used in an embedded application.  
(c) Explain the terms :  
(i) Branch penalty.  
(ii) Data dependency penalty.  
(d) List the uses of EEPROM, Flash and OTP memory.  
(e) What is meant by memory optimization ? List the advantages of memory optimization.  
(f) What are the project metrics for software ?  
(g) Explain how the functions of RTOS can be achieved in a small scale embedded system without using an RTOS.  
(h) List the different scheduling models used by RTOS scheduler.

(8 × 5 = 40 marks)

- II. (a) Discuss about the following hardware units in an embedded system :—

- (i) Real Time Clock (RTC) and Timers for various timing needs of the system. (6 marks)  
(ii) Reset circuit, powerup reset and watch dog timer reset. (9 marks)

*Or*

- (b) (i) Draw the block diagram form of functional circuits in a chip or core of micro-controller and explain.

(8 marks)

- (ii) List and explain the features of embedded processors.

(7 marks)

- III. (a) Discuss about sophisticated interfacing features in device ports.

*Or*

- (b) Explain the features of :

(i) I<sup>2</sup>C bus. (4 marks)

(ii) CAN bus. (6 marks)

(iii) USB bus. (5 marks)

Turn over

IV. (a) Discuss about use of Petrinet Model for real time embedded systems.

Or

(b) Explain about different classifications of hardware and software interrupts.

V. (a) List and explain the functions that can be taken care by RTOS in the case of a multiple task system.

Or

(b) Discuss about interrupt routines in RTOS environment.

(4 × 15 = 60 marks)

- (b) Name the different types of processor chip or core that are used in an embedded application.
- (c) Explain the terms:
  - (i) Branch penalty.
  - (ii) Data dependency penalty.
- (d) List the uses of EEPROM, Flash and OTP memory.
- (e) What is meant by memory optimization? List the advantages of memory optimization.
- (f) What are the project metrics for software?
- (g) Explain how the functions of RTOS can be achieved in a small scale embedded system without using an RTOS.
- (h) List the different scheduling models used by RTOS scheduler.

(8 × 5 = 40 marks)

II. (a) Discuss about the following hardware units in an embedded system:—

- (i) Real Time Clock (RTC) and Timers for various timing needs of the system. (6 marks)
- (ii) Reset circuit, powerup reset and watch dog timer reset. (9 marks)

Or

(b) (i) Draw the block diagram form of functional circuits in a chip or core of micro-controller and explain.

(8 marks)

(7 marks)

(ii) List and explain the features of embedded processors.

III. (a) Discuss about sophisticated interfacing features in device ports.

Or

(b) Explain the features of:

(4 marks)

(6 marks)

(6 marks)

(i) I<sup>2</sup>C bus.

(ii) CAN bus.

(iii) USB bus.