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INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

M.Tech I Semester End Examinations (Supplementary) - July, 2017

Regulation: IARE-R16

EMBEDDED C

(Common for Computer Science and Engineering | Embedded Systems)

Time: 3 Hours

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) Mention typical real time examples of embedded applications? Which operating system is used for embedded system and why? [7M]
- (b) Explain the process of developing embedded software with example? Develop an embedded C program for simple super loop? [7M]
2. (a) Design and discuss the external interface of the standard 8051 microcontroller with a neat sketch? Why crystal frequency of 8051 is 11.0592MHz? [7M]
- (b) Define interrupt? Elaborate the process of interrupt handling in an embedded system with schematic representation? [7M]

UNIT – II

3. (a) Describe various techniques for reading from port pins? Develop an embedded C program for super loop application which copies the value from Port1 to Port2? [7M]
- (b) Illustrate the need for pull-up resistor with a schematic representation? Develop an embedded C program for reading and writing bits (simple version). [7M]
4. (a) List out bitwise operators of C? Develop an embedded C program for reading and writing bits by using generic version method. [7M]
- (b) Explain the concept of switch bounce with example and develop an embedded C program for reading switch inputs? [7M]

UNIT – III

5. (a) Develop an embedded C program for [7M]
 - i. Project header (main.h)
 - ii. port header (port.h) using 8051 microcontroller?
- (b) Illustrate the process of goat-counting using switching concept? Develop an embedded C program for restructuring the gate counting? [7M]
6. (a) Discuss about file based C class? Develop an embedded C program for file based C class using 8051 microcontroller? [7M]
- (b) Develop an embedded C program for restructuring the “Hello World” using 8051 microcontroller? [7M]

UNIT – IV

7. (a) Elaborate how to create hardware delays using Timer 0 and Timer 1? Develop an embedded C program for testing a hardware timeout? [6M]
- (b) Discuss the special function registers TMOD and TCON? Explain each bit in detail? Generate a 50ms hardware delay for 12MHz using 8051 microcontroller. [8M]
8. (a) Elaborate the process of creating a portable hardware delay? Discuss its applications? Develop an embedded C program for creating hardware timeouts? [7M]
- (b) Explain the need for timeout mechanism? Develop an embedded C program for a more reliable switch interface? [7M]

UNIT – V

9. (a) Design an intruder alarm system using a small art gallery? Mention different operating states of control panel for alarm system? [7M]
- (b) Describe in detail the key software components used in intruder alarm system? Discuss its usages in intruder alarm system? [7M]
10. (a) Explain the working principle of main control panel for alarm system with neat sketch? Develop an embedded C program for project header and port header file of an intruder alarm system using 8051? [7M]
- (b) Develop an embedded C program for an intruder alarm system using 8051 microcontroller? [7M]

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