INSTITUTE OF AERONAUTICAL ENGINEERING
(AUTONOMOUS)

Code No: **BES001**

MODEL QUESTION PAPER - II

M.Tech I Semester Regular Examinations, February 2017

EMBEDDED C
(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) Discuss in detail about embedded applications with real time examples? Compare software development for desktop and embedded systems with suitable diagrams?   [8M]

   (b) Summarize the process of developing embedded software with suitable examples? Develop an embedded C program for simple super loop?   [6M]

2. (a) Define an embedded system? List out the features of 8051 microcontroller and draw the pin diagram of 8051 microcontroller? Discuss about input /output pins, serial interface and timers?   [7M]

   (b) Discuss about clock frequency in 8051 microcontroller by using a simple crystal oscillator circuit? Relate oscillator frequency and machine cycle period? Construct the block diagram of 8051 external memory interface?   [7M]

UNIT-II

3. (a) Describe the various techniques available for reading from port pins? Develop an embedded C program based on 8051 microcontroller for reading and writing bits (generic version)?   [7M]

   (b) List out the bitwise operators of C? Develop an embedded C program based on 8051 microcontroller for reading and writing bits (simple version)?   [7M]

4. (a) Illustrate the need for pull-up resistors in 8051 microcontroller with a schematic representation? Develop an embedded C program for reading switch inputs?   [8M]

   (b) "Embedded systems usually use switches as part of their user interface" demonstrate the above statement with suitable examples?   [6M]

UNIT-III

5. (a) Develop an embedded C program for the following using 8051 micro controller
   i) Project header (main.h)
   ii) Port header (port.h)   [8M]

   (b) Discuss about file based C class? Develop an embedded C program for file based C class using 8051 microcontroller?   [6M]

6. (a) Describe the key aspects of hardware environment using header file with a schematic representation? Discuss about the process of port access from the embedded system using port file? [8M]

(b) Illustrate the process of goat-counting using switching concept? Develop an embedded C program for restructuring the goat-counting? [6M]

UNIT-IV

7. (a) Describe and differentiate the loop timeout and the hardware timeout with suitable examples? Mention the merits and de-merits of loop timeout and hardware timeout? Develop an embedded C program for testing a hardware timeout? [8M]

(b) Compare TCON special function register and TMOD special function register? Identify the potential problem using simple switch interface code? [6M]

8. (a) Elaborate the process of creating a portable hardware delay and summarize its applications? Generate a 50ms delay for 12MHz 8051 microcontroller? Develop an embedded C program for testing loop timeouts? [8M]

(b) Develop an embedded C program for a more reliable switch interface? Develop an embedded C program for creating hardware delay? [6M]

UNIT-V

9. (a) Explain the working principle of main control panel for alarm system with a block diagram? Develop an embedded C program for project header file and port header file of an intruder alarm system using 8051 microcontroller? [8M]

(b) Discuss about keypad block in an intruder alarm system? Develop an embedded C program for keypad block and intruder block in an intruder alarm system using 8051 microcontroller? [6M]

10. (a) Design an intruder alarm system using a small art gallery which contains three statues? Mention different operating states of control panel for alarm system? [7M]

(b) List out the key software components used in intruder alarm system? Mention its applications in an intruder alarm system? [7M]

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