Hall Ticket No | | | | | | | | | | | Question Paper Code: BES001

Jawaharlal Nehru Technological University Hyderabad

M.Tech I Semester End Examinations (Regular) - February, 2018
Regulation: .–R16
EMBEDDED C
(Common to 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) Define an embedded system? Why C language is preferred for embedded systems? [7M]
   (b) Elaborate the process of a central heating controller and develop an embedded C program for it? [7M]
2. (a) List out the features of 8051 microcontroller? Draw the pin diagram of 8051 microcontroller and explain each pin in detail. [7M]
   (b) Design possible reset circuits for 8051 microcontroller? Discuss about clock frequency in 8051 microcontroller. [7M]

UNIT – II

3. (a) Discuss in detail the basic techniques for reading from port pins? Develop an embedded C program for reading and writing bits (generic version). [7M]
   (b) What is debounce technique? Explain the concept of switch bounce with example and develop an embedded C program for reading switch inputs? [7M]
4. (a) List out bitwise operators of C? Develop an embedded C program in order to perform bitwise operations on specified data? [7M]
   (b) Discuss in detail the difference between the schematic representation of a switch connected to a port with and without internal pull-up resistors? [7M]

UNIT – III

5. (a) How to use an object-oriented programming with C programs? Explain it with example. [7M]
   (b) Discuss various components available in project header file and mention their applications? Develop an embedded C program for the project header (main.h)? [7M]
6. (a) Elaborate the process of goat-counting using switching concept? Develop an embedded C program for restructuring the gate counting? [7M]
   (b) Describe port header with a schematic representation? Develop an embedded C program for the port header (port.h)? [7M]

UNIT – IV

7. (a) Construct the block diagram of simple autopilot system? Discuss each block in detail? Write a program for identifying problems with simple switch interface? [7M]
   (b) Draw the special function registers TMOD and TCON? Explain each bit in detail? Identify the potential problem using switch interface code? [7M]
8. (a) Elaborate the process of creating a portable hardware delay and Mention its applications? Generate a 50ms hardware delay for 12MHz using 8051 microcontroller. [7M]
   (b) Illustrate the process of creating loop timeouts with example? Develop an embedded C program for creating loop timeouts? [7M]

UNIT – V

9. (a) Discuss the working principle of main control panel for an alarm system with a block diagram? Mention different operating states of control panel for alarm system? [7M]
   (b) Discuss about keypad block in an intruder alarm system? Develop an embedded C program for an intruder alarm system using 8051 microcontroller? [7M]
10. (a) Discuss the key features of embedded C while designing an intruder alarm system using a small art gallery? [7M]
    (b) List out the key software components used in intruder alarm system? Mention its applications in an intruder alarm system? [7M]