

Time: 3 Hours

Marks: 80

- N.B.: 1. Question No. 1 compulsory.
 2. Attempt any Three out of remaining Five questions.
 3. Figures to the right indicate full marks.
 4. Draw neat diagram wherever necessary.

1. Solve any four out of five
 - A) What are the design metrics of an embedded systems. 05
 - B) Discuss working of stepper motor. 05
 - C) Explain different types of kernels. 05
 - D) Explain in brief Assembler Directives with respect to 8051 Assembler. 05
 - E) List important features of ARM architecture.. 05

2.
 - A) Describe priority inversion problem and explain how to resolve it? 10
 - B) Explain various addressing modes of 8051 microcontroller. 10

3.
 - A) Assuming crystal frequency = 11.0592 MHz, write an assembly language program for 8051 to generate square wave of 2 KHz at pin P2.5. Show necessary delay calculation. (Use Timer-0, Mode-0) 10
 - B) List and explain how exceptions and interrupts handled in ARM7. 10

4.
 - A) Write an assembly language program to generate triangular wave using DAC interfacing with 8051 micro controller. 10
 - B) Explain various addressing nodes of ARM7 with suitable example instruction. 10

5.
 - A) List discuss different features of Arduino and Raspberry-pi along with their schematic diagrams. 10
 - B) Draw and Explain interrupt structure of 8051 microcontroller. 10

6. Write short notes on :
 - A) SoC and DSP (Embedded system core) 06
 - B) ARM development tools. 07
 - C) Extended libraries of Arduino 07