

# Question Paper

Exam Date & Time: 27-Nov-2018 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

### SCHOOL OF INFORMATION SCIENCES

#### FIRST SEMESTER MASTER OF ENGINEERING - ME (EMBEDDED SYSTEMS)

#### Microcontrollers and its Applications [ESD 613]

Marks: 100

Duration: 180 mins.

### END SEMESTER DEGREE EXAMINATION NOVEMBER 2018

**Answer all the questions.**

- 1) Explain Programming model of 8051 with suitable block diagram (10)  
(10 MARKS)
- 2) Briefly explain Control Transfer Instructions of 8051 with example (10)  
(5 + 5 MARKS)
- 3) Write short note on following peripherals of 8051 (10)
  - a. Level Triggered and Edge triggered Interrupt (5 MARKS)
  - b. DB 9 pins of RS232 and interfacing diagram of RS232 to UART of 8051  
(5 MARKS)
- 4) Write an ASM program receive 10 bytes of number through UART and store it in internal RAM location 40h and sort it if EXT0 is activated transfer largest number among 10 bytes through serial port @4800 Baudrate if EXT0 is activated transfer Smallest number among 10 bytes through serial port @4800 Baudrate (10)  
(10 MARKS)
- 5) Briefly explain modes of 8051 UART ? And also comment Registers required to program Serial port of 8051 (10)  
(5 + 5 MARKS)
- 6) Explain Data path organization of ARM 7 with suitable block diagram (10)  
(7 + 3 MARKS)

- 7) Explain following instructions of ARM 7 (10)
- a. LDMIA R0! ,{R2-R5}
  - b. STMDB R2,{ R5-R9}
  - c. SWI
  - d. MRS
  - e. MSR

(2 x 5 MARKS)

- 8) Briefly explain the architecture of LPC 2148 with suitable block diagram and also list and explain Registers required to configure and program GPIO pins of LPC 2148 Microcontroller? (10MARKS) (10)
- 9) Write C program to transmit message "HELLO SOIS" using LPC 2148 UART? (10 MARKS) (10)
- 10) Briefly explain I2C communication protocol with suitable timing diagram (10 MARKS) (10)

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