

# Question Paper

Exam Date & Time: 04-Jan-2021 (09:00 AM - 12:00 PM)



**MANIPAL INSTITUTE OF TECHNOLOGY**  
MANIPAL  
(A constituent unit of MAHE, Manipal)

FIFTH SEMESTER BTECH. (Electronics & Instrumentation) DEGREE END SEMESTER EXAMINATION  
Dec 2020/Jan 2021

## MICRO-CONTROLLERS [ICE 3152]

Marks: 50

Duration: 180 mins.

### A

Answer all the questions.

Missing data may be suitably assumed.

- 1) Mention any two important features of flash EPROM and PROM memories. (2)
  - 1A)
  - 1B) Differentiate between Von Neumann and Harvard architectures. (3)
  - 1C) Explain the functions of the following pins of 8051 microcontroller : (5)
    - i) P0.0 - P0.7 ii) XTAL iii) RST iv) RXD v) INT0
- 2) Write an 8051 program to monitor bit P2.7 continuously and send 55h to Port 0 when bit P2.7 is zero. (2)
  - 2A)
  - 2B) With a neat block diagram explain the working of 4x4 keypad scanner. (3)
  - 2C) Write a program to transfer 5 bytes of data from internal memory location starting from 20h to internal memory location 40h. Assuming the program is burned into the ROM of an 8051 microcontroller, explain the step by step action of the 8051 upon applying power to it. (5)
- 3) Write a note on interrupt priority in 8051. (2)
  - 3A)
  - 3B) Explain half and full duplex transmission using neat diagrams. (3)
  - 3C) Explain the format of 8051 TMOD register. Generate a square wave of 80% duty cycle. Assume XTAL = 11.0592MHz. Use Timer 0 in mode 2. (5)
- 4) Explain the instruction AND r1, r2, r3 in ARM processors. (2)
  - 4A)
  - 4B) Explain the ARM programmer's model with description of different registers in it. (3)
  - 4C) Explain any five addressing modes in ARM processors with an example for each. (5)
- 5) List any four features of LPC2148. (2)
  - 5A)
  - 5B) Explain how timer resolution is achieved using prescale in LPC 2148. (3)
  - 5C) What do you mean by single edge and double edge PWM in LPC 2148 microcontroller? Explain how match registers are used for achieving PWM functions. (5)

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