Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5459]-159

S.E. (Electrical) (Second Semester) EXAMINATION, 2018

FUNDAMENTALS OF MICROCONTROLLER AND ITS APPLICATIONS

(2015 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Attempt Q. Nos. **1** *or* **2**, Q. Nos. **3** *or* **4**, Q. Nos. **5** *or* **6**, Q. Nos. **7** *or* **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Assume suitable data, if necessary.

1. (*a*) Draw the architecture of 8051 Microcontroller. Explain memory mapping of 8051. [6]

(*b*) Draw and explain internal structure of PORT 1 of 8051 microcontroller. [6]

Or

2. (*a*) Explain in detail bit level instructions in 8051 microcontroller. [6]

(*b*) Explain in detail different timer modes of 8051 microcontroller. [6]

P.T.O.

3. (*a*) Explain the interrupt structure of 8051 microcontroller. Explain how interrupts are prioritized. [6]

(*b*) Explain the Logical instructions present in 8051 microcontroller with a mnemonic code and its operation for each. [6]

Or

4. (*a*) Explain the different serial communication modes in 8051. [6]

(*b*) Write an assembly level program to generate a square wave of 2 kHz with timer 0 on port pin 1. [6]

5. (*a*) Write an assembly language program to generate triangular waveform using DAC interfaced with 8051 microcontroller. [7]

(*b*) Explain the mode 1 of 8255 PPI in output mode and list the functions of handshake signals. [6]

Or

6. (*a*) Explain in detail the following microcontroller development tools : [6]

(1) Assembler

(2) Compiler

(3) Cross Assembler and compiler.

(*b*) Draw and explain with schematic diagram hardware interfacing of 8255 with 8051 microcontroller. [7]

7. (*a*) Draw a schematic diagram for speed control of stepper motor using 8051 microcontroller. [7]

(*b*) Write a program to rotate the DC motor for a given speed. [6]

Or

8. (*a*) Write a program to rotate a motor 64° in the clockwise direction. The motor has a step angle of 2°. Use the normal 4 step sequence. [6]

(*b*) Draw and explain with schematic diagram for Power Factor measurement using 8051 microcontroller. [7]