Seat
No.

[5057]-240

S.E. (Electrical) (Second Semester) EXAMINATION, 2016

FUNDAMENTALS OF MICROPROCESSOR AND
MICROCONTROLLER

(2012 PATTERN)

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

N.B. :— (*i*)   Answer any *four* questions from *Or* section.

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

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

(*iv*) Your answers will be valued as a whole.

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

1. (*a*) Explain the function of registers stack pointer and instruction
register.   [6]

(*b*) Explain the steps taken by 8085 C.P.U. in response to a valid
CALL instruction.   [6]

Or

2. (*a*) Explain with an example Direct and Register indirect addressing
modes of 8085.   [6]

(*b*) Compute the total no. of bits in memories which are organized
as :   [6]

(1)   8k × 1

(2)   4k × 8

(3)   1k × 4.

3. (a) 8255 is interfaced with 8255 such that Control word register of 8255 has an address of 83 H. Write a program to set PC0 bit of 8255 in BSR mode. [6]

(b) Explain the functions of following pins of 8051 : [6]

(1) $\overline{EA}$

(2) $\overline{PSEN}$

(3) RST.

Or

4. (a) Draw the TMOD register and explain the individual bits of the register in detail. [6]

(b) Explain functions of following pins of ADC 0809 : [6]

(1) SOC

(2) EOC

(3) ALE.

5. (a) Explain the MOVC and MOVX instructions in detail. [6]

(b) Write a program to transfer a letter 'S' serially and continuously at a baud rate of 4800. Use serial port in Mode 1. Assume crystal frequency as 11.0592 MHz. [7]

Or

6. (a) Write an assembly language program for 8051 microcontroller to find one's complement of the number stored in register a location 30H and store the result in R0 of Bank 0. [6]

(b) Write a short note on interrupt structure of 8051. [7]

7. (*a*) With a neat diagram and flow chart, explain measurement of speed of a DC motor using 8051 microcontroller. [6]

(*b*) With a neat diagram and flowchart explain power factor measurement using 8085. [7]

Or

8. (*a*) A stepper motor is interfaced with 8051 through a driver card. The motor is controlled through most significant 4 bits of port 1. The step angle of the motor is 1.8 degrees. Write a program to run the motor in anticlockwise direction continuously. [6]

(*b*) With a neat diagram explain temperature measurement using 8051 microcontroller. [7]