



[4658] – 61

Seat No.	
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T.E. (Electrical) (Semester – I) Examination, 2014
MICROCONTROLLER AND ITS APPLICATIONS
(2008 Course)

Time : 3 Hours

Max. Marks : 100

N.B. : i) Answer **three** questions from Section I and **three** questions from Section II.
ii) Figures to the **right** indicate **full** marks.
iii) Assume suitable data, if **necessary**.

SECTION – I

1. a) Classify the microcontrollers based on number of bits, memory architecture, instruction set, memory devices and family. 8
- b) Explain the internal RAM structure of 8051 microcontroller. Also explain Programme memory and Data Memory with use of EA Pin. 10

OR

2. a) Draw and explain Architecture of 8051 Microcontroller and hence explain Memory Organization of 8051. 10
- b) Explain PSW in 8051. What are the flags that associate with ALU operation in 8051 ? 8
3. a) Square the content of R4 and put the result in R3 (higher byte) and R2 (lower byte). Also send result at External Location 20h (higher byte) and 21h (lower byte). 8
- b) Explain stack organization and enlist stack related instructions. 8

OR

4. a) Add the content of RAM locations 20h – 30h. Store the result at 40h (lower byte) and 41h (higher byte). 8
- b) Random numbers are present at R0 to R5. Find largest number and put it in R6. 8
5. a) Write a program for the 8051 to transfer letter 'A' serially at 4800 baud rate continuously. Also explain SCON register. 10
- b) Explain SPI communication bus. 6

OR

P.T.O.



6. a) What is interrupt ? Hence explain Programming interrupts, Timer interrupts, External interrupts, Serial interrupts and multiple interrupts. **10**
 b) Explain 12C communication bus. **6**

SECTION – II

7. a) Explain 8051 based Assembler, Compiler and Simulator. **8**
 b) Draw and explain the interfacing of 8051 with PC through RS 232. **8**

OR

8. a) Draw and explain the interfacing of 8051 with 8255. **8**
 b) Explain working of cross assembler system for 8051. **8**
9. a) Two stepper motors are interfaced to 8051 through a driver card. The motors are controlled through port 0. The step angle of the motor is 1.8 degree. Draw a schematic diagram and write a program to run both the motors in clockwise direction through an angle of 270 degree. **10**
 b) Write a short note on temperature measurement using 8051. **8**

OR

10. Write a short note on measurements of given physical quantities using 8051
 A) flow measurement
 B) level measurement
 C) humidity measurement. **18**
11. a) Explain frequency measurement using 8051. **8**
 b) Write a short note on 8051 based AC motor control. **8**

OR

12. a) Explain how a 4x4 matrix keyboard can be interfaced with 8051. **6**
 b) Write a short note on 8051 based KVA and KVAR measurement. **10**
