

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 131654 Roll No.

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B.Tech.

(SEM. VI) THEORY EXAMINATION 2013-14

MICROCONTROLLERS

Time : 2 Hours

Total Marks : 50

Note :- (i) Attempt questions are compulsory, however internal choices are given.

(ii) All questions carry equal marks.

1. Attempt any **two** parts of the following : (5×2=10)

(a) Differentiate between :

(i) Microcontroller and Microprocessor

(ii) Microcontroller and Embedded system.

(b) Draw and explain the architecture of 8051 microcontroller.

(c) What is register bank in 8051 ? Explain special function register used in 8051 microcontroller.

2. Attempt any **four** parts of the following : (2½×4=10)

(a) Explain the function of PC and SP in assembly language programming.

(b) Explain the following instruction including flag status with the help of suitable examples :

DJNZ, XRL, LCALL, SJMP, MOVX.

- (c) Write an ALP to generate a square wave of 50 Hz on the P 1.7 bits. Timer 1 is used in 16 bit mode and interrupt driven way.
- (d) Add the unsigned numbers found in internal RAM location 20h, 21h, 22h store the result in RAM location 41h (MSB), 40h (LSB).
- (e) List the directives used in 8051 microcontroller, and explain any five directives in detail.
3. Attempt any two parts of the following : (5×2=10)
- (a) What are the basics of serial communication ? Does asynchronous communication between two processors have to done at standard baud rate ?
- (b) How is RS-232 interfaced with 8051 and explain the use of RS-232 ?
- (c) What is the role of TCON 1 and TCON 2 in the execution of external interrupt 1 ?
- (d) Explain the role of registers which keeps track of interrupt priority in 8051 and also explain what happens if a low priority interrupt is activated while 8051 is serving a higher priority interrupt.
4. Attempt any two parts of the following : (5×2=10)
- (a) Draw and explain the interfacing of external memory with 8051 microcontroller.
- (b) Explain the LCD initialization and busy status of LCD, when connected with 8051 microcontroller.

- (c) Write a program to generate sine wave using DAC.
- (d) Draw architecture of 8255 chip and explain the ports in detail.
5. Write short notes on any two of the following : (5×2=10)
- (a) Signal conditioning
- (b) Stepper motor interfacing
- (c) MC68HC11 Microcontroller
- (d) Addressing modes.