

Roll No. ...3033813074.....

**328653(28)**

**B. E. (Sixth Semester) EXAMINATION,
April-May, 2015
(New Course)
(Branch : Et & T)
MICROCONTROLLER AND EMBEDDED
SYSTEMS**

*Time : Three Hours] [Maximum Marks : 80
[Minimum Pass Marks : 28*

Note : All questions are compulsory. Part (a) of each question is compulsory. Attempt any *two* parts from (b), (c) and (d) of each question.

1. (a) What does '7' show in a microcontroller 8751 ? 2
- (b) Write and explain three characteristics of Von-Neuman processor and distinguish it with Harvard processor. 7
- (c) How much time will it take to execute the following delay program ? If AT89C51 is used with 12 MHz crystal oscillator. 7

Delay :

MOV R₂, #10H

[2]

328653(28)

MOV A, # 20

MOV B, # 30

MUL AB

DIV AB

ANL A, B

XRL 40 H, # 40 H

SWAP A

MOV A, @R1

MOV 50 H, 40 H

MOV P 0.1,C

DJN₂ R₂, AGAIN

RET

- (d) Write an assembly language code to indentify the 129th day from today. Today is Monday. Store the first alphabet of the identified day at 1000H location of an external memory and glow the red LED connected to P 1.0 if the day is Monday otherwise glow Green LED connected to P 1.7. 7
2. (a) What is the role of TCON.3 of TCON register of AT89C51 controller ? 2
- (b) Write an assembly language code to design a counter for counting the pulses of an input signal. The pulses to be counted are fed to Pin P3.4. Use XTAL = 22 MHz. 7

[3] 328653(28)

- (c) Write an assembly language code to glow red LED connected to P0.0 for 100 μ s when a negative edge trigger signal ($\overline{INT0}$) at An P3.2 and glow green LED connected to P0.7 for 100 μ s when high to low level trigger signal arrived at Pin P3.9. Use TI in mode 2 to generate 100 μ s delay and IE register to set interrupts. XTAL = 12 MHz. 7
- (d) Explain the following terms : 7
- Working difference of RET and RETI
 - Edge trigger and Level trigger interrupt
 - When RI and TI raises ?
 - Role of Gate bit of TMOD
3. (a) What are the applications of 1488 and 1489 ? 2
- (b) A square wave is being generated at Pin P1.2. This square wave is to be sent to a receiver connected in serial form to this 8051. Write a program for this task. 7
- (c) Port 0 of 8051 is used to monitor a parameter in an industrial environment. If the parameter gives a reading above OFH, a message 'HI' is to be sent serially. Otherwise, a message 'OK' is to be sent. The words 'HI' and 'OK' are burned into program ROM locations. 7

[4]

328653(28)

- (d) Explain D-type 9 Pin connector and 25 Pin connector of RS232 standard. 7
4. (a) What is the name of stepper motor which do not have a permanent magnet rotor ? 2
- (b) Write an assembly language code to generate the given signal by DAC0808 signal $V_{out} = 5 + 5 \sin \theta$. 7
- (c) Write a .asm program to convert few samples of an analog input into digital data. Use ADC0809 and AT89C51 with 12 MHz crystal oscillator. 7
- (d) Draw and explain LCD timing diagram for read and write operation for E-line. Also explain the functions of each pin of LCD. 7
5. (a) Who and where developed the first embedded system ? 2
- (b) Explain embedded system with real time examples. 7
- (c) What are the embedded system challenges and development issues ? 7
- (d) What are the characteristics of real time embedded system ? Explain basic requirement to develop an embedded card. 7

328653(28)

2160