

EC6504

MICROPROCESSOR & MICROCONTROLLER

## UNIVERSITY QUESTIONS

Reg. No. :

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**Question Paper Code : 21364**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Electronics and Communication Engineering

EC 2304/EC 54 — MICROPROCESSORS AND MICROCONTROLLERS

(Regulation 2008)

(Common to PTEC 2304 – Microprocessors and Microcontrollers for B.E. (Part-Time)  
Fifth Semester Electronics and Communication Engineering – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ( $10 \times 2 = 20$  marks)

1. Why is 8284 clock generator connected to the 8086 CLK pin?
2. When the 8086 processor is in minimum mode and maximum mode?
3. What are the 8086 instructions used for BCD arithmetic?
4. What are the contents of AL and CY after the execution of the following segment?  
MOV BL, D5H  
RCL BL, 3  
MOV AL, BL
5. What is sample-and-hold circuit?
6. State the applications of programmable interval timer.
7. What happens in power down mode of 8051 microcontroller?
8. How the selection of particular register bank is done in 8051?
9. What do you mean by RTC?
10. State the importance of relays coils.

PART B — ( $5 \times 16 = 80$  marks)

11. (a) (i) Discuss the different types of interrupts in 8086. (8)  
(ii) Describe how memory is accessed in 8086 with suitable diagram. (8)  
Or  
(b) (i) Explain the internal architecture of 8086 microprocessor with neat diagram. (10)  
(ii) Explain the 8086 basic bus cycle timing diagram. (6)

12. (a) (i) Explain the various assembler directives with suitable examples. (8)  
(ii) Write an 8086 ALP to arrange the elements in an array of 10 elements in ascending order. (8)
- Or
- (b) (i) Discuss the data movement and program control instructions of 8086. (10)  
(ii) Write an 8086 ALP to find the sum of numbers in the array of 10 elements. (6)
13. (a) With neat block diagram explain the 8255 Programmable Peripheral Interface and its operating modes. (16)
- Or
- (b) Explain the 8279 Keyboard/Display controller with neat block diagram. (16)
14. (a) (i) Draw the pin diagram of 8051 microcontroller and explain the functions of each pin. (10)  
(ii) Discuss briefly the various registers in 8051 microcontroller. (6)
- Or
- (b) (i) Explain the interfacing of 4×4 matrix keyboard to the 8051 microcontroller with neat diagram. (10)  
(ii) Write shortly on the various operating modes for serial port of 8051 microcontroller. (6)
15. (a) Draw and explain the 8086 based traffic light control system in detail. (16)
- Or
- (b) Draw the diagram to interface a stepper motor with a 8051 microcontroller and explain. Also write an 8051 ALP to run the stepper motor in both forward and reverse direction with a delay. (16)

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MICROPROCESSOR & MICROCONTROLLER

**B.E/B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011  
FIFTH SEMESTER  
ELECTRONICS AND COMMUNICATION ENGINEERING  
EC2304- MICROPROCESSOR AND MICRO CONTROLLERS  
(Regulation 2008)**

**PART-A (2\*10=20)**

1. When the 8086 processor is in minimum mode and maximum mode?
2. Define segment override prefix.
3. What are the 8086 instructions used for BCD arithmetic?
4. List any four program control instructions available in 8086?
5. What do you mean by sample and hold circuit?
6. List the major functions performed by CRT interface?
7. What happens in power down mode of 8051 microcontroller?
8. What are the different ways of operand addressing in 8051?
9. Why are relays that use coils called electromagnetic relays?
10. What is PWM?

**PART-B**

- 11.(a) (i) Explain the internal hardware architecture of 8086 microprocessor with neat diagram. (12)  
(ii) Write briefly about the Direct Memory Access. (4)

(or)

- (b) (i) Explain the external memory addressing in 8086 (8)  
(ii) Discuss the interrupts types of 8086 microprocessor. (8)

- 12.(a) (i) Explain the assembler directives ASSUME,EQU,DW,and EVEN with suitable examples. (8)

- (ii) Write an 8086 ALP to sort the array of elements in a nding order. (8)

(or)

- (b) (i) Write an 8086 ALP to find the largest element in an array elements. (6)  
(ii) Explain the data transfer group and logical group of 8086 instructions. (10)

- 13.(a) With neat block diagram explain the 8255 Programmable Peripheral Interface and its operating modes. (16)

(or)

- (b) Draw and explain the block diagram of 8254 Programmable Interval Timer. Also explain the various modes of operation. (16)

- 14.(a) (i) Explain the architecture of 8051 microcontroller with neat diagram. (12)

- (ii) Write briefly about the operating modes for serial port of 8051 microcontroller. (4)

(or)

- (b) (i) Write an 8051 ALP to create a square wave of 66% duty cycle on bit 3 of port 1. (6)  
(ii) Describe the different modes of operation of timers/counters in 8051 with its associated register. (10)

- 15.(a) (i) Draw and explain the block diagram of traffic light control system. (10)

- (ii) Briefly discuss the features of RTC device. (6)

(or)

- (b) Draw the diagram to interface a stepper motor with 8051 microcontroller and explain. Also write an 8051 ALP to run the stepper motor in both forward and reverse direction with delay. (16)

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MICROPROCESSOR & MICROCONTROLLER

**B.E/B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011**  
**FIFTH SEMESTER**  
**ELECTRONICS AND COMMUNICATION ENGINEERING**  
**EC2304- MICROPROCESSOR AND MICRO CONTROLLERS**  
**(Regulation 2008)**  
**PART-A (2\*10=20)**

1. When the 8086 processor is in minimum mode and maximum mode?
2. Define segment override prefix.
3. What are the 8086 instructions used for BCD arithmetic?
4. List any four program control instructions available in 8086?
5. What do you mean by sample and hold circuit?
6. List the major functions performed by CRT interface?
7. What happens in power down mode of 8051 microcontroller?
8. What are the different ways of operand addressing in 8051?
9. Why are relays that use coils called electromagnetic relays?
10. What is PWM?

**PART-B**

- 11.(a) (i) Explain the internal hardware architecture of 8086 microprocessor with neat diagram. (12)  
(ii) Write briefly about the Direct Memory Access. ((4)  
(or)  
(b) (i) Explain the external memory addressing in 8086 (8)  
(ii) Discuss the interrupts types of 8086 microprocessor. (8)
12. (a) (i) Explain the assembler directives ASSUME, EQU, DW, and EVEN with suitable examples. (8)  
(ii) Write an 8086 ALP to sort the array of elements in a nding order. (8)  
(or)  
(b) (i) Write an 8086 ALP to find the largest element in an array elements. (6)  
(ii) Explain the data transfer group and logical group of 8086 instructions. (10)
- 13.(a) With neat block diagram explain the 8255 Programmable Peripheral Interface and its operating modes. (16)  
(or)  
(b) Draw and explain the block diagram of 8254 Programmable Interval Timer. Also explain the various modes of operation. (16)
- 14.(a) (i) Explain the architecture of 8051 microcontroller with neat diagram. (12)  
(ii) Write briefly about the operating modes for serial port of 8051 microcontroller. (4)  
(or)  
(b) (i) Write an 8051 ALP to create a square wave of 66% duty cycle on bit 3 of port 1. (6)  
(ii) Describe the different modes of operation of timers/counters in 8051 with its associated register. (10)
- 15.(a) (i) Draw and explain the block diagram of traffic light control system. (10)  
(ii) Briefly discuss the features of RTC device. (6)  
(or)  
(b) Draw the diagram to interface a stepper motor with 8051 microcontroller and explain. Also write an 8051 ALP to run the stepper motor in both forward and reverse direction with delay. (16)

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MICROPROCESSOR & MICROCONTROLLER

**B.E/B.Tech. DEGREE EXAMINATION, Nov/Dec 2010**  
**FIFTH SEMESTER**  
**ELECTRONICS AND COMMUNICATION ENGINEERING**  
**EC2304- MICROPROCESSOR AND MICRO CONTROLLERS**  
**(Regulation 2008)**

PART-A(10\*2=20marks)

1. What are tri-state devices?
2. Mention the advantages of using the Direct Memory Access.
3. What is the purpose of the following commands in 8086?(a)AAD,(b)RCL
4. Write an 8086 assembly language program to multiply two 16 bit unsigned numbers to provide a 32 bit result. Assume that the two numbers are stored in CX and DX.
5. Give the salient features of the 8254 Programmable interval timer.
6. What is a Sample and Hold circuit?
7. What are the advantages of the register indirect addressing mode in 8051 microcontroller?
8. Write an 8051 program to monitor PI continuously for the value 63H. It should get out of the monitoring only if P1=63H.
9. How is the microcontroller used for the traffic light control application?
10. Differentiate microprocessor from microcontroller in system design.

PART B (5 16 = 80 Marks)

- 11 (a)(i) Explain the 8085 bus structure with a neat sketch.  
(ii) What are the peripheral I/O instructions? Write its syntax and explain the same with the timing diagram.  
or  
(b) Explain the 8086 interrupts types in detail.
12. (a) Explain the 8086 bit manipulation instructions with an example for each.  
or  
(b) Write an 8086 program to convert BCD data to binary data.
13. (a) Explain the 8279 keyboard and display controller with a neat sketch.  
or  
(b) Describe the architecture and working of 8253 timer.
- 14 (a) Assume that 5 BCD data items are stored in RAM locations starting at 40H as shown below. Write an 8051 program to find the sum of all the numbers. The result must be in BCD.  
40= (71), 41=(11), 42=(65), 43=(59), 44(37)  
or  
(b) Explain the working of the 8051 microcontroller. Give a neat sketch.
- 15 (a) Explain how microcontrollers and microprocessors can be used for the washing machine control application. Use sketches.  
or  
(b) Explain with a neat sketch how microcontrollers and microprocessors can be used for the stepper motor control application.