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**Question Paper Code : 60455**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fifth Semester

Electronics and Communication Engineering

EC 2304/EC 54 — MICROPROCESSORS AND MICROCONTROLLERS

(Regulations 2008)

(Common to PTEC 2304 — Microprocessors and Micro controllers for  
B.E. (Part-Time) Fifth Semester — Electronics and Communication Engineering —  
Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the different data transfer schemes.
2. What are the advantages of memory-mapped I/O over I/O-mapped I/O?
3. What are the 8086 instructions used for BCD arithmetic?
4. List any four program control instructions available in 8086.
5. What is sample-and-hold circuit?
6. State the applications of programmable interval timer.
7. List the SFRs involved in interrupt programming of 8051.
8. Why it is necessary to have external pull-up for port 0 in 8051.
9. Why are relays that use coils called electromagnetic relays?
10. What do you mean by 12C standard?

PART B — (5 × 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) Develop a program to transfer 10 bytes of data from memory location starting from 2000H. (8)  
(ii) Describe program location control directives with suitable examples. (8)

Or

- (b) (i) Develop a program to multiply two 16 bit numbers stored in P1 and P2. (8)  
(ii) Explain rotate and shift instructions with suitable examples. (8)
13. (a) With a neat block diagram explain the key board and display controller IC 8279. (16)

Or

- (b) (i) With a neat block diagram explain programmable interval IC 8253. (8)  
(ii) Briefly explain the method of interfacing A-to-D converter with microcontroller. (8)
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 bit 3 of port 1. (6)  
(ii) Describe the different modes of operation of timers/counters in 8051 with its associated registers. (10)

15. (a) (i) Explain the block diagram of washing machine control system. (10)  
(ii) How do you interface RTC with  $\mu p / \mu c$ ? (6)

Or

- (b) (i) 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 delay. (10)  
(ii) What is PWM? Explain in detail. (6)
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