

**GANPAT UNIVERSITY**  
**B. TECH SEM.V ELECTRONICS & COMMUNICATION ENGINEERING**  
**EXAMINATION NOV/DEC-2011**  
**EC 501 ADVANCED MICROPROCESSORS AND MICROCONTROLLER**

TIME: 3 HOURS

TOTAL MARKS: 70

**INSTRUCTIONS:**

1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

**SECTION-I**

- Que.-1** (A) Draw and explain 8086 internal block diagram. 6  
 (B) State true or false with respect to 8086. If false give the correct answer for following: 3  
       (1) MOV DL, CX   (2) MOV DX, CL   (3) ADD AL, 7890H  
 (C) Discuss the advantages of segmentation in 8086. 3
- OR**
- Que.-1** (A) Explain memory banks of 8086. 6  
 (B) Explain timing diagram of memory read machine cycle. 6
- Que.-2** (A) Draw the pin diagram of 8051. 3  
 (B) Put a random number in internal RAM location 20h and increment it until it equals to the random number stored in register R5. 4  
 (C) Increment the DPTR from any initialized value to CDEFh. 4
- OR**
- Que.-2** (A) Draw and explain interfacing of external memory with 8051. 6  
 (B) Explain the following instructions: 5  
       1. XRL 15h,A  
       2. MOVX A,@dptr  
       3. MOV @R0,80h  
       4. ADDC A,@R1  
       5. SUBB A,#35h
- Que.-3** (A) Explain various addressing modes of 8051 with suitable examples. 4  
 (B) Write a program to get the value, say x, from P1 and send x<sup>2</sup> value to P2 continuously. 4  
 (C) Count the number of 1s in any number stored in register R5 and put the count in R1. 4



## SECTION-II

- Que.-4 (A) Write a program to transfer the message "microcontroller" serially at 9600 baud rate, 8 bit data, and 1 stop bit. Do this continuously. XTAL=11.0592MHz. Use timer 1 in mode2. 6
- (B) Draw and explain different modes of serial communication of 8051. 6
- OR
- Que.-4 (A) Program the 8051 to receive bytes of data serially, and put them in port P1. Set the baud rate 4800, 8 bit data and 1 stop bit. XTAL=11.0592MHz. Use timer 1 in mode2. 6
- (B) Draw and explain SCON and PCON registers of 8051. 4
- (C) List the values of P0-P3, PSW, SP and DPTR on reset the 8051. 2
- Que.-5 (A) Write a program that continuously gets 8 bit data from P1 and send it to P3. While simultaneously creating a square wave of 450  $\mu$ sec period on P0.2. Use timer 0 in mode 2 to create the square wave. Assume that XTAL=11.0592MHz. 6
- (B) Draw and explain P0 as GPIO, address bus and data bus. 5
- OR
- Que.-5 (A) Assume that the INT1 pin is connected to a switch that is normally high. Whenever it goes low, it should turn on a led. The led is connected to P1.0 and is normally off. When it is turned on it should stay on for a fraction of a second. As long as the switch is pressed the led should stay on. 6
- (B) State three differences between microcontroller and microprocessor. 3
- (C) Explain RL A, RLC A, RR A, RRC A. 2
- Que.-6 (A) Draw and explain IE and IP registers 3
- (B) What is difference between RET and RETI instructions? 2
- (C) Make the low nibble of R5, the complement of the high nibble of R6. 5
- (D) How can we represent -55d in hex? 2

**End of Paper**