

**GANPAT UNIVERSITY**  
**B.TECH SEM-V (ELECTRICAL)**  
**REGULAR EXAMINATION NOV-DEC 2016**  
**2EE502: MICROCONTROLLER & EMBEDDED SYSTEM**

**TIME: 3 HOURS**

**Total Marks:-60**

**Instructions:** - 1. Attempt all questions.

2. Make suitable assumptions wherever necessary.

3. Figures to the right indicate full marks.

**SECTION-I**

**Q:1**

(A) What do you mean by SFRs? Give the structure the SFRs in 8051. (05)

(B) Briefly discuss the functions of Stack, Stack pointer, Program counter and data pointer (05)

**OR**

**Q:1**

(A) Explain pin configuration with circuit diagram for port 0 and port 1. (05)

(B) What are the interrupts available in the 8051 microcontroller? Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR. (05)

**Q:2**

(A) Draw the pin diagram of 8051 Microcontroller and explain the function of each pin. (05)

(B) Describe TMOD and TCON Special Function registers. (05)

**OR**

**Q:2**

(A) Write a program to copy the value 44H into RAM locations from 60H to 61H using, (06)

i. Direct addressing mode

ii. Register indirect mode without loop.

iii. Register indirect mode with loop

(B) Give the format of PSW in 8051. (04)

**Q:3**

**Attempt any Two:**

(10)

(A) Explain various modes of timers in 8051 and explain with assembly language programming auto reload mode.

(B) Write ALP to count number of one's and zero's in a given number.

(C) Write an assembly program to find the average of given N numbers.



## SECTION-II

Q:4

- (A) Describe internal RAM organization of 8051 micro-controller in detail. (05)
- (B) Write an ALP to transfer set of data from memory location 3000-3004H to 4000-4000H (05)

OR

Q:4

- (A) Explain how to run and execute program of 8051 microcontroller. (04)
- (B) Explain with interfacing diagram, 7 segment interfacing with 8051 and write a program to display data accordingly. (06)

Q:5

- (A) Explain the data types used in 8051 C programming. (04)
- (B) A SW is connected to port pin P1.5. write an 8051 C program to monitor SW and create following frequencies on pin P1.7: [Use 11.0592 MHz crystal Frequency] (06)  
SW = 0 ; 500 Hz  
SW = 1 ; 750 Hz Use Timer 0, mode 1 for both of them

OR

Q:5

- (A) Write an 8051 C program to toggle all bits of port 1 continuously every 250ms. Use timer 0 mode 1 to create delay. Also mention appropriate delay calculation. [Use 11.0592 MHz crystal frequency] (05)
- (B) What is conditional branching? State various conditional branching instructions. & explain DJNZ instruction with example. (05)

Q:6 Attempt following Questions.

- (A) Explain PUSH instruction with suitable example. (02)
- (B) With the help of block diagram and circuit diagram, explain the concept of DC motor control by a microcontroller. (05)
- (C) Write an 8051 C program to toggle bit D0 of the port P2 (P1.0) 10,000 times. (03)

END OF PAPER