Seat No.________________

GANPAT UNIVERSITY

B. TECH SEM- VI (MC) CBCS REGULAR EXAMINATION– APRIL-JUNE 2017

2MC602 EMBEDDED SYSTEMS

Time: 3 HOURS **Total Marks:** 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.

(2) Figures on right indicate marks.

(3) Be precise and to the point in answering the descriptive questions.

SECTION: I

Que:1 **(A)** Explain program status registers. [5]

(B) When and how Q flag sets? [5]

OR

Que:1 **(A)** Explain control register. [5]

(B) Explain little ending and big ending with appropriate examples. [5]

Que:2 **(A)** Explain System Control Register (SCR). [5]

(B) Write an assembly program to calculate $5X^2 + 6Y^2$ where x=3 and y=4. [5]

OR

Que:2 **(A)** Explain NVIC Registers in detail. [5]

(B) Write a C program for seven segment display which counts number from zero to nine. [5]

Que:3 **(A)** Write a short note on GPIO block diagram. [5]

(B) Write the output of following instructions. [5]

(1) MLA R1,R2,R3,R4
(2) EOR R1,R2,R3
(3) ASR R1,R2,#0x02
(4) CLZ R1,R2
(5) REVSH R1,R0

SECTION: II

Que:4 **(A)** How does the kernel interact with the hardware? [5]

(B) Which are the good qualities of good RTOS systems? [5]

OR

Que:4 **(A)** Which are the different types of real time tasks? How to Distinguish them. [5]

(B) Draw and explain state transition diagram of processes. [5]

Que:5 **(A)** Explain Race condition in details. [5]

(B) The task in ready queue at time t=0. At time t=500, a new task '7' of priority rank 1 and execution period is 100 comes into the ready queue of pre-emptive priority scheduling. Draw the final Gantt chart. [5]

Task No.	1	2	3	4	5	6
T (Unit Time)	300	100	125	400	60	250
Priority	7	3	5	2	6	4

OR

Que:5 (A) Explain different types of RTOS. [5]

(B) At time t=250, a new task '7' with the service time of 50 enters the ready queue of pre-emption SJN scheduling. Represent all tasks timing by the Gantt chart. [5]

Task No.	1	2	3	4	5	6
T (Unit Time)	250	110	150	200	40	350

Que:6 (A) How the assembler converts the assembly codes into machine code. [5]

(B) Explain following terms :(1) API and (2) POSIX [5]

END OF PAPER