APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q. P. Code:PE0819252A-I **(Pages:3)** **Name .....**

Reg.No:.....

SECOND SEMESTER M.TECH. DEGREE EXAMINATION JUNE 2019

Branch: Electrical and Electronics Engineering **Specialization: Power Electronics**

08EE6252(A) EMBEDDED CONTROLLERS IN REAL TIME SYSTEMS

Time:3 hours **Max Marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

Q.no.	Module 1	Marks
1.a	Name the directives used in **8051** Microcontroller with their importance in programming?	3
	Answer b or c	
b	1.Draw the flowchart and program for transferring letter "A" serially at 4800 baud continuously in 8051 micro controller environment.? (4) 2.Code a program in 8051 to rotate stepper motor continuously. (2)	6
c	Write the procedure to monitor the status of the four, PWM controlled switches ,which are used for controlling the DC motor with the following condition, P2.7 = 1, DC motor moves with 50% duty cycle.	6

Q no.	Module 2	Marks
2.a	"Real-time operating systems increase reliability of systems"? Justify.	3
	Answer b or c	
b	Describe Robin round scheduling in real time operating systems and their impact on the performance of the systems?	6

c Enumerate with a simple C program ,"Context Switching in real time operating systems " ? 6

Q.no.	Module 3	Marks
3.a	"Semaphores layers are helpful for multilevel tasking" . Justify the statement.	3

Answer b or c

b Describe "Rate – Monotonic Algorithm method ", with a suitable example. 6

c List the interrupts in real time operating system and differentiate them with the help of real time situations. 6

Q.no.	Module 4	Marks
4.a	Comment on role of **OPTION_REG Register** used in **PIC** microcontroller?	3

Answer b or c

b Make up a program for the **PIC 18** Microcontroller to turn ON the LEDs connected to PORT B in an order 01010101 .Draw the circuit diagram also. 6

c Enumerate the CCP modules used in PIC microcontrollers and explain how the PWM signal is generated. 6

Q.no.	Module 5	Marks
5.a	Differentiate between Von Neumann and Harvard Architecture?	4

Answer b or c

b With suitable block diagram describe the architecture of DSP processor? List its applications. 8

c Compare and differentiate between DRAM and SRAM in DSP processor and 16 bit microprocessor ? 8

Q.no.	Module 6	Marks
6.a	Discuss **TDM Serial Port Registers** for a TMS320 Series DSP Processors?	4

Answer b or c

b	Enumerate **Processor Mode Status Register (PMST)** for aTMS320 series DSP Processor?	**8**
c	Discuss the architecture of **Central Arithmetic Logic Unit** of a TMS320 Series DSP Processor?	**8**