

SUBJECT CODE NO:- P-67
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(EC/ECT/IEC/E&C) Examination MAY/JUNE-2016
Embedded Systems
(Revised)

[Time:Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

- N.B
- i) Question No.1 from section A and Question No.6 from section B are compulsory.
 - ii) From remaining, solve any two questions from each section.
 - iii) Figures to the right indicate full marks.
 - iv) Assume suitable data, wherever necessary.

Section A

- Q.1 Solve any two questions from the following. 10
- 1) Compare RISC and CISC processor in detail.
 - 2) Explain in detail, with neat diagram the 3 stage pipeline in ARM7.
 - 3) Explain in brief RTC module in ARM7.
- Q.2
- a) Define embedded system and discuss in depth design challenges in embedded system. 08
 - b) Explain with neat diagram SPI protocol. 07
- Q.3
- a) Explain in detail with neat diagram ARM7 core architecture and its register organization. 08
 - b) Discuss the features of ARM7 core in comparison with other microprocessor/microcontroller. 07
- Q.4
- a) Compare and contrast ARM and thumb instruction set giving examples. 08
 - b) Explain different arithmetic instructions in ARM7 core. Write an ARM7 based ALP to perform multiplication of two 32 bit numbers and store the result in memory locations. Assume suitable data. 07
- Q.5 Write short notes on (Any 3) 15
- 1) CPSR
 - 2) On chip ADC in ARM7 processor
 - 3) ARM processor family
 - 4) Hardware and software designing and testing

Section B

- Q.6 Answer any two from following. 10
- 1) Discuss need of interfacing and I/F techniques in ES.
 - 2) Explain with neat diagram, Kernel architecture of RTOS.
 - 3) Explain in detail use of μ COS II and list down its features.
- Q.7
- a) Explain in detail GPIO interfacing with ARM 7 processor. 07
 - b) Write an embedded C program to rotate stepper motor in clockwise direction. Draw a neat interfacing diagram of stepper motor with ARM7 processor. 08

Q.8	a) Explain in detail RTOS services.	08
	b) Define and give classification of semaphore. Explain the need of semaphore.	07
Q.9	a) Discuss design criteria and steps in ARM based digital thermometer, giving neat diagram.	07
	b) Explain any two μ COS service functions in detail.	08
Q.10	Write short notes on: (<u>Any 3</u>)	15
	1) Touch screen I/F with ARM7	
	2) Task states and scheduler	
	3) Memory management in RTOS	
	4) Smart card design	