

Reg.No. \_\_\_\_\_



# Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)  
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

## End Semester Examination – Nov/Dec – 2016

Code : 14EC3078  
Sub. Name : Real Time and Embedded Control Automation

Semester : 2016-17 ODD  
Duration : 3hrs  
Max. marks : 100

### ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	What are the types of embedded systems and explain various functional components involved in embedded system design.		10
	b.	Explain in detail about various steps involved for the conversion of assembly code into machine implementable code with neat block diagram.		10
(OR)				
2.	a.	With neat Sketch, Illustrate how the hardware and software architecture are used to design real time embedded system using micro controller / DSP		10
	b.	Write down the three types of Instruction Set Architecture Model. Explain about the various features described by Instruction Set Architecture.		10
3.	a.	Comment briefly on the switch interface related to embedded systems.		10
	b.	Describe the operation of successive approximation type ADC.		10
(OR)				
4.	a.	Describe the following interfacing issues related to an embedded systems (i) Keypad Interfacing (ii) Stepper Motor interfacing		20
5.	a.	Discuss the finite state machine (FSM) and Write a pseudo code program to describe Traffic light system operation and depict it by FSM.		14
	b.	Explain in detail about the various software development tools used in real time system.		6
(OR)				
6.	a.	Write short notes on software development process of an embedded systems.		10
	b.	List advantages and disadvantages of java based embedded system design.		6
	c.	What are the typical characteristics of an embedded system?		4
7.	a.	Elaborate on different operating system task states with an example.		10
	b.	Describe the various functions of RTOS.		6
	c.	Write short notes on scheduler.		4
(OR)				
8.	a.	What is real time kernel? Discuss how shared data problem is handled by Real time kernel in RTOS.		15
	b.	Draw the petrinet model for scheduling process.		5
<b><u>Compulsory:</u></b>				
9.	a.	With neat sketch, illustrate the different methods of handling interrupt services in RTOS environment.		16
	b.	Mention the importance of memory allocation functions in UCOS-II.		4

ALL THE BEST