Total No. of Questions : 10]

SEAT No. :

**P3334**

[Total No. of Pages : 2

# [5670]-603
# B.E. (E & TC)
# EMBEDDED SYSTEMS & RTOS
## (2015 Course) (Semester - I) (Elective - I) (End Sem.)

*Time : 2½ Hours]* *[Max. Marks : 70*

***Instructions to the candidates:***

1) *Neat diagrams must be drawn wherever necessary.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data if necessary.*

***Q1)*** a) Explain the Spiral Model. State its merit and demerits. **[5]**

b) Discuss the criterion for memory selection in Embedded System design. **[5]**

OR

***Q2)*** a) What are the important challenges in design of Embedded System? Discuss. **[5]**

b) Compare General Purpose Operating System (GPOS) and RTOS with respect to : **[5]**

i) Time.

ii) Memory management.

***Q3)*** a) Justify the role of the following in scheduling algorithm : **[5]**

i) Turnaround time.

ii) Wait time.

b) Compare QNX with Nucleus OS. **[5]**

OR

***Q4)*** a) Discuss the concept of Priority Inversion with example. **[5]**

b) Explain the following functions : **[5]**

i) OSSemPend( )

ii) OSQPost ( )

***P.T.O.***

***Q5)*** a) In what way the corten architecture is suitable in modern embedded System? Justify your answer. **[8]**

b) Draw interfacing diagram of RGB LED with LPC 1768. Write a program or algorithm for the same. **[8]**

OR

***Q6)*** a) Explain the various power saving modes of LPC 1768. **[8]**

b) Justify the necessity of nested vector Interrupt controller in ARM corten? How tail chaining method improves the interrupt response time? **[8]**

***Q7)*** a) Explain the following file system in linux with their advantages. **[9]**

i) ext2

ii) ext3

iii) ext4

iv) JFFS2.

b) Explain the device driver with a simple application. **[9]**

OR

***Q8)*** a) Explain the following tool utilities in Embedded linux system. **[9]**

i) Busybox

ii) Redboot

ii) LIBC.

b) What is Embedded Linux? Explain Embedded Linux development setup. **[9]**

***Q9)*** a) Draw an interfacing diagram to connect 4 LEDs to Arduino board and write a program to blink them alternately. **[8]**

b) Explain different standard libraries in Arduino. **[8]**

OR

***Q10)*** a) Explain the following functions with respect to Arduino programming **[8]**

i) Setup( ) ii) digitalRead( )

iii) loop( ) iv) PinMode( )

b) Compare corten A, R, M series. **[8]**