

**B. Tech. Sem -VI (E & TC Engg.) (2014 COURSE) (CBCS) :  
SUMMER - 2019**

**SUBJECT: EMBEDDED SYSTEMS**

Date: Friday  
Day: 24/05/2019

**S-2019-2778**

Time: 02.30 PM TO 05.30 PM  
Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

**Q.1** What are the software components of an embedded system? Explain with suitable examples. (10)

**OR**

**Q.1** a) Explain classification of embedded systems with examples. (05)  
b) What are the challenges involved in embedded system design? (05)

**Q.2** Write a note on following: (10)  
i) Mailboxes  
ii) Message queue  
iii) Pipes  
iv) Semaphores

**OR**

**Q.2** a) What is shared data problem in processes? How it can be eliminated? (04)  
b) What are the memory management strategies used in RTOS? Explain them. (06)

**Q.3** a) Draw and explain programmer's model of ARM processor. (05)  
b) What are the features of ARM LPC2148? (05)

**OR**

**Q.3** a) Draw and explain dataflow model of ARM processor. (06)  
b) Write a note on I/O ports and registers associated with them in LPC2148. (04)

**Q.4** Write a program to interface LPC2148 with LCD and display following string on LCD. (10)

"AVENGERS"  
"INFINITY WAR"

**OR**

**Q.4** a) Write a program for LPC2148 to interface buzzer which is connected at P1.15 of LPC2148. (05)  
b) Draw and explain interfacing of LPC2148 with EEPROM using I2C. (05)

**Q.5** a) Compare features of ARM7 and Cortex series processors. (05)  
b) Explain modes of operation of power control block of LPC1768. (05)

**OR**

**Q.5** a) Explain use of SET, CLEAR and DIR registers of GPIO in LPC1768 with suitable examples. (05)  
b) What are the different reset sources under system control block of LPC1768? (05)

**Q.6** Write a program for LPC1768 to drive DC motor using PWM. (10)

**OR**

**Q.6** Draw and explain the interfacing of seven segment display with LPC1768. Explain the algorithm for the same. (10)