

B.TECH SEM - VI (2007 COURSE) (E & TC ENGG.) :

WINTER - 2017

SUBJECT: BASIC EMBEDDED SYSTEMS

Day: **Monday**
Date: **20/11/2017**

W-2017-2538

Time: **10.00 AM TO 01.00 PM**
Max Marks: 80

N.B:

- 1) **Q.No. 1 and Q.No. 5 are COMPULSORY.** Out of remaining questions attempt any **TWO** questions in each section.
- 2) Answer to both the section should be written in **SEPARATE** answer book.
- 3) Figures to the right indicate **FULL** marks.
- 4) Assume suitable data if necessary.

SECTION-I

- Q.1**
- a) Write a note on ports of 8051 microcontroller. **(05)**
 - b) Explain following instructions of PIC with examples. **(04)**
i) BTFS ii) GOTO
 - c) Write a note on pipeline mechanism of ARM processor. **(04)**
- Q.2**
- a) Write a program to transmit "I LOVE INDIA "Serially from 8051 microcontroller with a band rate of 4800. Answer required data. **(08)**
 - b) Explain different addressing modes of 8051 with examples. **(05)**
- Q.3**
- a) Draw and explain the internal architecture of PIC 16C6X series. **(06)**
 - b) Explain the role of ADCON0 and ADCON1 registers for ADC programming. **(07)**
- Q.4**
- a) Explain dataflow model of ARM core with neat diagram. **(06)**
 - b) With suitable examples explain logical instructions and branch instructions in ARM processor. **(07)**

SECTION-II

- Q.5**
- a) Write a short note on embedded hardware components in a system. **(04)**
 - b) Write a note on various parallel bus communication protocol used in embedded systems. **(06)**
 - c) Explain memory management in RTOS. **(04)**
- Q.6**
- a) Explain various steps of design process of an embedded system. **(07)**
 - b) In processor selection, which are the various features of a processor should be considered by hardware designer? **(06)**
- Q.7**
- a) Write a short note on: **(06)**
i) Multithreading ii) Tasking
 - b) Explain the term multitasking OS and multitasking scheduler. Give an example of deadlock situation during the multitasking execution. **(07)**
- Q.8**
- a) How does a mailbox message differ from a queue message? Can message queue be used as a counting semaphore? How to create a counting semaphore? **(06)**
 - b) State various software architecture. Explain round robin with interrupt architecture with suitable example. **(07)**

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