

**B.Tech Sem – VI (2007 Course) (Electronics) : WINTER - 2018**

**SUBJECT: EMBEDDED SYSTEMS**

Day : Tuesday  
Date : 13/11/2018

**W-2018-2857**

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 the remaining attempt **ANY TWO** questions from each section
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer books.
- 4) Assume suitable data, if necessary.
- 5) Use of non-programmable **CALCULATOR** is allowed.

**SECTION-I**

- Q.1**
- a) What is pipelining? Explain instruction pipeline flow execution with the help of clock cycle? **(05)**
  - b) Explain status and PCLATH register in PIC 16C6X micro-controller. **(05)**
  - c) What is CPSR? Explain in detail. **(04)**
- Q.2**
- a) Interface ADC0804 to 8051. Write a program to monitor the interrupt pin and bring an analog input into register A. **(07)**
  - b) Interface 64kB of EEPROM and 8kB of RAM to 8051 micro-controller. **(06)**
- Q.3**
- a) Describe the timers in 16C6X series micro-controller. Explain how count is calculated based on the delay requirement. **(07)**
  - b) Discuss the I/O ports in 16C6X microcontroller. write a program to initialize port A. **(06)**
- Q.4**
- a) Draw and explain internal architecture of AVR microcontroller. **(07)**
  - b) Explain the various processor modes in ARM processor. What is the significance of special registers r13, r14, and r15? **(06)**

**SECTION-II**

- Q.5**
- a) How does a data output generated by a process transfer to another using an inter process communication? **(04)**
  - b) What are the three ways of communication for a device? What are the features of SPI? **(05)**
  - c) What are the different ways adopted in embedded software development for saving memory space? **(05)**
- Q.6**
- a) Explain how you would select processor for system of voice data compression? Give a suitable example. **(07)**
  - b) What are the various classifications of Embedded System? Explain the basic processors and hardware units in the Embedded System. **(06)**
- Q.7**
- a) Explain : **i) Message queue      ii) Mailbox      iii) Pipe** **(07)**
  - b) Explain I<sup>2</sup>C protocol in detail. **(06)**
- Q.8**
- a) Explain the following with respect to RTOS. **(07)**  
**i) Events    ii) Timers    iii) Pipes and queues    iv) Semaphore**
  - b) Explain memory management in RTOS. **(06)**

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