

**B.TECH SEM – VI (2007 COURSE) (ELECTRONICS) :**  
**WINTER - 2017**

**SUBJECT: EMBEDDED SYSTEMS**

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

**W-2017-2514**

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

**N.B:**

- 1) **Q. No. 1 and 5 are COMPULSORY.** Out of remaining attempt any **TWO** 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) Use of electronic **CALCULATOR** is allowed.

**SECTION-I**

- Q.1**
- a) What is stack? Explain facts about stack pointer in 8051. (05)
  - b) What is status and PCLATH register in PIC 16 C 6x micro - controller. (05)
  - c) What is CPSR? Explain in detail. (04)
- Q.2**
- a) With a neat diagram explain how you would interface 8051 micro – controller to stepper motor .Write a program to rotate the motor continuously. (07)
  - b) Write a program in 8051 to generate square wave of 2KHZ at P1.0. The 8051 is running at 12 MHZ. (06)
- Q.3**
- a) Draw & explain the RESET & BROWN OUT circuit of PIC micro-controller. (07)
  - b) Describe the timers in 16c6x series micro – controller. Explain how count is calculated based on the delay requirement. (06)
- Q.4**
- a) What is the role of barrel shifter in ARM core? Explain MOV instruction with barrel shifting operations. (07)
  - b) Draw & explain register organization of ARM processor. (06)

**SECTION-II**

- Q.5**
- a) What are the different ways adopted in embedded software development for saving memory space? (05)
  - b) Differentiate between conventional OS & embedded OS. (05)
  - c) Discuss the complete design of typical embedded system. (04)
- Q.6**
- a) Define interrupt latency? What are the different causes of interrupt latency? Suggest different ways to reduce it. (07)
  - b) Why device drivers are used? What are the different types of device drivers? (06)
- Q.7**
- a) What are the states of a task? Which is the entity controlling in a task? Define critical section of a task. (07)
  - b) Interpret the following: (06)  
I) Semaphore                      II) Context switching  
III) Tasking                        IV) Multiple threads
- Q.8**
- a) Explain what is meant by shared data? What are the advantages & disadvantages of sharing data? How would you solve the shared data problem? (07)
  - b) Explain memory management in RTOS. (06)

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