Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_

****

**End Semester Examination – Nov / Dec – 2019**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **18EI3002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **EMBEDDED SYSTEM AND SOFTWARE DESIGN** | **Max. Marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Draw the basic block diagram in embedded system. | CO1 | 4 |
| b. | Explain in detail the various schemes available in DMA. | CO1 | 4 |
| c. | Explain how watch dog timer prevents the embedded system from software hangs. | CO1 | 4 |
| d. | Enumerate Semaphore and its types. | CO1 | 4 |
|  |  |  |  |  |
| 2. | a. | Explain in detail the RS232 serial interface with pin configuration. | CO2 | 8 |
| b. | Describe I2C bus operation and explain its interface. | CO2 | 4 |
| c. | Which are the different Parallel I/O ports? | CO2 | 4 |
|  |  |  |  |  |
| 3. | a. | Compare RS232 with RS485. | CO2 | 6 |
| b. | Explain the architecture of device driver, with neat sketch and give the applications of device drivers. | CO2 | 10 |
|  |  |  |  |  |
| 4. | a. | Discuss deeply the pre-emptive and non pre-emptive scheduling with suitable diagrams. | CO3 | 6 |
| b. | Explain the state transitions in task control block module system. | CO3 | 6 |
| c. | How do we initiate round robin time series scheduling? | CO3 | 4 |
|  |  |  |  |  |
| 5. | a. | Explain how threads and processes are used in embedded systems. | CO3 | 6 |
| b. | What is interprocess communication (IPC)? | CO4 | 6 |
| c. | Distinguish the features of µCOS from VxWorks RTOS. | CO4 | 4 |
|  |  |  |  |  |
| 6. | a. | Explain different Debugging Techniques used in RTOS. | CO4 | 6 |
| b. | Analyze the role of UML in embedded design. | CO4 | 6 |
| c. | Distinguish hard from soft real time systems. | CO4 | 4 |
|  |  |  |  |  |
| 7. | a. | What is the need of IDE in embedded architecture? Discuss. | CO5 | 6 |
| b. | How would you convert a C program into file with suitable block diagram. | CO5 | 6 |
| c. | Write short notes on different modelling techniques. | CO5 | 4 |
| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Explain the case study of a embedded system design for intruder alarm. | CO6 | 12 |
| b. | List out the important design considerations when using sEOS. | CO6 | 8 |