



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec. - 2015

Embedded Systems

Time: 3 hrs

Max. Marks: 100

Note: Answer any **FIVE** full questions, selecting at least **TWO** full questions from each **part**.

PART - A

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| 1 a. | Explain the architecture of 8051 with diagram. | 10 |
| | b. Explain any three addressing modes of 8051 with example. | 6 |
| | c. Briefly explain the difference (any two) between microcontroller and microprocessor. | 4 |
| 2 a. | Write a program to perform the following: | |
| | i) Create a square wave of 75% duty cycle at bit 0 of port 1 | 6 |
| | ii) Create a square wave of 66% duty cycle at bit 5 of port 1 | |
| | b. Explain keypad interface to 8051 and write a program to find key pressed. | 10 |
| | c. List the steps for executing an interrupt in 8051. | 4 |
| 3 a. | Describe the process of counting an assembly language program into machine codes and finally obtaining a ROM image. | 10 |
| | b. Briefly explain any Ten Design metrics in embedded systems. | 10 |
| 4 a. | Explain Design process in Embedded systems. | 10 |
| | b. Explain sophisticated interfacing features in device ports. | 7 |
| | c. Mention and briefly explain any three skills required for embedded system designs. | 3 |

PART - B

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| 5 a. | Explain the following : | |
| | (i) Watch Dog Times (ii) Real Time clock | 6 |
| | b. Explain the following wireless protocols: | |
| | (i) Blue tooth (ii) ZigBee | 8 |
| | c. Explain PCI and PCI/x buses. | 6 |
| 6 a. | Briefly explain in general how Interrupts are handled. Also mention the sources of interrupts. | 8 |
| | b. List the steps involved in writing a Device driver. | 4 |
| | c. Explain DMA controller's working and its uses. | 8 |
| 7 a. | Explain FSM model with an example by showing state diagrams and state tables for key 'S' in T9 keypad. | 8 |
| | b. Explain process control Block and its contents. | 6 |
| | c. Distinguish between Function and ISR. | 6 |
| 8 a. | Explain how RTOS responds to hardware source call on interrupt. | 12 |
| | b. Explain memory management in RTOS. | 8 |