



--	--	--	--	--	--	--	--	--	--

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

(An Autonomous Institution affiliated to VTU, Belgaum)

Sixth Semester, B.E. - Automobile Engineering

Semester End Examination; June/July - 2015

Mechatronics and Microprocessors

Time: 3 hrs

Max. Marks: 100

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

PART - A

- | | | |
|-------|---|---|
| 1. a. | Explain with a block diagram, the key components in a typical mechatronic system. | 6 |
| | b. Explain the basic elements of a closed loop system. | 6 |
| | c. Explain with a block diagram, the working of a microprocessor controlled washing machine. | 8 |
| 2. a. | Illustrate the difference between Transducers and Sensor. | 6 |
| | b. Discuss the classification of transducer. | 8 |
| | c. Explain the working principle of "Hall effect" sensor and its application in fluid level deletion with necessary sketches. | 6 |
| 3. a. | Explain any one type of solid state switch. | 6 |
| | b. Discuss how control of D.C. Motors achieved through PWM technique. | 8 |
| | c. Explain with a neat sketch the principle of variable reluctance stepper motor. | 6 |
| 4. a. | What are the signal conditioning processes? | 5 |
| | b. Explain with sketch Non-inverting Amplifier. | 7 |
| | c. Why protection is required? Explain Zener diode protection circuit. | 8 |

PART - B

- | | | |
|-------|---|----|
| 5. a. | Briefly explain the evolution of microprocessors. | 10 |
| | b. What is underflow and overflow? | 5 |
| | c. State the difference between CPU and ALU. | 5 |
| 6. a. | How are clock signals generated in an 8085 and what is the frequency of the internal clock? | 6 |
| | b. Write the 8085A Architecture. | 14 |
| 7. a. | How are the address and Data lines multiplexed in 8085? | 6 |
| | b. What are the addressing modes available in 8085? | 6 |
| | c. Sketch the Pin configuration diagram of 8085. | 8 |
| 8. a. | What is instruction cycle, fetch and execute cycle? | 6 |
| | b. Explain conditional jump instructions. | 8 |
| | c. Explain the instruction : (i) POP (ii) RAR | 6 |