

Seat No.	
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B.E. (Mechanical) (Semester - VIII) (Revised)**Examination, May - 2018****MECHATRONICS****Sub. Code : 68508****Day and Date : Friday, 04 - 05 - 2018****Total Marks : 100****Time : 02.30 p.m. to 05.30 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Answer to all questions must be written in one answer book.
 - 3) Figure to right indicate full marks to question.
 - 4) Assume any data if necessary and state it clearly.
 - 5) Use of any type of calculator is not permitted.

Q1) Solve any two of the following :

- a) Explain with block diagram basic elements of measurement system. Discuss LVDT. [8]
- b) Give various definitions of mechatronics and explain the concept w.r.t. a pick and place manipulator. [8]
- c) Explain with neat sketches Pneumatic limit valves and backpressure sensors. [8]

Q2) Solve any two of the following :

- a) Explain with suitable circuit the concept of Digital to Analog Conversion (DAC). [8]
- b) What is signal conditioning? Explain filtering process and filters. [8]
- c) What is unidirectional and bidirectional buffer with pin diagram. [8]

Q3) Solve any two of the following :

- a) Compare microprocessor and microcontroller w.r.t. architecture, applications, advantages and limitations. [8]
- b) Explain microcontroller 8051 with internal architecture. [8]
- c) Explain in brief Boolean algebra and its relevance in PLC ladder programming. [8]

P.T.O.

Q4) Solve any two of the following :

- a) Explain different types of switches used in PLC and its symbols. [8]
- b) With the help explanatory sketch and ladder diagram explain single cycle operation. [8]
- c) What are internal relays? How they are incorporated in ladder diagram, explain. [8]

- Q5) a)** Explain various types counters used in PLC. [8]
- b)** Draw a physical wiring diagram and programming diagram for alarm system which operates as below; [12]
- i) if one input is on, nothing happens
 - ii) if any two light are on, a red pilot light goes on
 - iii) if any three inputs are on, the fire department is noticed

Q6) Solve any two of the following :

- a) Explain with block diagram basic elements of piece counting machine. [8]
- b) With the help of ladder diagram explain fail-safe-circuit. [8]
- c) Write a note on Automatic tool and pallet changer as a mechatronics system. [8]

