

امتحانات نصف العام 2020



Menofia University
Faculty of Electronic Engineering



3rd year, Electronic and Communication Department, 1st Term Exam.

Optional Course (1)

Time allowed: 3 hours

Prof. Dr. Hossam Ahmed

Mechatronics

22 January 2020

Solve all questions:

- 1) A variety of physical variables can be measured using sensors, remember these physical variables and the name of sensor using to measure each of them? (5 point)
- 2) Explain Shape memory alloys (SMAs) and their applications? (5 point)
- 3) What are Components required to implement sensors and Computer-Process Interface? (5 point)
- 4) Give five desirable features of Sensor or Actuator specifications? (5 point)
- 5) Explain with a neat sketch Bimetallic sensors and Capacity type Sensors? (5 point)
6. Give a block diagram for a practical experiment of Interfacing of Pressure Sensor, using microcontroller and explain the operations of designed circuit? (10 point)
- 7) Develop a simple computer to add or sub or div or mul two numbers 3-bit op-code with input and output, also give the instruction table of this computer. (5 point)
- 8) Design a Circuit using LCD display as O/P of a circuit sensing Humidity, using an op-amp and a PIC microcontroller with 4Mhz oscillator. Use a power supply. Give number of the used components? (20 point)
- 9) Give a block diagram using CPU pins M/\overline{IO} to select one of four memories (1k x 8-bit each) to R/ \overline{W} data. The chip selects CS is controlled by the decoder 47LS138 with address bus lines A10, A11, and A12? (5 point)
- 10) Add two numbers 29H, 69H and make a BCD Numbers correction.
Give an assembly program for multiplication of these two numbers? (5 point)