

B.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Sixth Semester

MECHATRONICS ENGINEERING

MCT113: Sensors and Signal Processing

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Thermal energy type sensor measures the following except
 - a) Heat flow
 - b) Absorbance
 - c) Entropy
 - d) State of matter
2. Ultrasonic Piezoelectric crystal's operating frequency range is _____
 - a) 1KHz to 10KHz
 - b) 10KHz to 100KHz
 - c) 0.5MHz to 10MHz
 - d) 10MHz to 100MHz
3. To measure humidity, which of the following material is used
 - a) Au
 - b) ZnO
 - c) CrNi
 - d) Ta₂O₅
4. Intelligent sensors are also called as _____
 - a) Smart sensors
 - b) Variable sensors
 - c) Common sensors
 - d) Group sensors
5. A buffer amplifier has a gain of
 - a) Zero
 - b) Unity
 - c) Infinity
 - d) Depends upon circuit parameter
6. Quantization is a process of _____
 - a) Rounding off
 - b) Summing off
 - c) Multiplying off
 - d) Subtracting off
7. Standard current loop varies between _____ and _____ mv.
 - a) 4 and 20
 - b) 3 and 15
 - c) 0 and 20
 - d) 0 and 15

23. a) Construct 4 list successive approximation A/D converters.

(OR)

b) (i) Sketch and explain current to voltage converter. (6)

(ii) Justify why pressure needs to be converter as current and explain how it is converted. (8)

24. a) Explain the process of data acquisition with neat sketches.

(OR)

b) (i) Differentiate Analog filters and digital filters. (4)

(ii) Explain different high pass digital filters and also describe the significance of roll-off rate. (10)

25. a) Describe the working of LED, X-Y recorders and magnetic tape recorders.

(OR)

b) (i) Sketch and identify internal structure of CRT. (7)

(ii) Outline different types of DOT Matrix printers. (7)
