BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BE   **SEMESTER: VI/ADD**
BRANCH: ECE   **SESSION : SP/2019**

SUBJECT : EC6201 INTELLIGENT INSTRUMENTATION

TIME: 1.5 HOURS   **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1   (a)   Compare conventional transducers with Intelligent sensors.   [2]
     (b)   Explain and categorize biosensors.   [3]

Q2   (a)   Explain solid flow measurement in a conveyor belt system.   [2]
     (b)   What are the advantages of using silicon sensors? Discuss various types of silicon sensors.   [3]

Q3   (a)   Why the non-contact type sensing is essential? Explain with a suitable example.   [2]
     (b)   State the advantages of Fiber-optic sensor. Explain the working of fiber optic sensor for   [3]
           level measurement.

Q4   (a)   List the commonly known ionizing radiations. What are the detectors used for their   [2]
           measurement?
     (b)   Demonstrate the construction and working of scintillation counter.   [3]

Q5   (a)   What is the need of Sample and hold circuit in a DAS? Explain its working with circuit   [2]
           diagram.
     (b)   What do you mean by analog multiplexing? Why it required in a DAS? Schematize a four   [3]
           channel analog multiplexer.

Q6   (a)   Schematize a 8 channel DAS and procedure for acquiring data.   [2]
     (b)   A sensor linearly changes resistance from 2.35 to 3.57 KΩ over a range of some measured   [3]
           variable. The measurement must have resolution of at least 1.25Ω and be interfaced to
           a computer. Design the signal conditioning circuit and specify the characteristic of ADC
           required.

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