| PRN: | | Course Code : | PPD301 |
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Second Year **M. Tech** End Semester Examination Winter 2023

# Sensors and Measurement

Day and Date: Tuesday, 28/11/2023 Max Marks: **100**

Time : 10.30 am to 1.30 PM Duration: **03** hrs

Instructions: All questions are compulsory.

| | | | Marks | Bloom's Level | CO |
|---|---|---|---|---|---|
| Q.1 | | **Attempt the following** | | | |
| | a) | Interpret Environmental factors and reliability of sensors. | 08 | 1 | 1 |
| | b) | Discuss Static and dynamic characteristics of sensors | 08 | 2 | 1 |
| | | **OR** | | | |
| | b) | Explain various schematics for active and passive sensors. | 08 | 2 | 1 |
| Q.2 | | **Attempt the following** | | | |
| | a) | Describe the working of conventional voltmeter and ammeters. | 08 | 1 | 2 |
| | b) | Articulate the working of<br>i. High voltage sensors.<br>ii. High power sensors. | 08 | 2 | 2 |
| | | **OR** | | | |
| | b) | Write a note on microwave frequency sensors. | 08 | 2 | 2 |
| Q.3 | | **Attempt any two from the following** | | | |
| | a) | Analyze the operation of semiconductors temperature sensors and their signal conditioning. | 08 | 3 | 3 |
| | b) | Explain the working of optical encoders Accelerometer. | 08 | 3 | 3 |
| | c) | Articulate the working of Hall effect magnetic sensors. | 08 | 3 | 3 |
| Q.4 | | **Attempt any two from the following** | | | |
| | a) | Write a short note on Photodiodes. | 08 | 4 | 3 |
| | b) | Explain high impedance charge output sensors. | 08 | 4 | 3 |
| | c) | Design the Signal conditioning of high impedance sensors. | 08 | 4 | 3 |
| Q.5 | | **Attempt any Two of the following** | | | |
| | a) | Define and discuss the terms Accuracy and precisions. | 09 | 5 | 4 |
| | b) | Explain the types of errors. | 09 | 5 | 4 |
| | c) | Interpret the terms<br>i. Sensitivity,<br>ii. Linearity<br>iii. Reproducibility<br>iv. Transfer function | 09 | 5 | 4 |
| Q.6 | | **Attempt any Two of the following** | | | |
| | a) | Explain the working of Displacement Sensor (LVDT). | 09 | 4 | 4 |
| | b) | Write a note on working principle of strain gauges & its applications. | 09 | 5 | 4 |
| | c) | Illustrate the working of Piezo-electric sensors. | 09 | 5 | 4 |

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