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| **Name of Faculty** | Sh. Pardeep Kumar |
| **Discipline** | Electrical Engineering |
| **Semester** | 5th |
| **Subject** | Instrumentation |
| **Duration** | (From September 2022 to January 2023) Theory : 04, Practical : 02 |
| **Week** | **Theory** | **Practical** |
|  | **Lecture****Day** | **Topic (Including Assignment/ Test)** | **Practical****Day** | **Topic** |
| 1st | Day 1 | **1.Measurements** | Day 1 | To measure the level of a liquid using a transducer |
| Day 2 | Importance of measurement, Basicmeasuring systems |
| Day 3 | Advantages and limitations of eachmeasuring systems |
| Day 4 | Generalized measurement system, signalconditioning |
| 2nd | Day 1 | Display devices | Day 1 | To measure temperature using a thermo-couple |
| Day 2 | Revision |
| Day 3 | **2.Transducers** |
| Day 4 | Theory, construction and use of varioustransducers |
| 3rd | Day 1 | Resistance | Day 1 | Practice /Checking |
| Day 2 | Inductance |
| Day 3 | Capacitance |
| Day 4 | Electromagnetic |
| 4th | Day 1 | piezo electric type | Day 1 | Study and use of digital temperature controller |
| Day 2 | Revision |
| Day 3 | **3.Measurement of Displacement and****Strain** |
| Day 4 | Displacement Measuring Devices: |
| 5th | Day 1 | wire wound potentiometer | Day 1 | Use of themistor in ON/OFF transducer |
| Day 2 | LVDT, strain gauges |
| Day 3 | and their different types such as inductancetype, |
| Day 4 | resistive type |
| 6th | Day 1 | Wire and foil type etc. | Day 1 | Practice /Checking |
| Day 2 | Gauge factor, gauge materials |
| Day 3 | And their selections, sources of errorsand its compensations. |
| Day 4 | Use of electrical strain gauges |
| 7th | Day 1 | Strain gauge bridges and amplifiers. | Day 1 | Study of variable capacitive transducer |
| Day 2 | Revision |
| Day 3 | **4.Force and Torque Measurement:** |
| Day 4 | Different types of force measuring devicesand their principles, |
| 8th | Day 1 | Load measurements by using elasticTransducers | Day 1 | Draw the characteristics of a potentiometer |
| Day 2 | and electrical strain gauges |
| Day 3 | Load cells |
| Day 4 | Proving rings |
| 9th | Day 1 | Measurements of torque by brake | Day 1 | Practice /Checking |
| Day 2 | Dynamometer |

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|  | Day 3 | Electrical strain gauges, |  |  |
| Day 4 | Speed measurements; |
| 10th | Day 1 | different methods, devices | Day 1 | To measure linear displacement using LVDT |
| Day 2 | Revision |
| Day 3 | **5.Pressure Measurement** |
| Day 4 | Bourdon pressure gauges |
| 11th | Day 1 | Electrical pressure pickups and theirprinciple, | Day 1 | To study the use of electrical strain gauge |
| Day 2 | Construction and applications |
| Day 3 | Use of pressure cells. |
| Day 4 | Revision |
| 12th | Day 1 | **6.Flow Measurement:** |
| Day 2 | Basic principles of magnetic | Day 1 | Practice /Checking |
| Day 3 | Ultrasonic flow meters |
| Day 4 | Revision |
| 13th | Day 1 | **7.Measurement of Temperature:** | Day 1 | To study weighing machine using load cell |
| Day 2 | Bimetallic thermometer |
| Day 3 | Pressure thermometers |
| Day 4 | Thermoelectric thermometers,resistance thermometers, |
| 14th | Day 1 | Thermocouple, | Day 1 | To study pH meter |
| Day 2 | Thermisters |
| Day 3 | Pyrometer, errors in temperaturemeasurements in rapidly moving fluids |
| Day 4 | Temperature recorders |
| 15th | Day 1 | Revision | Day 1 | Practice /Checking |
| Day 2 | **8. Measurement of other non- electrical quantities** |
| Day 3 | such as humidity |
| Day 4 | pH level and |
| 16th | Day 1 | Vibrations | Day 1 | Internal practical |
| Day 2 | Revision of Hsbte old Paper |
| Day 3 | Revision of Hsbte old Paper |
| Day 4 | Revision of Hsbte old Paper |