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| **Name of the Faculty : Sh. Ravinder Kumar** |
| **Discipline : Electronics and Communication Engg.**  |
| **Semester : IVth** |
| **Subject : Instrumentation** |
| **Lesson Plan Duration : 06 March-June-2023** |
| **Work Load (Lecture/ Practical) per week (in hours):** 03 HOURS (Lecture) |
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| **Week** | **Theory** | **Practical** |
| **Lecture day** | **Topic (including assignment/ test)** | **Topic** |
| **1st** | **1** | Introduction about subject | Introduction about Practical |
| **2** | Measurements: Importance of measurement, basic measuring systems |
| **3** | advantages and limitations of each measuring systems  |
| **2nd** | **4** | display devices  | Draw the characteristics of a potentiometer |
| **5** | Theory of Transducers: construction and use of various transducers |
| **6** | Different types of transducers  |
| **3rd** | **7** | Resistive transducers and wire wound potentiometer  | Study of variable capacitive transducer |
| **8** | capacitive transducers  |
| **9** | Inductive transducers  |
| **4th** | **10** | Electromagnetic transducers  | To measure linear displacement using LVDT |
| **11** | Piezo electric type transducers  |
| **12** | Measurement of Displacement and Strain: LVDT and RVDT transducers |
| **5th** | **13** | **1st Sessional Test** | To study the use of electrical strain gauge |
| **14** | Strain gauges and Gauge factor  |
| **15** | Gauge materials and their selections.  |
| **6th** | **16** | Use of electrical strain gauges their different types such as inductance type resistive type, wire and foil type etc. | To study weighing machine using load cell |
| **17** | Strain gauge bridges and amplifiers. |
| **18** | Force Measurement: Different types of force measuring devices and their principles |
| **7th** | **19** | Load cells | Study and use of digital temperature controller |
| **20** | load measurements by using elastic transducers and electrical strain gauges |
| **21** | Torque Measurement: Different types of torque measurement methods |
| **8th** | **22** | measurements of torque by brake and dynamometer | Use of themistor in ON/OFF transducer |
| **23** | Speed measurements; different methods and devices. |
| **24** | Speed measurements; different methods and devices. |
| **9th** | **25** | Pressure Measurement  | To measure temperature using a thermo-couple |
| **26** | Bourdon pressure gauges |
| **27** | electrical pressure pickups and their principle construction and applications |
| **10th** | **28** | Low pressure measurements  | To measure pH value of given solution. |
| **29** | Use of pressure cells. |
| **30** | **2nd Sessional Test** |
| **11th** | **31** | Flow Measurement: Different type of flow meters  | To measure TDS value of given solution. |
| **32** | Basic principles of magnetic flow meters |
| **33** | ultrasonic flow meters |
| **12th** | **34** | Measurement of Temperature: Bimetallic thermometer | Revision & Test |
| **35** | resistance thermometers |
| **36** | Thermisters  |
| **13th** | **37** | Thermocouple | Revision & Test |
| **38** | Pyrometer |
| **39** | Temperature recorders |
| **14th** | **40** | Measurement of other non electrical quantities such as humidity measurements | Revision & Test |
| **41** | Different Hygrometers |
| **42** | pH value measurements |
| **15th** | **43** | Level measurements  | Revision & Test |
| **44** | vibrations measurements |
| **45** | **3rd Sessional Test** |
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