Name of the faculty : DEVENDER Discipline : ECE

Semester : 2nd

Subject : ELECTRONIC INSTRUMENTS AND MEASUREMENT

Lesson plan Duration : 15 weeks (FEB 2024 to June 2024)

WORK LOAD PER WEEK (IN HOURS):- Lecture-**03**, Practical-04 per group

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| **Week** | **Lecture Day** | **Theory (Topics)** | **Practical** | **Topic** |
| 1st | 1 | Measurement, method of measurement, types of instruments | 1 | Measurement of voltage, resistance and current using analog multimeter. |
|  | 2 | Specifications of instruments: Accuracy,  precision, sensitivity, resolution, range, |
|  | 3 | Errors in measurement ,sources of errors,  limiting errors |
| 2nd | 4 | loading effect, importance and applications of standards and calibration | 2 | Measurement of voltage, resistance and current using digital multimeter. |
|  | 5 | Principles of measurement of DC voltage,  DC current, |
|  | 6 | Principles of measurement of AC voltage, AC current, |
| 3rd | 7 | Principles of operation and construction of  permanent magnet moving coil (PMMC) instruments | 3 | To study the front panel controls of CRO |
|  | 8 | Application, advantages and disadvantages of PMMC |
|  | 9 | Moving iron type instruments(attraction and repulsion type) |
| 4th | 10 | VOM Meter | 4 | Measurement of voltage, frequency, time period and phase using CRO |
|  | 11 | Revision of Unit-1 |
|  | 12 | Revision of Unit-2 |
| 5th | 13 | Sessionals | 5 | VIVA |
|  | 14 | Construction and working of cathode ray tube(CRT), |
| 6th | 15 | Basic block diagram of CRO and triggered sweep oscilloscope , front panel controls | 6 | Measurement of voltage, frequency, time and phase using DSO. |
|  | 16 | specifications of CRO and their application |
|  | 17 | Measurement of current, voltage, frequency |

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| 7th | 18 | Measurement of Time period and phase using CRO, Lissajous pattern for phase measurement | 7 | Measurement of phase using lissajous pattern on CRO. |
|  | 19 | Block diagram and working principle of Digital storage oscilloscope (DSO) |
|  | 20 | Wheat stone bridge |
| 8th | 21 | AC bridges: Maxwell’s induction bridge | 8 | Measurement of unknown resistance using Wheat Stone bridge. |
|  | 22 | Hay’s bridge |
|  | 23 | De Sauty’s Bridge |
| 9th | 24 | Block diagram and working principle of Q meter | 9 | Measurement of Q of a coil |
|  | 25 | Explanation of block diagram and specifications of low frequency |
|  | 26 | RF generators |
| 10th | 27 | Revision of Unit-3 | 10 | VIVA |
|  | 28 | Revision of Unit-4 |
| 11th | 29 | Sessionals |
|  | 30 | Pulse generator |
| 12th | 31 | Function generator | 12 | Measurement of inductance using Maxwell Induction Bridge. |
|  | 32 | Comparison of analog and digital instruments |
|  | 33 | Block diagram and working of a digital multi-meter |
| 13th | 34 | applications of digital multi-meter and their limitations | 13 | Measurement of capacitance using De Sauty’s Bridge. |
|  | 35 | Working principle of logic probe |
|  | 36 | Working principle of logic  pulser |
| 14th | 37 | Revision of Unit-5 | 14 | Use of logic pulser and logic probe |
|  | 38 | Revision of Unit-1,2 |
|  | 39 | Revision of Unit-3,4 |
| 15th | 40 | Sessionals | 15 | VIVA |