Name of the faculty : Naveen Pratap

Discipline : ECE

Semester : 3rd

Subject : **ELECTRONIC INSTRUMENTS AND MEASUREMENT**

Lesson plan Duration : 15 week

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| **Theory** | | | | |
| **Week** | **Lecture Day** | **Topic**  **(Including Assignment test)** | **Practical** | **Topic** | |
| 1st | 1 | Measurement, method of measurement, types of instruments | 1 | 1)Measurement of voltage, resistance, frequency using digital multimeter | |
|  | 2 | Specifications of instruments: Accuracy, precision, sensitivity, resolution, range, | 2 |
|  | 3 | Errors in measurement ,sources of errors, limiting errors, loading effect, | 3 |
| 2nd | 4 | importance and applications of standards and calibration | 4 | 2)Measurement of voltage, frequency, time period and phase using CRO | |
|  | 5 | Principles of measurement of DC voltage, DC current, | 5 |
|  | 6 | AC voltage, AC current, | 6 |
| 3rd | 7 | Principles of operation and construction of permanent magnet moving coil (PMMC) instruments | 7 | 3)Measurement of voltage, frequency, time and phase using DSO | |
|  | 8 | Principles of operation and construction of permanent magnet | 8 |
|  | 9 | moving coil (PMMC) instruments | 9 |
| 4th | 10 | Moving iron type instruments, | 10 | 4)Measurement of Q of a coil | |
|  | 11 | Construction and working of Cathode Ray Tube(CRT) | 11 |
|  | 12 | Block diagram description | 12 |
| 5th | 13 | Basic CRO and triggered sweep oscilloscope, front panel controls | 13 | 5)Measurement of resistance and inductance of coil using RLC Bridge | |
|  | 14 | Specifications of CRO and their explanation | 14 |
|  | 15 | Measurement of current, voltage, frequency, | 15 |
| 6th | 16 | Time period and phase using CRO | 16 | 6)Measurement of impedance using Maxwell Induction Bridge | |
|  | 17 | Digital storage oscilloscope (DSO) : | 17 |
|  | 18 | Block diagram and working principle | 18 |
| 7th | 19 | Wheat stone bridge | 19 | 7)To find the value of unknown resistance using Wheat Stone Bridge | |
|  | 20 | AC bridges: Maxwell’s induction bridge, | 20 |
|  | 21 | Hay’s bridge, , | 21 |
| 8th | 22 | Schering bridge | 22 | 8)Measurement of distortion using Distortion Factor Meter | |
|  | 23 | Anderson bridge | 23 |
|  | 24 | laboratory type RLC bridge, | 24 |
| 9th | 25 | Bock diagram description | 25 | 9)Use of logic pulser and logic pobe | |
|  | 26 | Specifications of RLC bridge | 26 |
|  | 27 | Block diagram and working principle of Q meter. | 27 |
| 10th | 28 | Explanation of block diagram specifications of low frequency | 28 | Measurement of voltage, resistance, frequency using digital multimeter **(Revise 1st Practical)** | |
|  | 29 | RF generators, | 29 |
|  | 30 | Pulse generator, function generator | 30 |  | |
| 11th | 31 | Distortion factor meter | 31 | 2)Measurement of voltage, frequency, time period and phase using CRO  (**Revise 2nd Practical)** | |
|  | 32 | Instrumentation amplifier: its characteristics | 32 |
|  | 33 | N eed and working  Comparison of analog and digital instruments | 33 |  | |
| 12th | 34 | Working principle of ramp, dual slope and integration type digital voltmeter | 34 | Measurement of voltage, frequency, time and phase using DSO  **(Revise 3rd Practical)** | |
|  | 35 | Block diagram and working of a digital multi-meter | 35 |
|  | 36 | Specifications of digital multi-meter and their applications | 36 |  | |
| 13th | 37 | Limitations of digital multi-meters. | 37 | 4)Measurement of Q of a coil  **(Revise 4th Practical**) | |
|  | 38 | Working principle of logic probe, logic pulser, | 38 |
|  | 39 | logic analyzer and signature analyzer. | 39 |  | |
| 14th | 40 | Revision | 40 | 5)Measurement of resistance and inductance of coil using RLC Bridge  **(Revise 5th Practical)** | |
|  | 41 | Revision | 41 |
|  | 42 | Revision | 42 |  | |
| 15th | 43 | Revision | 43 | 6)Measurement of impedance using Maxwell Induction Bridge  **(Revise 6th practical**) | |
|  | 44 | Revision | 44 |
|  | 45 | Revision | 45 |  | |