STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

SYLLABUS

L-SCHEME

(Implements from the Academic year 2011-2012 onwards)

Course Name : All branches of Diploma in Engineering and Technology and Special Programmes except DMOP, HMCT and Film & TV

Semester : II Semester

Subject Title : Engineering Physics - II Practical

Subject Code : 2008

Teaching and Scheme of Examination: **No of weeks per semester : 16 weeks**

Subject	Instructions		Examination			
	Hours/Week	Hours/Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Engineering Physics – II Practical	**3 Hrs**	**48 Hrs**	**25**	**75**	**100**	**3 Hrs**

RATIONALE:

In diploma level Engineering education skill development plays a vital role. The skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

GUIDELINES:

- **In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every two students should be provided with a separate experimental setup for doing experiments in the laboratory.**
- **The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations**.

ALLOCATION OF MARKS

Formula with explanation	10	
Figure / Circuit diagram with parts	05	
Tabulation with proper units	10	
Observation (including taking readings)	35	
Calculation	10	
Result	05	
Total	75	Marks

II SEMESTER

2008 ENGINEERING PHYSICS - II PRACTICAL

List of Experiments with objectives:

1. LEE'S DISC
   To determine the coefficient of thermal conductivity of a poor thermal conductor.
2. REFRACTIVE INDEX
   To determine the refractive index of a transparent liquid (water) using travelling microscope.
3. SPECTROMETER.
   To measure the angle of the prism and the angle of minimum deviation using spectrometer and to calculate the refractive index of glass.
4. SOLAR CELL.
   To draw the V – I characteristics of the solar cell.
5. LAWS OF RESISTANCES.
   To verify the laws of resistances by connecting the two given standard resistances (i) in series and (ii) in parallel, using Ohm's law.
6. METRE BRIDGE.
   To determine the unknown resistance of the given wire.
7. POTENTIOMETER.
   To compare the electro motive forces (e.m.fs) of the given two cells.
8. JOULE'S CALORIMETER.
   To determine the specific heat capacity of water.
9. COPPER VOLTAMETER.
   To determine the electro chemical equivalent (e.c.e.) of copper.
10. P-N JUNCTION DIODE.
    To draw the voltage – current characteristics in forward bias and to find the 'dynamic forward resistance' & 'knee voltage' from the graph.
11. P-N-P / N-P-N TRANSISTOR.
    To draw the input characteristics and output characteristics in common emitter configuration and to calculate the input resistance and output resistance from the graphs.
12. LOGIC GATES.
    To find the output conditions for different combinations of the input for NOT gate and 2 inputs AND, OR, NAND & NOR logic gates, using IC chips.

II SEEMSTER

LIST OF EQUIPMENT

1. LEE'S DISC

   Lee's Disc, Hot plate/Electric heater, Steam chamber, rubber tube, two thermometers (0.5°C accuracy), poor thermal conductor and digital stop watch.

2. REFRACTIVE INDEX

   Travelling Microscope, Beaker with transparent liquid and saw dust.

3. SPECTROMETER.

   Spectrometer, Sodium vapour lamp, Reading lens and glass prism

4. SOLAR CELL.

   Solar cell Kit for drawing the VI characteristics

5. LAWS OF RESISTANCES.

   Battery Eliminator, key, rheostat, ammeter, voltmeter, connecting wires and two known standard resistances.

6. METRE BRIDGE.

   Metre Bridge, variable resistance box, Leclanche cell, plug key, galvanometer, high resistance, jockey, connecting wires and unknown resistance.

7. POTENTIOMETER.

   Potentiometer, two cells (Leclanche cell and Daniel cell), Battery eliminator, Rheostat, Key, two way key, galvanometer, high resistance, jockey and connecting wires

8. JOULE'S CALORIMETER.

   Joule's Calorimeter, Battery eliminator, Rheostat, Key, ammeter, voltmeter, stop clock, thermometer, digital

balance and connecting wires.

9. COPPER VOLTAMETER.

Copper Voltameter, Battery eliminator, Rheostat, Key, ammeter, stop clock, digital balance, emery sheet and connecting wires.

10. P-N JUNCTION DIODE.

P-N Junction Diode forward characteristics kit

11. P-N-P / N-P-N TRANSISTOR.

P-N-P or N-P-N transistor characteristics kit with common emitter configuration.

12. LOGIC GATES.

Logic gates testing apparatus kit with bread board for mounting ICs and Integrated circuit chips (IC 7404 –NOT Gate, IC 7408 – AND Gate, IC 7432 – OR gate, IC 7400 – NAND Gate, IC 7402 – NOR Gate)

Note : While conducting practical classes a batch of 30 students may be divided into 5 groups, each group with 6 students. Every group of students may be allotted different experiments in a cyclic order. By this only 6 students will be doing a particular experiments at a time in the practical class. In order to provide separate experimental arrangement for every two students, a minimum of 3 sets of instruments/apparatus are required. To meet any unexpected events like mal functioning or non-working condition of the apparatus, a buffer staff of two sets of instruments/apparatus are required. Hence for every experiment, a minimum of 5 sets of instruments /apparatus should be available in the laboratory.

II SEMESTER

2008 ENGINEERING PHYSICS - II PRACTICAL

MODEL QUESTION PAPER

1. Determine the coefficient of thermal conductivity of a poor thermal conductor using Lee's disc.
2. Determine the refractive index of the given transparent liquid using traveling microscope.
3. Draw the V – I characteristics of the solar cell.
4. Measure the angle of the prism and the angle of minimum deviation using spectrometer and then calculate the refractive index of glass.
5. Verify the laws of resistances by connecting the two given standard resistances (i) in series and (ii) in parallel, using Ohm's law.
6. Determine the unknown resistance of the given wire, using metre bridge.
7. Compare the electro motive forces (e.m.fs) of the given two cells, using potentiometer.
8. Determine the specific heat capacity of water, using Joule's calorimeter.
9. Determine the electro chemical equivalent (e.c.e.) of copper using Copper Voltameter.
10. Draw the voltage – current characteristics of a P-N junction diode in forward bias and then find the 'dynamic forward resistance' & 'knee voltage' from the graph.
11. Draw the input characteristics and output characteristics of a given (P-N-P or N-P-N) transistor in common emitter configuration and then calculate the input resistance and output resistance from the graphs.
12. Find the output conditions for different combinations of the input for NOT gate and 2 inputs AND, OR, NAND & NOR logic gates using IC chips.

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