

**Syllabus for F.Y. B.Sc. (Electronics for Computer Science)  
Paper III**

**Electronics Practical**

<b>Semester- I</b>	<b>Subject Code: BSP21513</b>	<b>Lectures: 40</b>
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**Objectives:**

The syllabus aims in equipping students with,

- Different electronic instruments like Digital Multimeter, CRO, Function generator for various measurements
- Developing skills of presentations, PCB making, circuit simulation, making electronic gadgets as projects etc.
- Studying the functioning of various components and their symbols
- Understanding the interconnection of the components to get the desired output.

- 1) The practical course consists of 20 experiments.
- 2) Any two of the following activities with proper documentation will be considered as equivalent of 4 experiments in term work.
  - Preparatory experiments
  - Hobby projects
  - Preparing power point presentations on recent trends in electronics
  - industrial visit / live work experience
  - PCB Making
  - Visit to electronic exhibitions
  - Circuit Simulations and CAD tools

These will be evaluated in an oral examination for 20 marks at internal and final (annual) examination.

- 3) All the students are required to complete a minimum of 16 experiments (Four from each group) from the following list.



Group A (Any Four)	No. of Lect.=16
1. Verification of network theorems: KCL / KVL, Thevenin, Norton.	4
2. Verification of network theorems: Maximum Power Transfer, Superposition theorem.	4
3. Study of forward and Reverse biased characteristics of PN Junction Diode	4
4. Study of low voltage Half-wave, Full-wave and Bridge rectifier circuits.	4
5. Study of breakdown characteristics and voltage regulation action of Zener diode	4

### BOS Members:

Ms. Nanda Ranade, (Subject Expert)

Nanda

Mr. Manoj Kukade, (Subject Expert)

Manoj

Mr. Prafulla Wadaskar. (Industry Expert)

Prafulla

Ms. Divya Jagannathan, (Alumni)

Divya

Ms. Swatee Sarwate , (Chairman)

Swatee

Ms. Anitha Menon, (Internal Faculty)

Anitha



<b>Group B (Any Four)</b>	<b>No. of Lect.=16</b>
1. Study of Basic Logic gates.	4
2. Interconversions and realizations of logic expressions using ICs	4
3. Build and Test Half Adder, Full Adder and half Subtractor using basic gate	4
4. Study of Four bit Universal Adder/Subtractor	4
5. Build and Test 4 bit parity checker/ generator using X-OR gate IC	4
6. Build and Test 2:1 Multiplexer and 1:2 Demultiplexer using gates	4

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<b>Preparatory Experiments</b>	<b>No. of Lect.=8</b>
<p><b>1. Identification of Components / Tools</b></p> <p>Minimum 10 different types of components must be given Identification based on visual inspection / data sheets be carried out</p> <p><b>2. Use of Digital Multimeters.</b></p> <ul style="list-style-type: none"> <li>➤ Measurement of AC/DC voltage and Current – on different ranges</li> <li>➤ Measurement of R &amp; C</li> <li>➤ Testing of Diodes &amp; Transistors</li> <li>➤ Measurement of <math>h_{fe}</math>.</li> <li>➤ Use of Multimeter in measurement of Variation of Resistance of LDR.</li> <li>➤ Thermister</li> </ul> <p><b>3. Study of Signal Generator/CRO</b></p> <ul style="list-style-type: none"> <li>➤ Understand how to use Signal Generator/CRO</li> <li>➤ Study of front panel controls</li> <li>➤ Measurement of amplitude and frequency of Sine/Square waveform</li> <li>➤ Demonstrate the use of Component testing facility</li> </ul>	8

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Semester- II	Subject Code: BSP21513	Lectures: 40
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Group C (Any four)	No. of Lect.=16
1. Study of output characteristics of Bipolar Junction Transistor in CE mode	4
2. Study of Single Stage RC coupled Amplifier for its Gain and frequency response.	4
3. Study of potential divider biasing of BJT and its use in driving DC motor.	4
4. Build and test Inverting and non inverting amplifier using OPAMP.	4
5. Build and test adder and subtractor circuits using OPAMP.	4
6. Study of output and transfer characteristics JFET/MOSFET	4

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Group D(Any Four)	No. of Lect.=8
1. Build and Test 3X4 matrix Keyboard Encoder	4
2. Build and Test Diode matrix ROM	4
3. Study of RS, JK and D flip flops using NAND gates	4
4. Study of decade counter IC7490 for different configurations	4
5. Study of 4-bit Shift register using IC7495	4
6. Study BCD to seven segment decoder using Thumbwheel switch	4

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<b>Hobby Project Example</b>	<b>No. of Lect.=8</b>
<ul style="list-style-type: none"> <li>➤ Water level Indicator</li> <li>➤ Photo relay / smoke detector</li> <li>➤ Burglar Alarm</li> <li>➤ Fan regulator</li> <li>➤ Logic Probe</li> </ul> <p>Experiments with simulation software's like PSPICE / LT SPICE</p>	8

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