

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Lectures : 5 periods/week
Practical : 2 periods/week

Theory Paper (3 Hours) : 100 Marks
Practical & Oral (2 Hours) : 25 Marks
Term Work : 25 Marks

Total : 150 Marks

Detailed Syllabus

		<i>Hours</i>
1	<p>DC circuits : (only independent sources).</p> <ul style="list-style-type: none"> • Ohm's law, resistance, resistivity, series & parallel connections, star delta transformation, power dissipation in resistance, effect of temperature on resistance, • Kirchhoff's laws, Mesh & Nodal analysis, Source transformation, Superposition, Thevenin's Norton's and Maximum power transfer theorems. 	12
2	<p>A. C. circuits :</p> <ul style="list-style-type: none"> • Generation of alternating voltage & currents, R.M.S. & Average value, form factor, crest factor, A.C. through resistance, inductance & capacitance, $R-L$, $R-C$ and $R-L-C$ series & parallel circuits, phasor diagrams, power & power factor, series & parallel resonance. <p>Problems by analytical as well graphical methods.</p>	16
3	<p>Three phase circuits :</p> <ul style="list-style-type: none"> • Three phase voltage & current generation, star & delta connections (balanced load), relationship between phase & line currents and voltages, phasor diagrams, measurement of power by two wattmeter method. Problems by analytical as well graphical methods. 	8
4	<p>Single phase transformer :</p> <ul style="list-style-type: none"> • Construction, working principle, e.m.f. equation, ideal & practical transformer, phasor diagrams, equivalent circuit, O.C. & S.C. tests, efficiency & regulation, All day efficiency. 	8
5	<p>Electrical Machines : (No numerical is expected)</p> <ul style="list-style-type: none"> • DC Generators & Motors : Construction, working principle, e.m.f. equation, classification & applications. • Three phase induction Motor : Construction, working principle, squirrel cage rotor & phase wound rotor, production of rotating magnetic field, slip. • Single phase Induction Motor : Construction, working principle, double field revolving theory, split phase, capacitor start and shaded pole motor. 	9
6	<p>Semiconductor Devices : (No numerical is expected)</p> <ul style="list-style-type: none"> • $p-n$ junction diode, Zener diode, their construction, working and characteristics. • BJT – its construction, characteristics & applications. (only CE configuration). <p>Rectifiers : (No numerical is expected)</p> <ul style="list-style-type: none"> • Analysis of half wave & full wave rectifier with resistive load and its parameters – ripple factor, rectification efficiency. Rectifier circuit with capacitive filter only. 	4 4

Theory Examination :

- (1) Question Paper will be comprising of total 7 questions, each of 20 marks.
- (2) Only 5 Questions need to be solved.

- (3) Q.1 will be compulsory and based on entire syllabus.
- (4) Remaining questions will be mixed in nature. (e.g. Suppose Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3).
- (5) In Question Paper, weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

Practical and Oral Examination :

Practical and oral Examination will be based on one experiment performed from the list of experiment given in the syllabus and the oral will be based on the same experiment.

Term work :

Term work shall consist of minimum eight experiments and a written test.

The distribution of marks for term work shall be as follows :

Laboratory work (Experiments and Journal) : 10 marks.

Test (atleast one) : 10 marks.

Attendance (Practical and Theory) : 05 marks.

The final certification and acceptance of term–work ensures the satisfactory performance of laboratory work and minimum passing in the term–work.

***Book containing Full Syllabus with Complete Explanation of Theory
and Solved Examples :***

FANATIC ENGINEERS' GUIDE for
Basic Electrical & Electronics Engineering

**WHY BASIC ELECTRICAL & ELECTRONICS ENGINEERING
BY FANATIC ENGINEERS' GUIDE
IS BETTER THAN ANY OTHER BOOK ON
BASIC ELECTRICAL & ELECTRONICS ENGINEERING**

- Each and Every Chapter is divided into simple units.
- It covers in all **601 different types of questions and problems.**
- It covers Ample Exercise Problems with Final Answers.
- In the beginning of every Chapter, a glimpse of the **average marks** of questions expected from that Chapter in University Question Paper is provided.
- Wherever possible, certain generalised steps are given to enable better understanding.
- All the problems are solved by applying easy steps for better understanding.
- Basic Electrical & Electronics Engineering by Fanatic Engineers' Guide covers certain important topics like

- ◆ Examples of Work, Power and Energy,
- ◆ Effect of Temperature on resistance and examples based on it,
- ◆ General Procedure of Kirchoff's Law,
- ◆ General Procedure to solve problems based on Nodal Analysis,
- ◆ General Procedure to solve problems based on Superposition Theorem,
- ◆ General Procedure to solve problems based on Thevenin's Theorem,
- ◆ General Procedure to solve problems based on Norton's Theorem,
- ◆ General Procedure to solve problems based on Maximum Power Transfer Theorem,
- ◆ Examples of finding r.m.s. value of different types of waveforms,
- ◆ General Procedure of Converting Polar to Rectangular and Rectangular to Polar co-ordinates using Calculator,
- ◆ General Procedure of finding Resultant Voltage and Current,
- ◆ Different Types of Examples of series A.C. circuits (with resonance),
- ◆ Different Types of Examples of parallel A.C. circuits (with resonance),
- ◆ Relation between line and phase current & line and phase voltage in case of three-phase circuit,
- ◆ Power measurement using 2 wattmeters method,
- ◆ Applications of Transformer,
- ◆ Principle of Operation of Transformer,
- ◆ Voltage ratio and Current ratio of an ideal transformer,
- ◆ Determination of Efficiency and Regulation by Direct Loading Method,
- ◆ Construction, Working Principle, e.m.f. equation, Classification and Applications of D.C. Generators,
- ◆ Construction, Working Principle, e.m.f. equation, Classification and Applications of D.C. Motors,
- ◆ Squirrel cage and phase wound rotor in case of three-phase induction motor,
- ◆ Double Revolving Field Theory,
- ◆ Zener Diodes and its characteristics, etc.
- ◆ Use of Bleeder Resistor in Filter Circuits, etc.

which are normally not covered in other regularly available books.