Basic Electrical and Electronics Engineering (BEE)

F.E. Sem. I

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	80
Practical & Oral Exam	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

Prerequisite

A. Concept of e.m.f, potential difference, current, ohm's law, resistance, resistivity, series and parallel connections, power dissipation in resistance, effect of temperature on resistance.

B. Capacitors, with uniform and composite medium, energy stored in capacitor, R-C time constant.

C. Magnetic field, Faraday's laws of Electromagnetic induction, Hysterics and eddy current losses, energy stored in an inductor, time constant in R-L circuit.

1. **D.C. circuits** (only independent sources)
   Kirchhoff 's laws, Ideal and practical voltage and current source, Mesh and Nodal analysis (super node and super mesh excluded), Source transformation, Star-delta transformation, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, (Source transformation not allowed for Superposition theorem, Mesh and Nodal analysis)

2. **A.C Circuits**
   Generation of alternating voltage and currents, RMS and Average value, form factor , crest factor, AC through resistance, inductance and capacitance, R-L , R-C and R-L-C series and parallel circuits, phasor diagrams, power and power factor, series and parallel resonance, Q-factor and bandwidth

3. **Three phase circuits**
   Three phase voltage and current generation, star and delta connections (balanced load only), relationship between phase and line currents and voltages, Phasor diagrams, Basic principle of wattmeter, measurement of power by two wattmeter method .

4. **Single phase transformer**
   Construction, working principle, Emf equation, ideal and practical transformer, transformer on no load and on load, phasor diagrams, equivalent circuit, O.C. and S.C test, Efficiency.

5. **Electronics (no numericals)**
   Semiconductor diode, Diode rectifier with R load: Half wave, full wave-center tapped and bridge configuration, RMS value and average value of output voltage, ripple factor, rectification efficiency, introduction to C and L filter (no derivation). CE, CB, CC transistor configuration, CE input-output characteristics.

Mumbai University Question Paper Format

1) Question paper will comprise of 6 question, each carrying 20 marks.
2) Total 4 questions need to be solved.
3) Q.1 will be compulsory, based on entire syllabus wherein sub questions of 2 to 3 marks will be asked.
4) Remaining question will be randomly selected form all the modules.
5) Weightage of marks should be proportional to number of hours assigned to each Module.

Reference Books :

1. Electrical Engineering (*B.L.Theraja*) Vol-I and II
2. Basic Electrical Engineering (*S.N. Singh*) PHI, 2011

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