Universitatea Transilvania din Braşov
Facultatea de Inginerie Electrică şi Ştiin a Calculatoarelor
Programul de studii: Inginerie Electrică şi Calculatoare (lb. Engleză)

TEMATICĂ LICENȚĂ PROBA 1 – PROBĂ ORALĂ
AN UNIVERSITAR 2019-2020

1. Methods for numerical solving of the electrical circuits in steady-state. The loop-current method. The node-potential method;
2. Methods for numerical solving of the electrical circuits in dynamic state. The Runge-Kutta method for systems of differential equations;
3. Methods for numerical solving of the non-linear electrical circuits. The bisection method. The Spline interpolation method;
4. Induction motors, nominal power, current demand, subtransient current and protection setting, motor starting current, compensation of reactive-power (k
5. VAr) supplied to induction motors;
6. Power loading of an installation, installed power (kW), installed apparent power (kVA), estimation of actual maximum kVA demand;
7. Electrical installation characteristics, activity, site topology, layout latitude, service reliability, maintainability, installation flexibility, power demand, load distribution, power interruption sensitivity, disturbance sensitivity, disturbance capability of circuits, protection devices settings and choices;
8. Earthing schemes, earthing connections, definition of standardised earthing schemes, characteristics of TT, TN and IT systems, selection criteria for the TT, TN and IT systems, choice of earthing method – implementation;
9. Electric shock, protection against electric shock, direct and indirect contact;
10. The basic functions of LV switchgear, electrical protection, isolation, switchgear control;
11. Circuit-breaker, standards and description, fundamental characteristics of a circuit-breaker, other characteristics of a circuit-breaker, selection of a circuit-breaker, coordination between circuit-breakers, discrimination MV/LV in a consumer's substation;
12. Voltage surge, the four voltage surge types, main characteristics of voltage surges, different propagation modes;

13. Overvoltage protection devices, primary protection devices (protection of installations, against lightning), secondary protection devices (protection of internal, installations against lightning);
14. Reactive energy and power factor, ways to improve the power factor in electrical installations;
15. Computing currents and powers in DC circuits;
16. Computing currents, impedances, powers, power factor in AC circuits (single phase and three-phase circuits);
17. Computing currents and voltages in circuits in transient state.

Bibliography

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2. Sorea, D., Lungoci, C., Scutaru G. – Metode numerice cu aplicații în ingineria electrică. Curs aplicativ, Editura Universității Transilvania Braşov, 2009.
3. Scutaru G. – Metode numerice, Editura Universității Transilvania Braşov, 2003
4. *Electrical installation guide according to IEC international standards*, Schneider Electric, 2015.
5. *I7 Normativ pentru proiectarea, executia si exploatarea instalatiilor aferente cladirilor*, 2011.
6. O. Centea, C. Bianchi, *Instalatii electrice*, Intreprinderea poligrafica "Banat", 1973
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10. Aciu L. E., Barote L, Bidian D. – Bazele electrotehnicii .Teoria circuitelor electrice, Editura Universității Transilvania Braşov, 2013.
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