



Errata/addenda: Module 3 deel 2 theorie bij de tweede druk (2009)

De onderstaande wijzigingen/toevoegingen zijn reeds verwerkt in de derde druk van deze module.

Op het eerste schutblad is een waarschuwing geplaatst dat het boek uitsluitend gebruikt mag worden voor trainingsdoeleinden.

Blz. 6-8

Part-66 tabel is aangepast naar aanleiding van veranderde regelgeving als gevolg van EU verordening No 1149/2011 van 21 oktober 2011. Zie bijlage.

Blz. 44

Afbeelding 1.41 Schema aangepast en in en uitschakel grafieken toegevoegd.

Afbeelding 2.11, 2.15, 2.16, 2.18, 2.19, 2.20, 2.21, 2.23, 3.16

In deze figuren stond N en Z als benaming voor de verschillende Polen. Dit is veranderd in N en S.

Blz. 71

In het blauwe kader. Toegevoegd achter $T_d = T_t$: (Dit geldt alleen als het toerental van de generator constant is).

Blz. 95

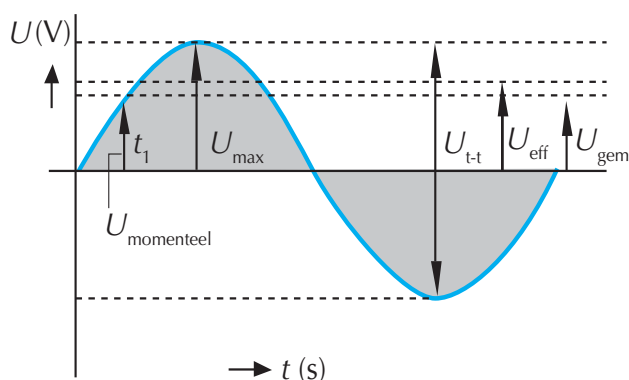
Formule gecorrigeerd in $\eta = \frac{P_{af}}{P_{toe}}$ (P_{af} en P_{toe} van plaats gewisseld).

Blz. 120

Afbeelding 4.6: waarde bij de X-as aangepast (2^e keer "0,25" is veranderd in "0,50").

Blz. 122

Afbeelding 4.8: pijl U_{eff} aangepast, U_{gem} toegevoegd.





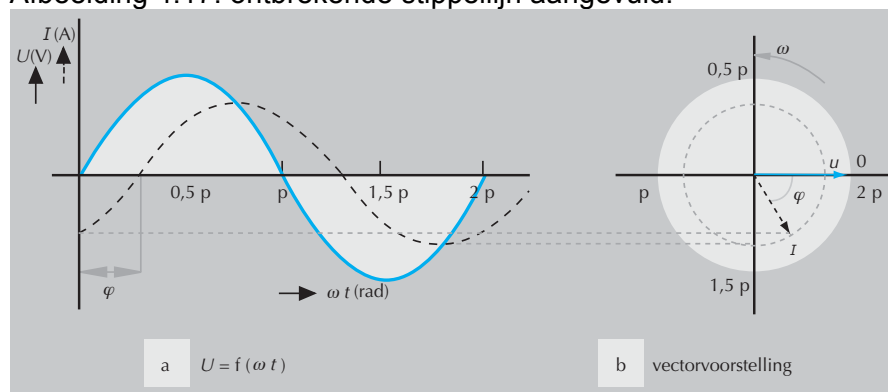
Blz. 126

Afbeelding 4.12: decimale waarden veranderd in breuken, de nieuwe tabel:

Spanningsvorm	U_{gem}	U_{eff}
	\hat{u}	\hat{u}
	$\frac{1}{2} \cdot \hat{u}$	$\frac{1}{2} \sqrt{2} \cdot \hat{u}$
	$\frac{1}{2} \cdot \hat{u}$	$\frac{1}{3} \sqrt{3} \cdot \hat{u}$
	$\frac{1}{2} \cdot \hat{u}$	$\frac{1}{3} \sqrt{3} \cdot \hat{u}$
	$\frac{2}{\pi} \cdot \hat{u}$	$\frac{1}{2} \sqrt{2} \cdot \hat{u}$

Blz. 131

Afbeelding 4.17: ontbrekende stippelijijn aangevuld.



a $U = f(\omega t)$

b vectorvoorstelling

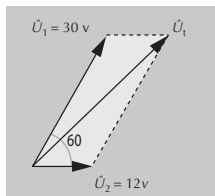
a Spanning en stroom uit fase

b Vectorvoorstelling



Blz. 133

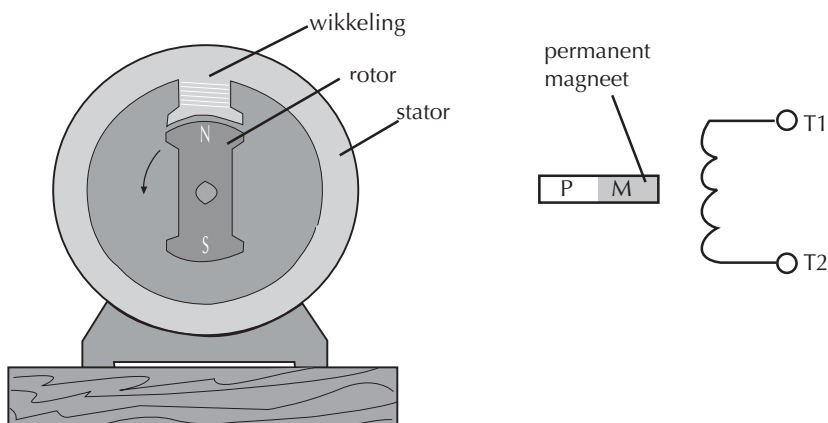
Afbeelding 4.20: benamingen in figuur \hat{U}_1 en \hat{U}_2 verwisseld.



Blz. 135

Afbeelding 4.21a: aanduidingstreepje van de rotor door laten lopen tot in de rotor.

Afbeelding 4.21b: “permanenten” vervangen door “permanent”

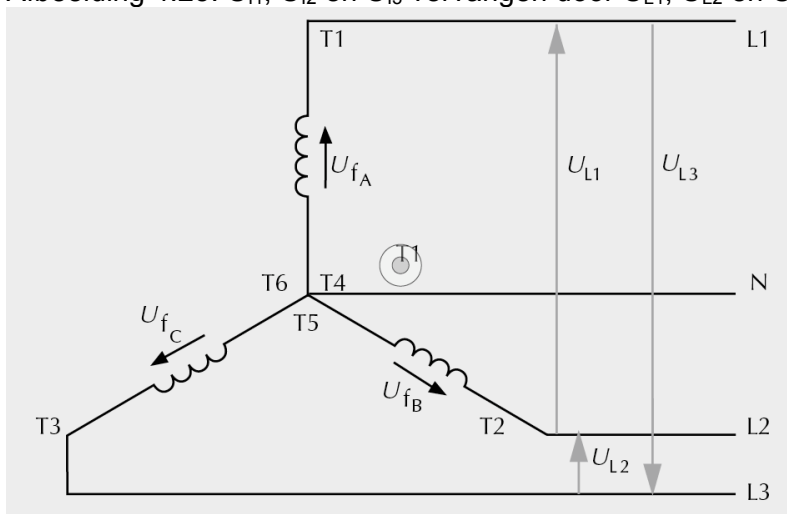


Blz. 136

Afbeelding 4.23: “permanente” vervangen door “permanent”

Blz. 138

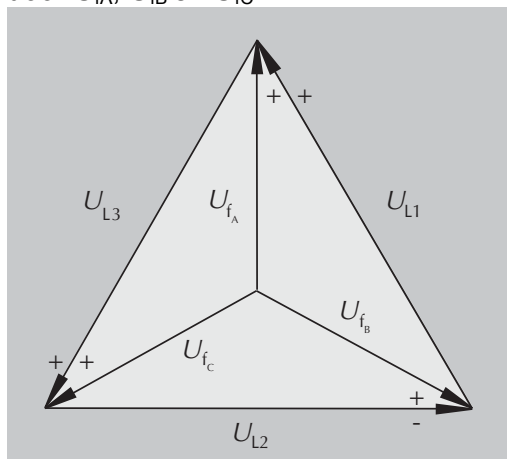
Afbeelding 4.25: U_{I1} , U_{I2} en U_{I3} vervangen door U_{L1} , U_{L2} en U_{L3}





Blz. 139

U_{I1} , U_{I2} en U_{I3} vervangen door U_{L1} , U_{L2} en U_{L3} en U_{f1} , U_{f2} en U_{f3} vervangen door U_{fA} , U_{fB} en U_{fC}



Blz. 169

Blauw kader: deelstreep aangebracht in laatste $\cos \varphi$ formule
Paragraafnummering: 5.9.2 moet 5.9.3 zijn.

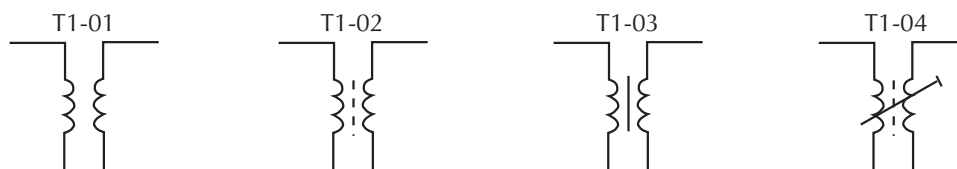
Blz. 180

2 grammaticale aanpassingen.

Blz. 181

Grammaticale aanpassing in paragraaf naam.

Afbeelding 6.9: benamingen van de verschillende transformatoren toegevoegd.



algemeen symbool - scheidingstraaf - met ferromagnetische kern - instelbare trafo

Blz. 189, 3^e regel:

Het symbool P_{fe} veranderd in P_{Fe}

Grammaticale aanpassing in titel afb. 6.14

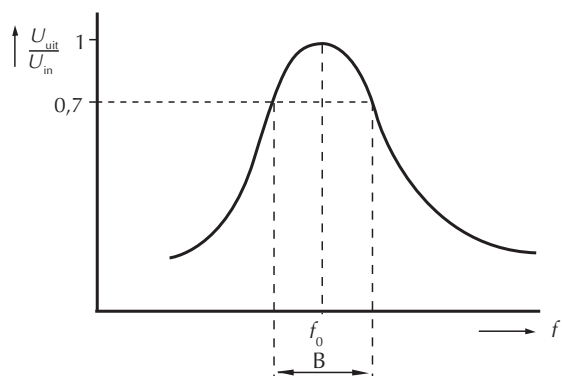
Blz. 191

Laatste zin veranderd van er zijn veiligheidstransformatoren van 220/220V en van 220/42V in: Een veiligheidstransformator heeft een secundaire spanning van maximaal 50 V.



Blz. 219

Afbeelding 7.13 streeplijn bij f_0 aangebracht.



Blz. 231

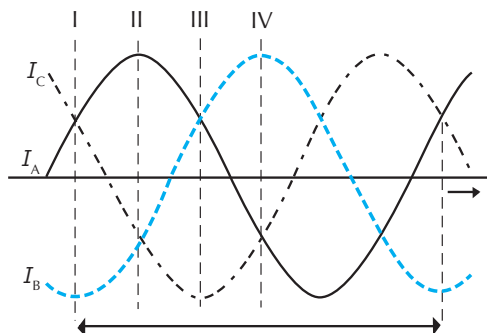
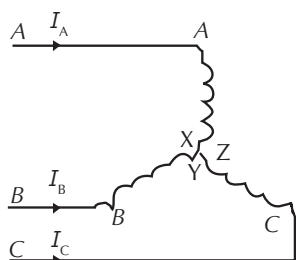
Eenheid van toerental veranderd van rpm in min^{-1}

Blz. 235

Eerste bullet: grammaticale aanpassing

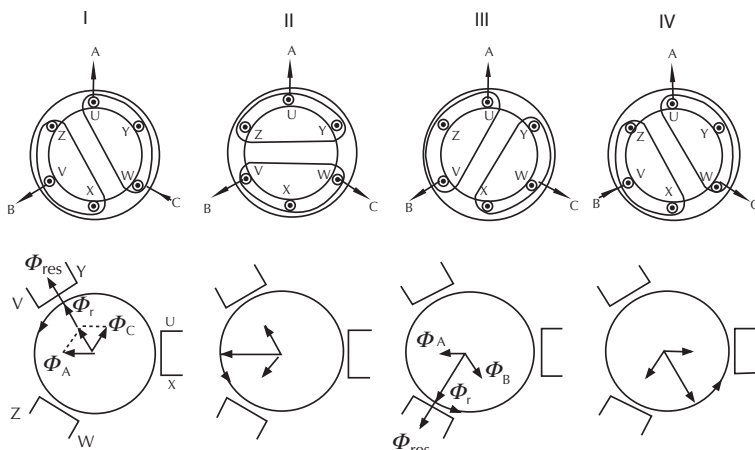
Blz. 249

Afbeelding 9.2: benamingen van de fasen R, B, C, links in het figuur vervangen door A, B, en C



Blz. 250

Afbeelding 9.3 aangepast.

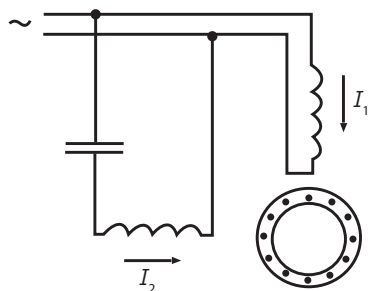




JEWKA UITGEVERIJ

Blz. 263

Afbeelding 9.16: symbool van condensator gecorrigeerd.



Bijlage: Part 66

Category		A level	B1 level	B2 level	B3 level	Deel	Hfst
3.1	<p>Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors and insulators.</p>	1	1	1	1	1	1
3.2	<p>Static Electricity and Conduction Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.</p>	1	2	2	1	1	2
3.3	<p>Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.</p>	1	2	2	1	1	3
3.4	<p>Generation of electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.</p>	1	1	1	1	1	4
3.5	<p>DC Sources of electricity Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.</p>	1	2	2	2	1	5
3.6	<p>DC Circuits Ohms Law, Kirchoff's Voltage and current Law's; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.</p>	-	2	2	1	1	6
3.7a	<p>Resistance/Resistor Resistance and effecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.</p>	-	2	2	1	1	7
3.7b	<p>Resistance/Resistor Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction. Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge;</p>	-	1	1	-	1	7

Categorie		A level	B1 level	B2 level	B3 level	Deel	Hfst
3.8	<p>Power</p> <p>Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula Calculation involving power, work and energy.</p>	-	2	2	1	1	8
3.9	<p>Capacitance/Capacitor</p> <p>Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.</p>	-	2	2	1	1	9
3.10a	<p>Magnetism</p> <p>Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around currentcarrying conductor.</p>	-	2	2	1	1	10
3.10b	<p>Magnetism</p> <p>Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.</p>	-	2	2	1	1	10
3.11	<p>Inductance/Inductor</p> <p>Faraday's law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor terms; Mutual induction; The effect of rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's law and polarity determining rules; Back emf, self induction; Saturation point; Principle uses of inductors;</p>	-	2	2	1	2	1

Categorie		A level	B1 level	B2 level	B3 level	Deel	Hfst
3.12	<p>DC Motor/Generator Theory.</p> <p>Basic motor and generator theory; Construction and purpose of components in DC generator; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.</p>	-	2	2	1	2	2, 3
3.13	<p>AC Theory.</p> <p>Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power; Triangular/Square waves; Single/3 phase principles.</p>	1	2	2	1	1	11
3.14	<p>Resistive (R), Capacitive (C) and Inductive (L) Circuits.</p> <p>Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.</p>	-	2	2	1	2	5
3.15	<p>Transformers.</p> <p>Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.</p>	-	2	2	1	2	6