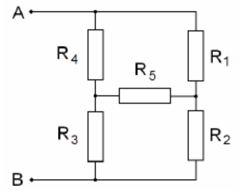
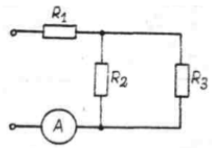
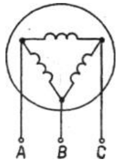
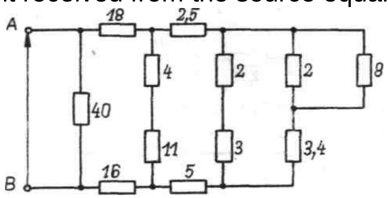
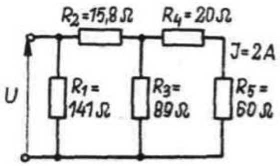
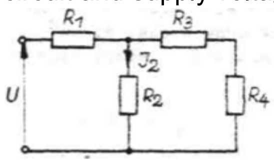
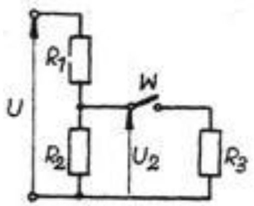
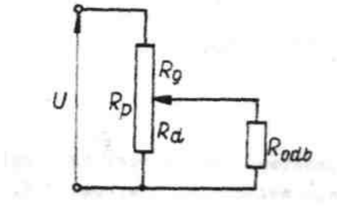
Examination questions from the "Electrical engineering basics" course

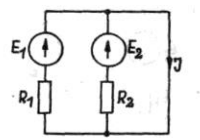
Operative level			
Electrical engineering basics			
Questions			
Item	**B/D**	**Question**	**Correct answer**
1.	B	Ohm's law for a direct current circuit is as follows: A. U=R*I, B. I=R*U, C. R=U*I, D. U=R/I.	A
2.	B	1st Kirchoff's law for direct current circuits is as follows: A. In a closed circuit, the sum of voltage losses at impedances equals the sum of electromotive forces present in this circuit, B. In a closed circuit, the sum of voltage losses at resistances equals the sum of electromotive forces present in this circuit, C. Algebraic sum of currents in a node equals zero, D. Electric potential difference U between two ends of a conductor is proportional to the intensity and current flowing through a conductor.	C
3.	B	2nd Kirchoff's law for direct current circuits is as follows: A. In a closed circuit, the sum of voltage losses at impedances equals the sum of electromotive forces present in this circuit, B. The algebraic sum of receiver input voltages in a mesh equals the algebraic sum of source voltages, C. The sum of intensities of currents entering the node equals the sum of current intensities exiting the node, D. Electric potential difference U between two ends of a conductor is proportional to intensity and current flowing through a conductor.	B

4.	D	Equivalent resistance between points A and B of a circuit shown in the picture equals:  A. 2.5 Ω, B. 10 Ω, C. 5 Ω, D. 3 Ω, Given: R_1=3 Ω, R_2=2 Ω, R_3=2 Ω, R_4=3 Ω, R_5=4 Ω	A
5.	B	The principle of superposition can be explained as follows: A. In a series circuit, drops of voltage caused by individual energy sources operating individually may be replaced with a single drop of voltage, B. The response of a linear circuit to simultaneous action of several stimuli equals the sum of responses for each stimulus individually, C. All voltage sources in a circuit may be replaced by a gap, D. All current sources in a circuit may be replaced by a contact,	B
6.	D	Find voltage drops in specific circuit branches in the picture, if the ammeter indicates 3 A. Given: R1=3 Ω, R2=2 Ω, R3=4 Ω. A. 8 V, 4 V, 4 V, B. 5 V, 6 V, 6 V, C. 9 V, 4 V, 4 V, D. 4 V, 5 V, 5 V. 	C

7.	D	Three identical stator windings of a three phase motor were connected into a delta. Resistance measured between terminals A and B equals 44 Ω. Resistance of a single winding equals: A. 22 Ω, B. 44 Ω, C. 66 Ω, D. 55 Ω,  	C
8.	D	The circuit described in the picture is supplied from a direct voltage source of value U = 220 V. The numbers denote resistance in ohms. Current received from the source equals: A. 1 A, B. 11 A, C. 2 A, D. 20 A.  	B
9.	D	In a passive circuit there are given resistances and the current flowing through resistance R_4. Supply voltage equals: A. 110 V, B. 220 V, C. 311 V, D. 440 V.  	B

10.	D	In a circuit presented in the picture, the current intensity I_2=2 A. Resistance values: R_1 = 3 Ω, R_2 = 18 Ω, R_3 = 3 Ω, R_4 = 6 Ω. Equivalent resistance of the circuit and supply voltage equal: A. 10 Ω,72 V, B. 9 Ω, 54 V, C. 11 Ω, 36 V, D. 15 Ω, 41 V.  	B
11.	D	Voltage divider made up of R_1 and R_2 resistors was supplied with voltage of U = 200 V.  Given: R_1 = 100 Ω, R_2 = R_3 = 300 Ω. Voltage values U_2 at the output of the divider with open and closed W switch equal: A. 150 V, 120 V, B. 100 V, 200 V, C. 210 V, 115 V, D. 200 V, 175 V.	A

<table>
<tr>
<td>12.</td>
<td>D</td>
<td>Electrical load with resistance of R_{odb} = 40 Ω is supplied from a potentiometer (R_p = 80 Ω), whose terminals are connected to voltage of U = 120V


Values of electrical load current and voltage, assuming the potentiometer slider is in the middle position (R_g = R_d) are equal to:
A. 10 V, 5 A,
B. 15 V, 2 A,
C. 40 V, 1 A,
D. 35 V, 5 A.</td>
<td>C</td>
</tr>
<tr>
<td>13.</td>
<td>D</td>
<td>In a circuit presented in the picture, electromotive forces equal E_1 = 100 V, E_2 = 120 V, resistances R_1 = 10 Ω, R_2 = 40 Ω.


Current I has the following value:
A. 10 A,
B. 13 A,
C. 15 A,
D. 25 A.</td>
<td>B</td>
</tr>
<tr>
<td>14.</td>
<td>B</td>
<td>Coulomb’s law can be written using the following formula:
A. $F = k\frac{Q_1 Q_2}{r^2}$,</td>
<td>A</td>
</tr>
</table>

		B. $F = k\frac{r_1 r_2}{Q^2}$, C. $F = r^2 Q_1 Q_2$, D. $F = k\frac{U}{d}$.	
15.	B	Value of electric field intensity in a given point is determined by the following function: A. $E = \frac{F}{q}$, B. $F = \frac{E}{q}$, C. $E = \frac{q}{F}$, D. $C = \frac{F}{q}$.	A
16.	B	Equivalent capacity Cz for two condensers with capacities of C1 and C2 in a parallel connection may be calculated using the formula A. Cz=1/C1+1/C2, B. 1/Cz =1/C1+1/C2, C. Cz =C1+C2, D. Cz=(C1+C2)/C1*C2.	C
17.	B	What is the average rectified value of sinusoidal alternating voltage in volts: A. 2 π, B. 314, C. 0, D. 230.	C
18.	B	Which formula presents the true function between the maximum and RMS value for sinusoidal alternating voltage? A. U_m = 0.707 U, B. U = 0.707 U_m,	B

		C. $U = \sqrt{2}\, U_m$, D. $U = \sqrt{3}\, U_m$.	
19.	B	For network frequency of f = 50 Hz, the period equals: A. 5 ms, B. 10 ms, C. 20 ms, D. 30 ms.	C
20.	B	Pulsation is described by the following function: A. 2 π T, B. 2 π f, C. f π /2, D. $\sqrt{2}$ f.	B
21.	B	The phase shift between voltage and current in a given electrical load is the name for: A. the difference of initial phases of voltage and current, B. the difference of initial phases of voltages in a circuit, C. the quotient of initial phases of voltage and current, D. the product of initial phases of voltage and current.	A
22.	B	For a resistance electrical load in a sinusoidal alternating current circuit, the phase shift angle between current and voltage equals: A. 180^o, B. 90^o, C. 0^o, D. -90^o.	C

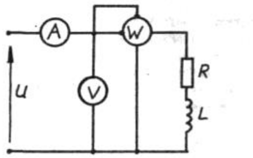
23.	B	For a load with ideal inductance in a sinusoidal alternating current circuit, the phase shift angle between current and voltage equals: A. 180^0 (output voltage "leads" the current), B. -180^0 (voltage "lags" in relation to the current), C. 90^0 (output voltage "leads" the current), D. -90^0 (voltage "lags" in relation to the current),	C
24.	B	The unit for impedance is a: A. siemens [S], B. henry [H], C. ohm [Ω], D. farad [F].	C
25.	B	The unit for inductive reactance is a: A. siemens [S], B. henry [H], C. ohm [Ω], D. farad [F].	C
26.	B	Capacitive reactance is expressed by the following function: A. $X_C = \frac{1}{\omega C}$, B. $X_C = \omega C$, C. $Z_C = R_C + X_C$, D. $Z_C = X_C$.	A
27.	B	Inductive reactance is expressed by the following function: A. $X_L = \omega L$, B. $X_L = \frac{1}{\omega L}$, C. $Z_L = R_L + X_L$, D. $Z_L = X_L$.	A
28.	B	For a sinusoidal alternating circuit with a real induction coil load the following function used to determine impedance is true:	

		A. $Z_L = R_L - X_L$, B. $Z_L = R_L + X_L$, C. $Z_L = R_L^2 + X_L^2$, D. $Z_L = \sqrt{R_L^2 + X_L^2}$.	D
29.	D	How many times is the RMS value of full-wave rectified sinusoidal waveform greater than the RMS value of this voltage before rectification? A. two times, B. square root times, C. two times smaller, D. it is the same.	D
30.	D	What shall be the impedance of the Zo electric load supplied from a real voltage source with intrinsic impedance of Zw=Rw+jXw so that it operates (Zo) at a maximum active power (maximum power transfer condition) A. Zo=Rw, B. Zo=Xw, C. Zo=R+jXw, D. Zo=R-jXw.	D
31.	D	Current and voltage have the following waveforms: $u = 310\sin(\omega t)$, $i = 2\sin(\omega t - \pi/4)$. Instantaneous voltage and current values for t = 0.005s, provided f = 50 Hz, equal approximately: A. u = 230 V, i = 1.7 A, B. u = 360 V, i = 2.2 A, C. u = 310 V, i =1.4 A, D. u = 110 V, i = 3.3 A.	C
32.	D	Two sinusoidal alternating values have a phase shift angle of $\varphi = \pi/6$. What is the time shift of their positive maximum values if frequency equals f = 500 Hz. A. 166.7 μs, B. 20 ms, C. 10 μs, D. 311 μs.	A
33.	D	Indication of a volt meter connected to the network with a sinusoidal voltage equals 230 V. Maximum voltage value is approximately equal to: A. 440 V, B. 380 V,	C

		C. 325 V, D. 311 V.	
34.	D	Current with a waveform of $i = I_m \sin(\omega t + 2\pi/3)$ s measured with an electromagnetic ammeter. What is the indication of the ammeter if at the moment of t = 0 the instantaneous current value is i = 1.3 A. A. 2.12 A, B. 1.06 A, C. 1.49 A, D. 3.00 A.	B
35.	B	The unit of active power is A. VA, B. W, C. var, D. Vs.	B
36.	B	The unit of passive power is A. VA, B. W, C. var, D. J.	C
37.	B	Apparent power is expressed by the following function: A. $S=\sqrt{P+Q}$, B. $S=\sqrt{P^2+Q^2}$, C. S = P + Q, D. S = P·Q.	B
38.	B	Active power in a single phase circuit with a resistant-inductive electrical load is specified by the following function: A. U·I·tgϕ, B. U·I·sinϕ, C. U·I·cosϕ, D. U·I.	C
39.	B	Resonance frequency in a series RLC circuit can be presented by the following function:	

		A. $f=\sqrt{L^2+C^2}$, B. $f=\frac{1}{2\pi\cdot\sqrt{L\cdot C}}$, C. $f=\frac{1}{2\pi\cdot\sqrt{R\cdot L\cdot C}}$, D. $f=\frac{1}{\sqrt{L\cdot C}}$.	B
40.	B	Resonance frequency in a parallel RLC circuit can be presented by the following function: A. $f=\sqrt{L^2+C^2}$, B. $f=\frac{1}{2\pi\cdot\sqrt{L\cdot C}}$, C. $f=\frac{1}{\sqrt{L\cdot C}}$, D. $f=\frac{1}{2\pi\cdot\sqrt{R\cdot L\cdot C}}$.	B
41.	D	An ideal coil with inductance of L = 86 mH was connected to a sinusoidal current source of voltage U = 220 V (RMS value) and frequency of f = 50 Hz. The values of current flowing through the coil (RMS value), the passive, active and apparent power consumed by the coil equal: A. I = 8.15 A, P = 0 W, Q = 1793 var, S = 1793 VA, B. I = 8.15 A, P = 1793 W, Q = 0 var, S = 1793 VA, C. I = 8.15 A, P = 0 W, Q = 1793 var, S = 0 VA, D. I = 8.15 A, P = 1793 W, Q = 1793 var, S = 0 VA.	A
42.	D	An ideal capacitor with capacity of C = 36.7 μF was connected to a sinusoidal current network of voltage U = 380 V and frequency of f = 50 Hz. The value of current flowing through a condenser, apparent, active and passive power consumed by the condenser equal: A. I = 4.38 A, P = 1664 W, Q = 0 var, S = 1664 VA, B. I = 4.38 A, P = 0 W, Q = -1664 var, S = 1664 VA, C. I = 4.38 A, P = 1664 W, Q = 1664 var, S = 1664 VA, D. I = 0 A, P = 1664 W, Q = 0 var, S = 1664 VA.	B
43.	D	Coil with a resistance of R = 80 Ω and inductance of L = 255 mH was connected to a source of sinusoidal current with voltage of U = 24 V and frequency of f = 50 Hz. The value of current in the circuit, voltages at the U_R resistance and voltage at inductive reactance U_L equal respectively:	

		A. $I = 0.08$ A, $U_R = 5$ V, $U_L = 5$ V, B. $I = 0.33$ A, $U_R = 25$ V, $U_L = 27$ V, C. $I = 0.12$ A, $U_R = 13$ V, $U_L = 11$ V, D. $I = 0.21$ A, $U_R = 17$ V, $U_L = 17$ V.	D
44.	D	In a coreless coil connected to a power source with direct voltage of $U = 4.2$ V, there is a current flow of $I = 0.14$ A, and when it is connected to a sinusoidal voltage power source ($U = 75$ V $f = 50$ Hz), the current in the coil is $I = 1.5$ A. Inductive reactance and inductance of the coil and the power received from the network with direct and alternating current equal respectively: A. $X_L = 40\ \Omega$, $L = 0.127$ H, $P_= = 0.59$ W, $P_\sim = 67.5$ W, B. $X_L = 50\ \Omega$, $L = 0.16$ H, $P_= = 0.12$ W, $P_\sim = 32.4$ W, C. $X_L = 10\ \Omega$, $L = 0.21$ H, $P_= = 0.32$ W, $P_\sim = 32.0$ W, D. $X_L = 20\ \Omega$, $L = 0.41$ H, $P_= = 0.52$ W, $P_\sim = 12.0$ W.	A
45.	D	After connecting a coil with a steel core to a source with voltage of $U = 120$ V and frequency of $f = 100$ Hz the current in the coil was equal to 0.5 A. After the core was remove from the coil, current increased to 8 A. Coil resistance $R = 4\ \Omega$. Inductance of the coil in both cases, not taking into account energy losses in the core, equals approximately: A. $L_1 = 0.80$ H, $L_2 = 0.2$ H, B. $L_1 = 0.54$ H, $L_2 = 0.01$ H, C. $L_1 = 0.38$ H, $L_2 = 0.02$ H , D. $L_1 = 0.12$ H, $L_2 = 0.12$ H.	C

46.	D	In order to calculate induction coil parameters. it was connected, along with meters, to a network with sinusoidal voltage and frequency of f = 50 Hz. Meters indicated the following values: voltmeter U = 220 V, ammeter I = 5.3 A, wattmeter P = 780 W. The manner of connecting the meters is presented in drawing 11. Parameters of the coil (R, L, Z) are respectively: A. R = 98 Ω, L = 27.8 mH, Z = 41.5 Ω, B. R = 27.8 Ω, L = 98 mH, Z = 41.5 Ω, C. R = 41.5 Ω, L = 98 mH, Z = 27.8 Ω, D. R = 41.5 Ω, L = 27.8 mH, Z = 41.5 Ω. 	B
47.	D	Condenser with capacity of C = 10 μF was connected in series with a resistor with resistance of R = 500 Ω and included in an alternating voltage network with an RMS voltage of U = 240 V. Current in a circuit and drops of U_R, U_c voltages equal respectively: A. I = 0.21 A, U_R = 200 V, U_C = 100 V, B. I = 0.33 A, U_R = 202.5 V, U_C = 128.8 V, C. I = 0.51 A, U_R = 220.5 V, U_C = 118.8 V, D. I = 0.41 A, U_R = 202.5 V, U_C = 128.8 V.	D
48.	D	A condenser was included in series with a heater with power P = 40 W and rated voltage of U = 220 V. What shall be the approximate condenser capacitance value so that after connecting the voltage of U = 380 V to a two-terminal circuit, the voltage at the heater was equal to 220 V (f = 50 Hz). A. C = 1.87 μF, B. C = 18.7 μF, C. C = 1.87 mF, D. C = 18.7 mF.	A

49.	B	In a three-phase symmetrical system all voltages have the same RMS and the shift angle between voltages of specific phases equals: A. 30^0, B. 60^0, C. 90^0, D. 120^0.	D
50.	B	In three-phase systems there are phase values of I_f, U_f and line values I, U, depending on whether the three phase system is arranged in a star, or a delta. In a star network, the following functions are true: A. $I_f = \sqrt{3}I$ and $U_f = \sqrt{3}U$, B. $I_f = I$ and $U_f = \frac{U}{\sqrt{3}}$, C. $I_f = \frac{I}{\sqrt{3}}$ and $U_f = U$, D. $I_f = I$ and $U_f = \sqrt{3}U$.	B
51.	B	In a positive star network, the line voltage leads the phase voltage by a phase angle equal: A. 30°, B. 45°, C. 120°, D. 90°.	A
52.	B	In three-phase systems there are phase values of I_f, U_f and line values I, U, depending on whether the symmetrical three-phase system is arranged in a star, or a delta. In a delta network, the following functions are true: A. $I_f = \sqrt{3}I$ and $U_f = \sqrt{3}U$, B. $I_f = I$ and $U_f = \frac{U}{\sqrt{3}}$, C. $I_f = \sqrt{3}I$ and $U_f = \sqrt{3}U$, D. $I_f = \frac{I}{\sqrt{3}}$ and $U_f = U$.	D
53.	B	Active power received by a three-phase symmetric load with given phase values is expressed by the following function: A. $P = \sqrt{3} U_f I_f \cos \varphi$, B. $P = 3U_f I_f \cos \varphi$,	B

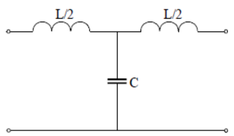
		C. $P = \sqrt{3}\, U_f \sqrt{3}\, I_f \cos\varphi$, D. $P = \sqrt{3}\, U_f I_f$.	
54.	B	Passive power received by a three-phase symmetric load with given phase values is expressed by the following function: A. $Q = \sqrt{3}\, U_f I_f \sin\varphi$, B. $Q = 3U_f I_f$, C. $Q = 3U_f\, 3I_f \sin\varphi$, D. $Q = 3U_f I_f \sin\varphi$.	D
55.	B	Active power received by a three-phase symmetric load with given line values is expressed by the following function: A. $P = \sqrt{3}\, U I$, B. $P = 3U I \cos\varphi$, C. $P = \sqrt{3}\, U \sqrt{3}\, I \cos\varphi$, D. $P = \sqrt{3}\, U I \cos\varphi$.	D
56.	B	Apparent power received by a three-phase symmetric load with given line values is expressed by the following function: A. $S = \sqrt{3}\, U I$, B. $S = 3U I \cos\varphi$, C. $S = \sqrt{3}\, U \sqrt{3}\, I \cos\varphi$, D. $S = \sqrt{3}\, U I \cos\varphi$.	A
57.	B	The sum of instantaneous electromotoric forces in a symmetrical three-phase circuit is equal to: A. 120 V, B. 400 V, C. 0 V, D. 230 V.	C
58.	B	Transformation of a single branch of a star circuit into a delta has the following form: A. $\underline{Z}_{12} = \underline{Z}_1 + \underline{Z}_3 + \frac{\underline{Z}_1}{\underline{Z}_3}$, B. $\underline{Z}_{12} = \underline{Z}_1 + \underline{Z}_2 + \frac{\underline{Z}_1 \cdot \underline{Z}_2}{\underline{Z}_3}$,	B

		C. $\underline{Z}_1 = \dfrac{\underline{Z}_{12} \cdot \underline{Z}_{13}}{\underline{Z}_{12} + \underline{Z}_{13} + \underline{Z}_{23}}$, D. $\underline{Z}_3 = \dfrac{\underline{Z}_{23} \cdot \underline{Z}_{13}}{\underline{Z}_{12} + \underline{Z}_{13} + \underline{Z}_{23}}$.	
59.	B	RMS value of a periodic function has the following form: A. $A = \sqrt{\dfrac{1}{T}\int_0^T f\ (t)dt}$, B. $A = \sqrt{\dfrac{1}{T} f^2(t)}$, C. $A = \dfrac{1}{T}\sqrt{\int_0^T f^2(t)dt}$, D. $A = \sqrt{\dfrac{1}{T}\int_0^T f^2(t)dt}$.	D
60.	B	Assuming the amplitude of kth harmonic number is represented as A_{m_k} , the RMS of kth harmonic number is expressed by the following function: A. $\lvert A_k \rvert = \sqrt{2} \cdot A_{m_k}$, B. $\lvert A_k \rvert = \dfrac{A_{m_k}}{\sqrt{2}}$, C. $\lvert A_k \rvert = \sqrt{2} \cdot A_{m_k}^2$, D. $\lvert A_k \rvert = A_{m_k}^2$.	B

61.	B	Assuming the amplitude of kth harmonic number is represented as A_{m_k} and A_0 is a constant component, the RMS value of the f(t) function is expressed by the following function: A. $A_{sk} = \sqrt{A_0 + \sum_{k=1}^{\infty} A_{m_k}}$, B. $A_{sk} = \sqrt{A_0^2 + \sum_{k=1}^{\infty} A_{m_k}^2}$, C. $A_{sk} = \sqrt{\sum_{k=1}^{\infty} A_{mk}^2}$, D. $A_{sk} = \sqrt{A_0 + \sum_{k=1}^{\infty} A_{m_k}^2}$.	B
62.	B	Average rectified value of the f(t) function is defined as: A. $A_0 = \frac{1}{T}\int_0^T f(t)\,\mathrm{d}t$, B. $A_0 = \frac{1}{T}\int_0^T \sqrt{f(t)}\,\mathrm{d}t$, C. $A_0 = \frac{1}{T}\int_0^T f^2(t)\,\mathrm{d}t$, D. $A_0 = \frac{1}{T}\int_0^T \sqrt{f^2(t)}\,\mathrm{d}t$.	A

63.	B	Sine wave peak factor $s = \frac{A_{\max}}{A_{sk}}$ equals: A. $\sqrt{3}$, B. $\frac{\sqrt{3}}{2}$, C. $\sqrt{2}$, D. $\frac{\sqrt{2}}{2}$.	C
64.	B	Determining RMS value for specific harmonic waveforms as A_k, the total distortion factor h is expressed by the following function: A. $h = \sqrt{\frac{\lvert A_2\rvert + \lvert A_3\rvert + \cdots}{\lvert A_1\rvert + \lvert A_2\rvert + \lvert A_3\rvert + \cdots}}$, B. $h = \sqrt{\frac{\lvert A_2\rvert^2 + \lvert A_3\rvert^2 + \cdots}{\lvert A_1\rvert^2 + \lvert A_2\rvert^2 + \lvert A_3\rvert^2 + \cdots}}$, C. $h = \int \sqrt{\frac{\lvert A_2\rvert^2 + \lvert A_3\rvert^2 + \cdots}{\lvert A_1\rvert^2 + \lvert A_2\rvert^2 + \lvert A_3\rvert^2 + \cdots}}$, D. $h = \sqrt{\frac{(\lvert A_2\rvert + \lvert A_3\rvert + \cdots)^2}{(\lvert A_1\rvert + \lvert A_2\rvert + \lvert A_3\rvert + \cdots)^2}}$.	B

65.	B	Total harmonic distortion is defined using the following depenence: A. $h=\frac{{A_1}^2}{\sqrt{A_0^2+{A_1}^2+{A_2}^2+\cdots}}$, B. $h=\sqrt{\frac{A_1}{A_0^2+{A_1}^2+{A_2}^2+\cdots}}$, C. $h=\frac{A_1}{A_0^2+{A_1}^2+{A_2}^2+\cdots}$, D. $h=\frac{\sqrt{A_2^2+{A_3}^2+{A_4}^2+\cdots}}{A_1}$.	D
66.	B	If the RMS value of the 1st harmonics waveform is defined as A_1, and the RMS value of kth harmonics is defined as A_k, the total distortion of the kth harmonics is defined using a function: A. $h_k=\sqrt{\frac{\|A_k\|}{\|A_1\|}}\cdot 100\%$, B. $h_k=\left(\frac{\|A_k\|}{\|A_1\|}\right)^2\cdot 100\%$, C. $h_k=\frac{\|A_k\|}{\|A_1\|}\cdot 100\%$, D. $h_k=\frac{\|A_k\|^2}{\|A_1\|}\cdot 100\%$.	C
67.	B	The reversibility condition of a two-port network for ABCD chain parameters is as follows: A. AD – BC = 1, B. AD + BC = 1, C. AD · BC = 1, D. AD / BC = 1.	A
68.	B	Which equation is true in the case of a symmetric two-port network for ABCD chain parameters:	

		A. AD = BD, B. AD = BC, C. A = B, D. A = D.	D
69.	B	A two-port network is called active if: A. there are uncompensated energy sources inside, B. It fulfils the reciprocity principle, e.g. line passive two-port network, C. swapping input and output terminals does not change the currents and voltages in the remaining part of the circuit which includes a two-port network, D. At least one two-port network element is non-linear.	A
70.	B	The passband edge is a frequency for which the voltage amplification of the filter: A. decreases by 10 dB, B. increases by 3 dB, C. decreases by 3 dB, D. decreases by 6 dB,	C
71.	B	The filter presented in the picture is of the following filter type: A. low-pass, B. band-pass, C. high-pass, D. band-stop. 	A
72.	B	Intrinsic inductance of the coil L is defined by a formula: A. L=B*q*v, B. L= Φ *i, C. L=N*Φ*i, D. L=N* Φ /i.	D
73.	B	The units of magnetic field strength and inductance are: A. henry, tesla, B. weber, tesla, C. A/m, tesla,	C

		D. A*m, weber.	
74.	B	The unit of electric field intensity is: A. V*m, B. A*m, C. VA/m, D. V/m.	D
75.	B	Direction and sense of force *F=B*i*L* can be determined based on: A. Coulomb's law, B. left hand rule, C. right hand rule, D. Ohm's law.	B
76.	B	Sense of electromotoric force *e*=B*l**v* may be determined based on: A. the Coulomb's law, B. left hand rule, C. right hand rule, D. Ohm's law.	C
77.	B	Magnetic permeability is divided by μ_0 it is a number smaller than 1 for the following material types: A. paramagnetic, B. diamagnetic, C. ferromagnetic, D. isotropic.	B
78.	B	Magnetic induction is a value: A. that describes the operation of the condenser, B. that describes the magnetic field, C. of magnetic permeability, D. of current intensity.	B
79.	B	Condenser capacity is calculated from the following formula: A. C=I*R, B. C=U/I, C. C=Q/I, D. C=Q/U.	D
80.	B	Low value of cosφ depends on: A. Inclusion of large heating elements, B. High active energy consumption, C. High passive energy consumption, D. Generator efficiency.	C

81.	B	The value of cosφ may be increased by: A. decreasing passive energy consumption, B. increasing passive energy consumption, C. decreasing power of generators, D. increasing power of generators,	A