Question Paper Preview

Question Paper Name: Electrical Engineering 11th May 2018 Shift2
Subject Name: Electrical Engineering
Duration: 120

Electrical Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 2203605521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If r, s be two real numbers and $A=\begin{bmatrix}1 & 2 & 0\\ 2 & 0 & 3\\ r & s & 0\end{bmatrix}$ and $B=\begin{bmatrix}1\\ 1\\ s-1\end{bmatrix}$ then the system of linear equation $AX=B$ has

Options :

1. No solution for $s \neq 2r$

2. Infinitely many solutions for $s=2r=2$

3. A unique solution for $s=2r=2$

4. Infinitely many solutions for $s=2r \neq 2$

Question Number : 2 Question Id : 2203605522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $F(t)$ has a constant magnitude then___

Options :

1. $F \cdot \frac{dF}{dt} = 0$

2. $F \times \frac{dF}{dt} = \overline{0}$

3. $F \cdot \frac{dF}{dt} \neq 0$

4. $F \times \frac{dF}{dt} \neq \overline{0}$

Question Number : 3 Question Id : 2203605523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation $(x+x^8+ay^2)dx+(y^8-y+bxy)dy=0$ is exact if

Options :

1. $b = 2a$

2. $a = b$

3. $a \neq 2b$

4. $a = 1, b = 3$

Question Number : 4 Question Id : 2203605524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of the equation $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = z$ is

Options :

1. $f(x+y, y+\log z) = 0$

2. $f(xy, y+\log z) = 0$

3. $f(x-y, y-\log z) = 0$

4. $f(x-y, y+\log z) = 0$

Question Number : 5 Question Id : 2203605525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of the convergence of the power series $\sum_{n=0}^{\infty}(3+4i)^n z^n$ is

Options :

1. 7

2. 5

3. $\frac{1}{5}$

4. $\frac{1}{7}$

Question Number : 6 Question Id : 2203605526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_C \frac{1}{z+3}dz$, where C: $|z| = 2$ is_____.

Options :

1. 0

2. $3\pi i$

3. $-\pi i$

4. $2\pi i$

Question Number : 7 Question Id : 2203605527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two bolts are drawn from a box containing 4 good bolts and 6 bad bolts then the probability that the second bolt is good if the first one is found to be bad is

Options :

1. $\frac{6}{10}$

2. $\frac{4}{9}$

3. $\frac{4}{15}$

4. $\frac{7}{9}$

Question Number : 8 Question Id : 2203605528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In normal distribution, the ratio of mean deviation and standard deviation is _____.

Options :

1. 1:5

2. 3:5

3. 4:5

4. 5:3

Question Number : 9 Question Id : 2203605529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let $\frac{dy}{dx} = x - y, y(0) = 0, h = 0.1$. By Euler's method the value of $y(0.1)$ is _____.

Options :

1. 0

2. 0.1

3. 0.01

4. 0.031

Question Number : 10 Question Id : 2203605530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following methods is not a step-by-step method?

Options :

1. Modified Euler's

2. Picard's

3. Adams Bashforth

4. Euler's

Question Number : 11 Question Id : 2203605531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The law which states that the line integral of the magnetic field around a closed surface is equal to the free current through a surface, is

Options :

1. Tellegen's Theroem

2. Gauss' law

3. Coulomb's law

4. Ampere's circuital law

Question Number : 12 Question Id : 2203605532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dual element value of a 6 ohms resistor is

Options :

1. 6 mhos

2. 1/6 ohms

3. 1/6 mhos

4. 6 ohms

Question Number : 13 Question Id : 2203605533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A heating element supplies 600 kilojoules in 50 minutes. If current through the element is 2 amperes, the potential difference across the element is

Options :

1. 1200 Volts

2. 300 Volts

3. 600 Volts

4. 100 Volts

Question Number : 14 Question Id : 2203605534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Closing a switch connects a 21 V source, a 3 ohms resistor and a 2.4 H inductor in series. What are the initial and final values of the currents in the circuit after closing the switch?

Options :

1. 7 A and 1A

2. 1A and 7A

3. 0A and 7A

4. 7A and 0A

Question Number : 15 Question Id : 2203605535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 3-phase balanced source having line voltage of 400 V, 50 Hz supplies a balanced 3-phase star connected load of 1.2 kW at leading power factor of 0.8. Then impedance of each phase of the load is

Options :

1. $106.6\angle -36.87^{\circ}\Omega$

2. $106.6\angle 36.87^{\circ}\Omega$

3. $184.7\angle 36.87^{\circ}\Omega$

4. $184.7\angle -36.87^{\circ}\Omega$

Question Number : 16 Question Id : 2203605536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two spheres of different radii are connected by a conducting wire. Each of the spheres has been given a charge of Q. Then

Options :

1. Larger sphere will have greater potential

2. Larger sphere will have smaller potential

3. Both spheres will have equal potential

4. The potentials will be inversely proportional to their radius

Question Number : 17 Question Id : 2203605537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An RLC circuit made of series connection of R = 15 ohm, X_L = 15 ohm and X_C = 15 ohm is connected across an AC supply of 150 V. The magnitude and phase angle (with reference to supply voltage) of the total voltage drop across the series combination of the inductor and capacitor are

Options :

1. 0 V, 0 degrees

2. 150 V, 90 degrees

3. 150 V, –90 degrees

4. 300 V, 0 degrees

Question Number : 18 Question Id : 2203605538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A battery consisting of series connections of 50 cells. Each cell has emf of 1 V and resistance of 0.01 ohm. This battery is delivering a load current of 40 A. Determine the total power output of the battery and its losses.

Options :

1. 1200 W, 800 W

2. 2000 W, 800 W

3. 2000 W, 1250 W

4. 1200 W, 400 W

Question Number : 19 Question Id : 2203605539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Thevenin's equivalent of a circuit operating at

$$\omega = 5 \text{ rad/s, has } V_{oc} = 3.71\angle -15.9^\circ \text{ V and } Z_o = 2.38 - j0.667\ \Omega.$$

At this frequency, the minimal realization of the Thevenin's impedance will have a

Options :

1. Resistor, a capacitor and an inductor

2. Resistor and a capacitor

3. Resistor and an inductor

4. Capacitor and an inductor

Question Number : 20 Question Id : 2203605540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A water boiler at home is switched on to the ac mains supplying power at 230 V/ 60 Hz. The frequency of instantaneous power consumed by the boiler is,

Options :

1. 0 Hz

2. 30 Hz

3. 60 Hz

4. 120 Hz

Question Number : 21 Question Id : 2203605541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a series RLC circuit, if C is increased, what happens to the resonant frequency?

Options :

1. Increases

2. Decreases

3. Remains the same

4. Can not be determined

Question Number : 22 Question Id : 2203605542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resistance of a copper wire is R ohms. The same wire is stretched to its double length. The new value of resistance is

Options :

1. R

2. R/2

3. 4R

4. 2R

Question Number : 23 Question Id : 2203605543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a circuit, the voltage and currents are given as (10 + j5) volts and (6 + j4) amps respectively. The reactive power in the circuit is

Options :

1. 70 Vars

2. 60 Vars

3. 10 Vars

4. –10 Vars

Question Number : 24 Question Id : 2203605544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

E_R, E_Y and E_B are the three phase voltages while E_{RY}, E_{YB} and E_{BR} are the line voltages of a balanced three phase star connected system having RYB phase sequence. The phase of E_B _____ E_{BR}.

Options :

1. lag by 30°

2. lead by 30°

3. have the same phase

4. have no definite phase relationship

Question Number : 25 Question Id : 2203605545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A DC voltage source is connected across a series R-L-C circuit. Under steady state conditions, the applied DC voltage drops entirely across the

Options :

1. R only

2. L only

3. C only

4. R and L combination

Question Number : 26 Question Id : 2203605546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An impulse of unity amplitude occurring at t = 0 signifies

Options :

1. area of the signal equal to one

2. amplitude of the signal equal to one

3. phase of the signal equal to one

4. area and phase of the signal equal to one

Question Number : 27 Question Id : 2203605547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The function of anti-aliasing filter is

Options :

1. to remove high frequency components

2. to remove both low and high frequency components

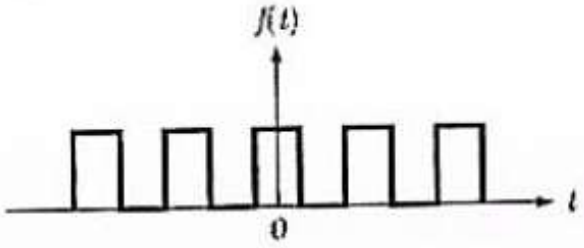
3. to allow both low and high frequency components

4. to remove low frequency components

Question Number : 28 Question Id : 2203605548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Fourier series expansion of the periodic signal

$f(t) = a_0 + \sum_{n=1}^{\infty} a_n \cos n\omega t + b_n \sin n\omega t$ shown in figure



will have the following non-zero coefficients:

Options :

1. a_0 and b_n, n = 1, 3, 5, …., ∞

2. a_0 and a_n, n = 1, 2, 3, …., ∞

3. a_0, a_n and b_n, n = 1, 2, 3,…., ∞

4. a_0 and a_n, n = 1, 3, 5, …., ∞

Question Number : 29 Question Id : 2203605549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Z-transform F(z) of $f(nT) = a^{nT}$ is

Options :

1. 100

2. 300

3. 500

4. 1500

Question Number : 30 Question Id : 2203605550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Fourier transform of a signum function is

Options :

1. jω

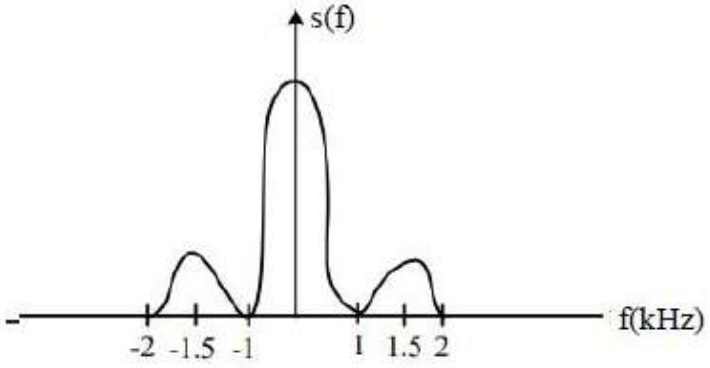
2. $1/j\omega$

3. $2j\omega$

4. $2/j\omega$

Question Number : 31 Question Id : 2203605551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A deterministic signal has the power spectrum given in the following figure. The minimum sampling rate needed to completely represent signal is



Options :

1. 1 kHz

2. 2 kHz

3. 3 kHz

4. 4 kHz

Question Number : 32 Question Id : 2203605552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The trigonometric Fourier series of a periodic function can have only

Options :

1. Cosine terms

2. Sine terms

3. Cosine and sine terms

4. dc and cosine terms

Question Number : 33 Question Id : 2203605553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Z-transform F(z) of $f(nT) = a^{nT}$ is

Options :

1. $\frac{z}{z - a^{T}}$

2. $\frac{z}{z + a^{T}}$

3. $\frac{z}{z - a^{-T}}$

4. $\frac{z}{z + a^{-T}}$

Question Number : 34 Question Id : 2203605554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of e^{-at} is

Options :

1. $\frac{1}{(s - a)}$

2. $\frac{1}{(s + a)}$

3. $\frac{e^{at}}{s}$

4. $\frac{1}{(s + a)^{2}}$

Question Number : 35 Question Id : 2203605555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inverse z-transform of $F[z]=\frac{z}{(z-0.2)}$ is

Options :

1. $(2)^k$

2. $(-2)^k$

3. $(0.2)^k$

4. $(-0.2)^k$

Question Number : 36 Question Id : 2203605556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the applied voltage to a DC shunt machine is 230 V, the back-emf of the machine, when delivering maximum power is _____.

Options :

1. 115 V

2. 200 V

3. 230 V

4. 460 V

Question Number : 37 Question Id : 2203605557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The applied voltage to a certain transformer is increased by 50% while the frequency is reduced to 50%. The maximum core flux density will

Options :

1. become three times

2. become 1.5 times

3. become 4 times

4. remain the same

Question Number : 38 Question Id : 2203605558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Slip rings of 3 phase, 4 pole, 50 Hz Induction motor are kept open circuited. Stator is energized with 40 Hz supply. What is the frequency of rotor induced emf?

Options :

1. Slip frequency

2. 50 Hz

3. 40 Hz

4. No emf generated

Question Number : 39 Question Id : 2203605559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At starting with DOL starter, current drawn by 220 V, 5 kW DC shunt motor with armature resistance 2 Ω is _____.

Options :

1. 110 A

2. 22.72 A

3. 220 A

4. 45.44 A

Question Number : 40 Question Id : 2203605560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a transformer is fed from a fundamental frequency voltage source, the source of harmonics is due to

Options :

1. iron loss

2. overloading

3. poor power factor of the load

4. saturation of the core

Question Number : 41 Question Id : 2203605561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At a slip of 3%, a 120 V, 3 phase, 50 Hz squirrel cage induction motor can be designed to run at maximum speed of _____.

Options :

1. 1455 rpm

2. 2820 rpm

3. 2910 rpm

4. 2955 rpm

Question Number : 42 Question Id : 2203605562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The thickness of the laminations in a transformer core are determined by

Options :

1. voltage ratings

2. current ratings

3. frequency

4. allowable temperature raise

Question Number : 43 Question Id : 2203605563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a desired feature for two-phase ac servo motor when compared to conventional ac induction motor?

Options :

1. Higher rotor resistance

2. Higher power rating

3. Higher inertia

4. Higher power rating and Inertia

Question Number : 44 Question Id : 2203605564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 200 V dc shunt motor running at 1000 rpm takes an armature current of 17.5 A. What is additional resistance to be added in the armature circuit to reduce the speed of the motor to 600 rpm with armature current remain at 17.5 A. Armature resistance of the motor is 0.4 Ω.

Options :

1. 4.4 Ω

2. 4.8 Ω

3. 1.6 Ω

4. 4.0 Ω

Question Number : 45 Question Id : 2203605565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an induction motor the rotor field runs with respect to the stator at

Options :

1. synchronous speed in the same direction as the stator field

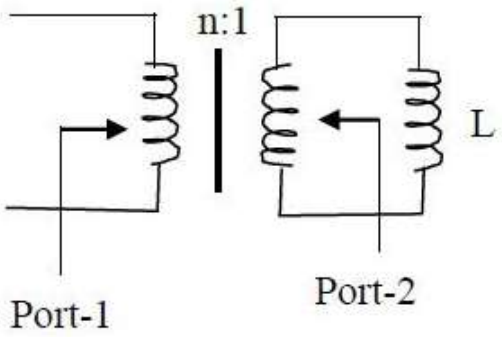
2. synchronous speed in the opposite direction as the stator field

3. slip speed in the same direction as the stator field

4. slip speed in the opposite direction as the stator field

Question Number : 46 Question Id : 2203605566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If an ideal transformer has an inductive load element at port 2 as shown in the figure below, the equivalent inductance at port 1 is



Options :

1. nL

2. n^2L

3. n/L

4. n^2/L

Question Number : 47 Question Id : 2203605567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A three phase, 4 pole alternator has 48 stator slots carrying the 3-phase distributed winding. When coil of the winding is short chorded by one slot pitch. The pitch factor is giving by

Options :

1. cos (7.5°)

2. 1/16 sin 7.5°

3. 1/16 cot 7.5°

4. 1/8 cot 7.5°

Question Number : 48 Question Id : 2203605568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a 50 kVA transformer, the iron losses are 400 W and full load copper losses are 600 W. Its full load efficiency at upf is

Options :

1. 95%

2. 96%

3. 97%

4. 98%

Question Number : 49 Question Id : 2203605569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 220 V dc machine has an armature resistance of 1 Ω. If the full load current is 20 A, the difference in the induced voltages when the machine is running as a motor, and as a generator is

Options :

1. 20 V

2. zero

3. 40 V

4. 50 V

Question Number : 50 Question Id : 2203605570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

To have spark less commutation, the armature reaction effect in a dc machine is neutralized by

Options :

1. Using compensating winding and commutating poles

2. Shifting the brush axis to the magnetic neutral axis

3. Fixing the brush axis in line with the pole axis

4. Increasing the field excitation

Question Number : 51 Question Id : 2203605571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The relation between sending and receiving end voltages and currents for short transmission lines can be written as

Options :

1. $\begin{bmatrix} V_s \\ I_s \end{bmatrix} = \begin{bmatrix} 1 & Z \\ 0 & 1 \end{bmatrix} \begin{bmatrix} V_R \\ I_R \end{bmatrix}$

2. $\begin{bmatrix} V_s \\ I_s \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & Z \end{bmatrix} \begin{bmatrix} V_R \\ I_R \end{bmatrix}$

3. $\begin{bmatrix} V_s \\ I_s \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 0 & Z \end{bmatrix} \begin{bmatrix} V_R \\ I_R \end{bmatrix}$

4. $\begin{bmatrix} V_s \\ I_s \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix} \begin{bmatrix} V_R \\ I_R \end{bmatrix}$

Question Number : 52 Question Id : 2203605572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following materials is used as a moderator in nuclear power stations?

Options :

1. Graphite

2. Boron

3. Sodium potassium liquid

4. Plutonium

Question Number : 53 Question Id : 2203605573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Y-bus matrix of a 100-bus interconnected system is 90% sparse. Hence the number of transmission lines in the system will be

Options :

1. 1000

2. 500

3. 450

4. 900

Question Number : 54 Question Id : 2203605574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A transmission line has a pu reactance of 30%. If the working voltage is now increased to 110% of its original voltage (the MVA rating of the line remaining the same), the pu reactance of the line will now be

Options :

1. 33%

2. 36.3%

3. 24.8%

4. 27%

Question Number : 55 Question Id : 2203605575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 50MVA, 10kV, 50Hz, star-connected, unloaded three-phase alternator has a synchronous reactance of 1 pu and a sub-transient reactance of 0.2 pu. If a 3-phase short circuit occurs close to the generator terminals, the ratio of initial and final values of the sinusoidal component of the short circuit current is

Options :

1. 6

2. 5

3. 4

4. 7

Question Number : 56 Question Id : 2203605576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A synchronous generator is synchronised to the grid and operating under normal conditions. Suddenly due to a fault its excitation winding is open circuited. What happens then?

Options :

1. it begins operating as an induction generator

2. the stator currents increase to high value

3. the stator voltages drop and it gradually stops

4. the speed becomes enormously high resulting in damage of the rotor

Question Number : 57 Question Id : 2203605577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The selection of size of conductors for a distributor in a distribution system is governed by

Options :

1. Corona loss

2. Temperature rise

3. Radio Interference

4. Voltage drop

Question Number : 58 Question Id : 2203605578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rate of rise of restriking voltage depends on

Options :

1. the type of circuit breaker

2. the inductance of the system only

3. the capacitance of the system only

4. the inductance and capacitance of the system

Question Number : 59 Question Id : 2203605579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 50 Hz, four-pole turbo alternator rated at 20 MVA, 13.2 kV has an inertia constant H = 4 kW sec/kVA. The K.E. stored in the rotor at synchronous speed is

Options :

1. 40 kilo joules

2. 80 megajoules

3. 40 megajoules

4. 20 megajoules

Question Number : 60 Question Id : 2203605580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Demand factor is

Options :

1. $\frac{\text{maximum demand}}{\text{connected load}}$

2. maximum demand × connected load

3. $\frac{(\text{maximum demand})^2}{\text{connected load}}$

4. $\frac{(\text{maximum demand})^2}{(\text{connected load})^2}$

Question Number : 61 Question Id : 2203605581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The phase A of a 3-phase system feeding a delta connected load gets open circuited. Currents in B and C phases are 'I' and '-I'. The zero sequence current is

Options :

1. I

2. –0.58 I

3. 0.58 I

4. zero

Question Number : 62 Question Id : 2203605582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A power station supplies peak loads of 20 MW, 40 MW and 50 MW in three different load centers. The annual plant load factor is 0.6 and the diversity factor is 1.6. The maximum demand and the average demands on the station, respectively are

Options :

1. 176 MW, 114.6 MW

2. 110 MW, 35.2 MW

3. 68.75 MW, 41.25 MW

4. 110 MW, 41.25 MW

Question Number : 63 Question Id : 2203605583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A power system consists of 10 buses, one Slack bus, three P-V buses and six load buses. Number of equations required to solve Load Flow using Newton-Raphson method (Polar form)

Options :

1. 10

2. 15

3. 20

4. 25

Question Number : 64 Question Id : 2203605584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Load Flow analysis is carried out for

Options :

1. Fault calculations

2. Stability calculations

3. System planning

4. Load frequency control

Question Number : 65 Question Id : 2203605585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As frequency is increased, the skin effect

Options :

1. Decreases

2. Increases

3. Remains the same

4. May decrease or increase

Question Number : 66 Question Id : 2203605586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The open loop transfer function of a unity feedback control system is given as $G(S) = \frac{as+1}{s^2}$. The value of 'a' to give a phase margin of 45° is equal to

Options :

1. 0.141

2. 0.441

3. 0.841

4. 1.141

Question Number : 67 Question Id : 2203605587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

With a negative feedback, the system gain and stability

Options :

1. decreases, increases respectively

2. increases, decreases respectively

3. increases, increases respectively

4. decreases, decreases respectively

Question Number : 68 Question Id : 2203605588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The closed loop transfer function of a control system is given by $\frac{C(s)}{R(s)} = \frac{2(s-1)}{(s+2)(s+1)}$. For a unit step input the output is

Options :

1. $-3e^{-2t} + 4e^{-t} - 1$

2. $-3e^{-2t} - 4e^{-t} + 1$

3. zero

4. infinity

Question Number : 69 Question Id : 2203605589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Effect of increase in proportional gain on the system response is to

Options :

1. Increase rise time

2. Decrease overshoot

3. Decrease rise time and increase overshot

4. Increase steady state error

Question Number : 70 Question Id : 2203605590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following controllers adds a pole at origin?

Options :

1. Integral controller

2. Differential controller

3. Proportional controller

4. Differential and integral controllers

Question Number : 71 Question Id : 2203605591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Signal flow graph is to find

Options :

1. Stability of the system

2. Controllability of the system

3. Transfer function of the system

4. Poles of the system

Question Number : 72 Question Id : 2203605592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider the following statements regarding ac servomotor:

i) The torque – speed curve has negative slope.

ii) It is sensitive to noise.

iii) The rotor has high resistance and low inertia

iv) It has slow acceleration

Which of these statements are correct?

Options :

1. (i) and (ii)

2. (ii) and (iii)

3. (i) and (iii)

4. (ii) and (iv)

Question Number : 73 Question Id : 2203605593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The input-output relationship of a linear system is given by

Options :

1. $y = a_0x^2 + a_1x + a_0$

2. $y = a_1x + a_0$

3. $y = a_1x$

4. $y = a_0$

Question Number : 74 Question Id : 2203605594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\phi(t)$ is the state transition matrix, then which of the following is correct

Options :

1. $\Phi(0) = 1$

2. $\Phi - 1(t) = \Phi(+ t)$

3. $[\Phi(t)]K = \Phi(t/K)$

4. $\Phi(1) = 0$

Question Number : 75 Question Id : 2203605595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Breakaway points of root locus may be,

Options :

1. real or complex

2. real only

3. complex only

4. zero

Question Number : 76 Question Id : 2203605596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Bode magnitude plot is drawn between

Options :

1. db and $\log_e \omega$

2. db and ω

3. db and $\log_{10} \omega$

4. db and frequency

Question Number : 77 Question Id : 2203605597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following represents the transfer function of a first order low pass filter

Options :

1. $1/(10s + 1)$

2. $1/(10s + 1)^2$

3. $(10s + 1)/s$

4. $s/(10s + 1)$

Question Number : 78 Question Id : 2203605598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resonant frequency is the frequency at which

Options :

1. Phase is maximum

2. Gain is maximum

3. Response settles

4. Upper limit of bandwidth

Question Number : 79 Question Id : 2203605599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a feedback control system of type-2, the steady state error for a ramp input is

Options :

1. Infinite

2. Constant

3. Zero

4. Indeterminate

Question Number : 80 Question Id : 2203605600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum phase shift that can be provided by a lead compensator with transfer function $G(s) = \frac{1+6s}{1+2s}$ is

Options :

1. 15°

2. 60°

3. 45°

4. 30°

Question Number : 81 Question Id : 2203605601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two ammeters, one with full scale current of 1 mA and internal resistance of 100 ohms, and the other a full scale current of 10 mA and internal resistance of 25 ohms, are connected in parallel. What is the total current these two meters can carry without any meter reading out of the scale?

Options :

1. 1 mA

2. 10 mA

3. 11 mA

4. 5 mA

Question Number : 82 Question Id : 2203605602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The current I through a resistance R is measured with uncertainties I = 4A ±0.5%, R = 100 Ω ±0.2%. The uncertainty in measurement of power is

Options :

1. 1600 W ± 0.01%

2. 1600 W ± 0.02%

3. 1600 W ± 0.05%

4. 1600 W ± 1.2%

Question Number : 83 Question Id : 2203605603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A (0-50A) moving coil ammeter has a voltage drop of 0.1 V across its terminals at full scale deflection. The external shunt resistance (in milliohms) needed to extend its range to (0-500A) is

Options :

1. 0.15

2. 0.22

3. 0.33

4. 0.44

Question Number : 84 Question Id : 2203605604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A thermometer reads 95.45°C and the static correction given in the correction curve is 0.08°C. What is the true value of the temperature?

Options :

1. 95.45°C

2. 95.53°C

3. 95.49°C

4. 95.37°C

Question Number : 85 Question Id : 2203605605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A transfer instrument employed in the standardization of a polar type ac potentiometer is

Options :

1. An electrostatic instrument

2. A thermal instrument

3. An electro-dynamometer instrument

4. A moving coil instrument

Question Number : 86 Question Id : 2203605606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An energy meter having a meter constant of 1200 rev/kWh and it is found to make 5 revolutions in 75 seconds, the load power is

Options :

1. 500 W

2. 2,000 W

3. 5,000 W

4. 200 W

Question Number : 87 Question Id : 2203605607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The deflection sensitivity of a CRT is 0.05 mm/V and an unknown voltage applied to the horizontal deflection plates shifts the spot by 5 mm towards the right in the horizontal direction. The unknown voltage is

Options :

1. 50 Volts

2. 100 Volts

3. 150 Volts

4. 200 Volts

Question Number : 88 Question Id : 2203605608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The meter suitable for only direct current measurements is

Options :

1. moving iron type

2. permanent magnet moving coil type

3. electro dynamic type

4. hot-wire type

Question Number : 89 Question Id : 2203605609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following instruments indicate the instantaneous value of the electrical quantity being measured at the time at which it is being measured?

Options :

1. Absolute instruments

2. Indicating instruments

3. Recording instruments

4. Integrating instruments

Question Number : 90 Question Id : 2203605610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A phase shifting transformer is used in conjunction with

Options :

1. D.C. potentiometer

2. Drysdale potentiometer

3. A.C. co-ordinate potentiometer

4. Crompton potentiometer

Question Number : 91 Question Id : 2203605611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A microprocessor with 12 address lines is capable of addressing

Options :

1. 1024 locations

2. 2048 locations

3. 4096 locations

4. 8192 locations

Question Number : 92 Question Id : 2203605612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An operational amplifier has a unity gain bandwidth of 10 MHz. If the closed loop bandwidth is 1 MHz, then the gain of the closed loop amplifier is

Options :

1. 100

2. 10

3. 1000

4. 50

Question Number : 93 Question Id : 2203605613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of these power semiconductor devices has highest switching speed?

Options :

1. IGBT

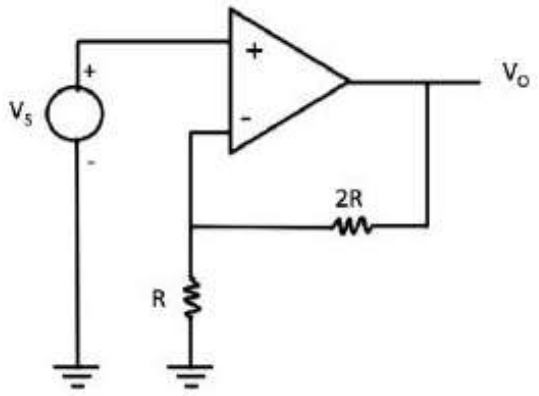
2. MOSFET

3. SCR

4. IGCT

Question Number : 94 Question Id : 2203605614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the OP AMP circuit shown, the output voltage V_O is



Options :

1. $2V_s$

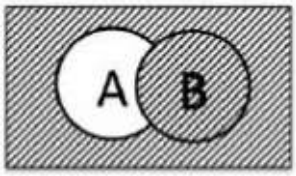
2. $-2V_s$

3. $3V_s$

4. $-3V_s$

Question Number : 95 Question Id : 2203605615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The shaded area in the venn diagram can be represented with a boolean expression as



Options :

1. $\overline{A} + B$

2. $A\,\overline{B}$

3. $A + \overline{B}$

4. $\overline{A}\,B$

Question Number : 96 Question Id : 2203605616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is not a vectored interrupt?

Options :

1. TRAP

2. INTR

3. RST7.5

4. RST6.5

Question Number : 97 Question Id : 2203605617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The contents of the accumulator in an 8085 microprocessor is altered after the execution of the instruction

Options :

1. CMP C

2. CPI 3A

3. ORA A

4. ANI 5C

Question Number : 98 Question Id : 2203605618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which flip-flop follows its data input in the next state?

Options :

1. T

2. D

3. RS

4. JK

Question Number : 99 Question Id : 2203605619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

By placing an inverter between both inputs of S-R flip-flop, the resulting flip-flop becomes

Options :

1. J-K flip-flop

2. D flip-flop

3. T flip-flop

4. Master slave J-K flip-flop

Question Number : 100 Question Id : 2203605620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

While a program is being executed in an Intel 8085 microprocessor, the program counter of the microprocessor contains

Options :

1. The memory address of the instruction that is being currently executed

2. The memory address of the instruction that is to be executed next

3. The number of instructions that have already been executed

4. The total number of instructions in the current program still to be executed

Question Number : 101 Question Id : 2203605621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The majority charge carriers in an N-type semiconductor are

Options :

1. Holes

2. Electrons

3. Neutrons

4. no charge carriers

Question Number : 102 Question Id : 2203605622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Quality factor of a band pass filter depends

Options :

1. on the critical frequency

2. only on bandwidth

3. only on center frequency

4. on the center frequency and bandwidth

Question Number : 103 Question Id : 2203605623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An oscillator whose frequency is changed by a variable dc voltage is known as

Options :

1. crystal oscillator

2. VCO

3. phase shift oscillator

4. Wien bridge oscillator

Question Number : 104 Question Id : 2203605624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

8259 is a

Options :

1. Programmable Peripheral Interface

2. DMA Controller

3. Programmable Interrupt Controller

4. Programmable Interval Timer

Question Number : 105 Question Id : 2203605625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A SCHOTTKY diode is a

Options :

1. majority carrier device

2. minority carrier device

3. fast recovery diode

4. infrared light emitting diode

Question Number : 106 Question Id : 2203605626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A single phase half wave controlled rectifier has 200 sin 314 t as the input voltage and R as the load. For the firing angle of 60 degrees for the SCR, the average output voltage is

Options :

1. $200/\pi$ V

2. $150/\pi$ V

3. $120/\pi$ V

4. $100/\pi$ V

Question Number : 107 Question Id : 2203605627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a 3-phase controlled bridge rectifier, with an increase of overlap angle, the output dc voltage

Options :

1. Decrease

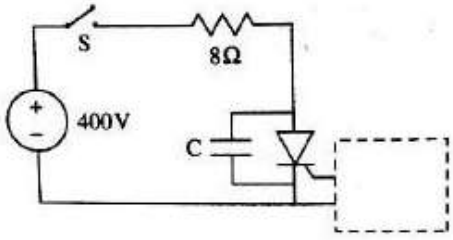
2. Increase

3. Does not change

4. Depends upon load inductance

Question Number : 108 Question Id : 2203605628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dv/dt rating of the thyristor in the circuit shown is 100 V/μs. Determine the minimum value of the capacitance C necessary so that no erratic turn ON due to dv/dt will occur when the power is turned ON by closing the switch S.



Options :

1. $1\ \mu F$

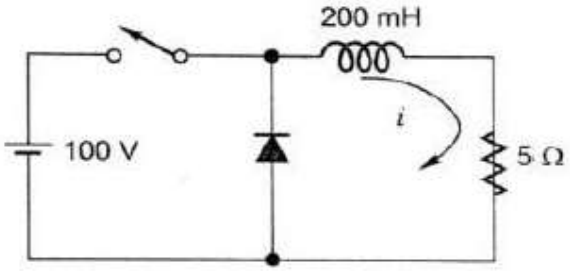
2. $0.5\ \mu F$

3. $0.25\ \mu F$

4. $2\ \mu F$

Question Number : 109 Question Id : 2203605629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the figure, a step-down chopper switched at 1 kHz with a duty ratio D = 0.5. The peak-peak ripple in the load current is close to



Options :

1. 10 A

2. 0.5 A

3. 0.125 A

4. 0.25 A

Question Number : 110 Question Id : 2203605630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a single phase full converter, if the load current is I and ripple free, then average and rms values of thyristor current are

Options :

1. $\frac{I}{2}, \frac{I}{\sqrt{2}}$

2. $\frac{I}{3}, \frac{I}{\sqrt{3}}$

3. $\frac{I}{4}, \frac{I}{2}$

4. $I, \frac{I}{\sqrt{2}}$

Question Number : 111 Question Id : 2203605631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The controlling parameter in IGBT is

Options :

1. I_G

2. V_{GE}

3. I_C

4. V_{CE}

Question Number : 112 Question Id : 2203605632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A step-up chopper has V_s as the source voltage and $\propto$ as the duty cycle. The output voltage for this chopper is

Options :

1. $V_s(1+\propto)$

2. $V_s/(1+\propto)$

3. $V_s(1-\propto)$

4. $V_s/(1-\propto)$

Question Number : 113 Question Id : 2203605633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a line commutated converter operates in the inverter mode

Options :

1. it draws both reactive and real power from the AC supply

2. it delivers both reactive and real power to the AC supply

3. it delivers real power to the AC supply

4. it draws reactive power from the AC supply

Question Number : 114 Question Id : 2203605634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In single pulse modulation of PWM inverters, the pulse width is 120°. For an input voltage of 220V DC, the rms value of the output voltage is

Options :

1. 179.63 V

2. 254.04 V

3. 127.02 V

4. 185.04 V

Question Number : 115 Question Id : 2203605635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A three-phase diode bridge rectifier is feeding a constant DC current of 100 A to a highly inductive load. If three-phase, 415 V, 50 Hz AC source is supplying to this bridge rectifier then the rms value of the current in each diode, in ampere, is

Options :

1. 47.73

2. 37.73

3. 57.73

4. 67.73

Question Number : 116 Question Id : 2203605636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the unit for specific energy consumption of a traction system?

Options :

1. watt-km per tonne-hour

2. watt-hour per tonne-km

3. watt-hour-tonne per km

4. watt-hr-km per tonne

Question Number : 117 Question Id : 2203605637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In traction, output of the driving axles is not used for

Options :

1. Coasting of the train

2. Accelerating the train

3. Overcoming the gradient

4. Overcoming the train resistance

Question Number : 118 Question Id : 2203605638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a sub-urban service compared to urban service

Options :

1. the coasting period is smaller but free running period is longer

2. the coasting period is longer

3. coasting periods is smaller

4. free running period is longer

Question Number : 119 Question Id : 2203605639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific energy consumption is minimum in

Options :

1. main line service

2. sub-urban service

3. urban service

4. equal for all services

Question Number : 120 Question Id : 2203605640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Longer coasting period of a train results in

Options :

1. higher schedule speed

2. lower specific energy consumption

3. higher retardation

4. higher acceleration