

Telangana State Council Higher Education

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Question Paper Name :	Electrical Engineering 24th Sept 2020 Shift 2
Subject Name :	Electrical Engineering
Creation Date :	2020-09-24 17:57:42
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console? :	Yes

Electrical Engineering

Group Number :	1
Group Id :	88039697
Group Maximum Duration :	0

Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120
Is this Group for Examiner? :	No

Mathematics

Section Id :	880396177
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	880396177
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 88039611521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An eigen value of $\begin{pmatrix} -2 & 2 & 1 \\ -2 & 0 & 5 \\ -1 & 2 & 1 \end{pmatrix}$ among the following is

Options :

88039646081. ✖ - 4

88039646082. ✘ - 3

88039646083. ✔ - 2

88039646084. ✘ - 1

Question Number : 2 Question Id : 88039611522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$A = \begin{pmatrix} -4 & 2 & 6 \\ -2 & 0 & 5 \\ -2 & 2 & 1 \end{pmatrix} \Rightarrow A^3 + 3A^2 =$$

Options :

88039646085. ✘ - A

88039646086. ✘ A

88039646087. ✔ - 2A

88039646088. ✘ 2A

Question Number : 3 Question Id : 88039611523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Maximum of $5 + 3x - 4y - x^2y + xy - y^2$ subject to $x + y = 1$ is

Options :

88039646089. ✓ $\frac{25}{3}$

88039646090. ✗ $\frac{25}{6}$

88039646091. ✗ $\frac{25}{7}$

88039646092. ✗ $\frac{25}{4}$

Question Number : 4 Question Id : 88039611524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Volume (in cubic units) of the solid of revolution of $y = 2x^2$ and $y = 2x$, $0 < x < 1$ about the y - axis is

Options :

88039646093. ✗ $\frac{\pi}{2}$

88039646094. ✓ $\frac{\pi}{3}$

88039646095. ✗ $\frac{\pi}{4}$

88039646096. ✘ $\frac{\pi}{5}$

Question Number : 5 Question Id : 88039611525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Laplace transform of the function $f(t) = t^2 \sin t$ is

Options :

88039646097. ✔ $\frac{6s^2 - 2}{(s^2 + 1)^3}$

88039646098. ✘ $\frac{6s^2 + 2}{(s^2 + 1)^3}$

88039646099. ✘ $\frac{6s^2 - 2}{(s^2 - 1)^3}$

88039646100. ✘ $\frac{6s^2 + 2}{(s^2 - 1)^2}$

Question Number : 6 Question Id : 88039611526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The solution of $4y'' + y = 0$ satisfying $y(0) = y'(0) = 1$ is

Options :

88039646101. ✘ $y(x) = \cos \frac{x}{2} - \sin \frac{x}{2}$

88039646102. ✘ $y(x) = \cos \frac{x}{2} + \sin \frac{x}{2}$

88039646103. ✘ $y(x) = \cos \frac{x}{2} + 4 \sin \frac{x}{2}$

88039646104. ✔ $y(x) = \cos \frac{x}{2} + 2 \sin \frac{x}{2}$

Question Number : 7 Question Id : 88039611527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $y = a \cos(\log x) + b \sin(\log x)$, then $x^2 y'' + xy' =$

Options :

88039646105. ✘ y

88039646106. ✔ $-y$

88039646107. ✘ $2y$

88039646108. ✘ $-2y$

Question Number : 8 Question Id : 88039611528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A critical point (x_0, y_0) of the function $f(x) = x$ is selected at random. Then the probability that $f(x)$ is extremum at (x_0, y_0) is

Options :

88039646109. ✘ $\frac{1}{2}$

88039646110. ✘ $\frac{1}{3}$

88039646111. ✘ $\frac{2}{3}$

88039646112. ✔ 0

Question Number : 9 Question Id : 88039611529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Let S be the set of all five digit numbers formed by the digits 1, 2, 3, 4 and 5 with no digit repeated. Then the probability that the number is a multiple of 4 is

Options :

88039646113. ✘ $\frac{1}{4}$

88039646114. ✘ $\frac{2}{5}$

88039646115. ✘ $\frac{1}{6}$

88039646116. ✔ $\frac{1}{5}$

Question Number : 10 Question Id : 88039611530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Residue of $f(z) = \frac{1}{(z^2 + 1)^3}$ at $z = i$ is

Options :

88039646117. ✘ $\frac{3i}{16}$

88039646118. ✔ $\frac{-3i}{16}$

88039646119. ✘ $\frac{-3i}{8}$

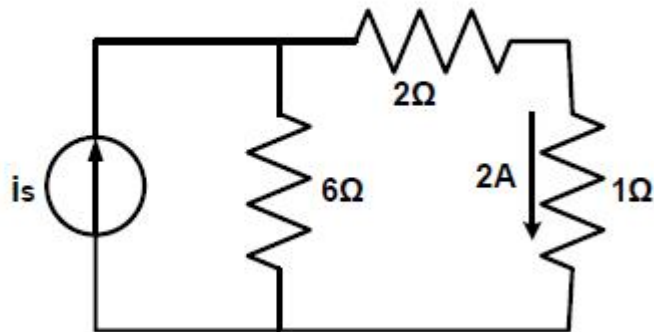
88039646120. ✘ $\frac{3i}{8}$

Electrical Engineering

Section Id :	880396178
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	880396178
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 88039611531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the following circuit, the value of i_s is



Options :

88039646121. ✓ 3 A

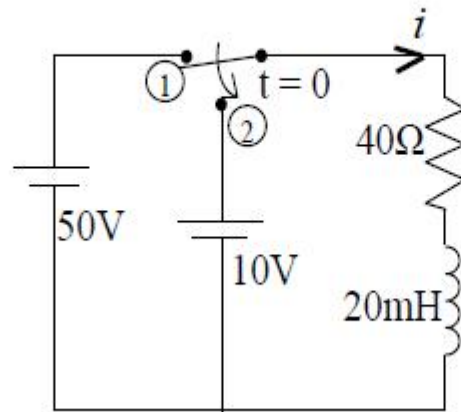
88039646122. ✘ 6 A

88039646123. ✘ 4 A

88039646124. ✘ 2 A

Question Number : 12 Question Id : 88039611532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The switch in the figure has been in position 1 initially for a long time, and finally it is moved to position 2 at $t = 0$. The initial and final values of the current i are respectively



Options :

88039646125. ✔ 1.25A & 0.25A

88039646126. ✘ 0.5A & 1.25A

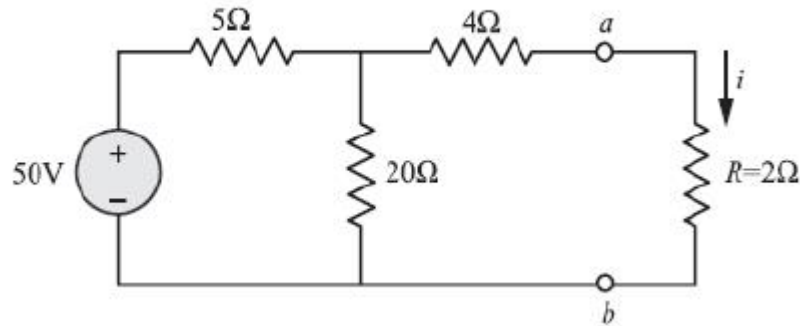
88039646127. ✘ 0.25A & 1.25A

88039646128. ✘ 0.8A & 1.65A

Question Number : 13 Question Id : 88039611533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Using Thevenin's theorem, the current i through $R = 2 \Omega$ is



Options :

88039646129. ✘ 20A

88039646130. ✘ 10A

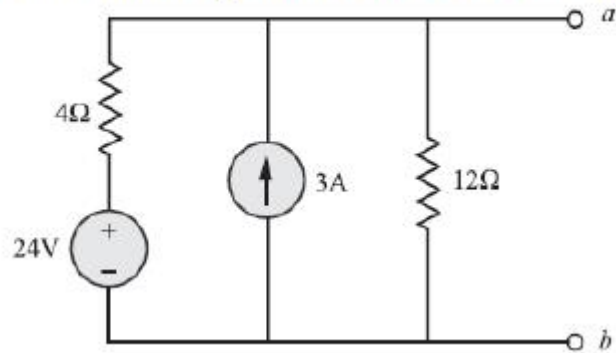
88039646131. ✔ 4A

88039646132. ✘ 1A

Question Number : 14 Question Id : 88039611534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The short circuit current i_{sc} across the terminals a-b is



Options :

88039646133. ✘ 18A

88039646134. ✔ 9A

88039646135. ✘ 6A

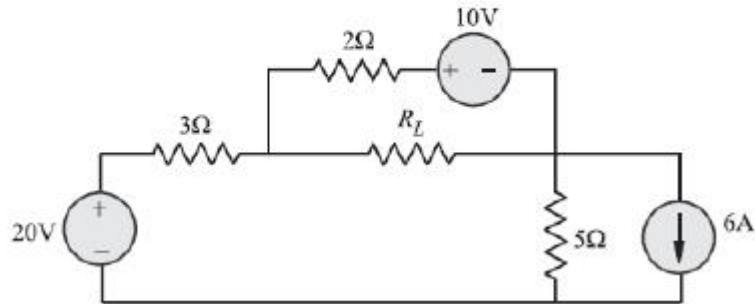
88039646136. ✘ 3A

Question Number : 15 Question Id : 88039611535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of R_L for maximum power transfer is



Options :

88039646137. ✓ 1.6 Ω

88039646138. ✗ 2.4 Ω

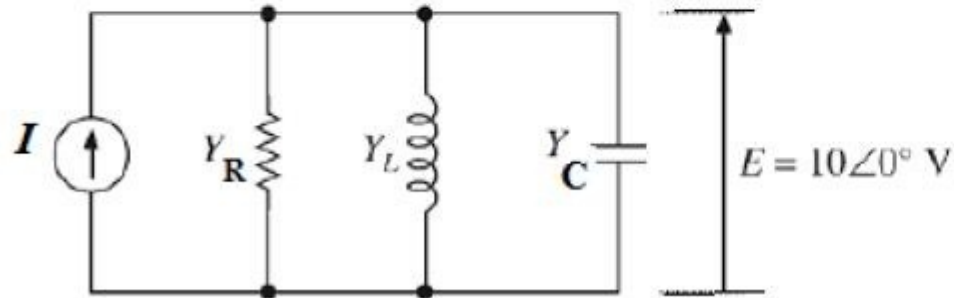
88039646139. ✗ 4.5 Ω

88039646140. ✗ 6.5 Ω

Question Number : 16 Question Id : 88039611536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In below figure, the admittance values in Siemens are $Y_R=0.5 + j0$; $Y_L=0 - j1.5$ and $Y_C= 0 + j0.3$ respectively. If the voltage E across the elements is $10\angle 0^\circ$ V, the value of I (in A) as a phasor is



Options :

88039646141. ✘ $1.5 + j0.5$

88039646142. ✘ $5 - j18$

88039646143. ✘ $0.5 + j1.8$

88039646144. ✔ $5 - j12$

Question Number : 17 Question Id : 88039611537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Thevenin equivalent of a circuit operating at $\omega = 5$ rad/s, has $V_{oc} = 3.71\angle -15.9^\circ$ V and $Z_o = 2.38 - j0.667 \Omega$. At this frequency the minimal realization of the Thevenin's impedance will have

Options :

88039646145. ✘ Resistor, capacitor and inductor

88039646146. ✓ Resistor and capacitor

88039646147. ✗ Resistor and inductor

88039646148. ✗ Capacitor and inductor

Question Number : 18 Question Id : 88039611538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The voltage applied to a circuit is $100\sqrt{2} [\cos(100\pi t)]$ V and the circuit draws a current of $10\sqrt{2} [\sin(100\pi t + (\pi/4))]$ A. Taking the voltage as the reference phasor, the phasor representation of the current in amperes is

Options :

88039646149. ✗ $10\sqrt{2} \angle -\pi/4$

88039646150. ✓ $10 \angle -\pi/4$

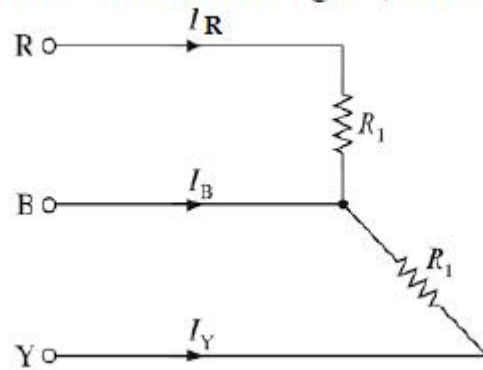
88039646151. ✗ $10 \angle +\pi/4$

88039646152. ✗ $10\sqrt{2} \angle +\pi/4$

Question Number : 19 Question Id : 88039611539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the three phase circuit shown in figure, the ratio of the currents $I_R : I_Y : I_B$ is



Options :

88039646153. ✓ 1:1: $\sqrt{3}$

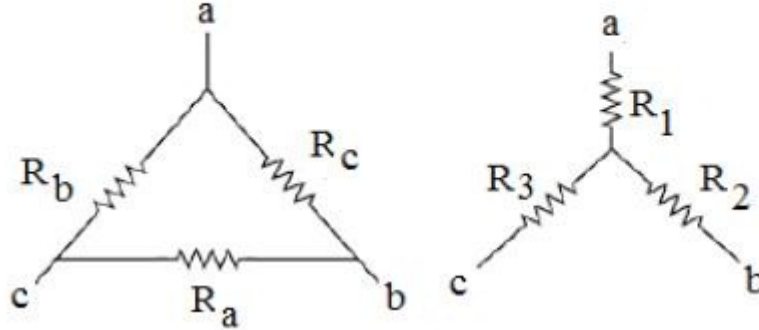
88039646154. ✗ 1:1:2

88039646155. ✗ 1:1:0

88039646156. ✗ 1:1: $\sqrt{\frac{3}{2}}$

Question Number : 20 Question Id : 88039611540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In below figure, R_a , R_b and R_c are $20\ \Omega$, $10\ \Omega$ and $10\ \Omega$ respectively. The resistance R_1 , R_2 and R_3 in Ω of an equivalent star-connection are respectively



Options :

88039646157. ✓ 2.5, 5, 5

88039646158. ✗ 5, 2.5, 5

88039646159. ✗ 5, 5, 2.5

88039646160. ✗ 2.5, 5, 2.5

Question Number : 21 Question Id : 88039611541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The energy stored in a capacitor over a complete cycle, when excited by an ac source is

Options :

88039646161. ✗ the same as that due to a dc source of equivalent magnitude

88039646162. ✗ half of that due to a dc source of equivalent magnitude

88039646163. ✓ zero

88039646164. ✘ infinity

Question Number : 22 Question Id : 88039611542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A series RLC circuit has the following parameters: $R = 10 \Omega$, $L = 0.01 \text{ H}$ and $C = 100 \text{ mF}$. The quality factor of the circuit at resonance is

Options :

88039646165. ✘ 32

88039646166. ✘ 3.2

88039646167. ✔ 0.032

88039646168. ✘ 0.016

Question Number : 23 Question Id : 88039611543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Three concentric spheres of radii 4 cm, 6 cm and 8 cm have charges of $8 \times 10^{-12} \text{ C}$, $-6 \times 10^{-12} \text{ C}$ and $4 \times 10^{-12} \text{ C}$ respectively. The potential (in V) and electric field (in N/C) at a point 2 cm from its centre are respectively

Options :

88039646169. ✘ zero & 1.35

88039646170. ✔ 1.35 & zero

88039646171. ✘ 28.88 & 0.99

88039646172. ✘ 0.99 & 28.88

Question Number : 24 Question Id : 88039611544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A parallel plate capacitor has plates 0.15 mm apart and dielectric with relative permittivity of 3. The voltage between the plates if the surface charge is $5 \times 10^{-4} \mu\text{C}/\text{cm}^2$ is

Options :

88039646173. ✘ 0.87 V

88039646174. ✘ 1.21 V

88039646175. ✔ 2.82 V

88039646176. ✘ 5.46 V

Question Number : 25 Question Id : 88039611545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 300 V voltmeter has an error of $\pm 2\%$ of full scale deflection. If true voltage is 30 V, then the range of readings is

Options :

88039646177. ✘ 20 V to 30 V

88039646178. ✓ 24 V to 36 V

88039646179. ✗ 29.4 V to 30.6 V

88039646180. ✗ 40 V to 46 V

Question Number : 26 Question Id : 88039611546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Maxwell's inductance-capacitance bridge is used for the measurement of inductance of

Options :

88039646181. ✗ Low Q-coils

88039646182. ✓ Medium Q-coils

88039646183. ✗ High Q-coils

88039646184. ✗ Low and medium Q-coils

Question Number : 27 Question Id : 88039611547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A moving coil instrument has a resistance of 0.6Ω and a full scale deflection of 0.1A .
The resistance value of the shunt to convert it to an ammeter of $0\text{-}15\text{ A}$ range is

Options :

88039646185. ✓ 0.004Ω

88039646186. ✘ 0.006 Ω

88039646187. ✘ 0.003 Ω

88039646188. ✘ 0.01 Ω

Question Number : 28 Question Id : 88039611548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two 100 V full scale PMMC type voltmeters having figure of merits (FOM) of 10 k Ω /V and 20 k Ω /V are connected in series. The series combination can be used to measure a maximum dc voltage of

Options :

88039646189. ✘ 200 V

88039646190. ✘ 100 V

88039646191. ✘ 300 V

88039646192. ✔ 150 V

Question Number : 29 Question Id : 88039611549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum number of wattmeter(s) required to measure 3 phase, 3-wire balanced or unbalanced power is

Options :

88039646193. ✘ four

88039646194. ✘ three

88039646195. ✔ two

88039646196. ✘ one

Question Number : 30 Question Id : 88039611550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The X and Y inputs of a CRO are respectively $V(\sin\omega t)$ and $-V(\sin\omega t)$. The resulting Lissajous pattern will be

Options :

88039646197. ✔ A straight line

88039646198. ✘ A circle

88039646199. ✘ An ellipse

88039646200. ✘ A figure of eight

Question Number : 31 Question Id : 88039611551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A potentiometer is basically

Options :

88039646201. ✘ A deflection type instrument

88039646202. ✔ A null type instrument

88039646203. ✘ Deflection as well as null type instrument

88039646204. ✘ A digital instrument

Question Number : 32 Question Id : 88039611552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a moving iron instrument, the deflecting torque is proportional to

Options :

88039646205. ✘ Inductance of the instrument

88039646206. ✘ First derivative of inductance with respect to time

88039646207. ✔ First derivative of inductance with respect to deflection

88039646208. ✘ Second derivative of inductance with respect to time

Question Number : 33 Question Id : 88039611553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The controlling torque in single phase power factor meter is provided by

Options :

88039646209. ✘ Gravity control
88039646210. ✘ Spring control
88039646211. ✘ Stiffness of suspension
88039646212. ✔ No controlling device

Question Number : 34 Question Id : 88039611554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The electrostatic deflection of electron in deflecting plates of a CRO is

Options :

88039646213. ✘ A hyperbola
88039646214. ✔ A parabola
88039646215. ✘ A straight line
88039646216. ✘ An ellipse

Question Number : 35 Question Id : 88039611555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Dynamometer type moving coil instrument can be used to power in

Options :

88039646217. ✘ ac circuits (sinusoidal) only

88039646218. ✘ dc circuits only

88039646219. ✔ both ac and dc circuits

88039646220. ✘ ac circuits (non-sinusoidal) only

Question Number : 36 Question Id : 88039611556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Relative permittivity of a dielectric material can be measured by

Options :

88039646221. ✘ Wein's bridge

88039646222. ✘ Anderson's bridge

88039646223. ✔ Schering's bridge

88039646224. ✘ Maxwell's bridge

Question Number : 37 Question Id : 88039611557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A bus is running at a constant speed of 50 km/h. Which of the following is the feedback element for the driver?

Options :

88039646225. ✘ Clutch

88039646226. ✘ Eyes

88039646227. ✔ Needle of the speedometer

88039646228. ✘ Steering wheel

Question Number : 38 Question Id : 88039611558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Despite the presence of negative feedback, control systems still have problems of instability because the

Options :

88039646229. ✔ Components used have non-linearity

88039646230. ✘ Dynamic equations of the subsystems are not known exactly

88039646231. ✘ Mathematical analysis involves approximations

88039646232. ✘ System has large negative phase angle at high frequencies

Question Number : 39 Question Id : 88039611559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The capacitance, in force-current analogy, is analogous to

Options :

88039646233. ✘ Momentum

88039646234. ✘ Velocity

88039646235. ✘ Displacement

88039646236. ✔ Mass

Question Number : 40 Question Id : 88039611560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Regarding Signal flow graphs, which of the following is true?

Options :

88039646237. ✔ They apply to linear systems

88039646238. ✘ The equation obtained may or may not be in the form of cause or effect

88039646239. ✘ Arrows are not important in the graph

88039646240. ✘ They cannot be converted back to block diagram

Question Number : 41 Question Id : 88039611561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following should be done to make an unstable system stable?

Options :

88039646241. ✘ The gain of the system should be decreased

88039646242. ✔ The gain of the system should be increased

88039646243. ✘ The number of poles to the loop transfer function should be increased

88039646244. ✘ The number of zeros to the loop transfer function should be increased

Question Number : 42 Question Id : 88039611562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the formation of Routh-Hurwitz array for a polynomial, all the elements of a row have zero values. This premature termination of the array indicates the presence of

Options :

88039646245. ✘ Only one root at the origin

88039646246. ✔ Imaginary roots

88039646247. ✘ Only positive real roots

88039646248. ✘ Only negative real

Question Number : 43 Question Id : 88039611563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A transfer function has two zeros at infinity. Then the relation between the numerator degree (N) and the denominator degree (M) of the transfer function is

Options :

88039646249. ✘ $N = M + 2$

88039646250. ✔ $N = M - 2$

88039646251. ✖ $N = M + 1$

88039646252. ✖ $N = M - 1$

Question Number : 44 Question Id : 88039611564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the time domain analysis of feedback control systems which one pair of the following is not correctly matched?

Options :

88039646253. ✖ Under damped: Minimize the effect of nonlinearities

88039646254. ✔ Dominant poles: Transients die out more rapidly

88039646255. ✖ Far away poles to the left half of s -plane: Transients die out more rapidly

88039646256. ✖ A pole near to the left of dominant complex poles and near a zero: Magnitude of transient is small

Question Number : 45 Question Id : 88039611565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A system has poles at 0.01 Hz, 1 Hz and 80 Hz, zeroes at 5 Hz, 100 Hz and 200 Hz. The approximate phase of the system response at 0 Hz is

Options :

88039646257. ✖ -90°

88039646258. ✓ 0°

88039646259. ✗ 90°

88039646260. ✗ -180°

Question Number : 46 Question Id : 88039611566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The roots of the characteristic equation of the second order system in which real and imaginary part represents the

Options :

88039646261. ✗ Damped frequency and damping respectively

88039646262. ✓ Damping and damped frequency respectively

88039646263. ✗ Natural frequency and damping ratio respectively

88039646264. ✗ Damping ratio and natural frequency respectively

Question Number : 47 Question Id : 88039611567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

After the starting winding of a single- phase induction motor is disconnected from supply, it continues to run only on which winding?

Options :

88039646265. ✗ Rotor

88039646266. ✘ Compensating

88039646267. ✘ Field

88039646268. ✔ Running

Question Number : 48 Question Id : 88039611568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For which of the following loads, armature reaction is magnetizing in nature?

Options :

88039646269. ✘ Pure resistive

88039646270. ✘ Pure Inductive

88039646271. ✔ Pure capacitive

88039646272. ✘ Combination of inductive and capacitive

Question Number : 49 Question Id : 88039611569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 12 pole, 3 phase alternator driven at a speed of 500 rpm supplies power to an 8-pole, 3 phase induction motor. If the slip of the motor, at full load is 3%, the full load speed in rpm of the motor is

Options :

88039646273. ✘ 990.75

88039646274. ✖ 820

88039646275. ✔ 727.5

88039646276. ✖ 550.25

Question Number : 50 Question Id : 88039611570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 220 V d.c shunt motor runs at 500 rpm when the armature current is 50A. Calculate the current in amperes if the torque is doubled, given that $R_a = 0.2 \Omega$.

Options :

88039646277. ✔ 100

88039646278. ✖ 200

88039646279. ✖ 150

88039646280. ✖ 450

Question Number : 51 Question Id : 88039611571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 0.5 HP, 6 pole induction motor is excited by a 3-phase, 60 Hz source. If the full-load speed is 1140 rpm, then calculate the percentage slip.

Options :

88039646281. ✖ 2 %

88039646282. ✘ 3 %

88039646283. ✔ 5 %

88039646284. ✘ 0 %

Question Number : 52 Question Id : 88039611572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The speed control of dc shunt motor in both directions can be obtained by

Options :

88039646285. ✘ Armature resistance control method

88039646286. ✔ Ward Leonard method

88039646287. ✘ Field diverter method

88039646288. ✘ Armature voltage control method

Question Number : 53 Question Id : 88039611573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 250 kVA, 11000 V/400 V and 50 Hz single-phase transformer has 80 turns on the secondary. What is the maximum value of flux?

Options :

88039646289. ✘ 2475 mWb

88039646290. ✘ 0.2 mWb

88039646291. ✔ 22.5 mWb

88039646292. ✘ 55.2 mWb

Question Number : 54 Question Id : 88039611574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A small 3-phase induction motor has a short-circuit current 5 times of full-load current and full-load slip of 5 %. If starting resistance starter is used to reduce the impressed voltage to 60 % of normal voltage, the starting torque obtained in terms of full load torque would be

Options :

88039646293. ✘ 30%

88039646294. ✔ 45%

88039646295. ✘ 55%

88039646296. ✘ 80%

Question Number : 55 Question Id : 88039611575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Determine the torque established by the armature of a four-poles DC motor having 774 conductors, two paths in parallel, 24 milli-webers of pole-flux and the armature current is 50 A.

Options :

88039646297. ✘ 235.3 N-m

88039646298. ✘ 395.3 N-m

88039646299. ✘ 495.3 N-m

88039646300. ✔ 295.3 N-m

Question Number : 56 Question Id : 88039611576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The main advantage of an auto-transformer over a two winding transformer is

Options :

88039646301. ✘ Hysteresis losses are reduced

88039646302. ✔ Saving in winding material

88039646303. ✘ Copper losses are negligible

88039646304. ✘ Eddy losses are totally eliminated

Question Number : 57 Question Id : 88039611577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 220V DC shunt machine has an armature resistance of 0.5Ω . If the full load armature current is 20 A, find the induced emf when the machine acts as generator

Options :

88039646305. ✘ 210 V

88039646306. ✘ 250 V

88039646307. ✘ 220 V

88039646308. ✔ 230 V

Question Number : 58 Question Id : 88039611578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The rotational speed of a given stepper motor is determined solely by the

Options :

88039646309. ✘ Shaft load

88039646310. ✔ Step pulse frequency

88039646311. ✘ Polarity of stator current

88039646312. ✘ Magnitude of stator current

Question Number : 59 Question Id : 88039611579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An alternator is supplying a load of 300 kW at a p.f. of 0.6 lagging. If the power factor is raised to unity, how many more kilowatts can alternator supply for the same kVA loading?

Options :

88039646313. ✘ 500 kW

88039646314. ✔ 200 kW

88039646315. ✘ 300 kW

88039646316. ✘ 400 kW

Question Number : 60 Question Id : 88039611580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Four identical alternators each rated for 20 MVA, 11 kV having subtransient reactance of 16 % are working in parallel. The short circuit level at the bus bars is.

Options :

88039646317. ✔ 500 MVA

88039646318. ✘ 400 MVA

88039646319. ✘ 125 MVA

88039646320. ✘ 80 MVA

Question Number : 61 Question Id : 88039611581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A power system consists of 300 buses out of which 20 buses are generator buses, 25 buses are the ones with reactive power support and 15 buses are the ones with fixed shunt capacitors. All the other buses are load buses. It is proposed to perform a load flow analysis for the system using Newton-Raphson method. The size of the Newton-Raphson Jacobian matrix is

Options :

88039646321. ✘ 553 X 553

88039646322. ✔ 540 X 540

88039646323. ✘ 555 X 555

88039646324. ✘ 554 X 554

Question Number : 62 Question Id : 88039611582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match list-I with list-II and select the correct answers using the codes given below the lists:

LIST- I
Equipment

LIST- II
Function

- | | |
|-----------------------|---------------------------|
| A. Circuit breaker | 1. Voltage control |
| B. Lightning arrestor | 2. Power control |
| C. Governor | 3. Overvoltage protection |
| D. Exciter | 4. Overcurrent protection |

Codes:

Options :

88039646325. ✘ A-1 B-2 C-3 D-4

88039646326. ✘ A-4 B-1 C-2 D-3

88039646327. ✘ A-2 B-3 C-4 D-1

88039646328. ✔ A-4 B-3 C-2 D-1

Question Number : 63 Question Id : 88039611583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the reference bus is changed in two load flow runs with the same system data and power obtained for reference bus taken as specified P and Q in the latter run, then

Options :

88039646329. ✔ The system losses will be unchanged but complex bus voltages will change

88039646330. ✘ The system losses will change but complex bus voltages remain unchanged

88039646331. ✘ The system losses as well as complex bus voltage will change

88039646332. ✘ The system losses as well as complex bus voltage will be unchanged

Question Number : 64 Question Id : 88039611584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Surge impedance of 400Ω means

Options :

- 88039646333. ✓ Line can be theoretically loaded upto 400Ω
- 88039646334. ✗ Line can be practically loaded upto 400Ω
- 88039646335. ✗ Open circuit impedance of 400Ω
- 88039646336. ✗ Short circuit impedance of 400Ω

Question Number : 65 Question Id : 88039611585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The inductance of single-phase, two-wire power transmission line per kilometer gets doubled when the

Options :

- 88039646337. ✗ Distance between the wires is doubled
- 88039646338. ✓ Distance between the wires is increased as square of original distance
- 88039646339. ✗ Distance between the wires is increased four folds
- 88039646340. ✗ Radius of the wire is doubled

Question Number : 66 Question Id : 88039611586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A transmission line of 210 kM length has certain values of parameters A, B, C, D. If the length is made 100 kM, then the parameters

Options :

88039646341. ✓ A increases and B decreases

88039646342. ✗ A and B decrease

88039646343. ✗ A and B increase

88039646344. ✗ A decreases and B increases

Question Number : 67 Question Id : 88039611587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A shunt fault is characterized by

Options :

88039646345. ✗ Increase in current, frequency and p.f

88039646346. ✓ Increase in current, reduction in frequency and p.f

88039646347. ✗ Increase in current and frequency but reduction in p.f

88039646348. ✗ Decrease in current, frequency and p.f

Question Number : 68 Question Id : 88039611588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A generator delivers power to an infinite bus via a transformer having reactance of $j0.25$ p.u and parallel transmission lines each having reactance of $j0.3$ p.u. Take $E_t = 1.2 \angle 22.02^\circ$ p.u, Infinite bus voltage $E = 1.0 \angle 0^\circ$ p.u and $X_d'' = 0.3$ p.u. The power transferred when the system is healthy is

Options :

88039646349. ✘ 1.03 p.u

88039646350. ✔ 0.6427 p.u

88039646351. ✘ 0.5 p.u

88039646352. ✘ 0.998 p.u

Question Number : 69 Question Id : 88039611589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The symmetrical components of an unbalanced three phase voltages are $V_{a0} = 60 \angle -20^\circ V$, $V_{a1} = 80 \angle -100^\circ V$, $V_{a2} = 20 \angle 20^\circ V$, the voltage in phase 'b' will be

Options :

88039646353. ✔ $48.20 \angle 114.80^\circ$

88039646354. ✘ $128.73 \angle -5.73^\circ$

88039646355. ✘ $110.93 \angle 56.46^\circ$

88039646356. ✘ $110.93 \angle -56.46^\circ$

Question Number : 70 Question Id : 88039611590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Who relay is normally used for the protection of

Options :

88039646357. ✓ Long transmission lines only

88039646358. ✗ Medium length lines only

88039646359. ✗ Short length lines only

88039646360. ✗ Short and Medium lines

Question Number : 71 Question Id : 88039611591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Zero sequence currents can flow from a line into a transformer bank if the windings are in

Options :

88039646361. ✓ Grounded star/delta

88039646362. ✗ Delta/star

88039646363. ✗ Star/grounded star

88039646364. ✗ Delta/delta

Question Number : 72 Question Id : 88039611592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of following power plants normally operate at high speeds?

Options :

88039646365. ✘ Hydroelectric

88039646366. ✔ Thermal

88039646367. ✘ Diesel engine

88039646368. ✘ Petrol engine

Question Number : 73 Question Id : 88039611593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 3 phase 33 kV oil circuit breaker is rated 1200 A, 2000 MVA, 3 s. The symmetrical breaking current is

Options :

88039646369. ✘ 1200 A

88039646370. ✘ 3600 A

88039646371. ✔ 35 kA

88039646372. ✘ 104.8 kA

Question Number : 74 Question Id : 88039611594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 3 core cable gives on test a capacitance of $3.7 \mu\text{F}$ between two cores. Find the line charging current of the cable when it is connected to 11 kV, 50 Hz system.

Options :

88039646373. ✓ 14.76 A

88039646374. ✗ 1.476 A

88039646375. ✗ 14.7 mA

88039646376. ✗ 1 A

Question Number : 75 Question Id : 88039611595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When a transformer is loaded, the secondary terminal voltage gains. That means power factor is

Options :

88039646377. ✗ Lagging

88039646378. ✗ Zero

88039646379. ✗ Unity

88039646380. ✓ Leading

Question Number : 76 Question Id : 88039611596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A circuit is so formed such that the source-R-C-diode-switch are in series. Consider the initial voltage across the C to be zero. When the switch is closed, the diode is so connected that it is forward biased. When the switch is closed,

Options :

88039646381. ✓ the current will decay exponentially & the voltage will increase exponentially

88039646382. ✗ the current will increase exponentially & the voltage will increase exponentially

88039646383. ✗ the current will fall to zero & the voltage both will decay exponentially

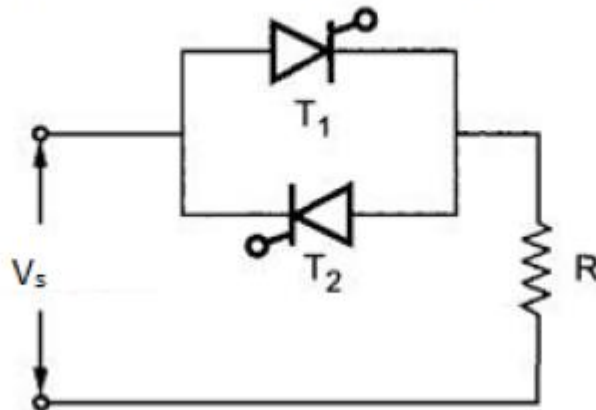
88039646384. ✗ the voltage and current both remain constant

Question Number : 77 Question Id : 88039611597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the AC voltage controller shown in below figure, the delay angles of the thyristors T_1 and T_2 are equal to $\alpha_1 = \alpha_2 = \alpha$. The rms output voltage will be



Options :

88039646385. ✘ $V_s \sqrt{\frac{1}{\pi}(\pi - \alpha) + \frac{\sin \alpha}{2}}$

88039646386. ✔ $V_s \sqrt{\frac{1}{\pi}(\pi - \alpha) + \frac{\sin 2\alpha}{2}}$

88039646387. ✘ $V_s \sqrt{\frac{1}{2\pi}(\pi - \alpha) + \frac{\sin 2\alpha}{2}}$

88039646388. ✘ $V_s \sqrt{\frac{1}{2\pi}(\pi + \alpha) + \frac{\sin 2\alpha}{2}}$

Question Number : 78 Question Id : 88039611598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A three phase fully controller thyristor bridge converter is used as line commutated inverter to feed 50 kW power at 420 V dc to a three phase, 425 V (line), 50 Hz ac mains. Consider dc link current to be constant. The dc current of the thyristor is

Options :

88039646389. ✔ 119.05 A

88039646390. ✘ 68.73 A

88039646391. ✘ 79.37 A

88039646392. ✘ 39.68 A

Question Number : 79 Question Id : 88039611599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In inverters, to make the supply voltage constant

Options :

88039646393. ✘ an inductor is placed in series with the load

88039646394. ✘ capacitor is connected in parallel to the load side

88039646395. ✔ capacitor is connected in parallel to the supply side

88039646396. ✘ an inductor is placed in parallel with the load

Question Number : 80 Question Id : 88039611600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 3-phase full converter delivers a ripple free load current of 10 A with a firing angle delay of 45° . The DF (distortion factor) is

Options :

88039646397. ✘ 1.414

88039646398. ✘ 0

88039646399. ✔ 0.707

88039646400. ✘ 0.569

Question Number : 81 Question Id : 88039611601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The minimum duration of the pulse in a pulse triggering system for thyristors should be at

Options :

88039646401. ✔ 10 μ s

88039646402. ✘ 10 ms

88039646403. ✘ 30 ms

88039646404. ✘ 1 s

Question Number : 82 Question Id : 88039611602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a rectifier circuit, the primary function of the filter is to

Options :

88039646405. ✘ Control the DC level of the output voltage

88039646406. ✔ Remove ripples from rectified output

88039646407. ✘ Minimize AC input variations

88039646408. ✘ Suppress odd harmonics in the rectifier output

Question Number : 83 Question Id : 88039611603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A single phase full bridge inverter is fed from a 48 V battery and is delivering power to a pure resistance load. What is the value of fundamental output voltage?

Options :

88039646409. ✘ 15.80 V

88039646410. ✘ 22.26 V

88039646411. ✘ 8.36 V

88039646412. ✔ 43.22 V

Question Number : 84 Question Id : 88039611604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A three-phase diode bridge rectifier is fed from a 400 V RMS, 50 Hz, three-phase AC source. If the load is purely resistive, then peak instantaneous output voltage is equal to

Options :

88039646413. ✘ 400 V

88039646414. ✔ 565.7 V

88039646415. ✘ 282.8 V

88039646416. ✘ 3.53 mV

Question Number : 85 Question Id : 88039611605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a 3-phase voltage source inverter used for speed control of induction motor, antiparallel diodes are used across each switching device. The main purpose of diodes is to

Options :

88039646417. ✘ Protect the switching devices against overvoltage

88039646418. ✘ Provide the path for freewheeling current

88039646419. ✔ Allow the motor to return energy during regeneration

88039646420. ✘ Help in switching off the devices

Question Number : 86 Question Id : 88039611606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A step up chopper has input voltage 110 V and output voltage 150 V. The value of duty cycle is

Options :

88039646421. ✘ 0.32

88039646422. ✘ 0.677

88039646423. ✘ 0.455

88039646424. ✓ 0.266

Question Number : 87 Question Id : 88039611607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a square-wave operation of 3 phase Current Source Inverter, the power values are on for

Options :

88039646425. ✗ 60 degree

88039646426. ✗ 90 degree

88039646427. ✓ 120 degree

88039646428. ✗ 150 degree

Question Number : 88 Question Id : 88039611608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If ' α ' is duty cycle in integral cycle control of ac regulator, the input power factor is equal to

Options :

88039646429. ✗ α

88039646430. ✗ α^2

88039646431. ✓ $\sqrt{\alpha}$

88039646432. ✘ $(\alpha)^{1/3}$

Question Number : 89 Question Id : 88039611609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The power factor at the input terminals of a cyclo-converter is generally

Options :

88039646433. ✘ low and leading

88039646434. ✔ low and lagging

88039646435. ✘ high and leading

88039646436. ✘ high and lagging

Question Number : 90 Question Id : 88039611610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The total number of leads in SCR, DIAC and TRIAC respectively are

Options :

88039646437. ✔ 3, 2, 3

88039646438. ✘ 2, 3, 3

88039646439. ✘ 3, 3, 2

88039646440. ✘ 3, 2, 4

Question Number : 91 Question Id : 88039611611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assertion (A): Thyristors can be used in controlled heating, excitation systems of alternators, speed control of motors and HVDC

Reason (R): A static var system using thyristors is very commonly used in high voltage ac systems.

Options :

88039646441. ✘ Both A and R are correct and R is correct explanation of A

88039646442. ✔ Both A and R are correct but R is not correct explanation of A

88039646443. ✘ A is correct but R is wrong

88039646444. ✘ A is wrong but R is correct

Question Number : 92 Question Id : 88039611612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a full bridge single phase inverter feeding RLC load

Options :

88039646445. ✘ one thyristor and one diode conduct simultaneously

88039646446. ✘ two thyristors conduct simultaneously

88039646447. ✔ two thyristors or two diodes conduct simultaneously

88039646448. ✘ four thyristors conduct simultaneously

Question Number : 93 Question Id : 88039611613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An SCR is considered to be a semi-controlled device because

Options :

88039646449. ✘ It can be turned OFF but not ON with a gate pulse

88039646450. ✘ It conducts only during one-half cycle of an alternating current wave

88039646451. ✔ It can be turned ON but not OFF with a gate pulse

88039646452. ✘ It can be turned ON only during one-half cycle of an alternating voltage wave

Question Number : 94 Question Id : 88039611614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a single phase full wave regulator feeding an R-L load, the power factor angle of load is θ . The range of control of firing angle α is

Options :

88039646453. ✘ $0 \leq \alpha \leq \pi$

88039646454. ✔ $\theta \leq \alpha \leq \pi$

88039646455. ✘ $0 \leq \alpha \leq (\pi - \theta)$

88039646456. ✘ $\theta \leq \alpha \leq (\pi + \theta)$

Question Number : 95 Question Id : 88039611615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which type of heating is used for sterilization?

Options :

88039646457. ✘ High frequency eddy current heating

88039646458. ✘ Coreless type heating

88039646459. ✘ Core type heating

88039646460. ✔ Dielectric heating

Question Number : 96 Question Id : 88039611616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In inert gas metal arc welding

Options :

88039646461. ✔ Argon is used for welding thin materials and helium is used for welding thick materials

88039646462. ✘ Both argon and helium are used for welding thin materials

88039646463. ✘ Both argon and helium are used for welding thick materials

Argon is used for welding thick materials and helium is used for welding thin materials

Question Number : 97 Question Id : 88039611617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Illumination level required for precision work is around

Options :

88039646465. ✘ 50 lm/m²

88039646466. ✘ 100 lm/m²

88039646467. ✘ 200 lm/m²

88039646468. ✔ 500 lm/m²

Question Number : 98 Question Id : 88039611618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The supply frequency usually employed for high frequency eddy current heating is

Options :

88039646469. ✘ 1 kHz

88039646470. ✘ 5 kHz

88039646471. ✘ 10 kHz

88039646472. ✓ 10 kHz to 400 kHz

Question Number : 99 Question Id : 88039611619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The electronic circuit which give constant DC output voltage, irrespective of variations in Input Voltage V , current drawn by the load I from output terminals is

Options :

88039646473. ✗ Rectifier

88039646474. ✗ Filter

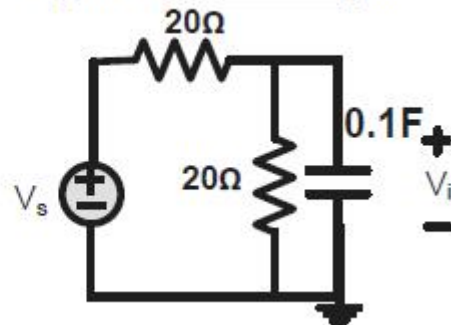
88039646475. ✓ Regulator

88039646476. ✗ Clipper

Question Number : 100 Question Id : 88039611620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The time constant of below figure is _____ μsec .



Options :

88039646477. ✘ 0.6

88039646478. ✔ 1.0

88039646479. ✘ 6.6

88039646480. ✘ 66.6

Question Number : 101 Question Id : 88039611621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What happens if source bypass capacitor (C_s) in a common emitter amplifier is removed while keeping the rest of circuit intact?

Options :

88039646481. ✘ Gain Increases

88039646482. ✔ Gain decreases

88039646483. ✘ Gain Unaffected

88039646484. ✘ Gain becomes zero

Question Number : 102 Question Id : 88039611622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider two MOSFETs A and B for which $I_{DA} = 4 I_{DB}$ and $W_A = 2 W_B$. What is the relationship between their channel lengths if they are identical in all other respects?

Options :

88039646485. ✘ $L_A = 2 L_B$

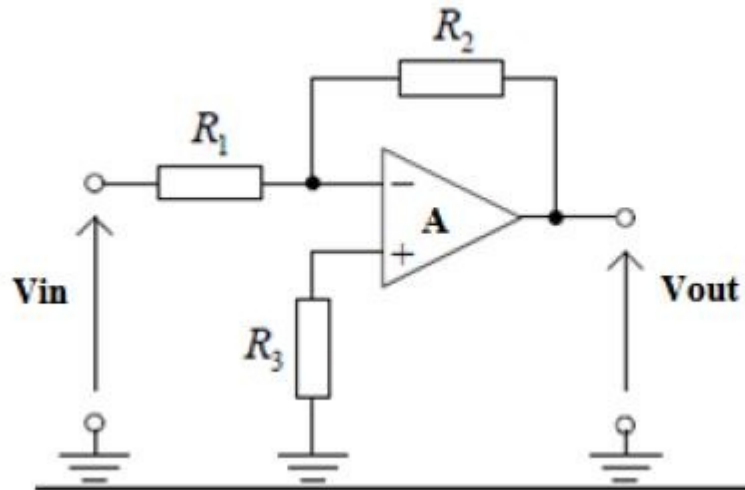
88039646486. ✔ $L_B = 2 L_A$

88039646487. ✘ $L_A = L_B$

88039646488. ✘ $L_A = 4L_B$

Question Number : 103 Question Id : 88039611623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the following circuit, $R_1 = 1 \text{ k}\Omega$, $R_2 = 10 \text{ k}\Omega$, the closed loop gain of the amplifier is



Options :

88039646489. ✘ 11

88039646490. ✘ Depends on A

88039646491. ✘ 9

88039646492. ✔ 10

Question Number : 104 Question Id : 88039611624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An amplifier has an open loop gain of 100, and its lower and upper 3-dB frequencies are 100 Hz and 100 KHz respectively. A negative feedback network with a feedback factor of 0.99 is connected to the amplifier. The new lower (f_{Lf}) and upper (f_{Hf}) 3-dB frequencies are _____ and _____ respectively.

Options :

88039646493. ✘ 100 Hz and 10000 kHz

88039646494. ✘ 1 Hz and 1000 kHz

88039646495. ✘ 1000 Hz and 1000 kHz

88039646496. ✔ 1 Hz and 10000 kHz

Question Number : 105 Question Id : 88039611625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many minimum number of 2:1 MUXes are required to generate a 2-input EX-OR gates ?

Options :

88039646497. ✔ 2

88039646498. ✖ 3

88039646499. ✖ 1

88039646500. ✖ 4

Question Number : 106 Question Id : 88039611626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

How many 1024 X 1 RAM chips are required to construct a 1024 X 8 memory system?

Options :

88039646501. ✖ 4

88039646502. ✖ 10

88039646503. ✖ 12

88039646504. ✔ 8

Question Number : 107 Question Id : 88039611627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A ring counter consisting of five flip-flops is fed with input 10000. The number of different states possible are

Options :

88039646505. ✔ 5 states

88039646506. ✖ 4 states

88039646507. ✘ 6 states

88039646508. ✘ 8 states

Question Number : 108 Question Id : 88039611628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a 16-bit register in 8085 processor?

Options :

88039646509. ✘ Stack Pointer

88039646510. ✘ Program Counter

88039646511. ✔ IR

88039646512. ✘ Both Stack pointer and Program Counter

Question Number : 109 Question Id : 88039611629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Name the filter that has two stop bands.

Options :

88039646513. ✔ Band-pass filter

88039646514. ✘ Low pass filter

88039646515. ✘ High pass filter

88039646516. ✘ Band-reject Filter

Question Number : 110 Question Id : 88039611630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which A/D converter is considered to be simplest, fastest and most expensive?

Options :

88039646517. ✘ Servo converter

88039646518. ✘ Counter type ADC

88039646519. ✔ Flash type ADC

88039646520. ✘ Dual slope ADC

Question Number : 111 Question Id : 88039611631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum number of NAND gates required to realize an exclusive OR gate is

Options :

88039646521. ✔ Four

88039646522. ✘ Three

88039646523. ✘ Two

88039646524. ✘ One

Question Number : 112 Question Id : 88039611632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

One input terminal of high gain op-amp comparator circuit is connected to ground and a sinusoidal voltage is applied to the other input. The output of the comparator will be a

Options :

88039646525. ✘ half rectified sinusoid

88039646526. ✘ full rectified sinusoid

88039646527. ✘ triangular wave

88039646528. ✔ square wave

Question Number : 113 Question Id : 88039611633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ideal op-amp has the following characteristics

Options :

88039646529. ✔ $R_i = \infty, A = \infty, R_o = 0$

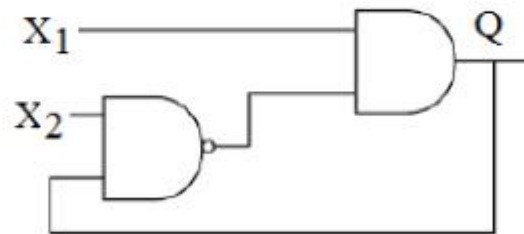
88039646530. ✘ $R_i = 0, A = \infty, R_o = 0$

88039646531. ✘ $R_i = \infty, A = \infty, R_o = \infty$

88039646532. ✘ $R_i = 0, A = \infty, R_o = \infty$

Question Number : 114 Question Id : 88039611634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In below given circuit, as long as $X_1 = 1$ and $X_2 = 1$, the output Q will be



Options :

88039646533. ✘ at 1

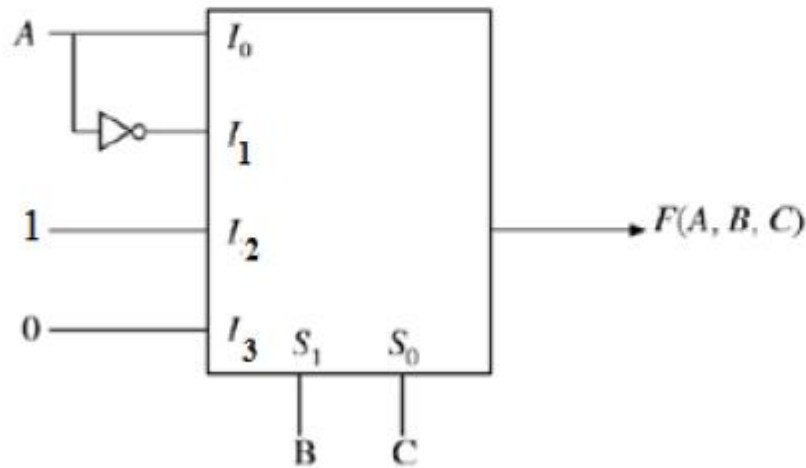
88039646534. ✘ at 0

88039646535. ✘ at its initial value

88039646536. ✔ unstable

Question Number : 115 Question Id : 88039611635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 4:1 MUX is used to implement a 3-input Boolean function as shown in figure. The Boolean function $F(A,B,C)$ implemented will be



Options :

88039646537. ✓ $F(A,B,C) = \Sigma(1,2,4,6)$

88039646538. ✗ $F(A,B,C) = \Sigma(2,4,5,6)$

88039646539. ✗ $F(A,B,C) = \Sigma(1,2,6)$

88039646540. ✗ $F(A,B,C) = \Sigma(1,2,5)$

Question Number : 116 Question Id : 88039611636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An open loop system described by the transfer function $G(s) = \frac{s-1}{(s+2)(s+3)}$ is

Options :

88039646541. ✘ stable and of the minimum phase type

88039646542. ✔ stable and of the non-minimum phase type

88039646543. ✘ unstable and of the minimum phase type

88039646544. ✘ unstable and of the non-minimum phase type

Question Number : 117 Question Id : 88039611637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A unity feedback control system has the open loop transfer function.

$$G(s) = \frac{4(1 + 2s)}{s^2(s + 2)}$$

If the input to the system is a unit ramp, the steady state error will be

Options :

88039646545. ✔ 0

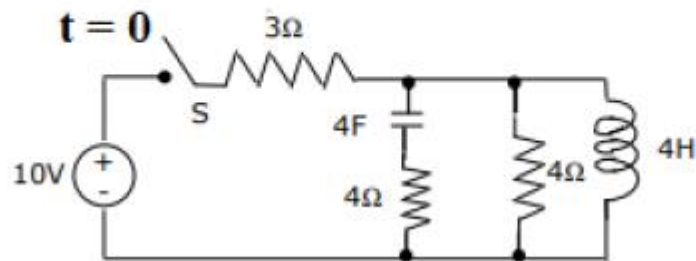
88039646546. ✘ 0.5

88039646547. ✘ 2

88039646548. ✘ ∞

Question Number : 118 Question Id : 88039611638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the circuit shown in figure, the switch S is closed at time $t = 0$. The voltage across the inductance at $t = 0^+$ is



Options :

88039646549. ✘ 2 V

88039646550. ✔ 4 V

88039646551. ✘ 6 V

88039646552. ✘ 8 V

Question Number : 119 Question Id : 88039611639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A function $y(t)$ satisfies the differential equation, $\frac{dy(t)}{dt} + y(t) = \delta(t)$ where $\delta(t)$ is the delta function. Assuming zero initial condition and denoting the unit step function by $u(t)$, then $y(t)$ is

Options :

88039646553. ✘ e^t

88039646554. ✘ e^{-t}

88039646555. ✘ $e^t u(t)$

88039646556. ✔ $e^{-t} u(t)$

Question Number : 120 Question Id : 88039611640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a transformer, zero voltage regulation at full load is

Options :

88039646557. ✘ Not possible

88039646558. ✘ Possible at unity power factor load

88039646559. ✔ Possible at leading power factor load

88039646560. ✘ Possible at lagging power factor load