

National Testing Agency

Question Paper Name :	Principle of Electrical Sciences 29th August 2021 Shift 2
Subject Name :	Principle of Electrical Sciences
Creation Date :	2021-08-29 19:53:48
Duration :	180
Total Marks :	100
Display Marks:	Yes

Principle of Electrical Sciences

Group Number :	1
Group Id :	940918122
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	100
Is this Group for Examiner? :	No

Principle of Electrical Sciences -1

Section Id :	940918178
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	940918243
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 9409188041 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 2 Wrong Marks : 0

An active element in a circuit is-

1. Current source
2. Resistance
3. Inductance
4. Capacitance

Options :

94091830137. 1

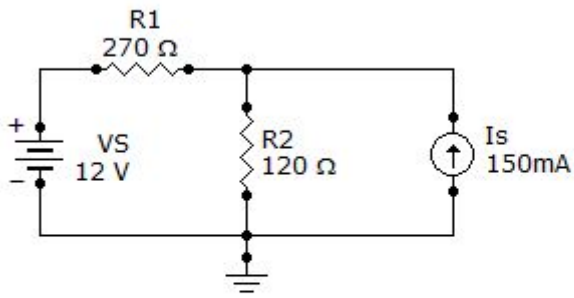
94091830138. 2

94091830139. 3

94091830140. 4

Question Number : 2 Question Id : 9409188042 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Correct Marks : 2 Wrong Marks : 0

Find the current through R2 of the given circuit.



1. 30.7 mA
2. 104 mA
3. 74 mA
4. 134 mA

Options :

94091830141. 1
94091830142. 2
94091830143. 3
94091830144. 4

Question Number : 3 Question Id : 9409188043 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Correct form of ohm's law is-

1. $I = VR$
2. $V = I$
3. $V = IR$
4. All are incorrect

Options :

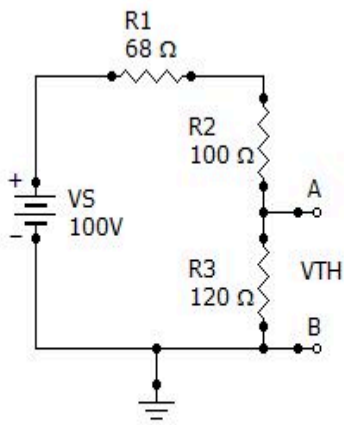
94091830145. 1
94091830146. 2
94091830147. 3
94091830148. 4

Question Number : 4 Question Id : 9409188044 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Find the Thevenin equivalent (V_{th} and R_{th}) between terminals A and B of the circuit given below.



1. 4.16 V, 120 Ω
2. 41.6 V, 120 Ω
3. 4.16 V, 70 Ω
4. 41.67 V, 70 Ω

Options :

94091830149. 1
94091830150. 2
94091830151. 3
94091830152. 4

Question Number : 5 Question Id : 9409188045 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Kirchhoff's laws are valid for-

1. Linear circuits only
2. Passive time-invariant circuits
3. Non-linear circuits only
4. Both linear and non-linear circuits

Options :

94091830153. 1

94091830154. 2

94091830155. 3

94091830156. 4

Question Number : 6 Question Id : 9409188046 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Kirchhoff's voltage law is concerned with-

1. IR drop
2. Battery emfs
3. Both 1 & 2
4. None of these

Options :

94091830157. 1

94091830158. 2

94091830159. 3

94091830160. 4

Question Number : 7 Question Id : 9409188047 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Three equal resistances are connected in star network. If this star is converted into equivalent delta, the resistance of delta network will be.....

1. Equal
2. Zero
3. Three Times
4. None of these

Options :

94091830161. 1

94091830162. 2

94091830163. 3

94091830164. 4

Question Number : 8 Question Id : 9409188048 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The terminals across the source are if a current source is to be neglected.

1. Open-circuited
2. Short-circuited
3. Replaced by a capacitor
4. Replaced by a source resistance

Options :

94091830165. 1

94091830166. 2

94091830167. 3

94091830168. 4

Question Number : 9 Question Id : 9409188049 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Ohm's law is applicable to ...

1. Semiconductors
2. Vacuum tubes
3. Carbon resistors
4. None of these

Options :

94091830169. 1

94091830170. 2

94091830171. 3

94091830172. 4

Question Number : 10 Question Id : 9409188050 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Application of Norton's theorem to a circuit yields

1. Equivalent current source and impedance in series
2. Equivalent current source and impedance in parallel
3. Equivalent impedance
4. Equivalent current source

Options :

94091830173. 1

94091830174. 2

94091830175. 3

94091830176. 4

Question Number : 11 Question Id : 9409188051 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

What will be effect on resistance if no of turns of coil will be increased?

1. increase
2. decrease
3. remain same
4. none

Options :

94091830177. 1

94091830178. 2

94091830179. 3

94091830180. 4

Question Number : 12 Question Id : 9409188052 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

To transmit the same amount of power over fixed distance 3phase circuit needs....the weight of Cu

1. 3 times
2. $\frac{3}{4}$ times
3. 2 times
4. 0.5 times

Options :

94091830181. 1

94091830182. 2

94091830183. 3

94091830184. 4

Question Number : 13 Question Id : 9409188053 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The power factor is the ratio of _____ power to the _____ power.

1. Average, apparent
2. Apparent, reactive
3. Reactive, active
4. Apparent, average

Options :

94091830185. 1

94091830186. 2

94091830187. 3

94091830188. 4

Question Number : 14 Question Id : 9409188054 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Impedance of an a.c circuit is $10\angle 60^\circ$, then resistance in the circuit is-

1. $5\ \Omega$
2. $8.66\ \Omega$
3. $10\ \Omega$
4. None

Options :

94091830189. 1

94091830190. 2

94091830191. 3

94091830192. 4

Question Number : 15 Question Id : 9409188055 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The rms value of sinusoidal varying voltage isthan its average

1. More than
2. Less than
3. Same as
4. none

Options :

94091830193. 1

94091830194. 2

94091830195. 3

94091830196. 4

Question Number : 16 Question Id : 9409188056 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

An RLC series circuit has $Q = 100$ and $\omega_0 = 20$ rad/sec. The bandwidth is-

1. 0.2 rad/sec
2. 2 rad/sec
3. 20 rad/sec
4. 200 rad/sec

Options :

94091830197. 1

94091830198. 2

94091830199. 3

94091830200. 4

Question Number : 17 Question Id : 9409188057 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

In series RL circuit the phase angle between V and I is-

1. Zero
2. Unity
3. Less than 90°
4. 90°

Options :

94091830201. 1

94091830202. 2

94091830203. 3

94091830204. 4

Question Number : 18 Question Id : 9409188058 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

In a parallel resonant circuit, what will be the circuit current at resonance -

1. Minimum
2. Maximum
3. Zero
4. None of these

Options :

94091830205. 1

94091830206. 2

94091830207. 3

94091830208. 4

Question Number : 19 Question Id : 9409188059 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Find the effective value of the given equation $I = 200 \sin (\omega t - 30^\circ)$

1. 141.4
2. 100
3. 200
4. None

Options :

94091830209. 1

94091830210. 2

94091830211. 3

94091830212. 4

Question Number : 20 Question Id : 9409188060 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

A sinusoidal voltage has peak value of 100 V. The rms value is-

1. 50
2. 70.7
3. 35.35
4. 141.41

Options :

94091830213. 1

94091830214. 2

94091830215. 3

94091830216. 4

Question Number : 21 Question Id : 9409188061 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Total number of windings present in Auto transformer is/are-

1. 2
2. 3
3. 4
4. 1

Options :

94091830217. 1

94091830218. 2

94091830219. 3

94091830220. 4

Question Number : 22 Question Id : 9409188062 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

How to reduce hysteresis loss in transformer?

1. By using thin laminated strips
2. By using soft magnetic material
3. By using hard magnetic material
4. By using solid piece of magnetic material

Options :

94091830221. 1

94091830222. 2

94091830223. 3

94091830224. 4

Question Number : 23 Question Id : 9409188063 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Which of the following is the main advantage of an auto-transformer?

1. Hysteresis losses are reduced
2. Saving in Conductor material
3. Copper losses are negligible
4. Eddy current losses are eliminated

Options :

94091830225. 1

94091830226. 2

94091830227. 3

94091830228. 4

Question Number : 24 Question Id : 9409188064 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

In a transformer copper loss at full load is 1000 watt. Then copper loss at half load is....

1. 1000 watt
2. 250 watt
3. 500 watt
4. 0 watt

Options :

94091830229. 1

94091830230. 2

94091830231. 3

94091830232. 4

Question Number : 25 Question Id : 9409188065 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

In a transformer full load copper loss is 1250 watt and iron loss is 800 watt. Find the percentage of full load at which maximum efficiency occurs.

1. 80%
2. 75%
3. 50%
4. 90%

Options :

94091830233. 1

94091830234. 2

94091830235. 3

94091830236. 4

Question Number : 26 Question Id : 9409188066 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

No load loss is also known as-

1. Core loss
2. Friction loss
3. Variable loss
4. Copper loss

Options :

94091830237. 1

94091830238. 2

94091830239. 3

94091830240. 4

Question Number : 27 Question Id : 9409188067 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The no-load current drawn by transformer is usually-

1. 0.2% to 0.5%
2. 2% to 5%
3. 12% to 15%
4. 20% to 30%

Options :

94091830241. 1

94091830242. 2

94091830243. 3

94091830244. 4

Question Number : 28 Question Id : 9409188068 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Condition for maximum efficiency of transformer is-

1. Iron loss = Fixed loss
2. Copper loss = Variable loss
3. Core loss = Copper loss
4. Copper loss = Iron loss/2

Options :

94091830245. 1

94091830246. 2

94091830247. 3

94091830248. 4

Question Number : 29 Question Id : 9409188069 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

How to reduce eddy current loss in transformer?

1. By using thin laminated strips
2. By using soft magnetic material
3. By using hard magnetic material
4. By using solid piece of magnetic material

Options :

94091830249. 1

94091830250. 2

94091830251. 3

94091830252. 4

Question Number : 30 Question Id : 9409188070 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

For step up transformer-

1. $N_1 > N_2$
2. $N_1 = N_2$
3. $N_1 < N_2$
4. None of these

Options :

94091830253. 1

94091830254. 2

94091830255. 3

94091830256. 4

Question Number : 31 Question Id : 9409188071 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The direction of force in a motoring action is determined by-

1. Fleming's right hand rule
2. End rule
3. Fleming's left hand rule
4. Right hand thumb rule

Options :

94091830257. 1

94091830258. 2

94091830259. 3

94091830260. 4

Question Number : 32 Question Id : 9409188072 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Synchronous speed of three phase induction motor is given by-

1. $N_s = 120 f P$
2. $N_s = 120 f/P$
3. $N_s = 120 P/f$
4. $N_s = f P/120$

Options :

94091830261. 1

94091830262. 2

94091830263. 3

94091830264. 4

Question Number : 33 Question Id : 9409188073 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The starting torque in a split phase induction motor is proportional to the

1. Stator frequency
2. Stator poles
3. Stator voltage
4. Split phase angle α

Options :

94091830265. 1

94091830266. 2

94091830267. 3

94091830268. 4

Question Number : 34 Question Id : 9409188074 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The synchronous motor is used as

1. Transformer
2. Power factor correction device
3. Induction motor
4. Universal motor

Options :

94091830269. 1

94091830270. 2

94091830271. 3

94091830272. 4

Question Number : 35 Question Id : 9409188075 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The Single phase induction motors are not self starting because

1. Rotating magnetic field is absent
2. The power rating is small
3. The power factor is low
4. No starting torque

Options :

94091830273. 1

94091830274. 2

94091830275. 3

94091830276. 4

Question Number : 36 Question Id : 9409188076 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

..... motor has constant speed characteristics.

1. D.C. series
2. D.C. compound
3. D.C. shunt
4. None of these

Options :

94091830277. 1

94091830278. 2

94091830279. 3

94091830280. 4

Question Number : 37 Question Id : 9409188077 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

..... motor can not be started on no load.

1. D.C. series
2. D.C. compound
3. D.C. shunt
4. None of these

Options :

94091830281. 1

94091830282. 2

94091830283. 3

94091830284. 4

Question Number : 38 Question Id : 9409188078 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

A 4 pole, 440 V, 50 Hz induction motor is running at a slip 4%. The speed of motor is-

1. 1260 r.p.m.
2. 1440 r.p.m.
3. 1500 r.p.m.
4. 1560 r.p.m.

Options :

94091830285. 1

94091830286. 2

94091830287. 3

94091830288. 4

Question Number : 39 Question Id : 9409188079 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

The back e.m.f. in a motor is due to

1. Generating action
2. Motoring action
3. Reverse action
4. None of these

Options :

94091830289. 1

94091830290. 2

94091830291. 3

94091830292. 4

Question Number : 40 Question Id : 9409188080 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

External resistance is connected to the rotor of a 3-phase wound induction motor in order to?

1. Reduce starting current
2. Collector current
3. As a star connected load
4. None of these

Options :

94091830293. 1

94091830294. 2

94091830295. 3

94091830296. 4

Question Number : 41 Question Id : 9409188081 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Which of the following is cheapest protection element used in electrical systems-

1. Isolator
2. Fuse
3. Relay
4. Circuit Breaker

Options :

94091830297. 1

94091830298. 2

94091830299. 3

94091830300. 4

Question Number : 42 Question Id : 9409188082 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Number of cells connected in parallel provide a-

1. High current carrying capacity
2. Higher voltage
3. Higher power
4. None of these

Options :

94091830301. 1

94091830302. 2

94091830303. 3

94091830304. 4

Question Number : 43 Question Id : 9409188083 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

An inverter converts

1. AC to DC
2. DC to AC
3. DC to AC and vice-versa
4. AC to AC (with changed frequency)

Options :

94091830305. 1

94091830306. 2

94091830307. 3

94091830308. 4

Question Number : 44 Question Id : 9409188084 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

A fuse has-

1. High Resistivity and Low Melting Point
2. Low Resistivity and High Melting Point
3. High Resistivity and High Melting Point
4. Low Resistivity and Low Melting Point

Options :

94091830309. 1

94091830310. 2

94091830311. 3

94091830312. 4

Question Number : 45 Question Id : 9409188085 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

A Battery is a series or parallel combination of electrolytic cells.

1. True
2. False
3. Partially True
4. Partially False

Options :

94091830313. 1

94091830314. 2

94091830315. 3

94091830316. 4

Question Number : 46 Question Id : 9409188086 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

In which of the following applications, Cables are not used generally-

1. Home Appliances
2. Transmission Lines
3. Distribution Lines
4. Big Industries

Options :

94091830317. 1

94091830318. 2

94091830319. 3

94091830320. 4

Question Number : 47 Question Id : 9409188087 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

What is the energy usage of a 1000 watt hair dryer used for 10 minutes straight?

1. 1000 watt x 10 minutes = 10 kWh
2. 1000 watts/10 min = 100 kW/h
3. 1000 watts x 10 minutes = 100,000 kWh
4. None of these

Options :

94091830321. 1

94091830322. 2

94091830323. 3

94091830324. 4

Question Number : 48 Question Id : 9409188088 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Purpose of Backup Protection is-

1. To guard against failure of primary
2. To increase the speed
3. To leave no blind spot
4. None of these

Options :

94091830325. 1

94091830326. 2

94091830327. 3

94091830328. 4

Question Number : 49 Question Id : 9409188089 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Which of the following medium is not employed for extinction of arc in circuit breakers-

1. Water
2. Oil
3. Air
4. SF₆ Gas

Options :

94091830329. 1

94091830330. 2

94091830331. 3

94091830332. 4

Question Number : 50 Question Id : 9409188090 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0

Which of the following cable works on the Principle of Total Internal Reflection:

1. Shielded Twisted pair Cable
2. Unshielded Twisted pair Cable
3. Coaxial Cable
4. Optical Fibre Cable

Options :

94091830333. 1

94091830334. 2

94091830335. 3

94091830336. 4