Andhra Pradesh State Council of 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 19th July 2022 Shift 2
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	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
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

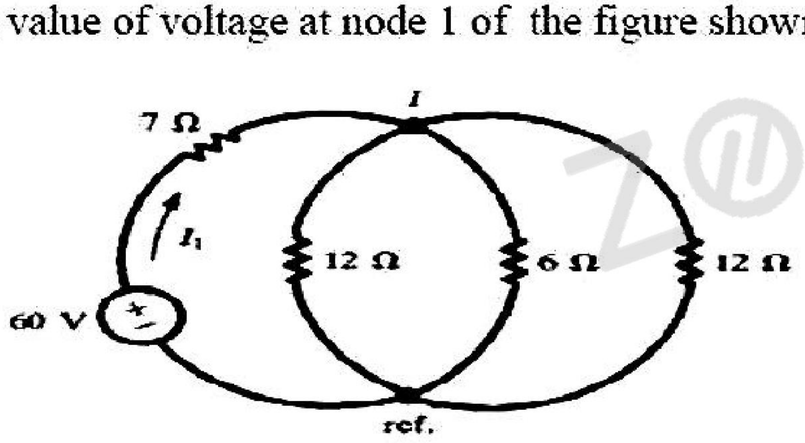
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Electrical Engineering

Section Id :	90030015
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	120
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 1 Question Id : 9003001681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of voltage at node 1 of the figure shown below is



Options :

1. ✗ 9 V

2. ✓ 18 V

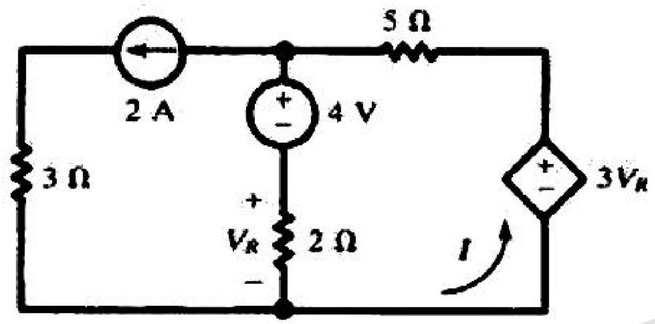
3. ✗ 6 V

4. ✗ 60 V

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Question Number : 2 Question Id : 9003001682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The current (I) flowing through the network given below is _____Amps



Options :

1. ✖ 12

2. ✖ 2

3. ✖ -2

4. ✔ -12

Question Number : 3 Question Id : 9003001683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Under no-load condition a dc generator has a terminal voltage of 120 V. When delivering its rated current of 40 A, the terminal voltage drops to 112 V. The Norton's current in amperes is

Options :

1. ✖ 40

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2. ✗ 60

3. ✓ 600

4. ✗ 240

Question Number : 4 Question Id : 9003001684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is correct?

Options :

1. ✗ Superposition theorem is applicable for power calculations in a network.

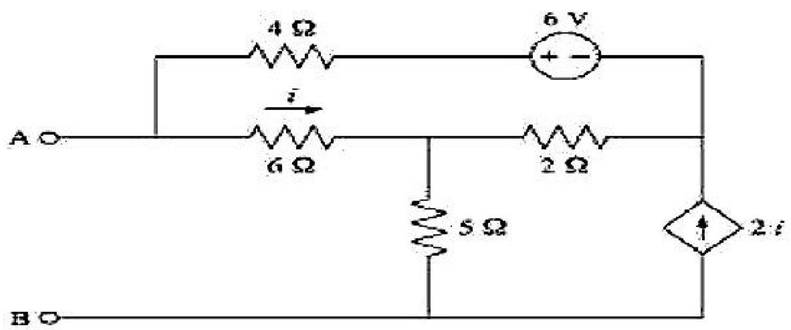
2. ✗ Superposition theorem is not applicable for linear circuits

3. ✓ Superposition theorem is not applicable for power calculations in a network.

4. ✗ Thevenin's' theorem is dual of Tellegen's' theorem

Question Number : 5 Question Id : 9003001685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thevenin's voltage across A and B terminals of the figure shown below is ___V



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Options :

1. ✓ 12

2. ✗ 6

3. ✗ 0

4. ✗ 10

Question Number : 6 Question Id : 9003001686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The efficiency of a linear active network to deliver maximum power from source to load is

Options :

1. ✗ 75%

2. ✗ 25%

3. ✗ 100%

4. ✓ 50%

Question Number : 7 Question Id : 9003001687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A series R-L circuit has a constant voltage V applied at t = 0. At what time does $v_R = v_L$?

Options :

1. ✗ 2(L/R) ln2

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2. ✔ (L/R) ln2

3. ✖ (R/L) ln2

4. ✖ 0.5 (R/L) ln2

Question Number : 8 Question Id : 9003001688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a passive two port network, the open circuit impedance matrix is $\begin{bmatrix} 2 & 1 \\ 1 & 8 \end{bmatrix}\Omega$. If input port is interchanged with the output port, then the open circuit impedance matrix will be

Options :

1. ✖ $\begin{bmatrix} 2 & 1 \\ 8 & 1 \end{bmatrix}\Omega$

2. ✔ $\begin{bmatrix} 8 & 1 \\ 1 & 2 \end{bmatrix}\Omega$

3. ✖ $\begin{bmatrix} 1 & 2 \\ 1 & 8 \end{bmatrix}\Omega$

4. ✖ $\begin{bmatrix} 1 & 1 \\ 2 & 8 \end{bmatrix}\Omega$

Question Number : 9 Question Id : 9003001689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The line to line input voltage to the 3-phase, 50 Hz, a.c circuit of star connected load of $5 \angle 60^0$ Ω is 200 V (r.m.s). The two wattmeters would read for phase sequence of RYB is

Options :

1. ✘ $W_1 = 1000$ W and $W_2 = 1000$ W

2. ✘ $W_1 = 886$ W and $W_2 = 8860$ W

3. ✘ $W_1 = 0$ W and $W_2 = 1000$ W

4. ✔ $W_1 = 0$ W and $W_2 = 2000$ W

Question Number : 10 Question Id : 9003001690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10 Amps current source, a closed switch, a resistance of R= 10 Ω and an inductance of 5H are all connected across a supply of "V" volts. Suddenly, the switch is opened at t =0, the first derivative of voltage at $t=0^+$ is

Options :

1. ✘ 50 V/Sec

2. ✘ - 50 V/Sec

3. ✘ 200 V/Sec

4. ✔ -200 V/Sec

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Question Number : 11 Question Id : 9003001691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of cut off frequency (f_C) of constant "k" low pass filter to constant "k" high pass filter is

Options :

1. ✖ 1:1

2. ✖ 1:2

3. ✔ 4:1

4. ✖ 1:4

Question Number : 12 Question Id : 9003001692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Series R-L-C circuit has a resonant frequency of 60 Hz. If, all the component values are

halved, the new resonant frequency is_____ Hz

Options :

1. ✖ 60

2. ✔ 120

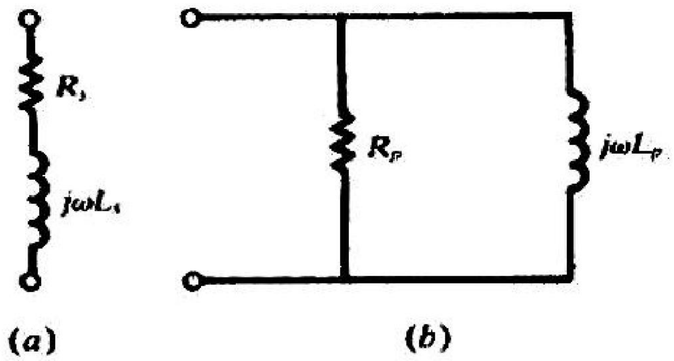
3. ✖ 30

4. ✖ 240

Question Number : 13 Question Id : 9003001693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A practical coil contains resistance as well as inductance and can be represented by either a Series or parallel circuit as shown in figure (a) and (b). The value of R_p in terms of R_s and L_s



Options :

1. ✔ $R_S + \frac{(\omega Ls)^2}{RS}$

2. ✘ $L_S + \frac{(\omega Rs)^2}{LS}$

3. ✘ $R_S + \frac{RS}{(\omega Ls)^2}$

4. ✘ $R_S + \frac{(\omega Ls)^2}{(RS^2)}$

Question Number : 14 Question Id : 9003001694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a 4-node graph, with every node connected to every other node with exactly one branch,

the number of trees will be

Options :

1. ✘ 4

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2. ✖ 64

3. ✔ 16

4. ✖ 32

Question Number : 15 Question Id : 9003001695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a singly excited magnetic system?

Options :

1. ✔ Reluctance Motor

2. ✖ Loudspeaker

3. ✖ Tachometer

4. ✖ Synchronous machine

Question Number : 16 Question Id : 9003001696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The approximate values of armature current (I_a) and speed (N) of a d.c shunt Motor would be____

and _____respectively, if the terminal voltage is halved, field current and power output are

kept constant

Options :

1. ✖ halved; halved

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2. ✗ doubled; doubled

3. ✓ doubled; halved

4. ✗ halved; constant

Question Number : 17 Question Id : 9003001697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is false, with respect to the reactance voltage in a d.c machine?

Options :

1. ✗ is proportional to core length

2. ✓ can not be compensated by voltage commutation

3. ✗ causes delayed commutation

4. ✗ is proportional to armature current

Question Number : 18 Question Id : 9003001698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 200 V d.c series Motor develops its rated output at 1200 r.p.m while taking 25 Amps. Armature and series field resistances are 0.7 Ω and 0.3 Ω respectively. By neglecting saturation, the resistance that must be added to obtain rated torque at the time of starting is

Options :

1. ✗ 11 Ω

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2. ✖ 9 Ω

3. ✖ 8 Ω

4. ✔ 7 Ω

Question Number : 19 Question Id : 9003001699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match the following with respect to D.C machine:

Part of D.C machine	Material used
P) Field pole core	a) Hard drawn copper
Q) Commutator segments	b) Copper
R) Brushes	c) Cast Steel
S) Field winding	d) Electro graphite

Options :

1. ✖ P ---- d; Q ----- c; R ---- a; S ----- b

2. ✖ P ---- c; Q ----- d; R ---- b; S -----a

3. ✖ P ---- d; Q ----- c; R ---- b; S -----a

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4. ✓ P ---- c; Q ----- a; R ---- d; S ----- b

Question Number : 20 Question Id : 9003001700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a 3-phase Induction Motor, the starting current is six times the full load current to have staring torque equals to the full load torque, the corresponding slip is

Options :

1. ✓ $\frac{1}{36}$

2. ✗ $\frac{1}{6}$

3. ✗ $\frac{1}{25}$

4. ✗ $\frac{1}{64}$

Question Number : 21 Question Id : 9003001701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The power input to a 3-phase Induction Motor is 30 kW at a slip of 4%. By neglecting stator impedance, the torque developed in synchronous watts is

Options :

1. ✗ 30 kW

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2. ✓ 28. 8 kW

3. ✗ 31.2 kW

4. ✗ 32 kW

Question Number : 22 Question Id : 9003001702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the air gap length of a 3-phase Induction Motor is increased, the effect is

Options :

1. ✗ Reduction in the air gap flux

2. ✗ Improvement in power factor

3. ✗ Increase in the torque

4. ✓ Worsen the power factor

Question Number : 23 Question Id : 9003001703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the following statements:

A) 3-phase Induction Motor running stably at lower speeds is called as Crawling

B) Crawling can be reduced by skewing

From the above statements, which is of the following is correct?

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Options :

1. ✖ A and B are true

2. ✖ A and B are not true

3. ✖ A is not true, but B is true

4. ✔ A is true, but B is not true

Question Number : 24 Question Id : 9003001704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the characteristic of the two value capacitor run 1-phase Induction

Motor from the following?

P) High starting torque

Q) Better running power factor

R) Low efficiency

S) Less expensive

Options :

1. ✖ P, Q and R only

2. ✔ P and Q only

3. ✖ Q and R only

4. ✖ P, Q and S only

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Question Number : 25 Question Id : 9003001705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the following:

A) Transformers with large turn's ratio, are tapped on the High Voltage winding

B) Transformers with large turn's ratio, are tapped on the Low Voltage winding

C) Tapping's on Low Voltage winding is difficult as it is placed next to the core

D) Tapping's on High Voltage winding is to handle more currents

Which of the above are correct?

Options :

1. ✗ A and B only

2. ✗ B and C only

3. ✗ C and D only

4. ✓ A and C only

Question Number : 26 Question Id : 9003001706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following 3- phase Transformer connection has oscillatory neutral problems?

Options :

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1. ✗ Star – Delta

2. ✗ Delta –Star

3. ✓ Star- Star

4. ✗ Open Delta

Question Number : 27 Question Id : 9003001707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A transformer is operated at rated frequency but at a voltage higher than its rated value. The no-load current, hysteresis loss and eddy current loss would be respectively

Options :

1. ✗ Increases; Decreases; and Decreases

2. ✓ Increases; Increases and Increases

3. ✗ Decreases; Increases and Increases

4. ✗ Decreases; Increases and Decreases

Question Number : 28 Question Id : 9003001708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a voltage, v = 250 sin 314t is applied to the transformer on no-load, the resulting current is. i = 2 sin $(314t - 60^0)$ amps. The core loss of the transformer is

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Options :

1. ✗ 150 W

2. ✗ 500 W

3. ✓ 125 W

4. ✗ 250 W

Question Number : 29 Question Id : 9003001709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

"X" kVA rating of a 1-phase transformer of 2000 / 200 V is to be used as an auto transformer of 1100 kVA rating for stepping up the voltage from 2000 V to 2200 V. The value of "X" is

Options :

1. ✓ 100

2. ✗ 1100

3. ✗ 2000

4. ✗ 110

Question Number : 30 Question Id : 9003001710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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In a salient pole type synchronous machine, the reluctance torque will be maximum, if the torque angle is

Options :

1. ✓ 45^0

2. ✗ 90^0

3. ✗ Slightly less than 90^0

4. ✗ Slightly greater than 90^0

Question Number : 31 Question Id : 9003001711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A synchronous machine is operating in a Motoring mode and the machine draws a leading power factor current, the armature reaction is

Options :

1. ✗ Cross magnetizing

2. ✓ Partly demagnetizing and partly cross magnetizing

3. ✗ Partly magnetizing and partly cross magnetizing

4. ✗ Demagnetizing

Question Number : 32 Question Id : 9003001712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Identify the correct statement from the following with respect to synchronous machine?

Options :

1. ✗ P_{sy} (synchronizing power coefficient) is inversely proportional to excitation voltage (E_f)

2. ✓ P_{sy} is positive for stable operating region

3. ✗ P_{sy} (synchronizing power coefficient) is proportional to X_s (Synchronous reactance)

4. ✗ P_{sy} is negative for stable operating region

Question Number : 33 Question Id : 9003001713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Zero Power Factor (ZPF) characteristic of an alternator is a plot between

Options :

1. ✗ V_t (armature terminal voltage) Versus I_a (armature current) at constant field current and speed

2. ✗ E_r (air gap voltage) Versus I_f (field current) at constant armature current and speed

3. ✓ V_t (armature terminal voltage) Versus I_f (field current) at constant armature current and speed

4. ✗ E_r (air gap voltage) Versus I_a (armature current) at constant field current and speed

Question Number : 34 Question Id : 9003001714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following Motors are used in wrist watches?

Options :

1. ✔ Stepper Motor

2. ✘ Servo Motor

3. ✘ Shaded pole Motor

4. ✘ Universal Motor

Question Number : 35 Question Id : 9003001715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match the following:

Bridge	Quantity of measurement
L) Schering bridge	A) Frequency in the audio range
M) Wien bridge	B) Self inductance
N) Maxwell's bridge	C) Dielectric loss and power factor of a lossy capacitor
O) De sauty bridge	D) Capacitance

Options :

1. ✔ L - C; M - A; N - B; O - D

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2. ✗ L - A; M - C; N - B; O - D

3. ✗ L - C; M - A; N - D; O - B

4. ✗ L - D; M - B; N - A; O - C

Question Number : 36 Question Id : 9003001716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Moving Instruments, the error due to stray magnetic fields are minimized by shielding the working part of the instrument by

Options :

1. ✓ an iron case

2. ✗ copper case

3. ✗ an aluminum case

4. ✗ steel case

Question Number : 37 Question Id : 9003001717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pickup wrong statement from the following?

Options :

1. ✓ Potential Transformer has large Volt- Ampere ratings

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2. ✗ Potential Transformer is a step down Transformer

3. ✗ Current Transformer must never be operated on open circuit

4. ✗ Current Transformer is a step up Transformer

Question Number : 38 Question Id : 9003001718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an electrodynamometer type wattmeter

Options :

1. ✓ Current coil is fixed whereas pressure coil is movable

2. ✗ Current coil is movable whereas pressure coil is fixed

3. ✗ Both the coils are fixed

4. ✗ Both the coils are movable

Question Number : 39 Question Id : 9003001719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The function of the Schmitt trigger in a digital frequency meter is

Options :

1. ✗ Amplifying the sinusoidal waveforms

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2. ✖ Providing time base

3. ✔ Converting the sinusoidal waveforms into rectangular pulses

4. ✖ Attenuating the sinusoidal waveforms

Question Number : 40 Question Id : 9003001720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a CRO, the horizontal amplifier is designed for

Options :

1. ✖ Low amplitude signals with a fast rise time

2. ✔ High amplitude signals with a slow rise time

3. ✖ High amplitude signals with a fast rise time

4. ✖ High frequency signals with a slow rise time

Question Number : 41 Question Id : 9003001721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

(With usual notations) when a synchronous motor is connected through inductive impedance under steady state conditions with constant E_f, V_t and Z_s, the maximum power output is given by

Options :

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1. ✓ $\frac{E_f V_t}{Z_s} - \frac{V_t^2}{Z_s^2} r_a$

2. ✗ $\frac{E_f V_t}{Z_s} - \frac{E_f^2}{Z_s^2} r_a$

3. ✗ $\frac{E_f V_t}{Z_s} + \frac{E_f^2}{Z_s^2} r_a$

4. ✗ $\frac{E_f V_t}{Z_s} + \frac{V_t^2}{Z_s^2} r_a$

Question Number : 42 Question Id : 9003001722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match the following:

	Nature of load	Angle between Armature m.m.f and field m.m.f
(i)	U.P.F	(L) 0^0
(ii)	Z.P.F lag	(M) 90^0
(iii)	Z.P.F lead	(N) 180^0
(iv)	Lagging p.f	(O) more than 90^0

Options :

1. ✗ (i) – (N) ; (ii) – (L) ; (iii) – (M) ; (iv) - (O)

2. ✗ (i) – (N) ; (ii) – (L) ; (iii) – (O) ; (iv) - (M)

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3. ✔ (i) – (M) ; (ii) – (N) ; (iii) – (L) ; (iv) - (O)

4. ✖ (i) –(N) ; (ii) – (M) ; (iii) – (O) ; (iv) - (L)

Question Number : 43 Question Id : 9003001723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pitch factor of a 3-phase alternator having 36 stator slots, 4 poles and coil span of 1 to 8 is

Options :

1. ✖ $\text{Cos } 10^0$

2. ✔ $\text{Cos } 20^0$

3. ✖ $\text{Cos } 15^0$

4. ✖ $\text{Cos } 30^0$

Question Number : 44 Question Id : 9003001724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cylindrical rotor synchronous generator having synchronous reactance of 1.2 p.u is running overexcited with $E_f = 1.2$ p.u., is delivering a synchronous power of 0.5 to the bus. The stiffness of coupling is

Options :

1. ✖ 0.5

2. ✖ 1

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3. ✓ 0.866

4. ✗ 0

Question Number : 45 Question Id : 9003001725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is correct with respect to 3-phase synchronous motor?

(i) Non-Self starting motor

(ii) At the time of starting its field winding is open circuited

(iii) Damper winding prevents hunting

(iv) At synchronous speed damping torque is produced

Options :

1. ✗ (i) and (ii)

2. ✗ (ii) and (iii)

3. ✗ (ii) and (iv)

4. ✓ (i) and (iii)

Question Number : 46 Question Id : 9003001726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following are representing doubly and singly excited magnetic systems respectively?

Options :

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1. ✗ Solenoids and d.c shunt machines

2. ✓ Synchronous motors and reluctance motors

3. ✗ Tachometers and loud speakers

4. ✗ M.I instruments and synchronous motors

Question Number : 47 Question Id : 9003001727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a two-phase servo motor which one of the following statements is not true?

Options :

1. ✗ The rotor diameter is small

2. ✓ The rotor resistance is low

3. ✗ The applied voltages are seldom balanced

4. ✗ The torque speed characteristics are linear

Question Number : 48 Question Id : 9003001728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 400 V, 20 kW d.c shunt motor takes 2.5 A when running light. For an armature resistance of 0.5Ω, field resistance of 800 Ω and brush drop of 2V, the total constant losses are

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Options :

1. ✗ 794 W

2. ✗ 894 W

3. ✓ 994 W

4. ✗ 800 W

Question Number : 49 Question Id : 9003001729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is correct with respect to speed control of d.c motors?

Options :

1. ✗ Field control method facilitates speed control below base speed

2. ✗ Field control method is suitable for constant torque drives

3. ✗ Armature resistance control method is more efficient than Ward Leonard method

4. ✓ Ward Leonard method is suitable for constant power drive

Question Number : 50 Question Id : 9003001730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The armature reaction m.m.f in a d.c machine makes

Options :

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1. ✓ An angle of 90^0 with the main pole axis and triangular in shape

2. ✗ An angle of 90^0 with the main pole axis and trapezoidal in shape

3. ✗ An angle of 180^0 with the main pole axis and trapezoidal in shape

4. ✗ An angle of 10^0 with the main pole axis and triangular in shape

Question Number : 51 Question Id : 9003001731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The average pitch of a six pole wave wound d.c armature having 16 slots with 2 coil sides per slot, each coil has single turn is

Options :

1. ✗ 6

2. ✗ 11

3. ✗ 7

4. ✓ 5

Question Number : 52 Question Id : 9003001732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Identify the Incorrect statements from the following?

i) A transformer can have zero voltage regulation at lagging power factor

ii) A transformer can have zero voltage regulation at leading power factor

iii) The resistance between primary and secondary windings of a transformer is Zero ohms.

iv) The resistance between primary and secondary windings of a transformer is infinite ohms.

Options :

1. ✓ (i) and (iii)

2. ✗ (ii) and (iii)

3. ✗ (i) and (iv)

4. ✗ (ii) and (iv)

Question Number : 53 Question Id : 9003001733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The core shape of a transformer is Cruciform to

Options :

1. ✗ Reduce copper material used for winding

2. ✓ Reduce core reluctance

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3. ✖ Reduce core loss

4. ✖ Provide mechanical strength

Question Number : 54 Question Id : 9003001734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

To account for power system interconnections, a Y/ Δ connected 3-phase transformer has a phase shift of

Options :

1. ✖ $\pm 45^0$

2. ✖ $\pm 60^0$

3. ✔ $\pm 30^0$

4. ✖ $\pm 15^0$

Question Number : 55 Question Id : 9003001735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a 2-winding transformer is connected as an auto transformer with transformation ratio "k", the ratio of per unit full load losses as auto transformer to two winding transformer is

Options :

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1. ✖ $\frac{1}{k}$

2. ✔ 1-k

3. ✖ $\frac{1}{k+1}$

4. ✖ $\frac{1}{1-k}$

Question Number : 56 Question Id : 9003001736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The torque developed in synchronous watts, if the power input to a 3-phase Induction motor is 40 kW running at a slip of 5% is_____ (by neglecting stator losses)

Options :

1. ✖ 40 kW

2. ✖ 2 kW

3. ✖ 42 kW

4. ✔ 38 kW

Question Number : 57 Question Id : 9003001737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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For a 2-value capacitor single phase Induction motor, at the time of starting the phase difference between main and auxiliary winding currents is

Options :

1. ✖ 45^0

2. ✖ 90^0

3. ✖ 30^0

4. ✔ $> 90^0$

Question Number : 58 Question Id : 9003001738 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the supply voltage to a 3-phase squirrel cage Induction Motor (SCIM) is reduced by 20%, the maximum torque will be decreased by

Options :

1. ✖ 40%

2. ✖ 64%

3. ✔ 36%

4. ✖ 20%

Question Number : 59 Question Id : 9003001739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A 3-phase, 4 pole, 50 Hz induction motor has a full load speed of 1440 r.p.m. The speed of rotor field with respect to rotor structure and stator structure respectively are

Options :

1. ✓ 60 and 1500 r.p.m

2. ✗ Zero and 1500 r.p.m

3. ✗ 1440 and 60 r.p.m

4. ✗ zero and 1400 r.p.m

Question Number : 60 Question Id : 9003001740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the load on a 3-phase Induction Motor is decreased from Full load to No- load

Options :

1. ✗ Both p.f and slip increases

2. ✓ Both p.f and slip decreases

3. ✗ p.f increases but slip decreases

4. ✗ p.f decreases but slip increases

Question Number : 61 Question Id : 9003001741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following Instruments are used as standard and transfer instruments?

Options :

1. ✖ Moving Iron type

2. ✖ Moving Coil type

3. ✖ Induction type

4. ✔ Electrodynamometer type

Question Number : 62 Question Id : 9003001742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two sine waves of same magnitude and frequency are applied simultaneously to the Vertical and horizontal deflecting plates of CRO with phase difference of 150^0 between them. The Lissajous figure obtained is

Options :

1. ✖ Circle

2. ✖ Straight line

3. ✔ Ellipse

4. ✖ Parabola

Question Number : 63 Question Id : 9003001743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following statements are correct with respect to M.I instruments?

i) Repulsion type instruments are much more common than the attraction type

ii) Attraction type instrument will usually have a more inductance that the corresponding repulsion instrument

iii) Scale is uniform

iv) For low voltage range, the power consumption is more

Options :

1. ✗ (i) and (ii)

2. ✓ (ii) and (iii)

3. ✗ (iii) and (iv)

4. ✗ (iv) and (i)

Question Number : 64 Question Id : 9003001744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A circuit consisting of an unknown coil, a resistance and a variable capacitor connected in series is tuned to resonance using a Q- meter. If the frequency is $\frac{400}{2\pi}$ kHz and the resonant capacitor is set at 200 pF, then the effective inductance of the unknown coil is

Options :

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1. ✓ $\frac{1}{32}$ H

2. ✗ $\frac{1}{64}$ H

3. ✗ $\frac{1}{16}$ H

4. ✗ $\frac{1}{8}$ H

Question Number : 65 Question Id : 9003001745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a single phase M.I power factor meter, the controlling torque is provided by

Options :

1. ✗ Gravity control

2. ✗ Spring control

3. ✓ No control is needed

4. ✗ Stiffness of suspension

Question Number : 66 Question Id : 9003001746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is correct?

Options :

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1. ✓ Owen's bridge is used for measurement of inductance in terms of capacitance

2. ✗ Hay's bridge is used for measurement of inductance for low Q- coils

3. ✗ Maxwell's Inductance capacitance bridge is used for measurement of inductance for high Q- coils

4. ✗ Campbell's bridge measures inductance in terms of standard mutual inductance

Question Number : 67 Question Id : 9003001747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How would 16.95 V be displayed on a 10 V range of $4\frac{1}{2}$ digit Voltmeter?

Options :

1. ✗ 16.95

2. ✓ 16.950

3. ✗ 16.9500

4. ✗ 16.9

Question Number : 68 Question Id : 9003001748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The disc of an Energy meter makes 600 revolutions per unit of energy. When a 1kW load is connected, the disc rotates at 10.2 r.p.m. If the load is ON for 12 hours, how many units are recorded as error?

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Options :

1. ✓ 0.24 (extra)

2. ✗ 0.24 (less)

3. ✗ 0.2 (extra)

4. ✗ 0.2 (less)

Question Number : 69 Question Id : 9003001749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pantograph collector is used where the vehicles run at _____ speeds and_____ currents are to be collected respectively in railways

Options :

1. ✗ Low ; Small

2. ✗ Low; Large

3. ✗ High; Small

4. ✓ High; Large

Question Number : 70 Question Id : 9003001750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following factors will cause less specific energy consumption in the movement of electric train?

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Options :

1. ✗ The distance between the stops is less

2. ✗ For a given scheduled speed, low values of acceleration and retardation

3. ✓ For a given scheduled speed, more values of acceleration and retardation

4. ✗ Steep gradient

Question Number : 71 Question Id : 9003001751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a D/A converter (DAC), if V_{fs} is the ideal full-scale output voltage and V_{ref} is the output reference voltage when all the digital inputs are all 1. Which among the following equations is valid?

Options :

1. ✓ $V_{fs} = V_{ref}\left(1 - \frac{1}{2^n}\right)$

2. ✗ $V_{fs} = V_{ref}\left(\frac{1}{2^n} - 1\right)$

3. ✗ $V_{ref} = V_{fs}\left(1 - \frac{1}{2^n}\right)$

4. ✗ $V_{ref} = V_{fs}\left(\frac{1}{2^n} - 1\right)$

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Question Number : 72 Question Id : 9003001752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match A/D converter (ADC) features in List I with the corresponding ADC types in List II

List I	List II
(a) Simplest type of ADC	(i) Flash - type ADC
(b) Fastest ADC	(ii) Dual - Slope type ADC
(c) Slowest ADC	(iii) Counter - type ADC
(d) Most widely used ADC	(iv) Successive - Approximation type ADC

Choose the correct answer from the options given below:

Options :

1. ✓ (a) - (iii), (b) - (i), (c) - (ii), (d) - (iv)

2. ✗ (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)

3. ✗ (a) - (iv), (b) - (ii), (c) - (iii), (d) - (i)

4. ✗ (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)

Question Number : 73 Question Id : 9003001753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $X(z) = z + 1 - 2z^{-1}$, the inverse z-transform of X(z) will be

Options :

1. ✗ $x[n] = d[n-1] + d[n] + 2\,d[n-1]$

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2. ✗ $x[n] = d[n-1] + d[n] - 2\,d[n+1]$

3. ✗ $x[n] = d[n+1] + d[n] + 2\,d[n+1]$

4. ✓ $x[n] = d[n+1] + d[n] - 2\,d[n-1]$

Question Number : 74 Question Id : 9003001754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

After execution of the following 8085 microprocessor program, the content of the register "A" is

```
MVI A, 55 h
MVI C, 35 h
ADD C
DAA
```

Options :

1. ✗ 22 h

2. ✗ 50 h

3. ✓ 90 h

4. ✗ 7A h

Question Number : 75 Question Id : 9003001755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Following are the flags in the flag register of 8085 microprocessor.

(a) Parity flag (b) Carry flag (c) Zero flag (d) Sign flag

Arrange them in the ascending order starting from LSB to MSB.

Options :

1. ✖ (c), (a), (b), (d)

2. ✖ (b), (d), (c), (a)

3. ✔ (b), (a), (c), (d)

4. ✖ (a), (c), (b), (d)

Question Number : 76 Question Id : 9003001756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Following statements are given for Laplace transforms:

(a) $L[x(t)] = \int_{-\infty}^{\infty} x(t)e^{st}dt$ (b) $L[x(t)] = \int_{-\infty}^{\infty} x(t)e^{-st}dt$

(c) $L[te^{-at}u(t)] = \frac{1}{(s+a)^2}$ (d) $L[te^{-at}u(t)] = \frac{1}{(s-a)^2}$

Out of the above, the following is the correct answer:

Options :

1. ✖ (a) and (c) are correct

2. ✔ (b) and (c) are correct

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3. ✖ (a) and (d) are correct

4. ✖ (b) and (d) are correct

Question Number : 77 Question Id : 9003001757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the signal, $x(n) = \left(\frac{1}{2}\right)^n u(n) + \left(\frac{1}{3}\right)^n u(n)$, Z transforms and ROC are given below.

(a) $Z[x(n)] = \frac{z}{z-\frac{1}{2}} + \frac{z}{z-\frac{1}{3}}$

(b) ROC: $|z| > \frac{1}{2}$ and $|z| > \frac{1}{3}$

(c) $Z[x(n)] = \frac{z}{z+\frac{1}{2}} + \frac{z}{z+\frac{1}{3}}$

(d) ROC: $|z| < \frac{1}{2}$ and $|z| < \frac{1}{3}$

Out of the above given statements which are correct?

Options :

1. ✖ (b) and (c) are correct

2. ✔ (a) and (b) are correct

3. ✖ (c) and (d) are correct

4. ✖ (a) and (d) are correct

Question Number : 78 Question Id : 9003001758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If differential amplifier has a differential gain of 20,000. CMRR = 80 dB, then common mode gain is

Options :

1. ✓ 2

2. ✗ 1

3. ✗ $\frac{1}{2}$

4. ✗ 0

Question Number : 79 Question Id : 9003001759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following circuit comes under the class of combinational logic circuits?

I. Full Adder II. Full Subtractor III. Counter IV. Multiplexer

Options :

1. ✗ I and II are correct.

2. ✓ I, II and IV are correct.

3. ✗ II, III and IV are correct.

4. ✗ I, III and IV are correct.

Question Number : 80 Question Id : 9003001760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which of the following statements are correct?

1. Race around condition occurs in a JK flip-flop when both the inputs are one.

2. A flip-flop is used to store one bit of information.

3. A transparent latch consists of D-type flip-flop.

4. Master-Slave configuration is used in flip-flop to store two bits of information.

Options :

1. ✔ 1, 2 and 3 only

2. ✘ 1, 3 and 4 only

3. ✘ 1, 2 and 4 only

4. ✘ 2, 3 and 4 only

Question Number : 81 Question Id : 9003001761 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match standard IC numbers in List I with their corresponding functionality in List II

List – I	List – II
a. 74148	i. Digital Multiplexer
b. 7490	ii. Demultiplexer
c. 74155	iii. 8-to3 bit Priority Encoder
d. 74151	iv. Decade Counter

Options :

1. ✔ a-iii; b-iv; c-ii; d-i

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2. ✖ a-i; b-ii; c-iii; d-iv

3. ✖ a-ii; b-iii; c-iv; d-i

4. ✖ a-iii; b-i; c-ii; d-iv

Question Number : 82 Question Id : 9003001762 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Regarding an Op-Amp:

1. All types of negative feedback reduce nonlinear distortion.

2. All types of negative feedback reduce the output offset voltage.

3. Non-inverting (current and voltage) feedback increases the input impedance.

4. Inverting (current and voltage) feedback decreases input impedance.

Options :

1. ✖ 1 only

2. ✖ 2 and 3 only

3. ✖ 2 and 4 only

4. ✔ 1, 2, 3 and 4

Question Number : 83 Question Id : 9003001763 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A digital multiplexer can be used for

A. Parallel-to-serial conversion

B. Many-to-one switch

C. To generate memory chip select

D. for code conversion

Options :

1. ✖ A, C and D only

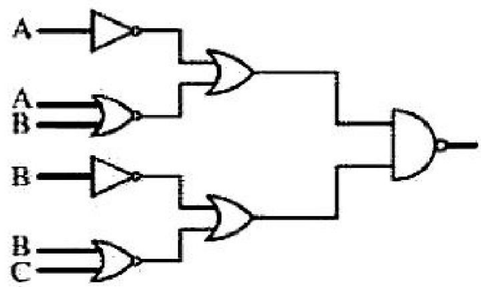
2. ✖ B, C and D only

3. ✔ A and B only

4. ✖ B and C only

Question Number : 84 Question Id : 9003001764 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The output of the circuit is given by



Options :

1. ✖ $A + C$

2. ✖ $B + C$

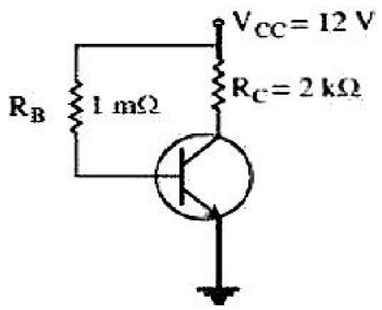
3. ✔ $A + B$

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4. ✗ $A + \overline{C}$

Question Number : 85 Question Id : 9003001765 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a circuit shown below, the base current is



Options :

1. ✗ 12 μA

2. ✓ 11.3 μA

3. ✗ 6 μA

4. ✗ 0.7 μA

Question Number : 86 Question Id : 9003001766 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The simplified Boolean expression for the following K-map to find F(A,B,C,D) in SOP:

AB \ CD				
	0	0	1	0
	1	1	1	
	0	1	1	1
	0	1	0	0

Options :

1. ✓ $BD + \overline{A}B\overline{C} + \overline{A}CD + A\overline{C}D + ABC$

2. ✗ $BD + \overline{A}B\overline{D} + \overline{A}\,\overline{C}D + AC\overline{D}$

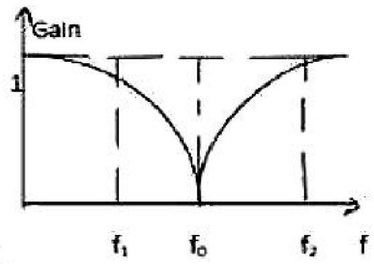
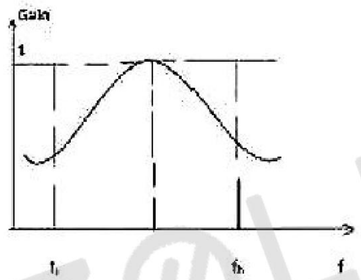
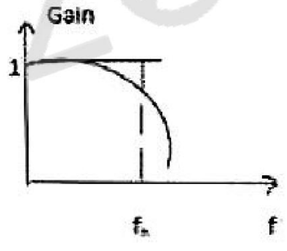
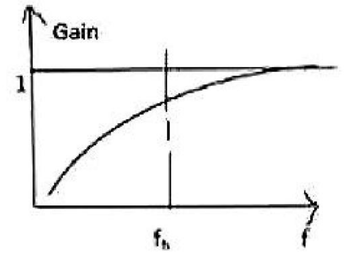
3. ✗ $\overline{A}B\overline{D} + \overline{A}\,\overline{C}D + AC\overline{D} + ABD$

4. ✗ $\overline{A}B\overline{C} + \overline{A}\,CD + AC\overline{D} + ABC$

Question Number : 87 Question Id : 9003001767 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Match filters in List I with their corresponding frequency response in List II

List I	**List II**
(Filters)	**(Frequency Response)**
A. Low Pass Filter	I. 
B. High Pass Filter	II. 
C. Band Pass Filter	III. 
D. Band Stop/Reject Filter	IV. 

Options :

1. ✖ A - II, B - I, C - IV, D -III

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2. ✖ A - II, B - III, C - IV, D - I

3. ✖ A - III, B - IV, C - I, D –II

4. ✔ A - III, B - IV, C - II, D – I

Question Number : 88 Question Id : 9003001768 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Match signals in List I with their corresponding Laplace transforms in List II

List I	**List II**
(f(t))	***(F(S))***
A. e^{-at}	I. $\frac{s}{s^2+\omega^2}$
B. te^{at}	II. $\frac{\omega}{s^2+\omega^2}$
C. $\sin \omega t$	III. $\frac{1}{(s-a)^2}$
D. $\cos \omega t$	IV. $\frac{1}{s+a}$

Options :

1. ✖ A - I, B - II, C - IV, D – III

2. ✖ A - III, B - II, C - I, D - IV

3. ✖ A - IV, B - III, C - I, D - II

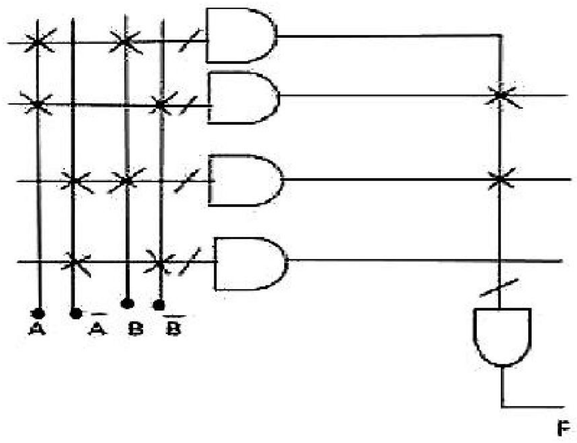
4. ✔ A - IV, B - III, C - II, D - I

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Question Number : 89 Question Id : 9003001769 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Determine the output of the logic array given in the following figure. The Xs represent

connected link.



Options :

1. ✖ $A\bar{B} + \bar{A}B$

2. ✖ $AB + \bar{A}\,\bar{B}$

3. ✔ 0

4. ✖ 1

Question Number : 90 Question Id : 9003001770 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Match logic gates in List I with their corresponding truth table in List II

List I (Logic Gate)

A. Negative OR

B. Exclusive NOR

C. Exclusive OR

D. Negative AND

List II (Truth Table)

I.

X	Y	F
0	0	1
0	1	0
1	0	0
1	1	0

II.

X	Y	F
0	0	1
0	1	1
1	0	1
1	1	0

III.

X	Y	F
0	0	1
0	1	0
1	0	0
1	1	1

IV.

X	Y	F
0	0	0
0	1	1
1	0	1
1	1	0

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Options :

1. ✗ A - I, B - III, C - IV, D – II

2. ✗ A - I, B - IV, C - III, D – II

3. ✓ A - II, B - III, C - IV, D – I

4. ✗ A - IV, B - I, C - II, D – III

Question Number : 91 Question Id : 9003001771 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Select a device which is suitable for lower-power and high frequency converter

Options :

1. ✗ BJT

2. ✓ MOSFET

3. ✗ IGBT

4. ✗ Thyristor

Question Number : 92 Question Id : 9003001772 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Choose the suitable statements for IGBT

i) lower gate drive requirement

ii) higher switching losses

iii) smaller snubber circuit parameters

Options :

1. ✖ i and ii

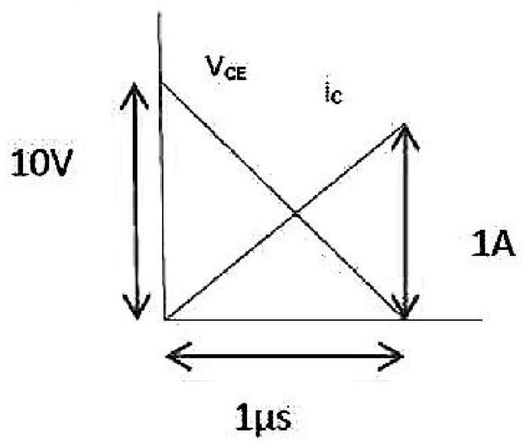
2. ✖ ii and iii

3. ✔ i and iii

4. ✖ i, ii and iii

Question Number : 93 Question Id : 9003001773 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the switching waveform of power transistor is shown below. The peak instantaneous power loss in watts is



Options :

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1. ✖ 250

2. ✔ 2.5

3. ✖ 500

4. ✖ 5

Question Number : 94 Question Id : 9003001774 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Thyristor operating from a peak supply voltage of 200V has the following specifications:

Repetitive peak current I_p = 200A, $(di/dt)_{max}$ = 40 A/μs, Factor of safety=2,calculate the value of inductance to be kept in series the thyristor to limit di/dt value beyond specified values

Options :

1. ✖ 25 μH

2. ✖ 5 μH

3. ✔ 10 μH

4. ✖ 50 μH

Question Number : 95 Question Id : 9003001775 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hard firing of thyristor results

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Options :

1. ✓ decreases turn on time and enhances di/dt capability

2. ✗ increases turn on time and reduces di/dt capability

3. ✗ decreases turn on time and reduces di/dt capability

4. ✗ increases turn on time and enhances di/dt capability

Question Number : 96 Question Id : 9003001776 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a three phase six pulse converter the ratio of average output voltage to the maximum value of line voltage for $\alpha=0^0$

Options :

1. ✗ $\frac{3\sqrt{2}}{\pi}$

2. ✓ $\frac{3}{\pi}$

3. ✗ $\frac{3\sqrt{3}}{2\pi}$

4. ✗ $\frac{3\sqrt{3}}{\pi}$

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Question Number : 97 Question Id : 9003001777 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a single phase full converter ,if the load current is 10A and ripple free, the r.m.s source current is

Options :

1. ✖ 5 A

2. ✖ 20A

3. ✖ 40A

4. ✔ 10A

Question Number : 98 Question Id : 9003001778 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In case of phase controlled converter feeding RLE load , extinction angle depends on

Options :

1. ✖ load emf E only

2. ✖ Firing angle α only

3. ✖ load impedance and firing angle α

4. ✔ load emf E, firing angle α and load impedance angle Ø

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Question Number : 99 Question Id : 9003001779 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Power factor of a three phase full converter is

Options :

1. ✖ $\frac{\sqrt{3}\cos\alpha}{\pi}$

2. ✖ $\frac{3\sqrt{3}\cos\alpha}{\pi}$

3. ✔ $\frac{3\cos\alpha}{\pi}$

4. ✖ $\frac{\pi\cos\alpha}{3}$

Question Number : 100 Question Id : 9003001780 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ripple factor of voltage for a step down chopper with duty cycle $\alpha=0.9$ is

Options :

1. ✖ 1/9

2. ✖ 9

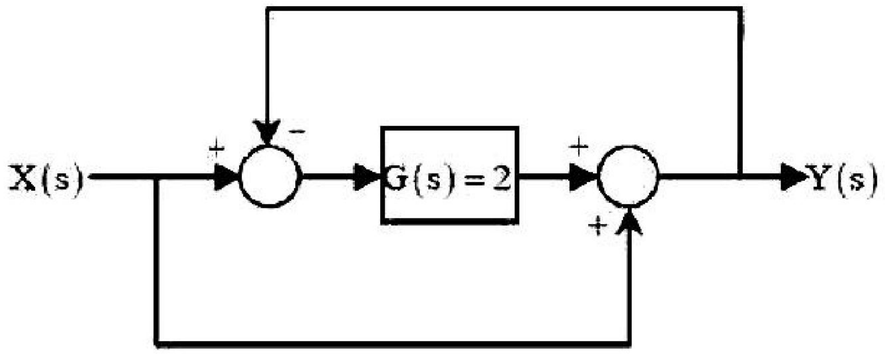
3. ✔ 1/3

4. ✖ 3

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Question Number : 101 Question Id : 9003001781 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the system shown in the figure, Y (s) / X (s) = _____.



Options :

1. ✖ 1

2. ✖ 2

3. ✖ 3

4. ✔ 4

Question Number : 102 Question Id : 9003001782 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given the G(s)H(s) = K/s(s+1)(s+3), the point of intersection of the asymptotes of the root loci with the real axis is

Options :

1. ✖ -4

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2. ✖ 1.33

3. ✔ -1.33

4. ✖ 4

Question Number : 103 Question Id : 9003001783 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the Bode-plot of a unity feedback control system, the value of phase of G(jω) at the gain cross over frequency is -125^0. The phase margin of the system is

Options :

1. ✖ -125°

2. ✖ -55°

3. ✔ 55°

4. ✖ 125°

Question Number : 104 Question Id : 9003001784 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The open-loop transfer function of a plant is given as $G(s)=1/s^2-1$. If the plant is operated in a unity feedback configuration, then the lead compensator that can stabilize this control system is

Options :

1. ✖ G(s)=10(s-1)/s+2

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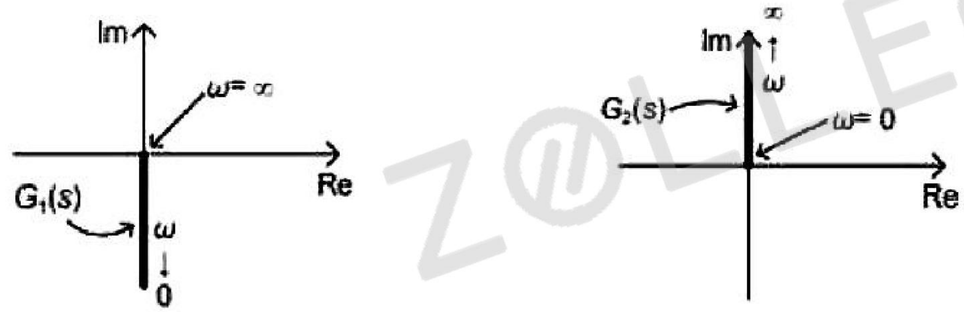
2. ✖ G(s)=10(s+4)/s+2

3. ✔ G(s)=10(s+2)/s+10

4. ✖ G(s)=2(s+2)/s+10

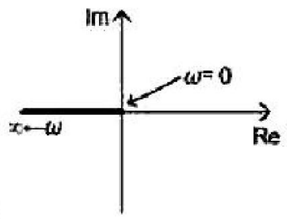
Question Number : 105 Question Id : 9003001785 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Nyquist plot of two functions $G_1(S)$ and $G_2(S)$ are shown in figure.



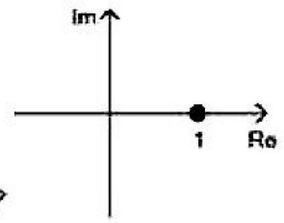
Nyquist plot of the product of G1 (s) and G2(s) is

Options :

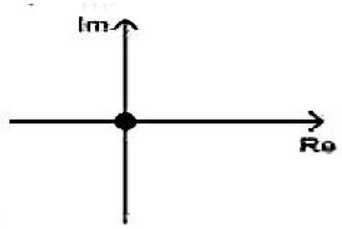
1. ✖ 

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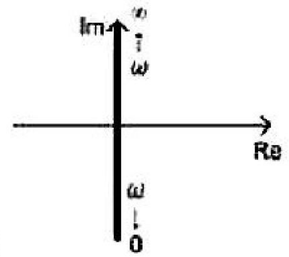
2. ✓



3. ✗



4. ✗



Question Number : 106 Question Id : 9003001786 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bundled conductors in EHV transmission systems provide

Options :

1. ✓ Increased line reactance

2. ✗ Reduced line capacitance

3. ✗ Reduced voltage gradient

4. ✗ Increased corona loss

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Question Number : 107 Question Id : 9003001787 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A list of relays and the power system components protected by the release are given in Group

1 and Group 2 respectively. Choose the correct match from the four choice given below

Group 1	**Group 2**
P: Distance relay	1. Transformer
Q: Under frequency relay	2. Turbine
R: Differential relay	3. Busbar
S: Buchholz relay	4. Shunt Capacitor
	5. Alternator
	6. Transmission lines

Options :

1. ✔ P-6, Q-5, R-3, S-1

2. ✘ P-4, Q-3, R-2, S-1

3. ✘ P-5, Q-2, R-1, S-6

4. ✘ P-6, Q-4, R-5, S-3

Question Number : 108 Question Id : 9003001788 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The fuel cost characteristics of two generators are obtained as under

$F_{c1}(P_{i1}) = 1000+50P_{i1} + 0.01P_{i1}^2$ unit of cost per hour

$F_{c21}(P_{i2}) = 2500+45P_{i2} + 0.01P_{i2}^2$ unit of cost per hour

If the total load supplied is 1000MW. What are the approximate values of P_{i1} and P_{i2}

Options :

1. ✗ 136.33 MW, 863.66 MW

2. ✓ 166.33 MW, 833.66 MW

3. ✗ 256.33 MW, 743.66 MW

4. ✗ 456.33 MW, 543.66 MW

Question Number : 109 Question Id : 9003001789 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio error of a current transformer is due to

Options :

1. ✗ Lagging power factor

2. ✓ Exciting current

3. ✗ Stray magnetism

4. ✗ Corona effects

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Question Number : 110 Question Id : 9003001790 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

..... is the ability of power system to maintain synchronism between machines

with the system and external tie- line, for small and slow normal load fluctuations

Options :

1. ✗ Dynamic stability

2. ✓ Steady state stability

3. ✗ Transient stability

4. ✗ Voltage stability

Question Number : 111 Question Id : 9003001791 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For what values of a and b the equations $x+2y+3z = 6$, $x+3y+5z = 9$, $2x+5y+az = b$ has a

unique solution

Options :

1. ✗ $a \neq 8, b \neq 15$

2. ✗ $a = 8, b \neq 15$

3. ✗ $a = 8, b = 15$

4. ✓ $a \neq 8, b = 15$

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Question Number : 112 Question Id : 9003001792 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Eigen values of the matrix $\begin{bmatrix} 0 & -2 & -2 \\ -1 & 1 & 2 \\ -1 & -1 & 2 \end{bmatrix}$ are

Options :

1. ✗ 0, 1, 2

2. ✗ 1, 2, -3

3. ✓ -1, 2, 2

4. ✗ 3, 0, 0

Question Number : 113 Question Id : 9003001793 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x, y) = x^3 + y^3 - 3axy$, then the stationary points are

Options :

1. ✓ (0, 0), (a, a)

2. ✗ (0, a), (a, a)

3. ✗ (0, 0), (-a, -a)

4. ✗ (0, 0)

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Question Number : 114 Question Id : 9003001794 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Value of normal vector to the surface $\Phi = xy^2 + yz^3$ at the point (2, -1, 1)

Options :

1. ✘ $i - 3j - 2k$

2. ✔ $i - 3j - 3k$

3. ✘ $i + 3j - 3k$

4. ✘ $8i - j - 10k$

Question Number : 115 Question Id : 9003001795 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

General Solution of $\frac{d^2y}{dx^2} - 81y = 0$

Options :

1. ✘ $y = C_1 Cos9x + C_2 Sin9x$

2. ✘ $y = C_1 Cos9x - C_2 Sin9x$

3. ✔ $y = C_1 e^{9x} + C_2 e^{-9x}$

4. ✘ $y = C_1 e^{9x} - C_2 e^{-9x}$

Question Number : 116 Question Id : 9003001796 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

General Solution of $4xyz = pq + 2px^2y + 2qxy^2$

Options :

1. ✗ $z = ax^2 + by^2$

2. ✗ $z = ax^2 - by^2$

3. ✓ $z = ax^2 + by^2 + a\,b$

4. ✗ $z = ax^2 + by^2 - ab$

Question Number : 117 Question Id : 9003001797 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let $f(z) = \frac{e^{3z}}{(z-1)(z-2)}$, and C: $|z| = 3$. The value of $\int_c f(z)dz$ is

Options :

1. ✓ $2\pi i\,(e^6 - e^3)$

2. ✗ $-2\pi i\,(e^6 + e^3)$

3. ✗ $\pi i\,(e^6 - e^3)$

4. ✗ $-2\pi i\,(e^6 - e^3)$

Question Number : 118 Question Id : 9003001798 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $f(z) = \frac{-e^{2z}}{(z-1)^3}$, then the Residue at $z = 1$ is

Options :

1. ✖ $-\pi e^4$

2. ✔ $-2e^2$

3. ✖ $-2\pi i e^4$

4. ✖ $-e^2$

Question Number : 119 Question Id : 9003001799 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A box I contains eleven cards numbered 1 to 11, box II contains seven cards numbered 1 to 7.

A box is selected at random and a card is drawn. If the number is even, find the probability that the card is from box I

Options :

1. ✔ 35/68

2. ✖ -35/68

3. ✖ 1 / 11

4. ✖ 1 / 7

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Question Number : 120 Question Id : 9003001800 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Regula false formula for a < b is

Options :

1. ✓ $\frac{af(b)-bf(a)}{f(b)-f(a)}$

2. ✗ $\frac{f(b)-f(a)}{af(b)-bf(a)}$

3. ✗ $\frac{bf(b)-af(a)}{f(b)-f(a)}$

4. ✗ $\frac{af(b)+bf(a)}{f(b)-f(a)}$

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