

Question Paper Preview

Subject Name: Electrical Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 7621614921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $kxyz = \det \begin{bmatrix} x & y & z \\ -x & y & z \\ x & -y & z \end{bmatrix}$ then $k =$

Options :

- 1
- 1
- 2
- 4

Question Number : 2 Question Id : 7621614922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The eigen values of $A = \begin{bmatrix} -1 - \lambda & \frac{1}{3} \\ -3 & -1 - \lambda \end{bmatrix}$ are

Options :

- $-1 + i$ and $-1 - i$
- $-1 + i$ and $-3 + i$
- $-1 + i$ and $-2 + i$
- $-1 + i$ and $1 + i$

Question Number : 3 Question Id : 7621614923 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $p = \int_{-\pi/2}^{\pi/2} \sin^2 dx = 2 \int_0^{\pi/2} \sin^2 x dx$, then $p =$

Options :

- $\frac{\pi}{2}$
- $\frac{\pi}{4}$
- $\frac{\pi}{5}$

4. $\frac{\pi}{6}$

Question Number : 4 Question Id : 7621614924 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $z = \cos(x^2 y) + \sin y$ then $\frac{\partial z}{\partial y} =$

Options :

1. $-x^2 \sin(x^2 y)$
2. $-x^2 \sin(x^2 y) + \cos y$
3. $x^2 \sin(x^2 + y) + \sin y$
4. $x^2 \sin(x^2 y) + \cos y$

Question Number : 5 Question Id : 7621614925 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $y' = y \sec x$ is

Options :

1. $y = c (\sec x + \tan x)$
2. $y = c (\sec x - \tan x)$
3. $y = c (\sec x \tan x)$
4. $y = c (\sec^2 x + \tan x)$

Question Number : 6 Question Id : 7621614926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The standard deviation of the observations 2, 4, 6 and 8 is

Options :

1. 3
2. 5
3. $\sqrt{3}$
4. $\sqrt{5}$

Question Number : 7 Question Id : 7621614927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normal derivative of $\phi(x, y, z) = xy + yz + zx$ at $(-1, 1, 1)$ is

Options :

1. 2
2. 3
3. 4
4. 6

Question Number : 8 Question Id : 7621614928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If z is a complex number, the fixed points of $\omega = \frac{z-3}{z+1}$ are

Options :

1. $\pm i$
2. $\pm i\sqrt{2}$
3. $\pm\sqrt{3}$
4. $\pm i\sqrt{3}$

Question Number : 9 Question Id : 7621614929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The z – transform of the sequence $\{5^n\}$, $n \geq 0$ is

Options :

1. $\frac{5}{z}$
2. $\frac{z}{5}$
3. $\frac{z-5}{z}$
4. $\frac{z}{z-5}$

Question Number : 10 Question Id : 7621614930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of $t \cos t$ is

Options :

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

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 11 Question Id : 7621614931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A current of $i = 20 + 15\sqrt{2}\sin(\omega t)$ is measured using a moving iron instrument. The reading would be

Options :

1. 20 A
2. 15 A
3. 25 A

4. 35 A

Question Number : 12 Question Id : 7621614932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In gravity control, the controlling torque is a function of angular deflection θ as

Options :

1. $\sin \theta$
2. $\tan \theta$
3. θ
4. $1/\theta$

Question Number : 13 Question Id : 7621614933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most efficient form of damping used in electrical measuring instruments is

Options :

1. air friction
2. fluid friction
3. eddy current
4. hysteresis

Question Number : 14 Question Id : 7621614934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A meter has a full scale angle of 90° deg at a current of 1 A. This meter has perfect square law response. What is the current when the deflection angle is 45° ?

Options :

1. 0.5 A
2. 0.25 A
3. 0.707 A
4. 0.67 A

Question Number : 15 Question Id : 7621614935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Lissajous pattern on an oscilloscope has 5 horizontal tangencies and 2 vertical tangencies. If the frequency of the horizontal input is 1000 Hz, what is the frequency of the vertical input?

Options :

1. 400 Hz
2. 2,500 Hz
3. 4,000 Hz
4. 5,000 Hz

Question Number : 16 Question Id : 7621614936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a single phase induction type energy meter, the lag adjustment is used to make the

Options :

1. series magnet flux to lag behind the applied voltage by 90°
2. shunt magnet flux to lag behind the applied voltage by 90°
3. shunt magnet flux in phase with the applied voltage
4. series magnet flux in phase with the applied voltage

Question Number : 17 Question Id : 7621614937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following instruments can measure only AC quantities?

Options :

1. PMMC
2. Moving Iron
3. Dynamometer type
4. Induction type

Question Number : 18 Question Id : 7621614938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The vertical gain control of a CRO is set at a deflection sensitivity of 5 V/cm. An unknown AC Sinusoidal voltage signal is applied to the Y input. A 10 cm long vertical straight line trace is observed on the screen. Then the RMS value of the unknown voltage applied is

Options :

1. 50 V
2. $50/\sqrt{2}$ V
3. 25 V
4. $25/\sqrt{2}$ V

Question Number : 19 Question Id : 7621614939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The current and potential coils of a wattmeter were accidentally interchanged while connecting. After energising the circuit, it was observed that the wattmeter did not show the reading. This could be due to

Options :

1. damage to the potential coil only
2. damage to the current coil only
3. damage to both potential and current coils
4. loose contact

Question Number : 20 Question Id : 7621614940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most suitable bridge for measurement of the inductance of a coil having high quality factor ($Q > 10$) is

Options :

1. Maxwell's bridge
2. Schering bridge
3. Hay's bridge
4. Wien's bridge

Question Number : 21 Question Id : 7621614941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cell in secondary circuit gives null deflection for 2.5 m length of potentiometer slide wire having 10 m length of wire. If the length of the potentiometer wire is increased by 1m without changing the cell in the primary, the position of the null point now is

Options :

1. 3.5 m
2. 3 m
3. 2.75 m
4. 2.0 m

Question Number : 22 Question Id : 7621614942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the field circuit resistance of a DC shunt generator exceeds its critical value, the generator

Options :

1. fails to build up voltage
2. builds up a very high voltage
3. exceeds its current capacity
4. produces power beyond rating

Question Number : 23 Question Id : 7621614943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The desirable properties of transformer core material are

Options :

1. low permeability and low hysteresis loss
2. high permeability and high hysteresis loss
3. high permeability and low hysteresis loss
4. low permeability and high hysteresis loss

Question Number : 24 Question Id : 7621614944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A synchronous generator is feeding a zero power factor (lagging) load at rated current. Then the armature reaction is

Options :

1. magnetizing
2. demagnetizing
3. cross-magnetizing
4. ineffective

Question Number : 25 Question Id : 7621614945 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The line current and torque of a 3-phase ac motor are 'I' and 'T' respectively, when DOL starter is used. When Y/√ starter is used, the respective quantities are:

Options :

1. $I/3, T/\sqrt{3}$
2. $I/\sqrt{3}, T/3$
3. $I/\sqrt{2}, T/\sqrt{2}$
4. $I/2, T/4$

Question Number : 26 Question Id : 7621614946 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cumulatively compounded dc generator is supplying 20 A at 200 V. Now if the series field winding is short circuited, the terminal voltage

Options :

1. will remain unaltered at 200 V
2. will rise to 220 V
3. will shoot upto a very high value
4. will become less than 200V

Question Number : 27 Question Id : 7621614947 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Brushes in dc machines are always placed

Options :

1. parallel to geometrical neutral axis (GNA)
2. parallel to magnetic neutral axis (MNA)
3. perpendicular to GNA
4. perpendicular to MNA

Question Number : 28 Question Id : 7621614948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the supply terminals of a DC Shunt motor are interchanged then

Options :

1. the motor will stop
2. the motor will run at its normal speed in the same direction as before

3. the direction of rotation will reverse
4. the motor will run much faster in the same direction

Question Number : 29 Question Id : 7621614949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a DC Shunt motor , three point starters are not suitable for applications where speed variation by flux control is required because the motor may

Options :

1. not start
2. run away
3. stop at very high speed
4. stop at very low speed

Question Number : 30 Question Id : 7621614950 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A DC Series Motor develops a torque of 20 Nm at 3 A of load current. If the current is increased to 6 A and if there is no saturation at this current the torque developed will be

Options :

1. 10 Nm
2. 30 Nm
3. 40 Nm
4. 80 Nm

Question Number : 31 Question Id : 7621614951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Under short circuit conditions the power factor of an alternator is

Options :

1. Unity
2. almost zero lagging
3. almost zero leading
4. 0.85 lagging

Question Number : 32 Question Id : 7621614952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

'Inverted V' curves of a Synchronous motor give relation between

Options :

1. Power factor and field current
2. Armature current and field current
3. Armature current and power factor
4. Applied voltage and field current

Question Number : 33 Question Id : 7621614953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Voltmeter gives 120 oscillations per minute when connected to the rotor of an induction motor. If the stator frequency is 50 Hz, then the slip of the motor is

Options :

1. 2%
2. 2.5%
3. 4%
4. 5%

Question Number : 34 Question Id : 7621614954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The power factor of an induction motor at no load is around

Options :

1. 0.2 leading
2. 0.2 lagging
3. 0.50 lagging
4. 0.8 lagging

Question Number : 35 Question Id : 7621614955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stator winding of a single phase induction motor is split up into two parts in order to

Options :

1. improve efficiency
2. improve power factor
3. develop starting torque
4. increase speed

Question Number : 36 Question Id : 7621614956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A field excitation of 20 A in a certain alternator results in an armature current of 400 A in short circuit and a terminal voltage of 2000 V on open circuit. The magnitude of the internal voltage drop within the machine at a load current of 200 A is

Options :

1. 1 V
2. 10 V
3. 100 V
4. 1000 V

Question Number : 37 Question Id : 7621614957 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The losses which vary with the load in a power transformer are

Options :

1. friction and windage losses
2. copper losses
3. eddy current losses
4. hysteresis losses

Question Number : 38 Question Id : 7621614958 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The speed of a DC Shunt motor can be increased above its normal speed by

Options :

1. increasing the field current
2. decreasing the field current
3. decreasing the terminal voltage
4. increasing the armature resistance

Question Number : 39 Question Id : 7621614959 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 4 kVA, 400 / 200 V single phase transformer has resistance of 0.02 p.u and reactance of 0.06 p.u. Its actual resistance and reactance referred to HV side are _____ respectively.

Options :

1. 0.2 Ω and 0.6 Ω
2. 0.8 Ω and 2.4 Ω
3. 0.08 Ω and 0.24 Ω
4. 2 Ω and 6 Ω

Question Number : 40 Question Id : 7621614960 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resistance and reactance of a transformer are 1% and 4% respectively. Then the respective percentage voltage regulations at 0.8 leading and 0.8 lagging power factors are

Options :

1. 2.4% and -0.8%
2. -1.6% and 3.2%
3. 3.2% and -1.6%
4. -0.8% and 2.4%

Question Number : 41 Question Id : 7621614961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a three phase induction motor, the rotor circuit resistance is 12 Ω / phase and maximum torque occurs at a slip of 0.6. The value of standstill reactance of the rotor circuit per phase is

Options :

1. 7.2Ω
2. 12Ω
3. 10Ω
4. 20Ω

Question Number : 42 Question Id : 7621614962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a 36 slot, 4 pole alternator, if coil span is maintained as 8 slots then the harmonic which is eliminated from the generated voltage is

Options :

1. 5th harmonic
2. 7th harmonic
3. 9th harmonic
4. 11th harmonic

Question Number : 43 Question Id : 7621614963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A three phase star/star connected wound rotor induction motor has 0.06Ω rotor resistance and 0.3Ω standstill reactance per phase. The additional resistance required in the rotor circuit to make the starting torque equal to the maximum torque of the motor is

Options :

1. 0.04Ω
2. 0.24Ω
3. 0.024Ω
4. 0.004Ω

Question Number : 44 Question Id : 7621614964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Reactance relay has an R-X plane characteristic depicted by

Options :

1. a straight line passing through the origin
2. a straight line parallel to reactance axis
3. a straight line parallel to R axis
4. a circle passing through the origin

Question Number : 45 Question Id : 7621614965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When bundled conductors are used in place of single conductors, then the effective inductance will _____ and capacitance will _____.

Options :

1. be increased be decreased
2. be decreased be increased
3. be decreased ... remain unaffected
4. remain unaffected be increased

Question Number : 46 Question Id : 7621614966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In string insulators, the unit

Options :

1. near the power conductor is electrically more stressed
2. near the power conductor is electrically less stressed
3. near the cross arm is electrically more stressed
4. in the middle of the string is electrically more stressed

Question Number : 47 Question Id : 7621614967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Mho relay is a

Options :

1. Voltage restrained directional relay
2. Voltage controlled over current relay
3. Directional restrained over current relay
4. Directional restrained over voltage relay

Question Number : 48 Question Id : 7621614968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 10 kVA , 400 V/100 V two winding transformer is reconnected as an autotransformer across a suitable voltage source. The maximum rating of an auto transformer is

Options :

1. 50 kVA
2. 15 kVA
3. 12.5 kVA
4. 500 kVA

Question Number : 49 Question Id : 7621614969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Scott connection, the teaser transformer operates on _____ percentage of its rated voltage

Options :

1. 33.3%

2. 66.7%
3. 50.0%
4. 86.6%

Question Number : 50 Question Id : 7621614970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An over current relay of current rating 5A and current setting 150% is connected to the secondary of CT of ratio 300:5. Then the current in the lines for which the relay picks up is

Options :

1. 300 A
2. 450 A
3. 150 A
4. 200 A

Question Number : 51 Question Id : 7621614971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The surge impedance of a 100 km long underground cable is 50 Ω . The surge impedance for a 40 km length of similar cable would be

Options :

1. 20 Ω
2. 50 Ω
3. 60 Ω
4. 80 Ω

Question Number : 52 Question Id : 7621614972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The only advantage of corona is

Options :

1. it produces a pleasing luminous glow
2. it makes line current sinusoidal
3. it works as a safety valve for surges
4. ozone gas is produced

Question Number : 53 Question Id : 7621614973 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The arc voltage produced in an AC circuit breaker is always

Options :

1. in phase with the arc current
2. in phase opposition to the arc current
3. lagging the arc current by 90°
4. leading the arc current by 90°

Question Number : 54 Question Id : 7621614974 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 50 Hz, 4 pole turbo generator rated at 100 MVA, 11 kV has an inertia constant of 8 MJ /MVA. If the mechanical input is suddenly raised to 80 MW for an electrical load of 50 MW, then the rotor acceleration in electrical deg/sec² is

Options :

1. 225
2. 337.5
3. 415
4. 112.5

Question Number : 55 Question Id : 7621614975 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a two plant power system with plant generations P_1 and P_2 , the transmission losses in terms of plant generation and loss coefficients are expressed by

Options :

1. $B_{11} P_1^2 + 2 B_{12} P_1 P_2 + B_{22} P_2^2$
2. $B_{22} P_1^2 + 2 B_{12} P_1 P_2 + B_{11} P_2^2$
3. $2B_{11} P_1^2 + B_{12} P_1 P_2 + 2B_{22} P_2^2$
4. $B_{11} P_1^2 + B_{12} P_1 P_2 + B_{22} P_2^2$

Question Number : 56 Question Id : 7621614976 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sequence components of the fault current are as follows:

$I_{\text{positive}} = j1.5 \text{ p.u.}$, $I_{\text{negative}} = -j0.5 \text{ p.u.}$ and $I_{\text{zero}} = -j1.0 \text{ p.u.}$ The type of fault in the system is

Options :

1. LG
2. LL
3. LLG
4. LLL

Question Number : 57 Question Id : 7621614977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the height of the transmission towers is changed, which of the following parameter(s) is (are) likely to change?

Options :

1. resistance only
2. inductance only
3. capacitance only

4. inductance and capacitance

Question Number : 58 Question Id : 7621614978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A single line to ground fault occurs on an unloaded generator in one phase.

If $X_1 = X_2 = 0.25$ p.u, $X_0 = 0.15$ p.u. reactance connected in the neutral is $X_n = 0.05$ p.u and initial pre-fault voltage is 1.0 p.u, then the magnitude of fault current is

Options :

1. $j2.25$ p.u
2. $j2.75$ p.u
3. $j3.25$ p.u
4. $j3.75$ p.u

Question Number : 59 Question Id : 7621614979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a two plant system, the load is connected at plant no.2. The loss coefficients

Options :

1. B_{11} , B_{12} , B_{22} are non-zero
2. B_{11} and B_{22} are non-zero but B_{12} is zero
3. B_{11} and B_{12} are non-zero but B_{22} is zero
4. B_{11} is non-zero but B_{12} and B_{22} are zero

Question Number : 60 Question Id : 7621614980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the solution of load flow equation , Newton-Raphson method is superior to the Gauss-Seidel method, because

Options :

1. the time taken to perform one iteration in the NR method is less when compared to the time taken in the GS method.
2. number of iterations required is not independent of the size of the system in the NR method
3. number of iterations required in the NR method is more when compared to that in the GS method
4. convergence characteristics of the NR method are not affected by the selection of slack bus

Question Number : 61 Question Id : 7621614981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A generating station has a connected load of 40 MW and a maximum demand of 20 MW and daily energy consumption of 360 kWh then the demand factor is

Options :

1. 0.25
2. 0.5
3. 0.60
4. 0.75

Question Number : 62 Question Id : 7621614982 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the incorrect statement in connection with the advantages of HVDC transmission?

Options :

1. No skin effect
2. Less corona loss
3. Less radio interference
4. Economical for short distances

Question Number : 63 Question Id : 7621614983 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main requirements of the insulating materials used for the cables are

Options :

1. High dielectric strength and low insulation resistance
2. Low dielectric strength and high insulation resistance
3. Low dielectric strength and low insulation resistance
4. High dielectric strength and high insulation resistance

Question Number : 64 Question Id : 7621614984 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is true for a bus impedance matrix?

Options :

1. It is sparse
2. It has diagonally dominant elements
3. It is the inverse of the bus impedance matrix

Each element of it is the reciprocal of the corresponding element in admittance matrix

Question Number : 65 Question Id : 7621614985 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a given transmission line if the full load resistance and reactance drops are 3% and 5% respectively then the regulation of the line for 0.8 p.f lagging load is

Options :

1. -0.6%
2. 5.4%

3. 3%
4. 1.2%

Question Number : 66 Question Id : 7621614986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A system is having a phase voltage of 60 kV with an insulator string of 3 units is used in the system. If the voltage across these three units are 25 kV, 20 kV and 15 kV then the string efficiency is

Options :

1. 70%
2. 80%
3. 90%
4. 65%

Question Number : 67 Question Id : 7621614987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a 132 kV three phase power system, the line to ground capacitance is $0.04 \mu\text{F}$ and inductance is 4 H. The critical resistance to be connected across the contacts of the circuit breaker to eliminate the restriking voltage is

Options :

1. $0.5 \text{ k}\Omega$
2. $5 \text{ k}\Omega$
3. $2 \text{ k}\Omega$
4. $20 \text{ k}\Omega$

Question Number : 68 Question Id : 7621614988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The scheduled speed is defined as

Options :

1. Distance between stops / (actual time of run + stop time)
2. (Distance between stops + stop time) / actual time of run
3. Distance between stops / actual time of run
4. Distance between stops / stop time

Question Number : 69 Question Id : 7621614989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific energy consumption expressed in

Options :

1. Watt – hours per newton – km
2. Watt – hours per km
3. Watt – hours per tonne

4. Watt – hours per tonne – km

Question Number : 70 Question Id : 7621614990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In ultrasonic welding, the frequency range is generally

Options :

1. 20 Hz – 60 Hz
2. 200 kHz – 250 kHz
3. 20 kHz – 60 kHz
4. 100 Hz – 160 Hz

Question Number : 71 Question Id : 7621614991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For arc heating, electrodes used are made up of

Options :

1. Platinum
2. Grey iron
3. Aluminum
4. Graphite

Question Number : 72 Question Id : 7621614992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In electric heating, the power factor is maximum in case of

Options :

1. Resistance heating
2. Dielectric heating
3. Arc heating
4. Induction heating

Question Number : 73 Question Id : 7621614993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The method of heating used for non – conducting materials is

Options :

1. Indirect resistance heating
2. Direct resistance heating
3. Dielectric heating
4. Infra – red heating

Question Number : 74 Question Id : 7621614994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The illumination is measured in

Options :

1. Lumen / radian
2. Lux
3. Lumens
4. Nits

Question Number : 75 Question Id : 7621614995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The lamp which gives nearly monochromatic light is

Options :

1. Tungsten filament lamp
2. Sodium vapour lamp
3. Fluorescent lamp
4. Mercury vapour lamp

Question Number : 76 Question Id : 7621614996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 500 MVA
2. 400 MVA
3. 125 MVA
4. 80 MVA

Question Number : 77 Question Id : 7621614997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Power MOSFET switch in its on-state can be considered equivalent to

Options :

1. Battery
2. Capacitor
3. Inductor
4. Resistor

Question Number : 78 Question Id : 7621614998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one is most suitable power device for high switching frequency application?

Options :

1. Power MOSFET
2. Power BJT
3. Power IGBT
4. Thyristor

Question Number : 79 Question Id : 7621614999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A step-up chopper operated in continuous conduction mode has V_{DC} as the source voltage and D as the duty cycle. The output voltage for this chopper is given by

Options :

1. $V_{DC} / (1+D)$
2. $V_{DC}(1+D)$
3. $V_{DC}/(1-D)$
4. $V_{DC}(1-D)$

Question Number : 80 Question Id : 7621615000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A single-phase voltage source square wave inverter feeds pure inductive load. The waveform of load current will be

Options :

1. Sinusoidal
2. Triangular
3. Trapezoidal
4. Rectangular

Question Number : 81 Question Id : 7621615001 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a three-phase voltage source inverter operating in square wave mode, the output line voltage is free from

Options :

1. 3rd harmonic
2. 7th harmonic
3. 11th harmonic
4. 13th harmonic

Question Number : 82 Question Id : 7621615002 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a GTO, anode current begins to fall when gate current

Options :

1. is negative peak at time $t = 0$
2. just begins to become negative at $t = 0$
3. is negative peak at $t =$ storage period t_s
4. is positive peak at time $t = 0$

Question Number : 83 Question Id : 7621615003 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a single-phase full wave controlled bridge rectifier, minimum output voltage and maximum output voltages are obtained at _____ conduction angles respectively.

Options :

1. 0° and 180°
2. 180° and 0°
3. 0° and 0°
4. 180° and 180°

Question Number : 84 Question Id : 7621615004 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Even after the forward current reduces to zero value, a practical diode continues to conduct in the reverse direction for a while due to the

Options :

1. resistance of the diode
2. high junction temperature
3. stored charges in the depletion region
4. junction capacitance of the diode

Question Number : 85 Question Id : 7621615005 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an induction motor control, the ratio of voltage to frequency is maintained at constant value to

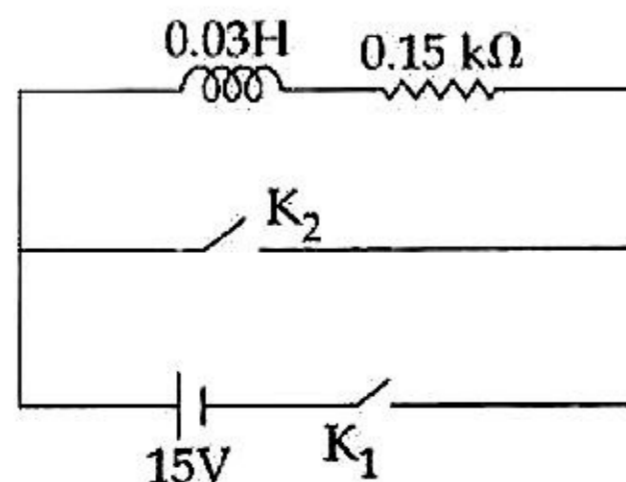
Options :

1. make maximum use of magnetic circuit
2. minimize the current drawn from supply to provide torque
3. make minimum use of magnetic circuit
4. maximize the current drawn from supply to provide torque

Question Number : 86 Question Id : 7621615006 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An inductor ($L = 0.03 \text{ H}$) and a resistor ($R = 0.15 \text{ k}\Omega$) are connected in series to a battery of 15 V emf in a circuit shown below. The key K_1 has been kept closed for a long time. Then at $t = 0$, K_1 is opened and key K_2 is closed simultaneously.

At $t = 1 \text{ ms}$, the current in the circuit will be : (Take $e^5 \approx 150$)



Options :

1. 100 mA
2. 67 mA
3. 6.7 mA
4. 0.67 mA

Question Number : 87 Question Id : 7621615007 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a series RC circuit voltage across resistor is 4 Volts and the voltage across capacitor is 3 volts. Then AC source voltage will be

Options :

1. 7 V
2. 4 V
3. 5 V
4. 1 V

Question Number : 88 Question Id : 7621615008 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

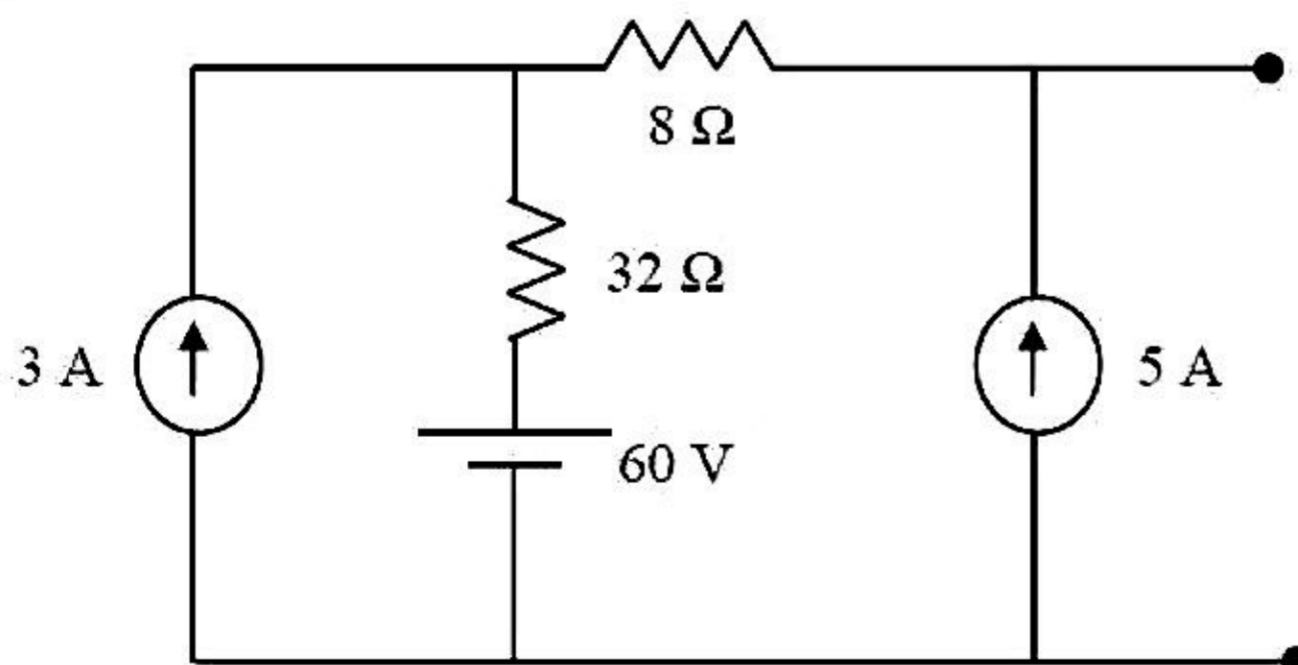
An RLC series circuit has a resonant frequency of 500 kHz and quality factor of 50. The bandwidth between half power points will be

Options :

1. 10 kHz between 500 kHz and 510 kHz
2. 10 kHz between 495 kHz and 505 kHz
3. 10 kHz between 490 kHz and 500 kHz
4. 20 kHz between 490 kHz and 510 kHz

Question Number : 89 Question Id : 7621615009 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Find the thevenin's equivalent for the given network given at the open circuited terminals



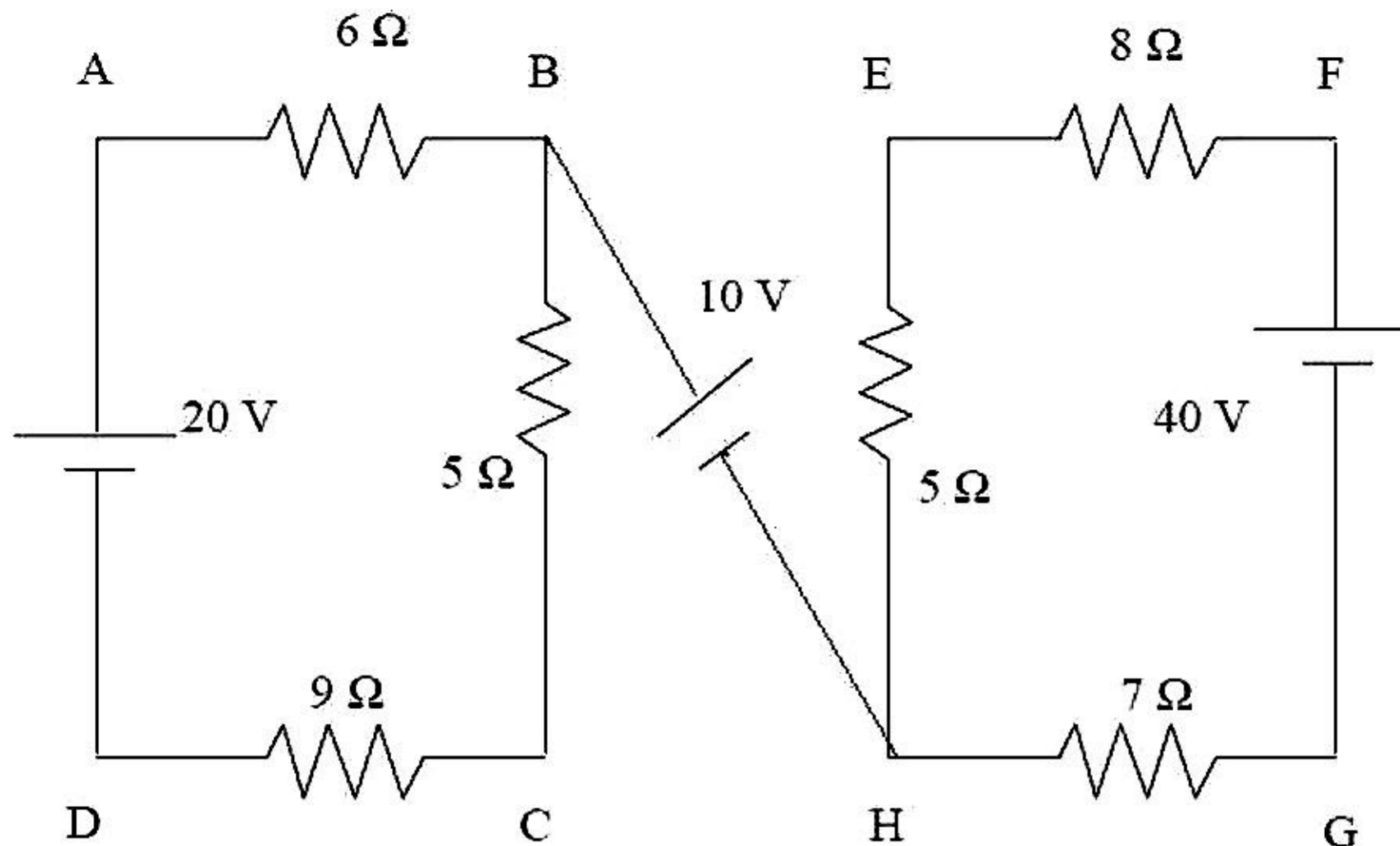
Options :

1. 260 V, 40 Ω
2. 296 V, 40 Ω

3. 296 V, 8 Ω
4. 356 V, 40 Ω

Question Number : 90 Question Id : 7621615010 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the circuit shown in the following figure, the potential difference between points C and E (V_{CE}) is



Options :

1. C is higher potential of 5 V with respect to point E
2. C is lower potential of 5 V with respect to point E
3. C is lower potential of 10 V with respect to point E
4. C is higher potential of 10 V with respect to point E

Question Number : 91 Question Id : 7621615011 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a series RLC circuit with $R = 200 \Omega$ and the voltage and the frequency of the main supply are 220 V and 50 Hz respectively. On taking out the capacitance from the circuit, the current lags behind the voltage by 30° . On taking out the inductance from the circuit, the current leads the voltage by 30° . The power dissipated in the RLC circuit is

Options :

1. 305 W
2. 210 W
3. zero
4. 242 W

Question Number : 92 Question Id : 7621615012 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 120 V, 60 W lamp is to be operated on 220 V, 50 Hz supply mains. What value of pure series resistance would be required in order that lamp is run on correct voltage?

Options :

1. 200 Ω
2. 100 Ω
3. 50 Ω
4. 150 Ω

Question Number : 93 Question Id : 7621615013 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The power of a three phase three wire balanced system was measured by two watt meter method. The reading of one of the watt meters was found to be twice that of other. Then the power factor of the system is

Options :

1. 1.0
2. 0.866
3. 0.707
4. 0.5

Question Number : 94 Question Id : 7621615014 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The RMS value of resultant circuit in a wire which carries a dc current of 10 A and sinusoidal alternating current of peak value 20 A is

Options :

1. 14.1 A
2. 17.3 A
3. 22.4 A
4. 30.0 A

Question Number : 95 Question Id : 7621615015 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three identical impedances are connected in delta to a three phase 400 V supply. The line current is 34.65 A and the total power taken is 14.4 kW. The resistance per phase of the load is

Options :

1. 4 Ω
2. 16 Ω
3. 12 Ω
4. 10 Ω

Question Number : 96 Question Id : 7621615016 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gauss theorem states that total electric flux ϕ emanating from a closed surface is equal to

Options :

1. Total current density on the surface
2. Total charge enclosed by the surface
3. Total current on the surface
4. Total charge density within the surface

Question Number : 97 Question Id : 7621615017 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An electric field of 10^5 N/C points towards west at a certain spot. Then the magnitude and direction of force that acts on a charge of $-5 \mu\text{C}$ is

Options :

1. 0.5 N towards west
2. 0.5 N towards east
3. 0.5 N towards north
4. 0.5 N towards south

Question Number : 98 Question Id : 7621615018 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two positive point charges $q_1 = 16 \mu\text{C}$ and $q_2 = 4 \mu\text{C}$ are separated in vacuum by a distance of 3 m. Find the point on the line between the charges where net electric field is zero.

Options :

1. The point is at a distance of 2 m from q_1 and 1 m from q_2
2. The point is at a distance of 1.5 m from q_1 and 1.5 m from q_2
3. The point is at a distance of 1 m from q_1 and 2 m from q_2
4. The point is at a distance of 1.2 m from q_1 and 1.8 m from q_2

Question Number : 99 Question Id : 7621615019 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three point charges $q_1 = 1 \mu\text{C}$ and $q_2 = -2 \mu\text{C}$ and $q_3 = 3 \mu\text{C}$ are placed at (1m, 0, 0), (0, 2m, 0) and (0, 0, 3m) respectively. Find the electric potential at origin.

Options :

1. 3 kV
2. 6 kV
3. 9 kV
4. 0 V

Question Number : 100 Question Id : 7621615020 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The relation between the Electric field intensity E and potential V is given by

Options :

1. $E = -\text{gradient } V$
2. $V = -\text{gradient } E$
3. $E = \text{gradient } V$
4. $V = \text{gradient } E$

Question Number : 101 Question Id : 7621615021 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following parameters are called as short circuit parameters in a two port network?

Options :

1. Z parameters
2. Y parameters
3. H parameters
4. A,B,C,D parameters

Question Number : 102 Question Id : 7621615022 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

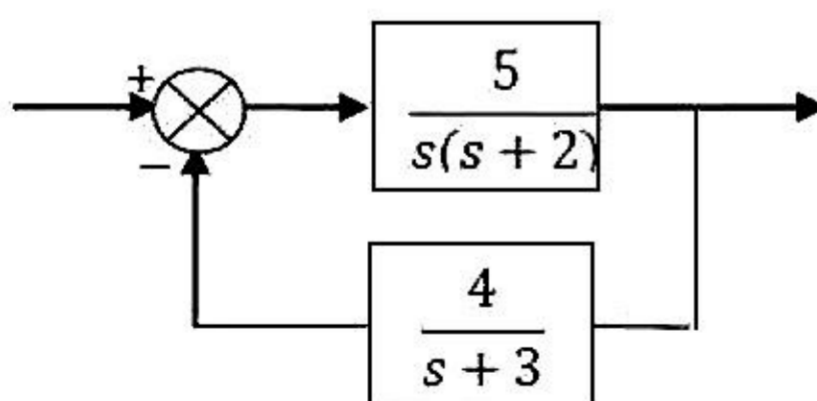
For a two port network Z parameter z_{22} in terms of Y parameters can be expressed by

Options :

1. $z_{22} = (y_{11}/y_{11}y_{22}) - y_{12}y_{21}$
2. $z_{22} = (y_{22}/y_{11}y_{22}) - y_{12}y_{21}$
3. $z_{22} = (y_{12}/y_{11}y_{22}) - y_{12}y_{21}$
4. $z_{22} = (y_{21}/y_{11}y_{22}) - y_{12}y_{21}$

Question Number : 103 Question Id : 7621615023 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following system is excited with a step input. Its steady state error is



Options :

1. Zero
2. 0.5
3. 0.25
4. 3.33

Question Number : 104 Question Id : 7621615024 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An open loop transfer function has 5 poles and 2 zeros. The number of branches of root locus is

Options :

1. 4
2. 7
3. 3
4. 5

Question Number : 105 Question Id : 7621615025 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

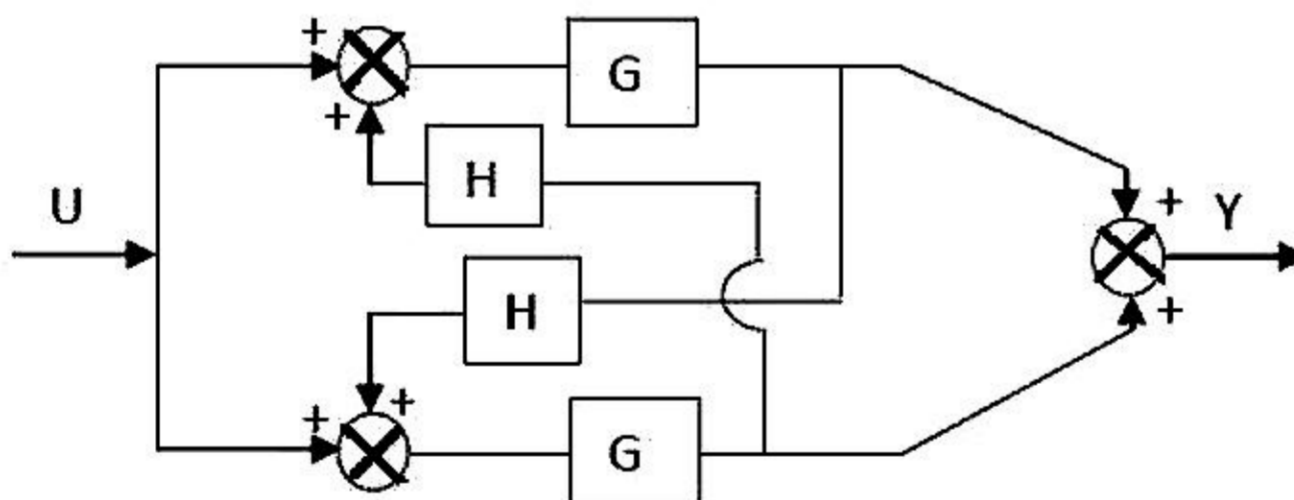
A lead compensator $\left(\frac{1+\tau s}{1+\alpha\tau s}\right)$ need to provide 60 degrees phase lead. Its α value is

Options :

1. 0.33
2. 3
3. 0.07
4. 13.9

Question Number : 106 Question Id : 7621615026 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The overall transfer function of the following figure is



Options :

1. $\frac{G}{1-GH}$
2. $\frac{2G}{1-GH}$
3. $\frac{GH}{1-GH}$
4. $\frac{2G}{1-2GH}$

Question Number : 107 Question Id : 7621615027 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the unit impulse response of a unity feedback control system is given by

$c(t) = -te^{-t} + 2e^{-t}$ ($t \geq 0$), then the open loop transfer function is equal to

Options :

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

2. $\frac{2s+1}{s^2}$

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

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

Question Number : 108 Question Id : 7621615028 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resonant frequency and bandwidth are measures of

Options :

1. Relative stability

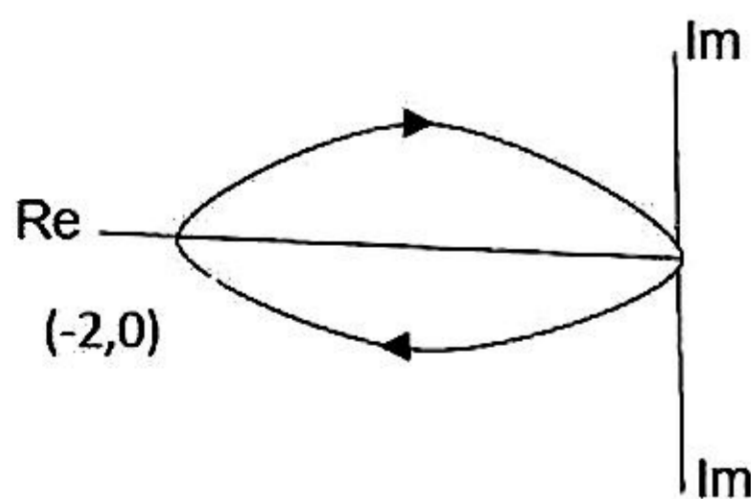
2. Absolute stability

3. Speed of the response

4. Steady state error

Question Number : 109 Question Id : 7621615029 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is the transfer function of the Nyquist plot shown in figure below?



Options :

1. $2 / [(s-1)(2s+1)(3s+1)]$

2. $2 / [(s+1)(2s+1)(3s+1)]$

3. $(s+1) / (s+2)$

4. $(s+2) / [(s+1)(s-1)]$

Question Number : 110 Question Id : 7621615030 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The characteristic equation of a system is given by the equation:

$s^5 + s^4 + 24s^3 + 48s^2 - 25s - 5 = 0$. Which one of the following is the number of roots in the right of S-plane?

Options :

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

Question Number : 111 Question Id : 7621615031 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a base current of $10 \mu\text{A}$, what is the value of collector current in common emitter if $\beta_{dc} = 100$

Options :

1. $10 \mu\text{A}$
2. $100 \mu\text{A}$
3. 1 mA
4. 10 mA

Question Number : 112 Question Id : 7621615032 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An RC coupled amplifier has an open loop gain of 200 and a lower cutoff frequency of 50 Hz. If negative feedback with $\beta = 0.1$ is used, the lower cut off frequency will be about

Options :

1. 50.0 Hz
2. 5.00 Hz
3. 2.38 Hz
4. 70.5 Hz

Question Number : 113 Question Id : 7621615033 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a system to work, as oscillator the total phase shift of the loop gain must be equal to

Options :

1. 90°
2. 45°
3. 270°
4. 360°

Question Number : 114 Question Id : 7621615034 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A half wave diode rectifier has a capacitive input filter. If input voltage is $v = V_m \sin \omega t$, then the PIV is

Options :

1. V_m
2. $2 V_m$
3. $3 V_m$
4. $4 V_m$

Question Number : 115 Question Id : 7621615035 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A difference amplifier using op-amp has closed loop gain = 50. If input is 2 V to each of inverting and non-inverting terminals, output is 5 mA. Then CMRR is

Options :

1. 20000
2. 2000
3. 200
4. 20

Question Number : 116 Question Id : 7621615036 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

2's complement of binary number 0101 is

Options :

1. 1011
2. 1111
3. 1101
4. 1110

Question Number : 117 Question Id : 7621615037 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the expression $A + BC$, the total number of minterms will be

Options :

1. 2
2. 3
3. 4
4. 5

Question Number : 118 Question Id : 7621615038 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basic storage element in a digital system is

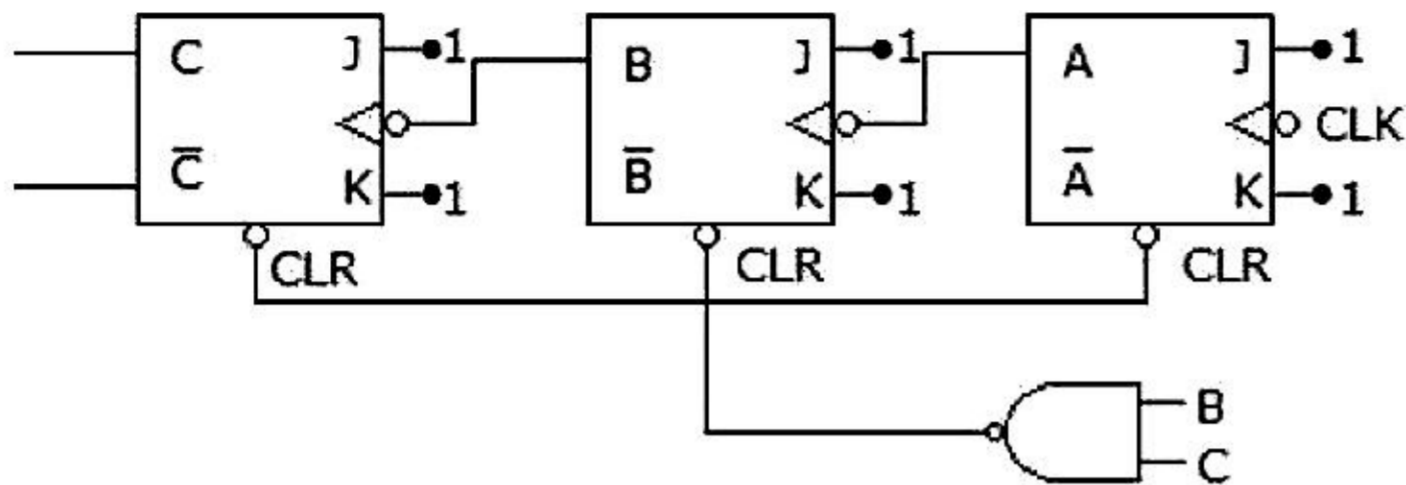
Options :

1. flip flop
2. counter

3. multiplexer
4. encoder

Question Number : 119 Question Id : 7621615039 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The counter in the given figure is



Options :

1. Mod 3
2. Mod 6
3. Mod 8
4. Mod 7

Question Number : 120 Question Id : 7621615040 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Darlington circuit is obtained by connecting

Options :

1. two CB stages in cascade
2. two CE stages in cascade
3. a CE stage followed by CB stage
4. two emitter followers in cascade