

# Andhra Pradesh State Council of Higher Education

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## Electrical Engineering (EE)

<b>Group Number :</b>	1
<b>Group Id :</b>	29996535
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	120
<b>Is this Group for Examiner? :</b>	No
<b>Revisit allowed for group Instructions? :</b>	Yes
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<b>Minimum Instruction Time :</b>	0

## Electrical Engineering (EE)

<b>Section Id :</b>	29996535
<b>Section Number :</b>	1
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	120
<b>Section Marks :</b>	120
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	29996535
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 2999654081 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The system  $2x + y + z = 0, y - z = 0, x + y = 0$  has \_\_\_\_\_.

**Options :**

1. unique solution
2. no solution
3. infinite number of solutions
4. exactly three solutions

**Question Number : 2 Question Id : 2999654082 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Let  $f(x) = \int_0^x \frac{t^6}{1+t^4} dt, \forall x \geq 0$ . Then the value of  $f'(2)$  is

**Options :**

1.  $67/17$
2.  $0$
3.  $-17/20$
4.  $35/27$

**Question Number : 3 Question Id : 2999654083 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A solution of the differential equation  $D^3 + D^2 + 4D + 4 = 0$  is

**Options :**

1.  $y = c_1 e^{-x} + c_2 \cos 2x + c_3 \sin 2x$
2.  $y = c_1 e^x + c_2 \cos 2x + c_3 \sin 2x$
3.  $y = c_1 e^{2x} + c_2 \cos 2x + c_3 \sin 2x$

4.  $y = c_1 e^{-x} + c_2 \cos x + c_3 \sin x$

Question Number : 4 Question Id : 2999654084 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The wave propagation  $u(x, t)$  of the one dimensional wave equation

$$\frac{\partial^2 u}{\partial t^2} = 4 \frac{\partial^2 u}{\partial x^2}, \quad -\infty < x < \infty, \quad t > 0,$$

$$u(x, 0) = f(x), \quad \frac{\partial u}{\partial t}(x, 0) = 0 \quad \text{is given by}$$

Options :

1.  $\frac{1}{2} [f(x + 2t) + f(x - 2t)]$

2.  $\frac{1}{2} [f(x + 4t) + f(x - 2t)]$

3.  $\frac{1}{2} [f(x + 4t) + f(x + 2t)]$

4.  $\frac{1}{2} [f(x + 2t) + f(x - 4t)]$

Question Number : 5 Question Id : 2999654085 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Let  $C$  be the closed curve  $C: |z - 1| = \frac{1}{2}$ . Then the value of the integral  $\oint_C \frac{z^3 + 2z + 1}{z} dz$

is

Options :

1.  $-6\pi i$

2.  $4\pi i$

3.  $0$

4.  $2\pi i$

Question Number : 6 Question Id : 2999654086 Question Type : MCQ Display Question Number : Yes Is

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

Which one of the complex variable function is analytic and has real part  $2x(1 - y)$ ?

**Options :**

1.  $f(z) = z^2 + 2iz + c$

2.  $f(z) = iz^2 + 2z + c$

3.  $f(z) = z^2 + 2z + c$

4.  $f(z) = z^2 + z + c$

**Question Number : 7 Question Id : 2999654087 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The mean of 200 items was 50. Later on it was discovered that two items were misread as 92 and 8 instead as 192 and 88. What is the correct mean?

**Options :**

1. 53.6

2. 55

3. 54

4. 56.3

**Question Number : 8 Question Id : 2999654088 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A continuous random variable  $X$  has the probability density function as

$$f(x) = \begin{cases} a - 2x, & 0 \leq x \leq 1 \\ 0, & \text{otherwise} \end{cases}$$

If the mean of this distribution is  $1/3$ , then the value of  $a$  is

**Options :**

1. 1

2.

3.  $\frac{1}{2}$

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

**Question Number : 9 Question Id : 2999654089 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The first approximation to the solution to the system of equations

$$\begin{aligned}8x - 3y + 2z &= 20, \\4x + 11y - z &= 33, \\6x + 3y + 12z &= 36\end{aligned}$$

by using the Gauss –Jacobi method with the initial approximation  $(0, 0, 0)$  is

**Options :**

1.  $(3, 2.5, 2.5)$

2.  $(8.2, 12, 10)$

3.  $(2.5, 3, 3)$

4.  $(12, 8.2, 10)$

**Question Number : 10 Question Id : 2999654090 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $\frac{dy}{dx} = x + y$  and  $y(0) = 1$ , then by Euler's method  $y(0.2) =$

**Options :**

1. 1.20

2. 1.25

3. 1.4

4. 1.00

Question Number : 11 Question Id : 2999654091 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A series RLC circuit with  $R = 4\Omega$ ,  $L = 2\text{H}$  and  $C = 0.5\text{F}$  is excited with a step input.

The current response is \_\_\_\_\_.

Options :

1. critically damped

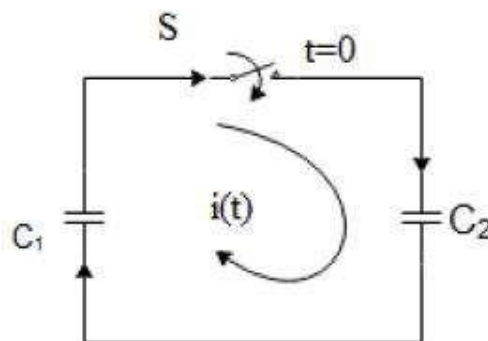
2. over damped

3. damped sinusoid

4. a constant

Question Number : 12 Question Id : 2999654092 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In the following figure,  $C_1$  and  $C_2$  are ideal capacitors.  $C_1$  has been charged to 12 V before the ideal switch  $S$  is closed at  $t = 0$ . The current  $i(t)$  for all 't' is \_\_\_\_\_.



Options :

1. zero

2. a step function

3. an exponentially decaying function
4. an impulse function

Question Number : 13 Question Id : 2999654093 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The transmission parameters of a two-port network are  $\begin{bmatrix} A & B \\ C & D \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$ .

If a  $1 \Omega$  resistor is connected in series with one of the input leads. Then the transmission parameters of the overall two-port network will be

Options :

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

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

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

4.  $\begin{bmatrix} 2 & 3 \\ 1 & 3 \end{bmatrix}$

Question Number : 14 Question Id : 2999654094 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the value of total electric flux coming out of a closed surface?

Options :

1. Zero

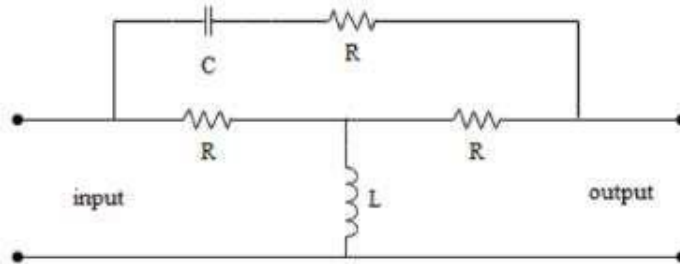
2. Equal to volume charge density

3. Equal to the total charge enclosed by the surface.

4. Equal to the surface charge density

Question Number : 15 Question Id : 2999654095 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The circuit shown in the figure, is a \_\_\_\_\_.

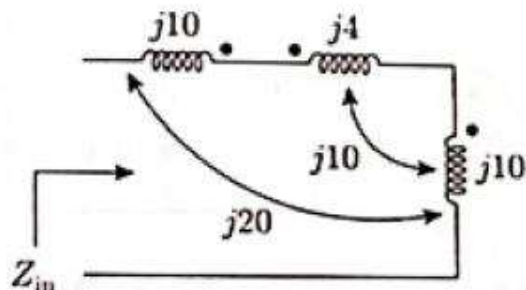


Options :

1. low pass filter
2. high pass filter
3. band pass filter
4. band stop filter

Question Number : 16 Question Id : 2999654096 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The network given below is connected in series with  $100 \Omega$  resistance. The total impedance of the circuit is given by



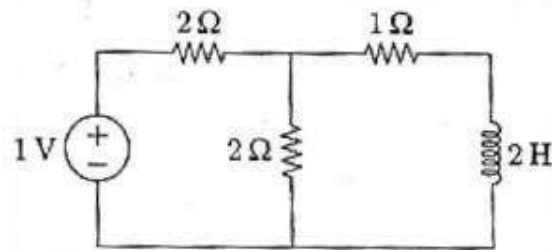
Options :



1.  $100+j14 \Omega$
2.  $100+j24 \Omega$
3.  $100+j4 \Omega$
4.  $100+j54 \Omega$

Question Number : 17 Question Id : 2999654097 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The time constant of the given circuit is \_\_\_\_\_.

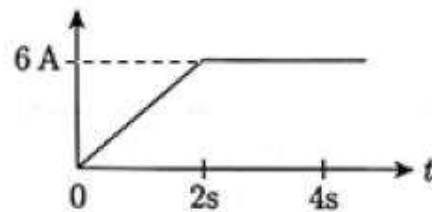


Options :

1. 2 s
2. 0.75 s
3. 3 s
4. 1 s

Question Number : 18 Question Id : 2999654098 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Figure given below shows the waveform of the current passing through an inductor of resistance  $2\ \Omega$  and inductance  $2\ \text{H}$ . The heat energy dissipated by the inductor in the first four seconds is \_\_\_\_\_.



Options :

1. 96 J
2. 192J
3. 132 J
4. 228 J

Question Number : 19 Question Id : 2999654099 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The rms value of the resultant current in a wire which carries a DC current of 10 A, a sinusoidal alternating current of peak value 20 A at 50 Hz and another sinusoidal alternating current of peak value 10 A at 150 Hz is \_\_\_\_\_.

Options :

1. 20 A
2. 25.81 A
3. 15.8 A
4. 18.71 A

Question Number : 20 Question Id : 2999654100 Question Type : MCQ Display Question Number : Yes Is

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

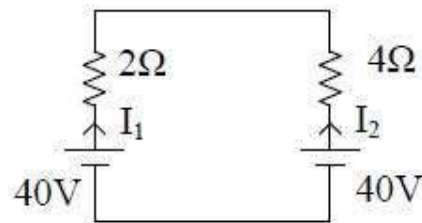
The input voltage to a load is  $v_i = 100\sin 314t$  volts and the current drawn is  $i = 10 \sin\left(314t - \frac{\pi}{3}\right) + 5 \sin\left(3 * 314t + \frac{\pi}{4}\right) + 2\sin\left(5 * 314t - \frac{\pi}{6}\right)$ A. Then the load power factor is \_\_\_\_\_.

Options :

1. 0.5
2. 0.44
3. 0.32
4. 0.71

Question Number : 21 Question Id : 2999654101 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which one is true for the circuit shown below?



Options :

1. No current in the loop
2.  $I_2 > I_1$
3.  $I_1 = -2I_2$
4.  $I_1 = 2I_2$

Question Number : 22 Question Id : 2999654102 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If  $I_1$  is 6A in the Fig.(a), what will be the current  $I_2$  in the Fig.(b)?

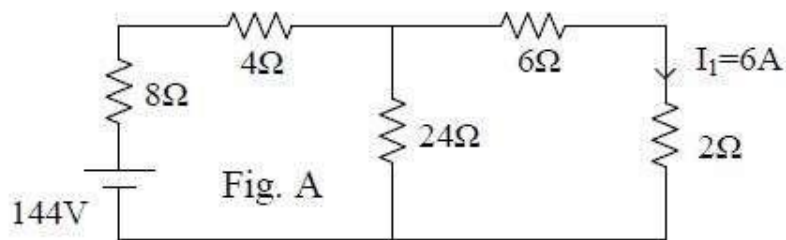


Fig. (a)

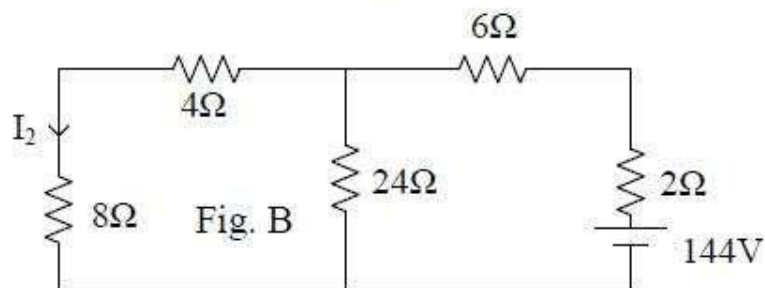


Fig. (b)

Options :

1. 6 A
2. 3 A
3. -3 A
4. < 3A

Question Number : 23 Question Id : 2999654103 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Power consumed by resistances connected in delta is \_\_\_\_\_ by the same resistances connected in star.

Options :

1. Same
2. Less
3. 9 times more

3 times more

4.

**Question Number : 24 Question Id : 2999654104 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A three phase motor connected with a 400 V balanced system consumes 1732 watt at a power factor of 0.5. The line current is \_\_\_\_\_.

**Options :**

1. 10 amp

2. 25 amp

3. 8.66 amp

4. 5 amp

**Question Number : 25 Question Id : 2999654105 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The voltage and current in a circuit are given by

$$v = 10 \sin (wt - \pi/6)$$

$$i = 10 \sin (wt + \pi/6). \text{ The power consumed by the circuit is } \underline{\hspace{2cm}}.$$

**Options :**

1. 100 watts

2. 50 watts

3. 86.6 watts

4. 25 watts

**Question Number : 26 Question Id : 2999654106 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Let  $x(t)$  be a periodic signal with time period  $T$ . Let  $y(t) = x(t-t_0) + x(t+t_0)$  for some  $t_0$ . The Fourier series coefficients of  $y(t)$  are denoted by  $b_k$ . If  $b_k = 0$  for all odd  $k$ , then  $t_0$  can be equal to \_\_\_\_\_.

Options :

1.  $T/8$

2.  $T/4$

3.  $T/2$

4.  $2T$

Question Number : 27 Question Id : 2999654107 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the function  $F(s) = \frac{5}{s(s^2 + 3s + 2)}$  where  $F(s)$  is the Laplace transform of the function  $f(t)$ . The initial value of  $f(t)$  is equal to \_\_\_\_\_.

Options :

1.  $5$

2.  $5/2$

3.  $5/3$

4.  $0$

Question Number : 28 Question Id : 2999654108 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The system represented by the input-output relationship:  $y(t) = \int_{-\infty}^{5t} x(\tau) d\tau$ ,  $t > 0$  is \_\_\_\_\_.

Options :

1. linear and causal
2. linear but not causal
3. causal but not linear
4. neither linear nor causal

Question Number : 29 Question Id : 2999654109 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Laplace Transform of a signal  $y(t) = 6 u(t-1) u(4-t)$  is \_\_\_\_\_.

Options :

1.  $\frac{6}{s} [e^{-s} - e^{-4s}]$
2.  $\frac{6}{s} [e^{-s} + e^{4s}]$
3.  $\frac{6}{s} [-e^{-s} + e^{-4s}]$
4.  $-\frac{6}{s} e^{-5s}$

Question Number : 30 Question Id : 2999654110 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Discrete time signal  $x(k) = (-1)^k$ , is periodic with fundamental period \_\_\_\_\_.

Options :

1. 1
2. 2

3. 3

4. 4

**Question Number : 31 Question Id : 2999654111 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The discrete time system given by  $h_2[n] = -\beta^n u[-n-1]$  where  $|\beta| > 1$  is \_\_\_\_\_.

**Options :**

1. Causal & stable system
2. Anti Causal & unstable system
3. Anti Causal & stable system
4. Causal & unstable system

**Question Number : 32 Question Id : 2999654112 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Determine the inverse z-transform of  $X(z) = \frac{1}{1 - 1.5z^{-1} + 0.5z^{-2}}$

where ROC:  $|Z| > 1$

**Options :**

1.  $x[n] = \left\{ \underset{\uparrow}{1}, \underset{\uparrow}{\frac{2}{3}}, \underset{\uparrow}{\frac{7}{4}}, \dots \right\}$

2.  $x[n] = \left\{ \underset{\uparrow}{1}, \underset{\uparrow}{\frac{2}{3}}, \underset{\uparrow}{\frac{7}{4}}, \dots \right\}$



3. 
$$x[n] = \left\{ 1, \frac{2}{3}, -\frac{7}{4}, \dots \right\}$$

4. 
$$x[n] = \left\{ 1, \frac{3}{2}, \frac{7}{4}, \dots \right\}$$

Question Number : 33 Question Id : 2999654113 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is discrete time Fourier transform of the sequence given by

$$x[n] = \alpha^n u[n], \alpha < 1?$$

Options :

1. 
$$\frac{1}{1 - \alpha e^{-j\omega}}$$

2. 
$$\frac{1}{1 - \alpha e^{j\omega}}$$

3. 
$$\frac{\alpha}{1 - \alpha e^{-j\omega}}$$

4. 
$$\frac{\alpha}{1 + \alpha e^{+j\omega}}$$

Question Number : 34 Question Id : 2999654114 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Determine response of LTI system  $h[n] = \{1, 2, 1, -1\}$ , if input signal is

$$x(n) = \{1, 2, 3, 1\}$$

Options :

1.  $y[n] = \{1, 4, 8, 8, 3, -2, -1\}$

2.  $y[n] = \{1, 4, 8, 8, 3, -2, -1\}$

3.  $y[n] = \{1, 4, 8, 8, 3, -2, -1\}$

4.  $y[n] = \{1, 4, 8, 8, 3, -2, -1\}$

Question Number : 35 Question Id : 2999654115 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find out Nyquist rate of following signal:

$$x(t) = 3 \sin 10\pi t + 100 \sin 400\pi t - 9 \cos 110\pi t$$

Options :

1. More than 5 Hz

2. More than 200 Hz

3. More than 110 Hz

4. Less than 110 Hz

Question Number : 36 Question Id : 2999654116 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Magnetizing

2. Demagnetizing
3. Cross magnetizing
4. Ineffective

**Question Number : 37 Question Id : 2999654117 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When the Transformer winding suffers a short circuit, adjoining turns of the same winding experiences \_\_\_\_\_.

**Options :**

1. an attractive force
2. a repulsive force
3. no force
4. attractive or repulsive depending upon current direction

**Question Number : 38 Question Id : 2999654118 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A 400 V, 15 kW, 4-pole, 50 Hz, Y-connected induction motor has full load slip of 4%. The output torque of the machine at full load is \_\_\_\_\_.

**Options :**

1. 1.66 Nm
2. 95.50 Nm
3. 99.47 Nm
4. 624.73 Nm

Question Number : 39 Question Id : 2999654119 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a DC motor running at 2000 rpm, the hysteresis and eddy current losses are 500 W and 200 W respectively. If the flux remains constant, calculate the speed at which the total iron losses are halved.

Options :

1. 2000 rpm
2. 1140 rpm
3. 1248 rpm
4. 1250 rpm

Question Number : 40 Question Id : 2999654120 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The distribution factor for a 36-slot stator with three-phase, 8 pole winding, having  $120^\circ$  phase spread, is \_\_\_\_\_.

Options :

1. 0.707
2. 0.844
3. 0.9
4. 0.5

Question Number : 41 Question Id : 2999654121 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 2200/220 V transformer draws a no load primary current of 0.6 A and absorbs 400 W. Find the magnetizing current.

Options :

1. 0.8 A
2. 0.7 A
3. 0.572 A
4. 0.9 A

**Question Number : 42 Question Id : 2999654122 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If applied voltage of a certain transformer is increased by 50% and frequency is reduced to 50% (assuming magnetic circuits remain unsaturated) maximum core flux density will

**Options :**

1. change to 3 times its original value
2. change to 1.5 times its original value
3. change to 0.5 times its original value
4. remains same as before

**Question Number : 43 Question Id : 2999654123 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The  $E_b/V$  ratio of a DC motor is an indication of its \_\_\_\_\_.

**Options :**

1. efficiency
2. speed regulation
3. starting torque

4. running torque

**Question Number : 44 Question Id : 2999654124 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A 3- $\phi$  induction motor has 4-pole star connected stator winding and runs on 220 V, 50 Hz supply. The rotor resistance is 0.1  $\Omega$  and reactance 0.9  $\Omega$ . The stator to rotor turns ratio is 1.75 and the full load slip is 5%. The maximum torque is \_\_\_\_\_.

**Options :**

1. 56 Nm
2. 184.8 Nm
3. 61.56 Nm
4. 99.5 Nm

**Question Number : 45 Question Id : 2999654125 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The full load voltage regulation of an alternator is 6% at 0.8 pf lagging and at rated speed of 1200 rpm. Its full load regulation at 0.8 pf lagging and at 1100 rpm would be (assuming negligible armature resistance)

**Options :**

1. less than 6%
2. more than 6%
3. 6%
4. 5.5%

**Question Number : 46 Question Id : 2999654126 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A  $\Delta$ -Y connected three phase core type transformer with 1:1 winding is on no-load and supply to one of the terminal is failed. Assuming magnetic circuit symmetry, voltages on secondary side will be \_\_\_\_\_. (Take secondary rated line voltage is 400 V)

**Options :**

1. 230,230,115
2. 230,115,115
3. 345,115,115
4. 345,0,345

**Question Number : 47 Question Id : 2999654127 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A three phase star connected induction motor is connected to 400 V, 50 Hz AC supply. If the stator to rotor turn ratio is 2, the standstill rotor induced emf per phase is \_\_\_\_\_.

**Options :**

1. 115.5 V
2. 231 V
3. 346.5 V
4. 200 V

**Question Number : 48 Question Id : 2999654128 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Wattmeter readings during OC test (at rated voltage) and SC test (at rated current) on a 10 kVA single phase transformer are respectively 64 W and 100 W. Maximum efficiency will occur when the transformer is loaded to \_\_\_\_\_.

Options :

1. 8.0 kVA at upf
2. 6.4 kVA at 0.8 lagging pf
3. 12.5 kVA at upf
4. 8.0 kVA at 0.8 leading pf

Question Number : 49 Question Id : 2999654129 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

How many number of commutator segments are required, if a DC machine uses 72 number of coils?

Options :

1. 36
2. 144
3. 72
4. 18

Question Number : 50 Question Id : 2999654130 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In the circle diagram of an induction motor, diameter of the circle represents \_\_\_\_\_.

Options :

1. slip
2. running torque



3. line voltage
4. rotor current

**Question Number : 51 Question Id : 2999654131 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The presence of earth in case of overhead lines \_\_\_\_\_.

**Options :**

1. increases the capacitance
2. decreases the capacitance
3. increases the inductance
4. decreases the inductance

**Question Number : 52 Question Id : 2999654132 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The angle  $\delta$  in the swing equation of a synchronous generator is the

**Options :**

1. angle between stator voltage and current.
2. angular displacement of the rotor with respect to the stator.
3. angular displacement of the stator mmf with respect to a synchronously rotating axis.
4. angular displacement of the rotor with respect to a stationary axis.

**Question Number : 53 Question Id : 2999654133 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The line impedance of a three phase transmission line is given by  $Z = (10+j5) \Omega$ . How much is the transmission loss, if the power delivered by the transmission line is 100 MVA at 132 kV?

Options :

1. 10 MW
2. 5.74 MW
3. 11.5 MW
4. 1 MW

Question Number : 54 Question Id : 2999654134 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A 3-phase load of 200 kVA is delivered at 11 kV over a short transmission line of  $R = 10 \Omega$  and  $X = 0.5 \Omega$ . If the load pf is 0.8 lag, the sending end power is \_\_\_\_\_.

Options :

1. 161.1 kW
2. 200 kW
3. 100 kW
4. 165.3 kW

Question Number : 55 Question Id : 2999654135 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A system has 200 buses of which 20 buses are generator buses and the rest are load buses. The size of Jacobian matrix in Newton-Rapson load flow method is \_\_\_\_\_.

Options :

1.  $376 \times 376$

2.  $378 \times 378$

3.  $380 \times 380$

4.  $379 \times 379$

**Question Number : 56 Question Id : 2999654136 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A uniform DC radial distribution system of 500 m length has a resistance of 0.2 ohm/km. If it is loaded at 3A/m, its maximum voltage drop is \_\_\_\_\_.

**Options :**

1. 100 V

2. 150 V

3. Zero

4. 300 V

**Question Number : 57 Question Id : 2999654137 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

For a 100 MVA, 11 kV, 50 Hz, 4-pole turbo generator with 800 MJ stored energy in the rotor at synchronous speed, the inertia constant H is \_\_\_\_\_.

**Options :**

1. 2.0 MJ/MVA

2. 40 MJ/MVA

3. 6.0 MJ/MVA

4. 8.0 MJ/MVA

Question Number : 58 Question Id : 2999654138 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A three phase transmission line is 400 km long. The voltage at the sending end is 220 kV. If line parameter 'A' is 0.90, then the receiving end voltage at no load is \_\_\_\_\_.

Options :

1. 198 kV
2. 244.4 kV
3. 220 kV
4. 230 kV

Question Number : 59 Question Id : 2999654139 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In Gauss-Seidel load flow method,  $\alpha$  (Alpha) is used \_\_\_\_\_.

Options :

1. to enhance rate of convergence
2. to enhance the stability limit
3. to decrease the voltage values of the bus bar
4. to count the iteration number

Question Number : 60 Question Id : 2999654140 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No 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 : 61 Question Id : 2999654141 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

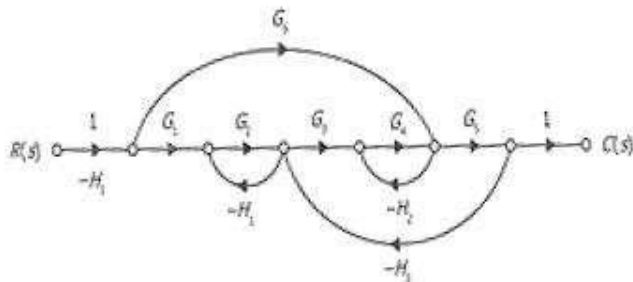
In a thermal power plant, the feed water coming to the economizer is heated using

Options :

1. HP Steam
2. LP Steam
3. direct heat in the furnace
4. flue gases

Question Number : 62 Question Id : 2999654142 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Number of forward paths in the given signal flow graph is \_\_\_\_\_.



Options :

1. 1
2. 2

3. 3

4. 4

**Question Number : 63 Question Id : 2999654143 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The transmission line distance protection relay having the property of being inherently directional is

**Options :**

1. Impedance relay

2. Reactance relay

3. OHM relay

4. Mho relay

**Question Number : 64 Question Id : 2999654144 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Critical clearing time of a fault in power system is related to \_\_\_\_\_.

**Options :**

1. Reactive power limit

2. Short circuit limit

3. Steady state stability limit

4. Transient stability limit

**Question Number : 65 Question Id : 2999654145 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following cannot be determined using equal area criterion?

**Options :**

1. Critical clearing angle
2. Critical clearing time
3. Transient stability limit
4. Both critical clearing angle and critical clearing time

Question Number : 66 Question Id : 2999654146 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The transfer function of the system is described by  $\frac{d^2y}{dt^2} + \frac{dy}{dt} = \frac{du}{dt} + 2u$ , with u as input and y as output is \_\_\_\_\_.

Options :

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

Question Number : 67 Question Id : 2999654147 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Three blocks  $G_1$ ,  $G_2$  and  $G_3$  are connected in some fashion such that overall transfer function is  $\frac{G_1 + G_3(1 + G_1G_2)}{(1 + G_1G_2)}$ . Which of the following options is correct to get the given transfer function?

Options :

1.  $G_1$ ,  $G_2$  with negative feedback and combination in parallel with  $G_3$
2.  $G_1$ ,  $G_3$  with negative feedback and  $G_2$  in parallel
3.  $G_1$ ,  $G_2$  in cascade and combination in parallel with  $G_3$
4.  $G_1$ ,  $G_3$  in cascade and combination in parallel with  $G_2$

Question Number : 68 Question Id : 2999654148 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If a second order system has poles at  $(-1 \pm j)$ , then the step response of the system will exhibit a peak value at \_\_\_\_\_.

Options :

1. 4.5 sec
2. 3.5 sec
3. 3.14 sec
4. 1 sec

Question Number : 69 Question Id : 2999654149 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical



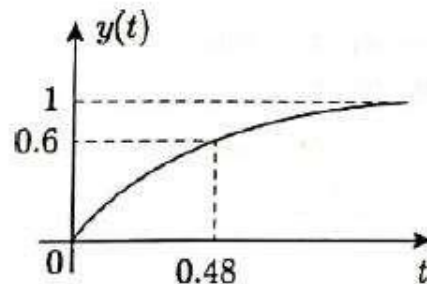
The settling time of an under damped second order system for 5% tolerance band is 10 s. The peak time is 1s. How many cycles the damped response completes, before the system settles?

Options :

1. 10
2. 17
3. 21
4. 25

Question Number : 70 Question Id : 2999654150 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The step response of a first-order system is as shown in the following figure.



The time constant of the system is \_\_\_\_\_.

Options :

1. 0.612 s
2. 0.524 s
3. 0.124 s
4. 0.254 s

Question Number : 71 Question Id : 2999654151 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A system has characteristic equation of  $s^3 + Ks^2 + 9s + 18 = 0$ . The value of K and frequency of sustained oscillations  $\omega_n$  for the given system are respectively \_\_\_\_\_,

Options :

1. 4, 5
2. 5, 6
3. 2, 3
4. 3, 2

Question Number : 72 Question Id : 2999654152 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A single input single output feedback system has forward transfer function  $G(s)$  and feedback transfer function  $H(s)$ . It is given that  $|G(s)H(s)| < 1$ . Select the correct statement from the following.

Options :

1. The system is always stable
2. The system is stable if all zeros of  $G(s)H(s)$  are in the left half of the s-plane
3. The system is stable if all poles of  $G(s)H(s)$  are in the left half of the s-plane
4. The system is always unstable

Question Number : 73 Question Id : 2999654153 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A system can be described as,  $\dot{x} = Ax + Bu$ , where  $A = \begin{bmatrix} -1 & 2 \\ 0 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$ .

Then choose the correct statement from the following.

Options :

1. The system is stable and controllable

2. The system is stable but uncontrollable
3. The system is unstable and controllable
4. The system is unstable and uncontrollable.

Question Number : 74 Question Id : 2999654154 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

What is the transfer function of positive feedback control system? Assume  $G(s)$  to be forward path gain and  $H(s)$  to be feedback path gain.

Options :

1. 
$$\frac{G(s)}{1 - G(s)H(s)}$$

2. 
$$\frac{G(s)}{1 - G(s)}$$

3. 
$$\frac{G(s)}{1 + G(s)H(s)}$$

4. 
$$\frac{G(s)}{1 + G(s)}$$

Question Number : 75 Question Id : 2999654155 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A unity feedback control system has the open loop transfer function  $G(s)$ . For the system to be stable, find range of  $K$ .

$$G(s) = \frac{K(s + 13)}{s(s + 7)(s + 3)}$$

Options :

1.  $[0, 70]$

2. [0,80]

3. [0,90]

4. [0,75]

**Question Number : 76 Question Id : 2999654156 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Initial slope of Bode magnitude plot gives information about \_\_\_\_\_.

**Options :**

1. type of the system
2. order of characteristic equation
3. gain at frequency of 1 rad/sec
4. number of zeros of open loop transfer function

**Question Number : 77 Question Id : 2999654157 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Consider a controller with a lead of  $35^\circ$  and gain of 5.65 dB at 2.8 rad/sec. Which of the following options represents the transfer function of the lead compensator?

**Options :**

1.  $\frac{(1 + 0.2s)}{(1 + 0.7s)}$
2.  $\frac{0.5(1 + 0.2s)}{(1 + 0.7s)}$
3.  $\frac{(1 + 0.69s)}{(1 + 0.19s)}$

$$\frac{0.272(1 + 0.69s)}{(1 + 0.19s)}$$

4.

Question Number : 78 Question Id : 2999654158 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The transfer function of a system is defined as the ratio of output to input in \_\_\_\_\_.

Options :

1. Fourier transform
2. Laplace transform
3. Z-transform
4. Laplace transform and Fourier transform

Question Number : 79 Question Id : 2999654159 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The state variable description of a system is  $[\dot{x}] = \begin{bmatrix} 2 & 0 \\ -2 & 0 \end{bmatrix}x + \begin{bmatrix} 0 \\ -1 \end{bmatrix}u$ .

The state transition matrix of the system is \_\_\_\_\_.

Options :

1.  $\begin{bmatrix} e^{2t} & 0 \\ 0 & e^{2t} \end{bmatrix}$
2.  $\begin{bmatrix} e^{-2t} & 0 \\ 0 & e^{-2t} \end{bmatrix}$
3.  $\begin{bmatrix} \sin 2t & \cos 2t \\ -\cos 2t & \sin 2t \end{bmatrix}$
4.  $\begin{bmatrix} \cos 2t & \sin 2t \\ -\sin 2t & \cos 2t \end{bmatrix}$

Question Number : 80 Question Id : 2999654160 Question Type : MCQ Display Question Number : Yes Is

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

In a type-1, second-order system, the first undershoot occurs at a time \_\_\_\_\_.

**Options :**

1. 
$$t_p = \frac{\pi}{\omega_d}$$

2. 
$$t_p = \frac{2\pi}{\omega_d}$$

3. 
$$t_p = \frac{\pi}{2\omega_d}$$

4. 
$$t_p = \frac{\omega_d}{\pi}$$

**Question Number : 81 Question Id : 2999654161 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Torque/weight ratio of an instrument indicates \_\_\_\_\_.

**Options :**

1. Selectivity

2. Accuracy

3. Fidelity

4. Sensitivity

**Question Number : 82 Question Id : 2999654162 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A 0-10 mA PMMC ammeter reads 4 mA in a circuit. Its bottom control spring snaps suddenly. The meter will now read nearly \_\_\_\_\_.

**Options :**

1. 10 mA

2.

8 mA

3.

2 mA

4.

zero

5.

**Question Number : 83 Question Id : 2999654163 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Power consumed by a balanced three-phase three-wire load is measured by the two-wattmeter method. The first wattmeter reads twice that of the second. Then the load impedance angle in radian is \_\_\_\_\_.

**Options :**

$\frac{\pi}{2}$

1.

$\frac{\pi}{8}$

2.

$\frac{\pi}{6}$

3.

$\frac{\pi}{3}$

4.

**Question Number : 84 Question Id : 2999654164 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A thermo-electric ammeter gives a full scale deflection for a current of 50 A.

Calculate the current which causes half scale deflection.

**Options :**

5 A

1.

2. 25 A

3. 38.47 A

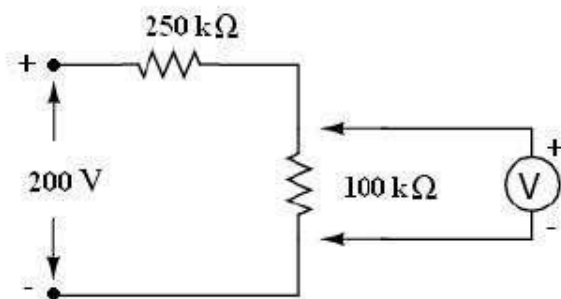
4. 35.36 A

**Question Number : 85 Question Id : 2999654165 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The voltage across a  $100\text{ k}\Omega$  resistor is to be measured as shown in the circuit below.

The sensitivity of the voltmeter is  $2000\ \Omega/\text{V}$ . The range of the voltmeter is  $0\text{-}80\text{ V}$ .

Then the reading of the voltmeter is \_\_\_\_\_.



**Options :**

1. 95.24 V

2. 39.5 V

3. 158.18 V

4. 102.24 V

**Question Number : 86 Question Id : 2999654166 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A moving coil instrument gives a full scale deflection of  $10\text{ mA}$  when voltage across its terminal is  $100\text{ mV}$ . Calculate the value of shunt resistance for a full scale deflection corresponding to  $100\text{ A}$ .



**Options :**

1.  $0.01 \Omega$
2.  $0.001 \Omega$
3.  $0.1 \Omega$
4.  $1 \Omega$

**Question Number : 87 Question Id : 2999654167 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The instruments that determine the electrical quantity to be measured directly in terms of deflection are called \_\_\_\_\_.

**Options :**

1. Absolute instruments
2. Integrating instruments
3. Secondary instruments
4. Recording instruments

**Question Number : 88 Question Id : 2999654168 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a moving coil instrument, the moving coil consists of 300 turns carrying a current of 10 mA wound on a former of dimension  $3 \text{ cm} \times 2 \text{ cm}$ . If the flux density in the air gap is 0.05 T, the deflecting force is \_\_\_\_\_.

**Options :**

1.  $0.9 \times 10^{-3} \text{ N}$
2.  $0.9 \times 10^{-4} \text{ N}$

3.  $4.5N$

4.  $4.5 \times 10^{-3} N$

**Question Number : 89 Question Id : 2999654169 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The purpose of synchronizing control in a CRO is to \_\_\_\_\_.

**Options :**

1. focus the spot on the screen

2. lock the display of signal

3. adjust the amplitude of display

4. control the intensity of the spot

**Question Number : 90 Question Id : 2999654170 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

With a sweep time 10 msec across the screen, the approximate horizontal saw tooth frequency is \_\_\_\_\_.

**Options :**

1. 50 Hz

2. 100 Hz

3. 1 KHz

4. 500 Hz

**Question Number : 91 Question Id : 2999654171 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The number of comparisons carried out in a 4-bit flash type A/D converter is \_\_\_\_\_.

**Options :**

1. 16
2. 15
3. 4
4. 3

**Question Number : 92 Question Id : 2999654172 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The AND function can be realized by using only 'n' number of NOR gates, where 'n' equal to \_\_\_\_\_.

**Options :**

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

**Question Number : 93 Question Id : 2999654173 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

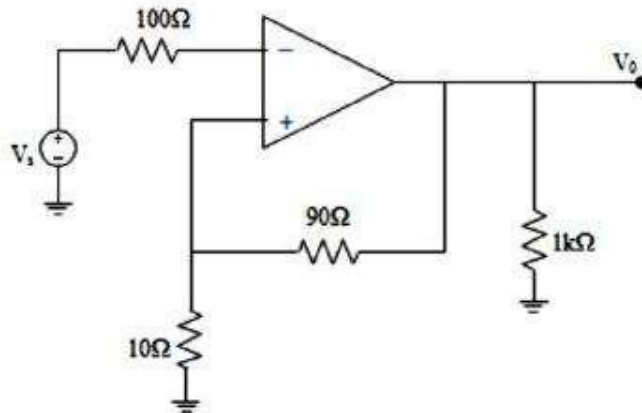
How many flip-flops are required to construct Mod-31 counter?

**Options :**

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

Question Number : 94 Question Id : 2999654174 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The feedback factor for the circuit shown in the figure is \_\_\_\_\_.

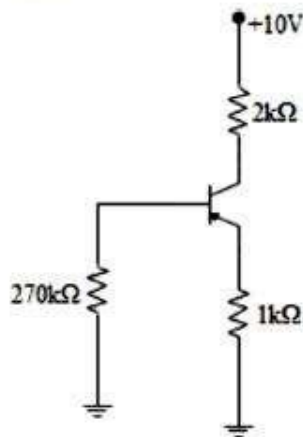


Options :

1. 9/100
2. 9/10
3. 1/9
4. 1/10

Question Number : 95 Question Id : 2999654175 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The common emitter forward current gain of the transistor circuit shown below is  $\beta_F = 100$ . The transistor is operating in \_\_\_\_\_.



Options :

1. Saturation region
2. Cut-off region
3. Reverse active region
4. Forward active region

Question Number : 96 Question Id : 2999654176 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A JFET is set up as a follower, with  $\mu = 200$ ,  $r_d = 100 \text{ k}\Omega$  and source load resistance  $R_L = 1 \text{ k}\Omega$ . The output resistance  $R_0$  is \_\_\_\_\_.

Options :

1.  $1000 \Omega$
2.  $500 \Omega$
3.  $333 \Omega$
4.  $666 \Omega$

Question Number : 97 Question Id : 2999654177 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The content of the accumulator in an 8085 microprocessor is altered after the execution of the instruction \_\_\_\_\_.

Options :

1. CMP C
2. CPI 3A
3. ANI 5C

4. ORA A

**Question Number : 98 Question Id : 2999654178 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a transmission line, there is a flow of zero sequence current when

**Options :**

1. There is an occurrence of an overvoltage on line due to a charged cloud
2. Line to line fault
3. Three phase fault
4. Double line to ground fault

**Question Number : 99 Question Id : 2999654179 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A silicon diode shows forward currents of 2 mA and 10 mA when a voltmeter connected across the diode shows 0.6V and 0.7V respectively. The operating temperature of the diode is \_\_\_\_\_.

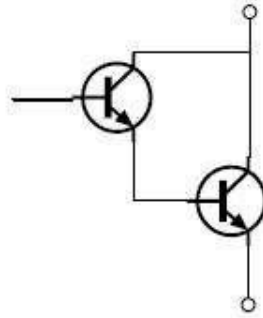
**Options :**

1. 360 K
2. 480K
3. 320K
4. 100K

**Question Number : 100 Question Id : 2999654180 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Consider the Darlington pair circuit shown below and  $h_{fe}$  of each resistor is 100.

The overall  $h_{fe}$  for the pair is \_\_\_\_\_.

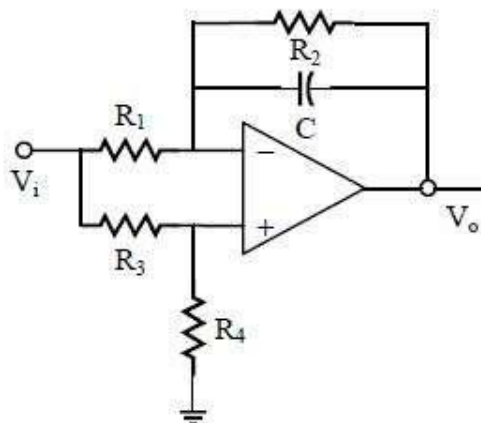


Options :

1. 10000
2. 10001
3. 10100
4. 9900

Question Number : 101 Question Id : 2999654181 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For the given filter circuit,  $R_1 = R_2$  and  $R_3 = R_4$ , it will act as \_\_\_\_\_.



Options :

1. Low pass filter
2. high pass filter

3. band pass filter

4. all pass filter

Question Number : 102 Question Id : 2999654182 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The octal equivalent for the HEX number AB.CD is \_\_\_\_\_.

Options :

1. 253.314

2. 632.324

3. 632.253

4. 253.632

Question Number : 103 Question Id : 2999654183 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In an 8085 microprocessor, which of the following are direct memory access (DMA) request signals?

Options :

1. INTR and INTA

2.  $\overline{RD}$  and  $\overline{WR}$

3. HOLD and HLDA

4. HALT and WRITE

Question Number : 104 Question Id : 2999654184 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical



Frequency at which gain of Op-Amp is zero dB is called \_\_\_\_\_.

Options :

1. Gain crossover frequency
2. Unity gain frequency
3.  $\alpha$  cut off frequency
4.  $\beta$  cut off frequency

Question Number : 105 Question Id : 2999654185 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Negative feedback in amplifiers \_\_\_\_\_.

Options :

1. Reduces gain, increases bandwidth, increases distortion
2. Reduces gain, reduces bandwidth, reduces distortion
3. Reduces gain, increases bandwidth, reduces distortion
4. Increases gain, increases bandwidth, reduces distortion

Question Number : 106 Question Id : 2999654186 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a single-phase semi-converter with resistive load and a firing angle  $\alpha$ , each SCR and freewheeling diode conduct for \_\_\_\_\_ respectively.

Options :

1.  $\alpha, 0^\circ$
2.  $\pi - \alpha, \alpha$
3.  $\pi + \alpha, \alpha$

4.  $\pi - \alpha, 0^\circ$

Question Number : 107 Question Id : 2999654187 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A step-up chopper is fed from a 230 V DC source to deliver a load voltage of 690 V. If the non-conduction time of the thyristor is 300  $\mu$ s, the required pulse width is \_\_\_\_\_  $\mu$ s.

Options :

1. 200

2. 350

3. 600

4. 150

Question Number : 108 Question Id : 2999654188 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A single-phase voltage controller is connected to a load resistance of 10  $\Omega$  and a supply of  $200 \sin 314 t$  volts. For a firing angle of  $90^\circ$ , the average thyristor current is \_\_\_\_\_ amperes.

Options :

1. 10

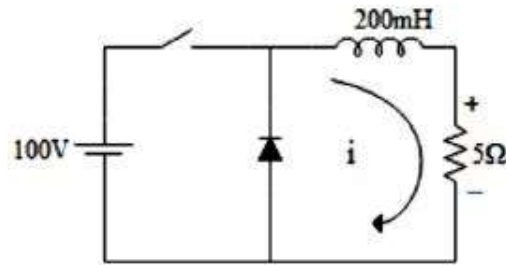
2.  $10/\pi$

3.  $5\sqrt{2} / \pi$

4.  $5\sqrt{2}$

Question Number : 109 Question Id : 2999654189 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The given figure shows a step-down chopper switched at 1 kHz with a duty ratio  $D = 0.5$ . The peak-to-peak ripple in the load current is close to \_\_\_\_\_.



Options :

1. 10 A
2. 0.5 A
3. 0.125 A
4. 0.25 A

Question Number : 110 Question Id : 2999654190 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

During the turn-off process of a thyristor, the current flow does not stop at the instant when the current reaches zero, but continues to flow to a peak value in the reverse direction. This is due to \_\_\_\_\_.

Options :

1. hole storage effect
2. commutation failure
3. presence of reverse voltage across the thyristor
4. protective inductance in series with the thyristor

Question Number : 111 Question Id : 2999654191 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

It is preferable to use a high frequency train of pulses for gate triggering of SCR in order to reduce \_\_\_\_\_.

Options :

1.  $dv/dt$  problem
2.  $di/dt$  problem
3. the size of the pulse transformer
4. the complexity of the firing circuit

Question Number : 112 Question Id : 2999654192 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A single-phase full-bridge semi-converter with a free-wheeling diode feeds an inductive load. The load resistance is  $15 \Omega$  with a large inductance providing constant and ripple free DC current. The converter is fed from an ideal 230 V, 50 Hz single phase AC source. For a firing delay angle of  $60^\circ$ , the rms value of diode current is \_\_\_\_\_.

Options :

1. 5.98 A
2. 4.98 A
3. 6.87 A
4. 10.35 A

Question Number : 113 Question Id : 2999654193 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A semi-controlled rectifier operates in \_\_\_\_\_.

Options :

1. I – quadrant
2. II – quadrant
3. I and II – quadrants
4. I and IV – quadrants

Question Number : 114 Question Id : 2999654194 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The ripple frequency in a “p” pulse rectifier supplied by “f” Hz supply is given by

Options :

1.  $P*f$
2.  $2P*f$
3.  $(P-1)*f$
4.  $2(P-1)*f$

Question Number : 115 Question Id : 2999654195 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which of the following choppers, does the voltage and current remain negative?

Options :

1. Type-A
2. Type-B
3. Type-C
4. Type-D

Question Number : 116 Question Id : 2999654196 Question Type : MCQ Display Question Number : Yes Is

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

Which of the following braking systems on the locomotives is costly?

**Options :**

1. Vacuum braking on steam locomotives
2. Vacuum braking on diesel locomotives
3. Regenerative braking on electric locomotives
4. All braking systems are equally costly

**Question Number : 117 Question Id : 2999654197 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A traction motor consumes maximum energy when it is in the following position of speed-time graph \_\_\_\_\_.

**Options :**

1. free running period
2. coasting period
3. Braking period
4. acceleration period

**Question Number : 118 Question Id : 2999654198 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The wheels of a train, engine as well as bogies are slightly tapered to \_\_\_\_\_.

**Options :**

1. Reduce friction
2. Increase friction

3. Facilitate in taking turns
4. Facilitate braking

Question Number : 119 Question Id : 2999654199 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A series circuit consists of  $R = 2.4 \Omega$ ,  $L = 25 \mu\text{H}$ ,  $C$  and a thyristor. For obtaining self-commutation in the circuit the value of  $C$  is \_\_\_\_\_.

Options :

1.  $50 \mu\text{F}$
2.  $30 \mu\text{F}$
3.  $20 \mu\text{F}$
4.  $10 \mu\text{F}$

Question Number : 120 Question Id : 2999654200 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The concept of  $V/f$  control of inverters driving induction motors results in \_\_\_\_\_.

Options :

1. constant torque operation
2. speed reversal
3. reduced magnetic loss
4. harmonic elimination