Telangana State Council Higher Education

Notations :

1.0ptions shown in green color and with icon are correct.

2.0ptions shown in red color and with icon are incorrect.

Question Paper Name :	Instrumentation Engineering
Subject Name :	
Creation Date :	2022-08-04 14:1 6:32
Duration :	120
Total Marks :	120
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	No
Highlighter :	Yes
Auto Save on Console?	No
Change Font Color :	Yes
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Instrumentation Engineering 4th Aug 2022 Shift 1	No
Show Progress Bar :	No
Group Number :	
Group Id :	34058049
Group Maximum Duration :	

Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	
Group Marks :	120
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	34058090
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	
Sub-Section Number :	1
Sub-Section Id :	34058090
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 3405805761 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The local maximum off(x)=x —6x^3 + llx +6x is

Options :

34058023041. 3

5

34058023042. 9

17

34058023043. 9

16

34058023044. 3

4

Question Number : 2 Question Id : 3405805762 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

If C is the culve given by x = 4cost, y = 3sint, t e [0, 211], then

$3x^2 ydx + x^3 + y\, dy =$

Options :

34058023045.

34058023046. 3

34058023047. 8 2

34058023048. O

Question Number : 3 Question Id : 3405805763 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

$$\int_{o}^{1}\int_{o}^{1}(x^3y + x^2Y^2 + xy^3)dzdydx =$$

Options :

34058023049. $\frac{13}{24}$

34058023050. $\frac{13}{36}$

34058023051. $\frac{13}{39}$

34058023052. $\frac{13}{42}$

Question Number : 4 Question Id : 3405805764 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The sum of eigen values $\begin{bmatrix} 4 & -1 & 0 \\ 0 & -2 & 2 \\ 2 & -1 & -1 \end{bmatrix}$ 3is 5

Options :

34058023053. s: 3

34058023054. s: -2

34058023055. $\frac{2}{}$

34058023056.

Question Number : 5 Question Id : 3405805765 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Ifthe system of equations: $x + 2y = l$, $y + 2z = 3$, $z + 2x = k$, $x + y + z = 0$ has a mique solution

then k =

Options :

34058023057. $-$

34058023058. -2

34058023059.

34058023060. e —4

Question Number : 6 Question Id : 3405805766 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Ifthe palticular integral of $x!' - 2xy = x^2 - 2x$ is $= ax^2 + bx$, thena + b =

Options :

1

2

34058023061.

-1

34058023062. 2

1

34058023063.

34058023064. s: -1

Question Number : 7 Question Id : 3405805767 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

Residue off(z)=z cosec z at z = 0 is

Options :

—fli

34058023065.

34058023066.

34058023067.

27ti

34058023068.

Question Number : 8 Question Id : 3405805768 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

z

— dz=

|z|=|

Options :

2 Tti

34058023069. 8

—fli

34058023070.

34058023071. 7ti

34058023072.

Question Number : 9 Question Id : 3405805769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

If X is a Poisson variate such that P(X = 1) = P(X = 3), then the mean of X is

Options :

34058023073.

34058023074.

34058023075. s:

34058023076.

Question Number : 10 Question Id : 3405805770 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

If X is a discrete random variable with the probability distribution

		2k	3k	4k	5k

Then its mean is

Options :

1
3
34058023077.

2
34058023078.

34058023079.

2
34058023080.

Instru me ntatio n Engineering

Section Id :	34058091
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110

Enable Mark as Answered Mark for Review and
Yes

Clear Response :

Maximum Instruction Time :

Sub-Section Number : 1

Sub-Section Id : 34058091

Question Shuffling Allowed : Yes

Question Number : 11 Question Id : 3405805771 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The discrete time sequence $x[n]=n^2[u[n-1]-u[n-50]]$ is

Options :

34058023081. Non-periodic and energy signal

34058023082. ✖ Periodic and power signal

34058023083. ✖ Non-periodic and power signal

34058023084. ✖ Periodic and energy signal

Question Number : 12 Question Id : 3405805772 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A continuous time system is desclibed by its impulse response is $h(t)=3x(t)+5$, then the system is

Options :

Linear time invariant

34058023085. s:

Linear time variant

34058023086. 8

Non-linear time invaliant

34058023087.

Non-linear time variant

34058023088. 8

Question Number : 13 Question Id : 3405805773 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A discrete time sequence x[n] is given as x(n) 2, 1 -j, 2+j, 5} . Let jo) denote the discrete-time Fourier Transform ofx[n]. The value of $\int_{-\pi}^{\pi} X(e^{jw})dw$ is I

Options :

34058023089. 1

34058023090.

34058023091. 2 T

10 z

34058023092.

Question Number : 14 Question Id : 3405805774 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O a, b, c, b, a is an impulse response of a $h_1(n)=\{a$ typical low pass filter, then a, -b, c,-b, a is an Impulse response of $h_2(n)=\{a$ a
Options :
34058023093. 8 Low pass filter

High pass filter
34058023094.

34058023095. ✖ Band pass filter

34058023096. s: Band stop filter

Question Number : 15 Question Id : 3405805775 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O
$x[n]=\left(\frac{1}{9}\right)^n u[-n-1]+\left(\frac{2}{9}\right)^n$ u[-n-l] the conesponding Z-transfonnX(:) region of convergence (ROC) is

Options :
34058023097. ✔ $|z|<\frac{1}{9}$

$\frac{1}{9}<|z|<\frac{2}{9}$

9 9

34058023098.

2

34058023099. s: 9

ROC doesn't exist 34058023100.

Question Number : 16 Question Id : 3405805776 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : 0

If the message signal m(t) = 2 sin(20001tt). (4000 m) is to be converted as discrete time signal, then tlle millimmn sampling frequency to avoid aliasing condition is

Options :

34058023101. 2 kHz

8 4kHz 34058023102.

34058023103. 8 8kHz

34058023104. e 6kHz

Question Number : 17 Question Id : 3405805777 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

An linear time invariant (LTI) system with impulse response h(n)- (0.4! $u(n)+(0.2)^n \delta(n$—2) then the system is

Options :

34058023105. s: Non-causal and un-stable

Non-causal and stable

34058023106. 8

34058023107. ✖ Causal and un-stable

Causal and stable

34058023108.

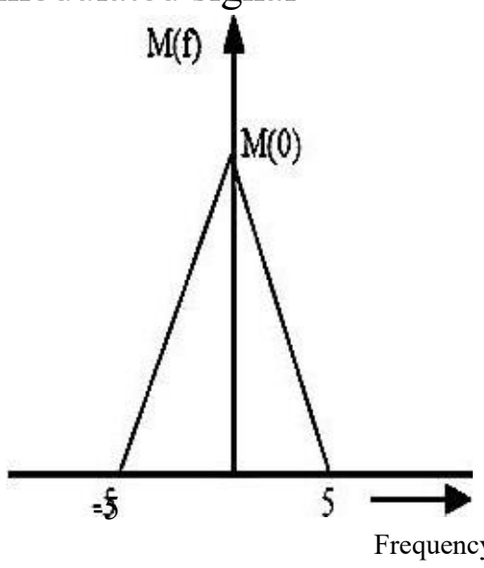
Question Number : 18 Question Id : 3405805778 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

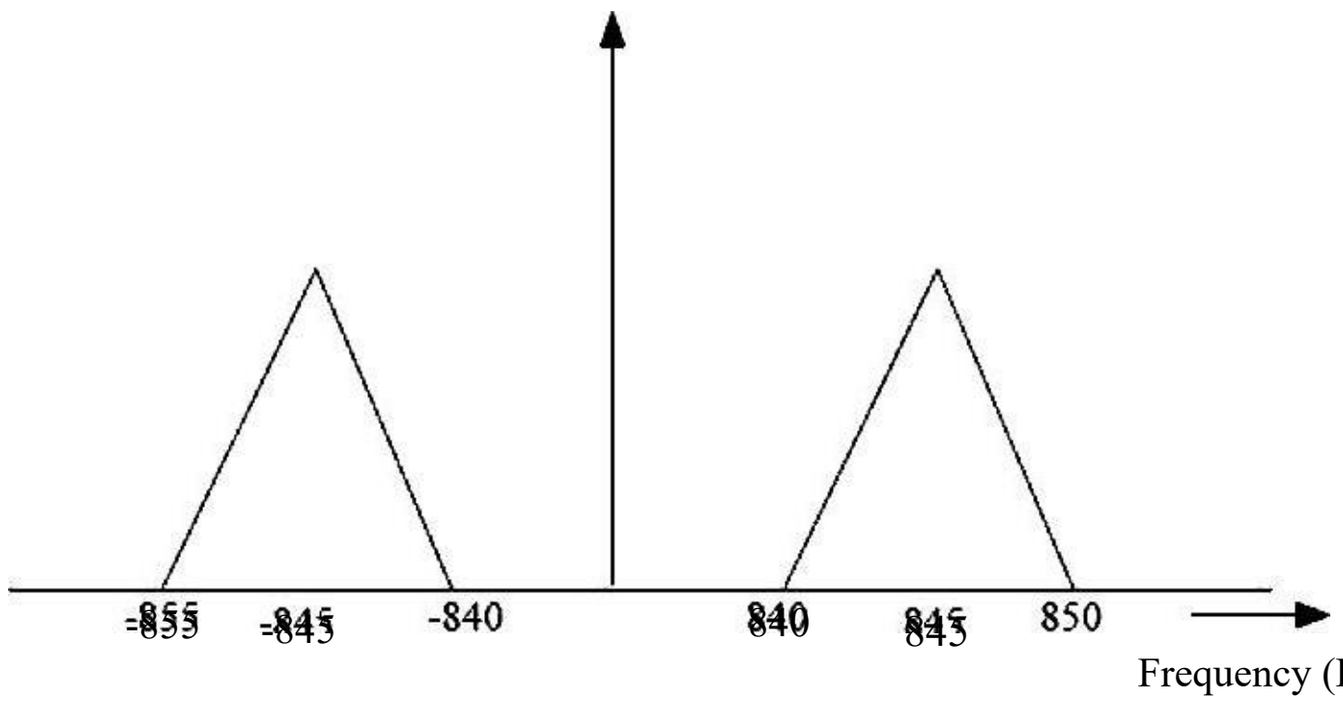
The message signal spectrum is shown in the figure is double side band suppressed carrier (DSB-SC) modulated by a sinusoidal canier signal of frequency 845 kHz, then using a suitable ideal band pass filter it is convened to upper side band single side band suppressed carrier (SSB-SC) modulator. Which of the following spectrum represent conesponding SSB-SC modulated signal



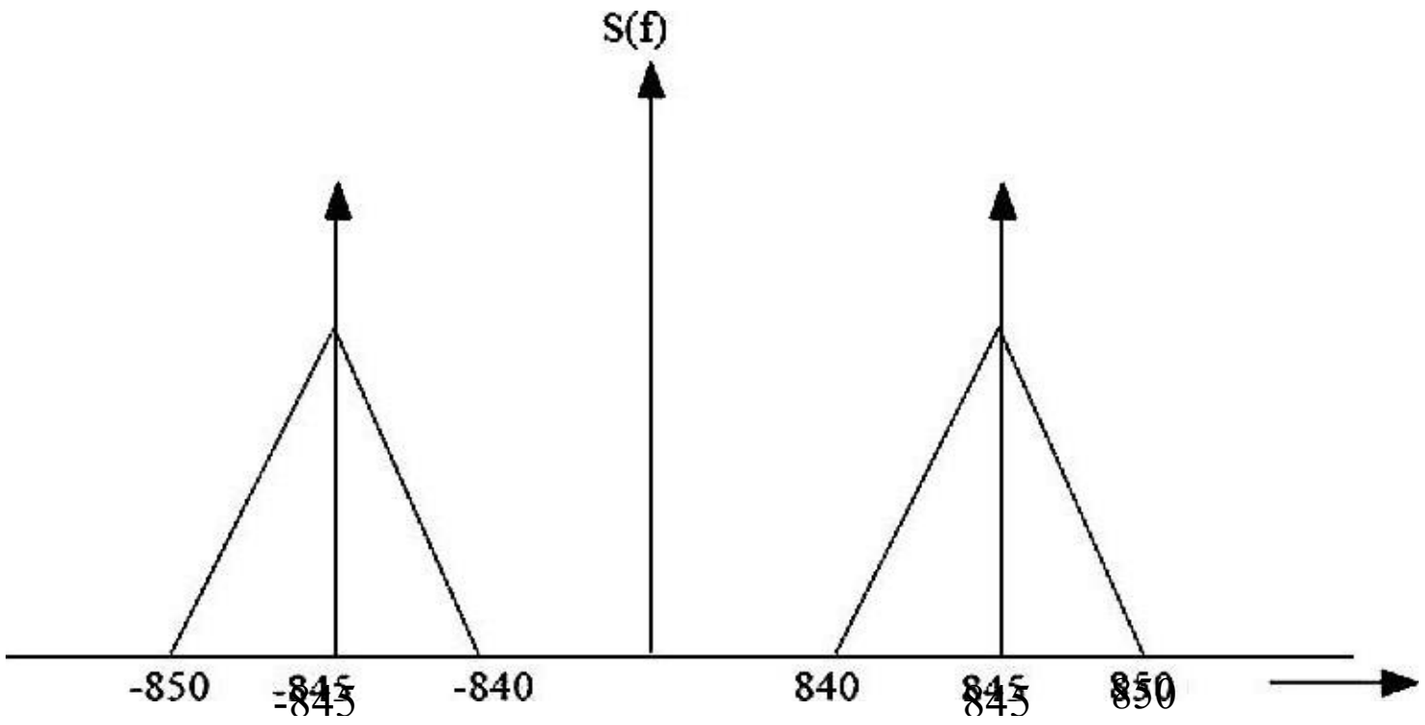
Options :

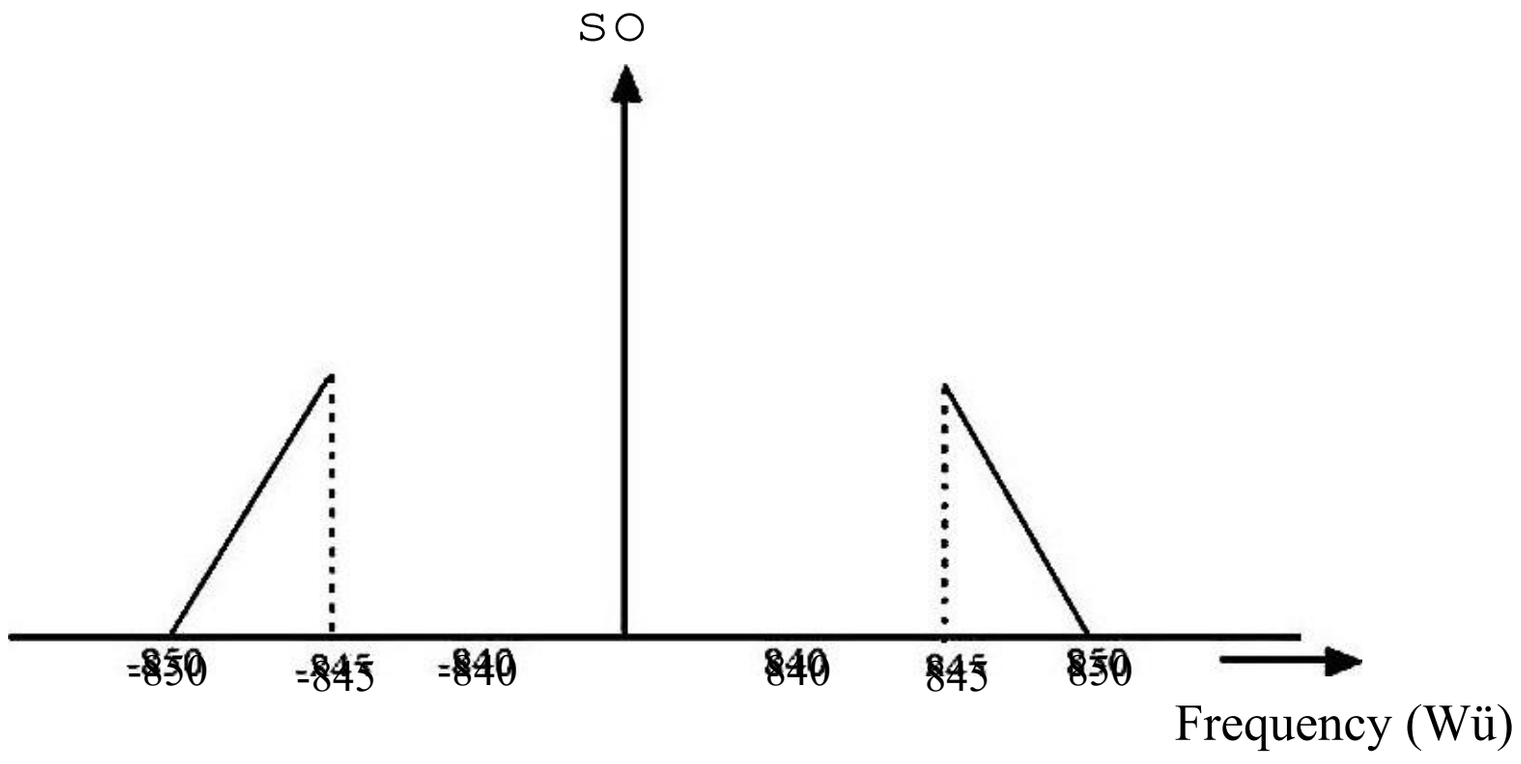
34058023109. s:

SO



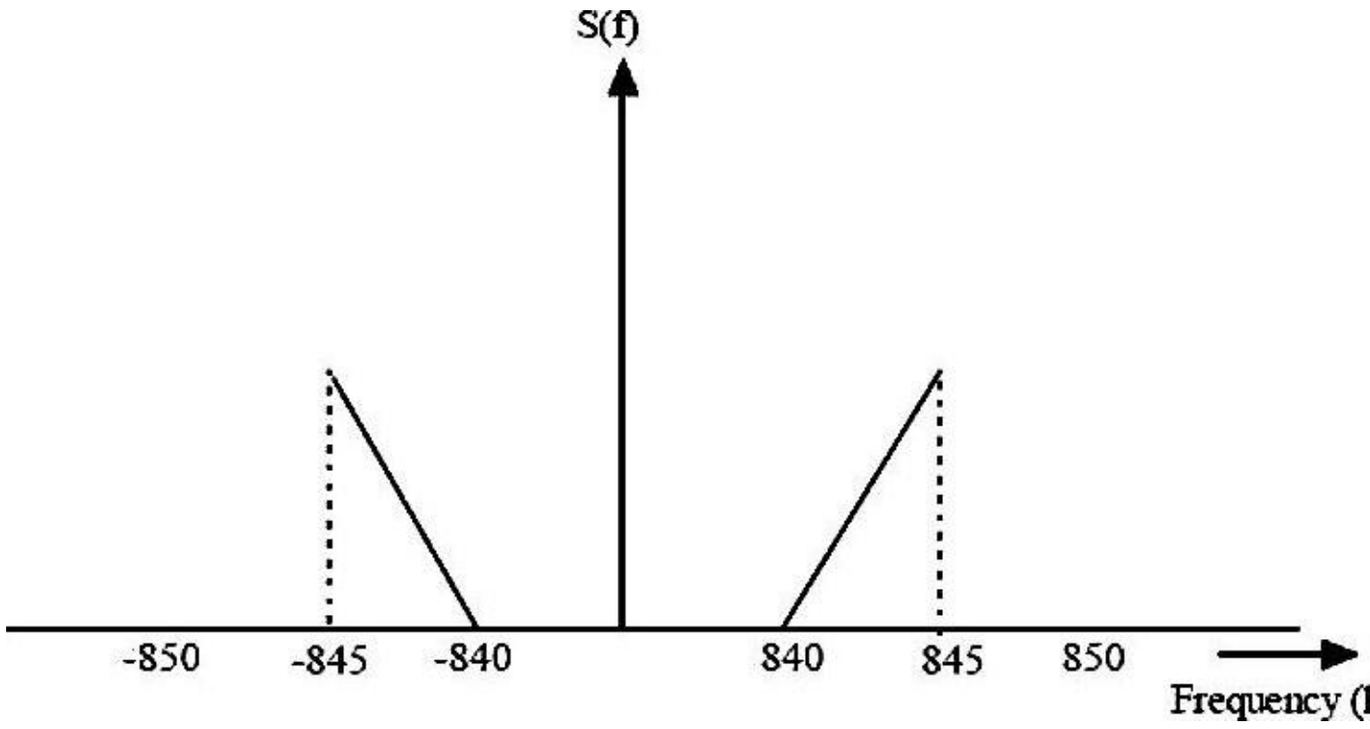
8 Frequency (kHz) 34058023110.





34058023111.

34058023112. 8



Question Number : 19 Question Id : 3405805779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Ifthe number ofbits in a pulse code modulation (PCM) system is increased from n to n+l. the Improvement of signal to quantization noise ratio will be

Options :

340580231 13. 2 3 dB

340580231 14. e 6 dB

340580231 15. ✖ 2ndB

340580231 16.✖ 6ndB

Question Number : 20 Question Id : 3405805780 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A message signal consists of a maximum frequency 15 kHz is used to generate a standard frequency modulation (FM) signal witli a modulation index of 5, the approximate bandwidth according to Carson's rule is

Options :

180 kHz

34058023117.

15 kHz

34058023118.

34058023119. 90 kHz

34058023120. 8 45 kHz

Question Number : 21 Question Id : 3405805781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The auto correlation of x(t) can be evaluated using convolution as

Options :

34058023121. R x(T)=x(t)*x(—t)

34058023122. ' R x $\tau)=x(-t)*$ x(—t)

34058023123.Rx(T)=x(t)*x(t)

$R_X(\tau)=x(-t)*x(-t+1)$

34058023124.

Question Number : 22 Question Id : 3405805782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Two systems with impulse responses hl(t) and h2(t) are connected 111 cascade. Then the overall impulse response of the cascaded system is given as

Options :

34058023125. s: Product of Ill(t) and h2(t)

34058023126. ✖ Sum ofhl(t) and h2(t)

34058023127.Convolution of Ill(t) and 112(t)

34058023128. ✖ Difference of hl(t) and h2(t)

Question Number : 23 Question Id : 3405805783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

111 FM signal with a modulation index ntfis passed tllrougll a frequency ü•ipler. The wave in the output oftlle tlipler will have a modulation index of

Options :

34058023129. ^{m}f

34058023130.

34058023131. 3mf

34058023132.

Question Number : 24 Question Id : 3405805784 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The slope overload enor is associated with which ofthe following digital modulation schemes

Options :

34058023133. s: Pulse code modulation

34058023134. ✖ Differential pulse code modulation

34058023135. Delta modulation

34058023136. s: Adaptive delta modulation

Question Number : 25 Question Id : 3405805785 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Mllich of the following impulse response con•espondmg to a linear phase mte impulse response (FIR) filter

Options :

$$h(n) = 2.\ 1$$

34058023137.

34058023138.

$$h(n) = \{\ldots, -2, -3, \underset{\uparrow}{1}, -2, -3, 7, \ldots\}$$

$$h(n) = \{\ldots, -2, -3, \underset{\uparrow}{1}, -2, -3\}$$

34058023139.

34058023140.

$$h(n)=\{3,\ 2,\ 4,$$

Question Number : 26 Question Id : 3405805786 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A canier is simultaneously amplitude modulated by a two sine waves llaving modulation indices of 0.6 and 0.8. The overall modulation index will be

Options :

34058023141. 0.6

34058023142. 8 0.8

34058023143. 1.4

34058023144.

Question Number : 27 Question Id : 3405805787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A memory system of size 128 k bytes is to be designed using memory chips wllich have 14 address lines and 4 data lines each. The number of such cliips required to design the memoiY system is

Options :

34058023145. 2

34058023146. 4

34058023140.

8

34058023148.

Question Number : 28 Question Id : 3405805788 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

WIIic11 of the following Boolean equation cannot be simplified further

Options :

ABt+AjC+ÄBC+ABC

34058023149. 8

AjC+AjC+ABC+ABC

34058023150.

$ABC+\overline{A}\overline{B}C+AB\overline{C}+A\overline{B}C$

34058023151.

AB+ÄBC+AjC

34058023152.

Question Number : 29 Question Id : 3405805789 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

Using 2's complement, the largest positive and negative number which can be stored with 10 bits are

34058023140.

Options :

34058023153. -1024 to 1024

s: -1024 to 1023

34058023154.

-512 to 511

34058023156. -512 to 512

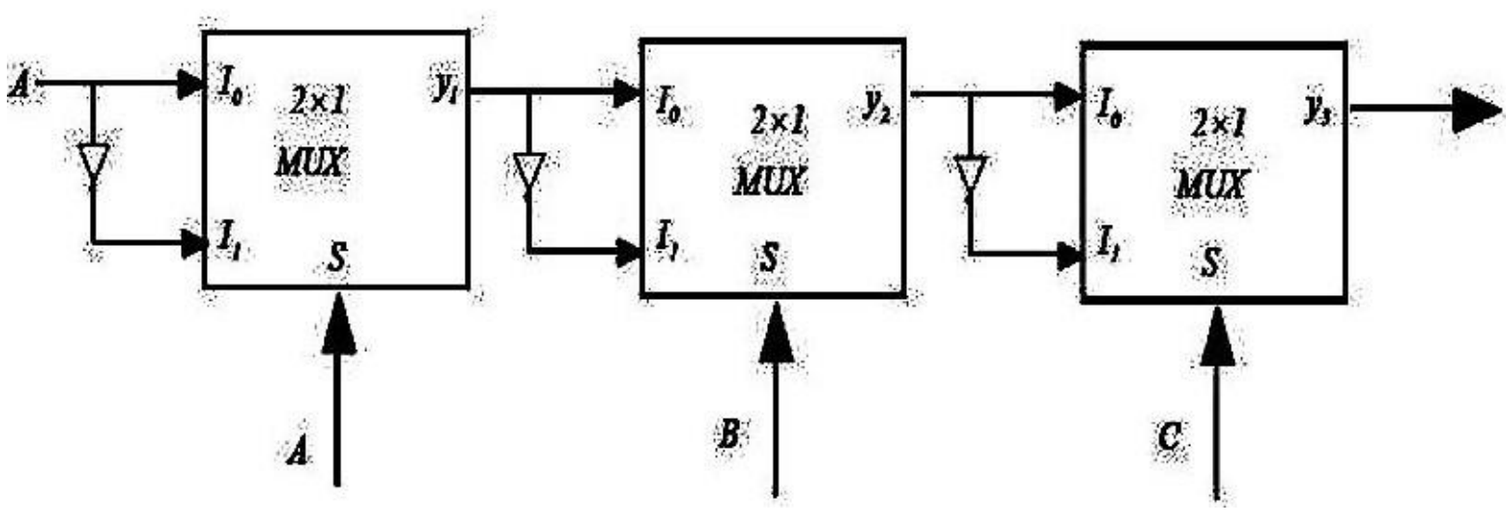
Question Number : 30 Question Id : 3405805790 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

Obtain åeBooleauequation for fie following 1* diagam.



Options :

34058023157. 8 A O BCC

34058023158. O

34058023159. 1

34058023140.
34058023160. (Aec)B

Question Number : 31 Question Id : 3405805791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O Correct Marks : 1 Wrong Marks : O

For a typical computer it has 24-bit address lines, how much mem01Y central processmg unit (CPU) can address

Options :

34058023161. 24 MB

34058023162. 8 MB

34058023163. ✔ 16 MB

34058023164. 8 1 MB

Question Number : 32 Question Id : 3405805792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

WIic11 of the following logic family has a small propagation delay

Options :

34058023165. 8 Transistor-transistor logic (TTL)

✔ Emitter coupled logic (ECL)

34058023166.

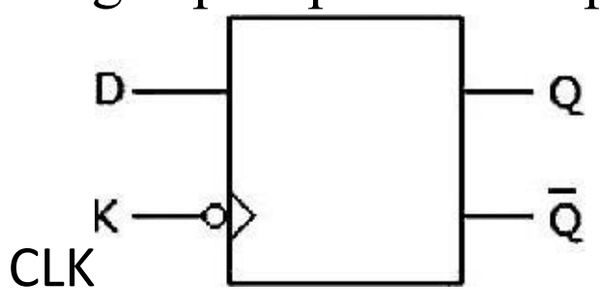
✖ Direct coupled transistor logic (DCTL)

34058023167.

34058023168. 8 ComplementalY metal oxide semiconductor (CMOS)

Question Number : 33 Question Id : 3405805793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The functionality of the following flip flop is best explained as



Options :

Output will ✓ be reflected when edge tiiggered pulse changing from high to low 34058023169.

Output will be reflected when edge triggered pulse changing from low to high 34058023170. 8

Output will be reflected
34058023171. ✗ at any time when edge friggered pulse in tlle low state

Output will ✗ be reflected at any time when edge triggered pulse in the high state 34058023172.

Question Number : 34 Question Id : 3405805794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Using four cascaded counters with a total of 16 bits. how many states must be deleted to acllieve a modulus of 50.000

Options :

34058023173. 50.000

34058023174. 65,536

34058023175. 20,000

34058023176. 15,536

Question Number : 35 Question Id : 3405805795 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

If a mod-12 and mod-10 counters are cascaded then detennine the output frequency if the input clock frequency is 240 MH:

Options :

34058023177. 240 kHz

34058023178. 8 120kHz

34058023179. 8 240 MHz

34058023180. e 2 MHz

Question Number : 36 Question Id : 3405805796 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Suppose a microprocessor has memoiY locations from 0000 to 7FFF, each storing one byte. How many bytes the memory can store

Options :

34058023181. 8 65,536

34058023182. 32,768

34058023183. 16,384

34058023184. 8,192

Question Number : 37 Question Id : 3405805797 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

How many times the loop will be executed for 8085 microprocessor

```
Loop : MVIC, OAh
       DEC C
       JNZ Loop
```

Options :

34058023185. ✘ 10 times

11 times 34058023186.

9 times

34058023187.

00 times

34058023188.

Question Number : 38 Question Id : 3405805798 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

Which of the following memory has smallest access time

Options :

✘ RAM

34058023189.

34058023190. ROM

34058023191. Cache memory

34058023192. Floppy disk

Question Number : 39 Question Id : 3405805799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For the following mathematical operation find the radix of the number system.

$(12)R + (23)R = (40)R$

Options :

34058023193. 8 10

34058023194. 7

34058023195. 5

34058023196.

Question Number : 40 Question Id : 3405805800 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The following switching functions are to be implemented using a suitable decoder

$f_1 = \sum m(1,2,5,7,9,11,14,19,25,26,29,31)$.The size of minimum suitable decoder is

Options :

34058023197. 8 2 to 4 line

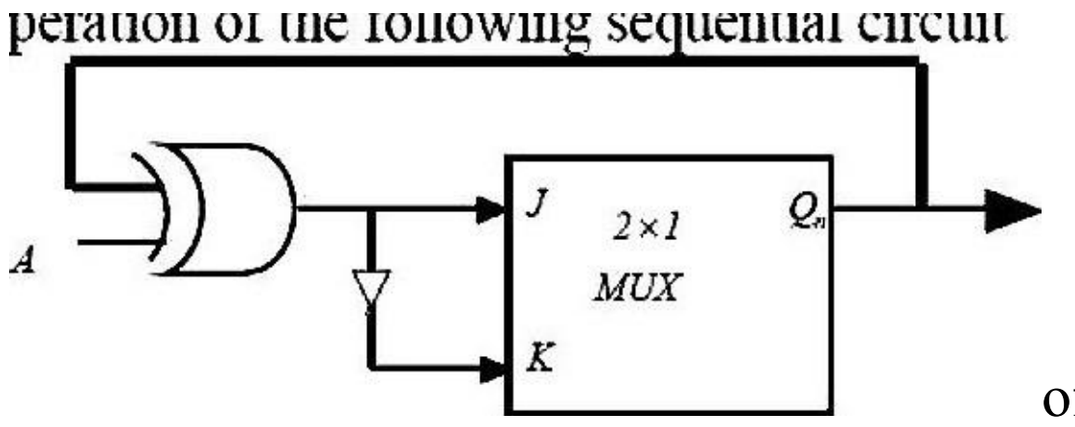
3 to 8 line

34058023198.

34058023199. 4 to 16 line

34058023200. 5 to 32 line

Question Number : 41 Question Id : 3405805801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O



Identify the final operation of the followin se uential circuit

Options :

34058023201. 8 JK Flip flop

D Flip flop 34058023202.

34058023203. T Flip flop

34058023204. SR Flip flop

Question Number : 42 Question Id : 3405805802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

An n bit twisted ling counter repeats the count after how many clock cycles

Options :

34058023205. ✔ 2n clock cycles

34058023206. ✘ n clock cycles

34058023207. ✘ 211-1 clock cycles

34058023208. ✘ n-l clock cycles

Question Number : 43 Question Id : 3405805803 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

After execution ofthe following programs contents of HL and DE register pair

```
LXI H. 1234 H
LXI D. 4321 H
DAD  D
```

Options :

34058023209. ✘ (HL)=1234 H, (DE)=4321 H

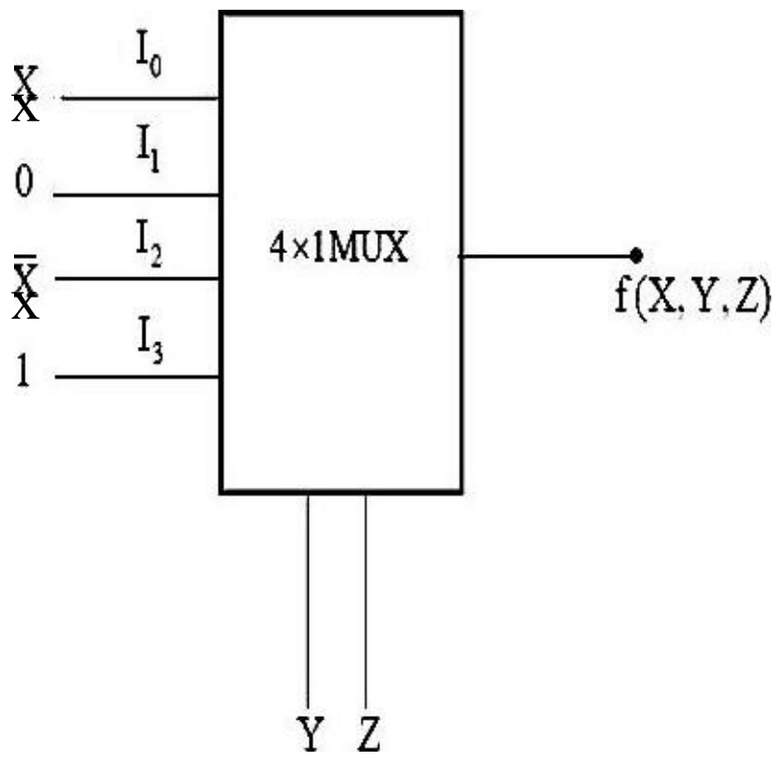
34058023210. ✘ (HL)=4321 H, (DE)=4321 H

3405802321 1 . ✗ (HL)=1234 H, (DE)=1234 H

34058023212. ✓ (HL)=5555 H, (DE)=4321 H

Question Number : 44 Question Id : 3405805804 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A 4 to I multiplexer to realize a Boolean function Y, Z) is shown 111 tlle figure below.
The canonical sum ofproducts expression for F(X, Y, Z) is



Options :

34058023213. ✓ $\sum m(2,3,4,7)$

34058023214. ✗ $\sum m(1,3,5,7)$

34058023215. ✗ $\sum m(0,2,4,6)$

34058023216. ✗ $\sum m(2,3,5,6)$

Question Number : 45 Question Id : 3405805805 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

111 the 8085 microprocessor which one ofthe followng is the conect sequence ofthe machine cycles for the executm ofthe insüuction INC M instillction

Options :

34058023217. OPC0de fetch

34058023218. Opcode fetch, memory read, mem01Y WIite

34058023219. Opcode fetch, memory read

34058023220. ✖ Opcode fetch, memory write, mem01Y read

Question Number : 46 Question Id : 3405805806 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The input impedance of the emitter follower Circuit is for the parameters. hæ=l kQ, hfe=99, RE-I K), Rs=OQ

Options :

IOkQ ✖ 34058023221.

34058023222. 9 kQ

34058023223. e101kQ

98 kQ

34058023224.

Question Number : 47 Question Id : 3405805807 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For a typical npn transistor unity gain bandwidth product is fr=100MHz anda=o.gg ,
the alpha and beta cut-off frequencies L, respectively are

Options :

34058023225. Hz ※ $f_\alpha = 1000M$ =10MHz

34058023226. f a=10MHz, fp =1MHz

34058023227. 8 f a=100MHz, fp =100MHz

f =101MHz, $= 1M$

34058023228M a

Question Number : 48 Question Id : 3405805808 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The Il-parameters of typical npn transistor are

h_{ie}=1.1k Q, hfe=50, 2.500^5, PAN, RL=lOkQ, for common emitter configuration the cun•ent gaill (A), input impedance (Zin) and voltage gaill are

Options :

34058023229. A_I --40.32, =1kQ, 4=-403.2

34058023230. ※ Al --50, 4 =10kQ, --500

34058023231. ※ Al =-400.2, =10kO, 4, =-40.32

34058023232. ✖ Al --100, =1k0 Av --1000

Question Number : 49 Question Id : 3405805809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For the high pass circuit to act as a differentiator, the time constant must be

Options :

34058023233. Very small compared to time period of the signal

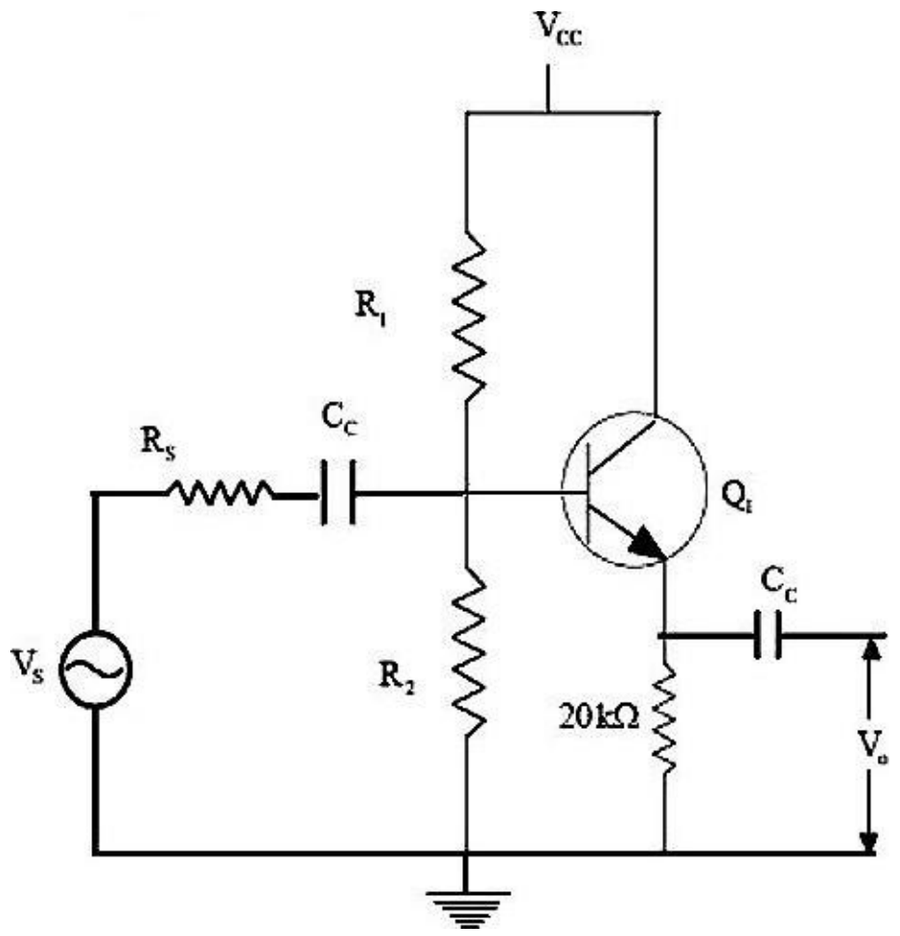
34058023234. Very high compared to time peliod of the signal

34058023235. s, Moderate

34058023236. ✖ Equal to time period of the signal

Question Number : 50 Question Id : 3405805810 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Identify the feedback configuration



Options :

34058023237. Voltage series

34058023238. s, Cunent selies

34058023239. Current shunt

34058023240. Voltage shunt

Question Number : 51 Question Id : 3405805811 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

An amplifier without feedback has a voltage gam of 100. input impedance of 10 kQ and output impedance of 5 kQ. The input impedance and output impedance ofthe current series negative feedback anplifier using the above amplifier with a feedback factor of 0.1 respectively is

Options :

34058023241. 110kQ and 55kQ

0.909kQ and 454Q

34058023242.

34058023243. 110kQ and 454Q

34058023244. 10kQ and 5kQ

Question Number : 52 Question Id : 3405805812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A Cascode amplifier pair consists of

Options :

34058023245. s: Cascade of CB amplifier and CE amplifier

34058023246. Cascade of 2 CE amplifiers

✖ Cascade of 2 CC amplifiers

34058023247.

Cascade of CE amplifier and CB amplifier

34058023248.

Question Number : 53 Question Id : 3405805813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The presence of hannonic distofiion in power amplifiers is because of

Options :

34058023249. 8 Linear charactelistics of active device

Non Linear charactelistics of active device

34058023250.

Ideal characteristics of active device

34058023251.

34058023252. 8 Time vatying cliaracteristics of active device

Question Number : 54 Question Id : 3405805814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Three identical amplifiers with each one having a voltage gain of 5, input resistance of 10 kQ and output resistance of 200Q are cascaded. The open circuit voltage gain of the cascaded amplifier is

Options :

34058023253. 15

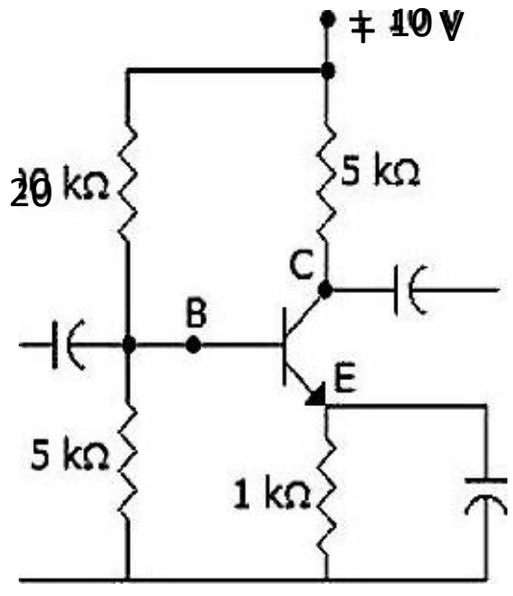
34058023254. 125

34058023255. 100

34058023256. 625

Question Number : 55 Question Id : 3405805815 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The stability factor (S) of the following self bias circuit is (Assume 13=99)



Options :

s=100

34058023257.

34058023258.

S=49 34058023259.

34058023260. S=4.8

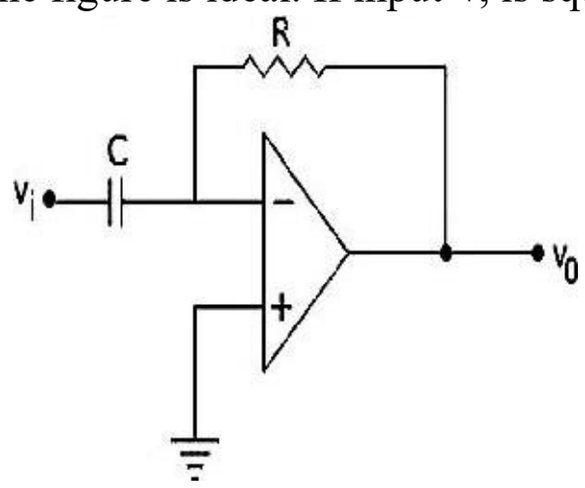
Question Number : 56 Question Id : 3405805816 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

Assume that op-amp in the figure is ideal. If input V, is square wave, the output % will be



Options :

34058023261. Square wave

34058023262. Sine wave

Impulse wave 34058023263.

Parabolic wave 34058023264.

s:

Question Number : 57 Question Id : 3405805817 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A panicular green light emitting diode (LED) emits ligllt of wavelength 5490 Å, the energy band gap ofthe semiconductor material used tllere is; Plank's constant h = 6.6 x 10^{34} J.sec

Options :

2.24 ev 34058023265.

34058023266. ✖ 1.98 ev

34058023267. ✖ 1.17 ev

34058023268. ✖ 0.74 ev

Question Number : 58 Question Id : 3405805818 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

111 an amplifier, ifthe output cunent flows for greater than 180^0 and less tllan 360^00ft11e input cycle, then the class of amplifier will be

Options :

34058023269. Class A

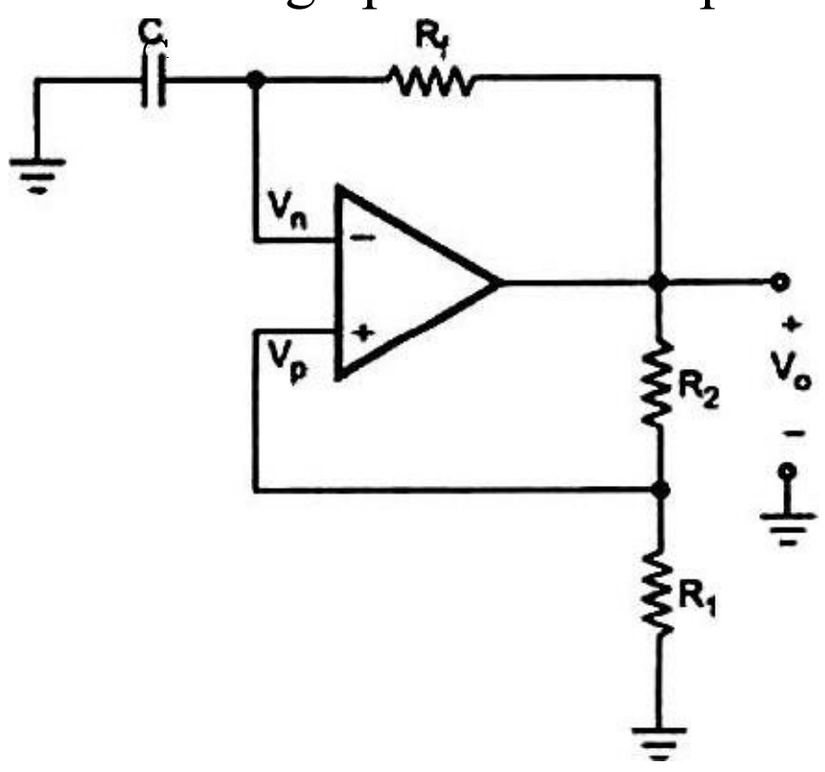
34058023270. Class B

34058023271. 8 Class C

Class AB 34058023272.

Question Number : 59 Question Id : 3405805819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Identify the following operational amplifier circuit



Options :

34058023273. ✖ Non-inverting amplifier

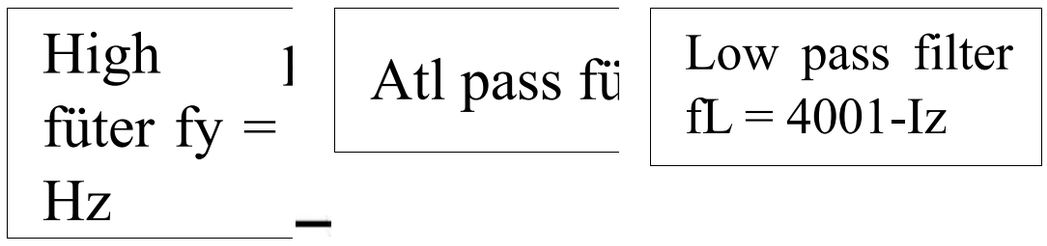
34058023274. ✖ Logarithmic amplifier

34058023275. ✖ Schmitt Tligger

34058023276. Astable multi-vibrator

Question Number : 60 Question Id : 3405805820 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

In the following block diagram, what is the behaviour ofthe overall system



Options :

34058023277. Low pass filter

34058023278. High pass filter

34058023279. Band pass filter

34058023280. All reject filter

Question Number : 61 Question Id : 3405805821 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

111 a 555 astable multi vibrator, RI : $R_1 = 3.9k\Omega$,, C=O.1gF , then its ON time, OFF time and duty cycle are

Options :

T = 0.54 $^{ns;}$ T_{OFF} = 0.27ms,• Dutycycle=66.66%

34058023281. ✔ ON

34058023282. 8 $T_{ON} = 0.27\,ms; T_{OFF}$ = 0.54 ms; Dutycycle =33.33%

34058023283. ON= $0.4\,ms$;OFF = 0.2ms; Dutycycle=66.66%

34058023284. ✖ $T_{ON} = 0.2\,ms; T_{OFF}$ = 0.4ms; Dutycycle=33.33

Question Number : 62 Question Id : 3405805822 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Johnson noise is caused by

Options :

34058023285. 8 Themal agitation of free electrons canying cun•ent thereby modulating tlle cunent

34058023286.Vibrations into circuit through conduct

✖

34058023287. Random emission of electrons across PN junction

Electromagnetic radiation into the circuit

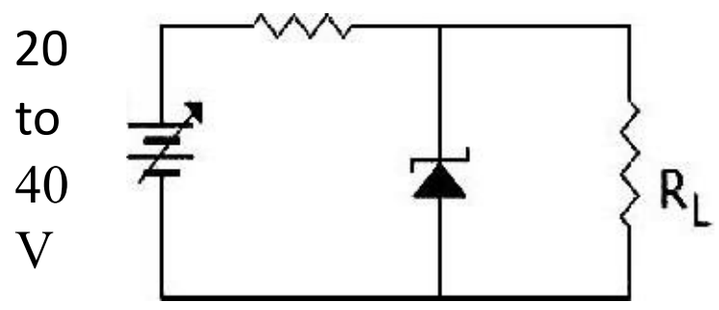
✖

34058023288.

Question Number : 63 Question Id : 3405805823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

In the followmg circuit diode is a 10 V zener diode. The minimum and maximum cun•ent through series resistance are

1 k



Options :

10 mA and 30 mA 34058023289.

20 mA and 40 mA
34058023290.

34058023291. 8 0 and 30 mA

O and 40 711.4
34058023292. 8

Question Number : 64 Question Id : 3405805824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O Correct Marks : 1 Wrong Marks : O

An amplifier without any feedback has mid band voltage gain of 40 dB. lower 3-dB frequency is 5 kHz and upper 3-dB frequency 50 kHz. If a 33% negative feedback is introduced to tlle basic amplifier. The lower and upper 3-dB frequencies for the same amplifier witli feedback are

Options :

✗ $f_{1f} = 300\,Hz; f_{2f} = 2\,MHz$
34058023293.

34058023294. ✓ $f_{1f} = 147\,Hz; f_{2f}$-1.7MHz

✗ $f_{1f} = 1000\,Hz; f_{2f} = 20\,MHz$
34058023295.

$= 3000\,Hz:$
34058023296. f2f=O.2MF-1z

Question Number : 65 Question Id : 3405805825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Consider a germaniump-n junction at 300 K, with doping concentration x10^{18}cm-3 and ND=2 cm-3 inp-side and Il-sides ofthe junction respectively. Assume the liltrmsic concentration ofGe xld^{3} cm-3 at 300 K. Ille contact potential across the junction is

Options :

34058023297. ✗ 0.658 v

34058023298. 0.398 V

34058023299. 8 0.7 V

34058023300. 0.2 V

Question Number : 66 Question Id : 3405805826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

In a multi stage amplifier configuration, the effective load impedance of I st stage is

Options :

34058023301. ✗ Actual load resistance connected to the first stage

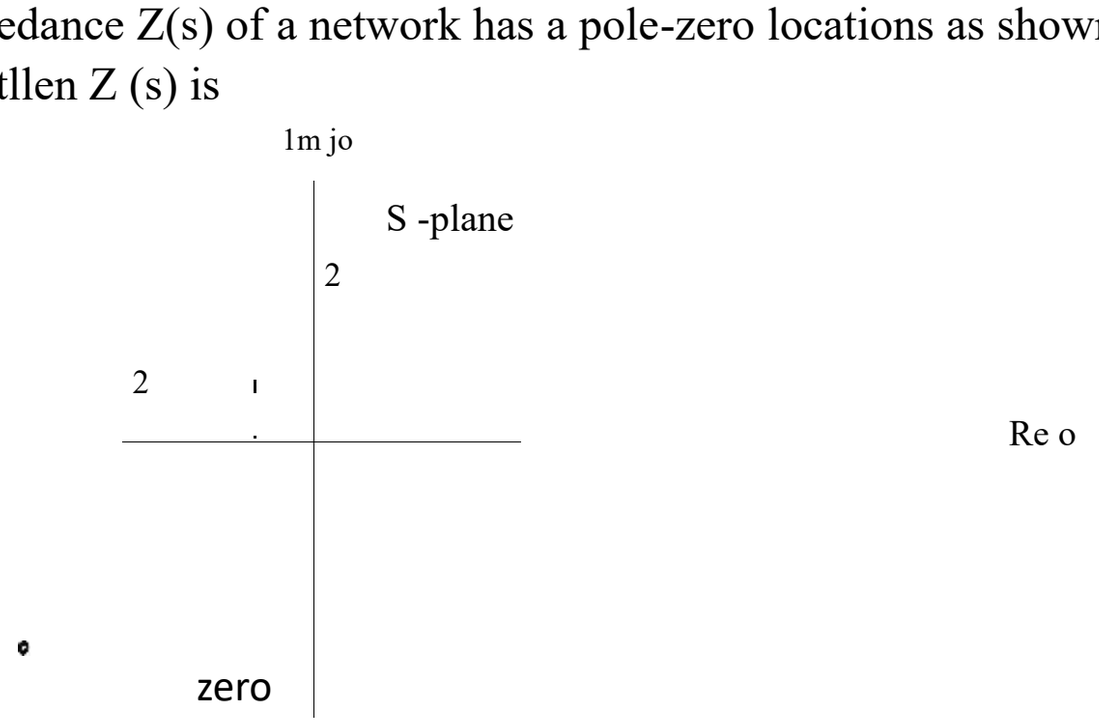
34058023302. Input impedance of the first stage

34058023303. ✗ Input impedance of second stage

34058023304. Pamllel combination of actual load resistor and input impedance of the 2nd stage

Question Number : 67 Question Id : 3405805827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The driving-point impedance Z(s) of a network has a pole-zero locations as shown in the figure. IfZ(0) = 4, tllen Z (s) is



Options :

$$Z(s)=\frac{106+2)}{\left(s^2+2s+5\right)}$$

34058023305.

$$Z(s)=\frac{100(s+2)}{\left(s^3+3s+7\right)}$$

34058023306.

$$Z(s)=\frac{(s+1)}{\left(s^2+4s+5\right)}$$

34058023307.

$$Z(s)=\frac{100(s+3)}{\left(s^2+4s+5\right)}$$

34058023308. 8

Question Number : 68 Question Id : 3405805828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

For a transmission line the open Circuit and sh01t circuit impedances are 200 Q and 50 Q.

Then conesponding characteristic impedance is

Options :

34058023309. 1000

500

34058023310.

3405802331 1 .

34058023312. 8 2000

Question Number : 69 Question Id : 3405805829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The impedance matrices oftwo, two-polt network are given by $\begin{matrix} 5 & 1 \\ 1 & 6 \end{matrix}$ alid $\begin{matrix} 10 & 4 \\ 4 & 20 \end{matrix}$ If these two networks are connected in series, the impedance matiix of the resulting twopolt network will be

Options :

3 14 34058023313.

16 5

5 26

34058023314.

60 4

4 120

34058023315. 8

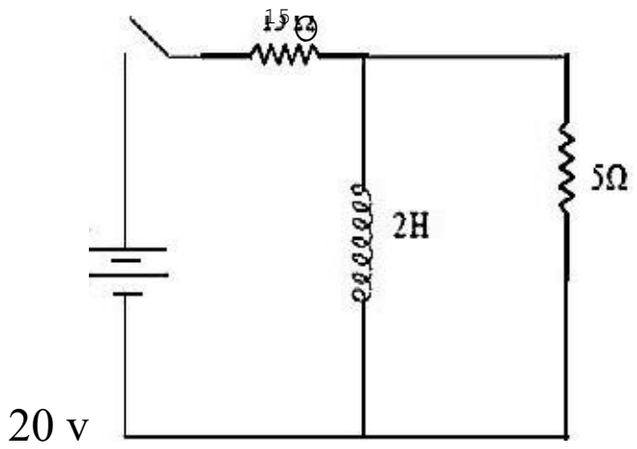
34058023316. 8

Question Number : 70 Question Id : 3405805830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

In the following switching circuit, the current supplied by the battery nnmediately after switching tlle circuit is



Options :

34058023317. 0 A

34058023318.

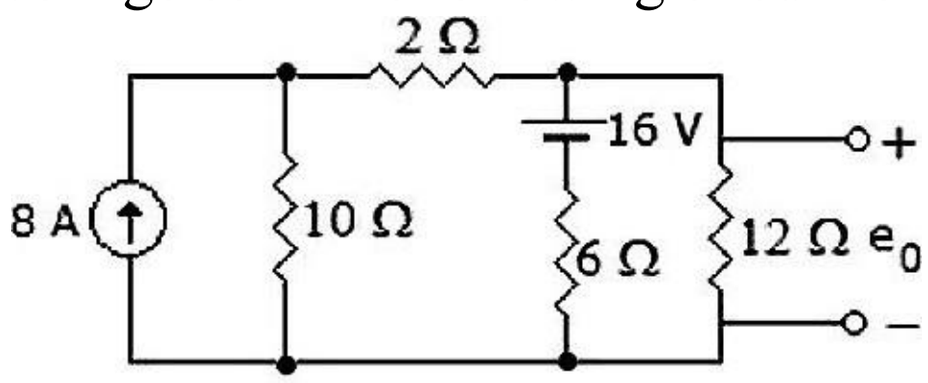
34058023319. 8 10 A

34058023320. 8

Question Number : 71 Question Id : 3405805831 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The voltage eo in the following circuit is



Options :

48 V

34058023321.

34058023322. 24 V
34058023323. 36 V

34058023324. 28 V

Question Number : 72 Question Id : 3405805832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

An RLC series Circuit has quality factor (Q) = 100 and angular resonant frequency (00) = 20 rad/sec. Then the bandwidth is

Options :

0.2 rad/sec

34058023325.

34058023326. 8 2 rad/sec

34058023327. 20 rad/sec

s: 2000 rad/sec

34058023328.

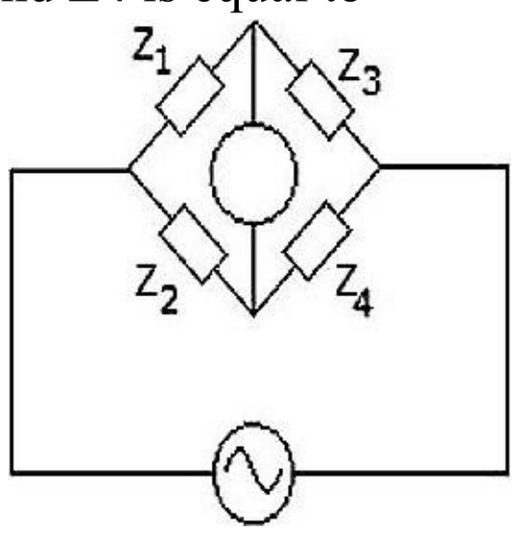
Question Number : 73 Question Id : 3405805833 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The ac bridge shown in the figure is balanced if Zl =100Z30^{G} , 4 , 4 =250Z-40^{ö} and Z4 is equal to



Options :

34058023329. =375Z700

34058023330. =375Z-700

34058023331. ✖ $Z_4 = 150\angle 0^{\circ}$

=150Z200

34058023332.

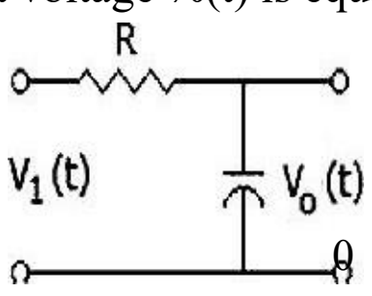
Question Number : 74 Question Id : 3405805834 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

For the Circuit shown in the figure, the time constant RC = I ms, The input voltage is VI(t) = {2 sin 10^3 t. The output voltage %(t) is equal to



Options :

sin (Id t- 450)

34058023333.

34058023334. s: sin (Id t + 45 ^{0})

34058023335.sin (10^3 t- 530)

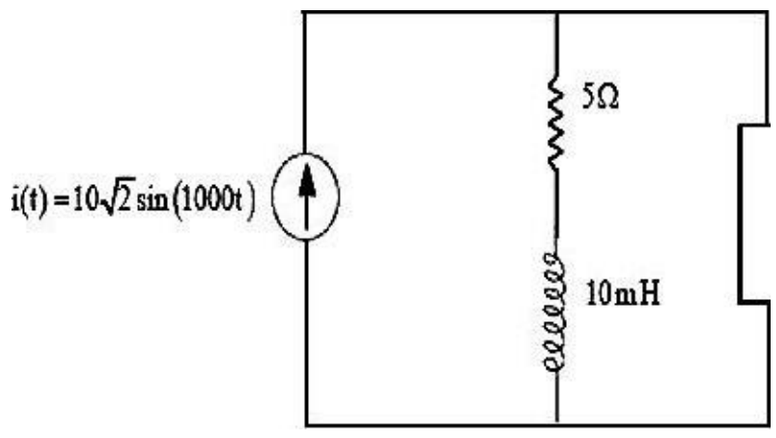
34058023336.sin (10^3 t + 530)

Question Number : 75 Question Id : 3405805835 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

In the circuit shown below the maximum power that can be tmnsfen•ed to load ZL is



Options :

34058023337. ✗ 250 W

34058023338. ✗ 500 W

34058023339. ✓625 W

34058023340. ✗ 2000 w

Question Number : 76 Question Id : 3405805836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O Correct Marks : 1 Wrong Marks : O

A two-polt network is represented by ABCD parameters given by

$$\begin{bmatrix} V_1 \\ I_1 \end{bmatrix} = \begin{bmatrix} A & B \\ C & D \end{bmatrix} \begin{bmatrix} V_2 \\ -I_2 \end{bmatrix}$$

If pon is tenninated by RL, then input impedance seen at pon I is given by

Options :

$$\frac{A + B R_L}{}$$

34058023341. s: C+DRL

34058023342. ✗ $\frac{A R_L + C}{B R_L + D}$

$$\underline{\text{DRL+A}}$$

34058023343. 8 BRL+C

B+ARL

34058023344. D+CRL

Question Number : 77 Question Id : 3405805837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The transfer fmction of selies RLC circuit is -2—; $= H(s) = \frac{10^6}{s^2 + 20s + 10^6}$ then the VI(s) quality factor of the circuit is

Options :

34058023345. 25

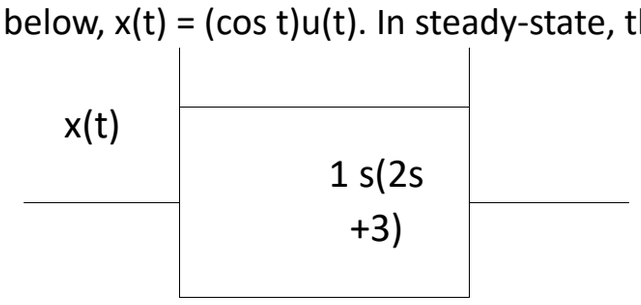
34058023346. 100

34058023347. 50

34058023348. 8 1000

Question Number : 78 Question Id : 3405805838 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

In the system shown in the figure below, x(t) = (cos t)u(t). In steady-state, the response y(t) will be



Options :

34058023349. 8 $t\ y(t) = 4 \cos (t — 120^0)$

$y(t)$=3.6cos(t—1560)

34058023350.

34058023351. 8$y(t)$= 7.2 cos (t —16 °
)

✖ .y(t)= 4.9 sin (t —56)
°
34058023352.

Question Number : 79 Question Id : 3405805839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For a stable system

Options :

34058023353. 8 Both phase and gain margin are negative

Both phase and gain margin are positive

34058023354.

Phase margm is positive but gain margin is negative

34058023355. 8

34058023356. ✖ Gain margin is positive but phase margin is negative

Question Number : 80 Question Id : 3405805840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The phase crossover frequency of the transfer function G(s) $\frac{1\ ooo}{}$ in rad/s is

Options :

43

34058023357.

1/43

34058023358.

34058023359.

34058023360. 8 343

Question Number : 81 Question Id : 3405805841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A network has $\frac{s + 1/T_1}{s + 1/T_2}$ en

Options :

34058023361 , 8 It is lead network

34058023362. It is lag network

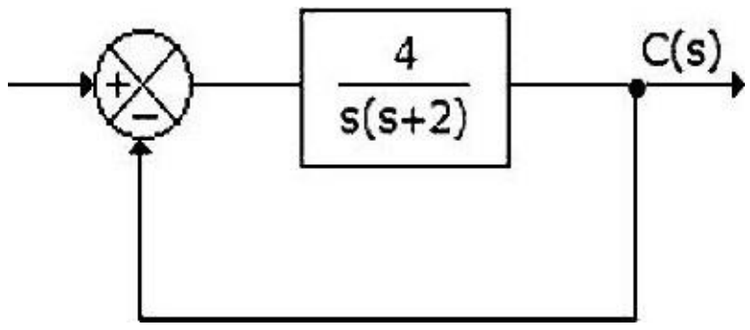
34058023363. It is lead network if Tl > T2 and lag network Tl < T2

. T h It is lead network if Tl < T2 and lag network Tl > T2

34058023364.

Question Number : 82 Question Id : 3405805842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For the system of the given figure the closed loop poles are located at



Options :

s=0 and s=-2

34058023365. 8

s = O and —1±jNG

34058023366.

✓ $s = -1 \pm j\sqrt{3}$

34058023367.

s =—2 and$-1 \pm i$

34058023368.

Question Number : 83 Question Id : 3405805843 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For a first order system having transfer ftnction ——— ,the unit step response

Options :

✓ $\left(1-e^{-\left(t/T\right)}\right)$ u(t)

34058023369.

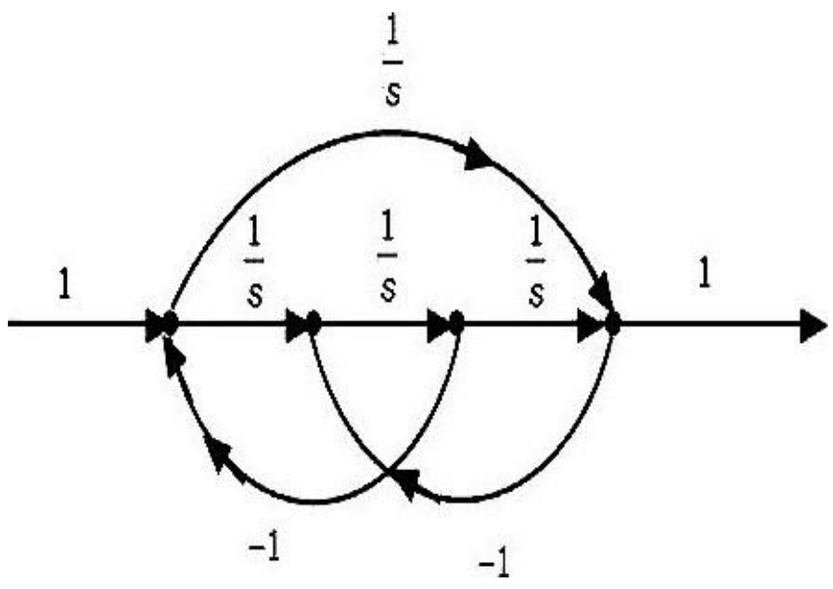
34058023370. $\left(e^{-\left(t/T\right)}\right)$ u(t)

34058023371. $\left(-e^{-\left(t/T\right)}\right)$ —1 u(t)

34058023372. 8 $\left(1-e^{-\left(\quad\right)}\right)$ tT) u(t)

Question Number : 84 Question Id : 3405805844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Tlle signal flow gmpll representation of control system is sliown in the figure, below. The transfer function is



Options :

34058023373. e $H(s)=\frac{1}{s}$

34058023374. I-I(s) $=\frac{s^2+1}{s\left(s^2+2\right)}$

34058023375. ✖ $H(s)=\frac{s\left(s^2+1\right)}{s^2+2}$

34058023376. ✖ $H(s)=1-\frac{1}{s}$

Question Number : 85 Question Id : 3405805845 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A unity feedback system has a forward path fransfer fimction G(s) $\frac{100}{}$ The time

at which the response to a unit step input reaches its peak is seconds. The value of damping coefficient andp value respectively are

Options :

34058023377. ✖ 4=0.8; p= 16

34058023378. , 4=0.7; p=14

34058023379. e 4=0.6; p = 12

4=0.5; p=10

34058023380.

Question Number : 86 Question Id : 3405805846 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The value of ao which will ensure that tlle polynomial $+3s^2 + 2s +$ (10 has roots on the left half of tlle s-plane is

Options :

34058023381. Il

34058023382. 9

34058023383. 8 7

34058023384.

Question Number : 87 Question Id : 3405805847 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A feedback system has the following open loop frequency response

o(rad / sec)
2
3
4
5
6
8
10

7 28
4.47

3.58
2.61
1 62

1.00
0.64
ZG(jo)
-1180
-1300
-1500
-1600
-1700
-1800

The gain and phase margin of the system are

Options :

34058023385. 0 dB, -180^0

34058023386. 8 7dB, -170

34058023387. 3.88 dB, 1m

34058023388. 8 20° 10 dB,

Question Number : 88 Question Id : 3405805848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A linear time-inmant single input single output system has a state space model given by

__=F.X+Gu; y=H: dt

Where $F=\begin{bmatrix}0 & -1\\ 4 & -2\end{bmatrix}; G=\begin{bmatrix}0\\ 4\end{bmatrix}; H=\begin{bmatrix}1 & 0\end{bmatrix}$

Here. s is the state vector, u is the input all(ly is output. The damping ratio of the system is

Options :

34058023389. ✖ 0.25

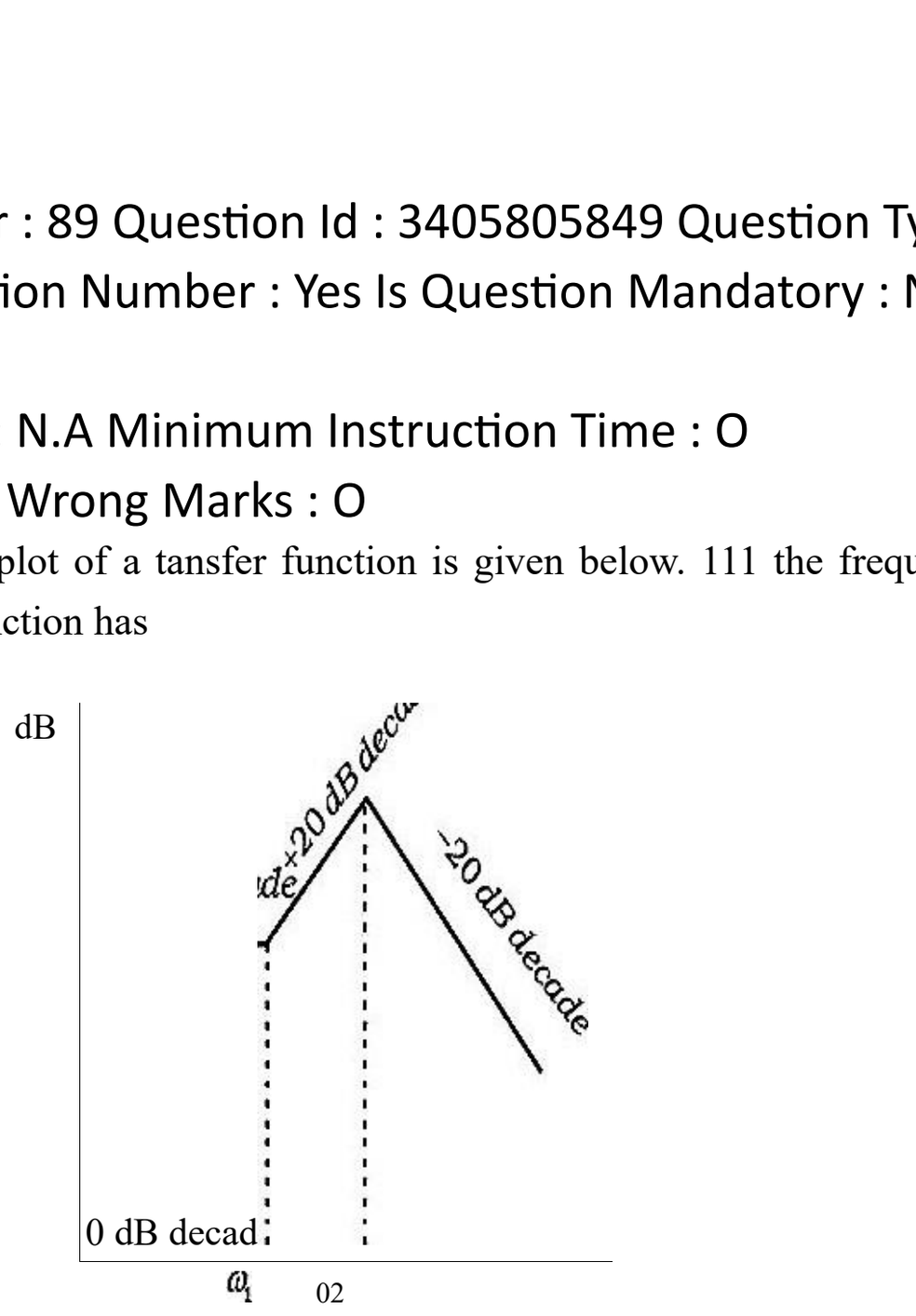
34058023390. 0.5

34058023391.

34058023392. 8 2

Question Number : 89 Question Id : 3405805849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The Bode asymptotic plot of a tansfer function is given below. 111 the frequency range shown, the transfer flinction has



Options :

✖ 3 poles and I zero

34058023393.

1 pole ✖ and 2 zero

34058023394.

34058023395. ✔ 2 poles and 1 zero

2 poles and 2 zeros

34058023396.

Question Number : 90 Question Id : 3405805850 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A 3%. 200 mVfull scale digital voltmeter lias an accuracy specification of ±0.5 % of reading plus 5 counts, When the meter reads 100 niV, the voltage being measured as

Options :

34058023397. s: Any value between 99.5 mV and 100.5 mV

34058023398. ✔Any value between 99.0 mV and 101 mV

34058023399. Exactly 99.5 mV

34058023400. ✘ Exactly 100 mV

Question Number : 91 Question Id : 3405805851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

All electronic voltmeter consisting of a full wave precision and an average Circuit gives con•ect root mean square (RMS) value for square wave inputs. Its reading for a 2 Vpeak to peak sinusoidal will be

Options :

2

34058023401.

1

34058023402.

2

34058023403. 8

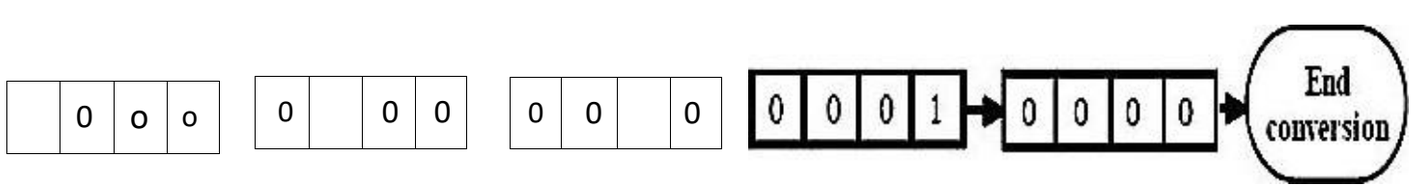
34058023404. ✖ $\frac{\sqrt{2}}{\pi}V$

Question Number : 92 Question Id : 3405805852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A 4 bit successive approximation type analog to digital convener (ADC) has a full scale value of 15 V. The sequence of the states. the successive approximation register (SAR) will traverse. for the conversion of an input of 9 Vis

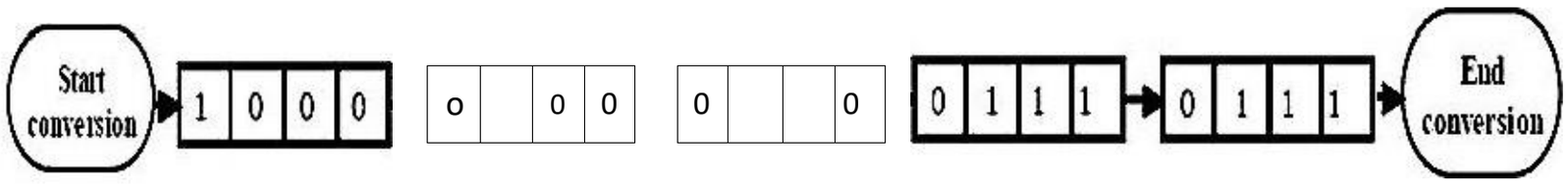
Options :

34058023405. 8



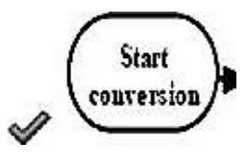
Start

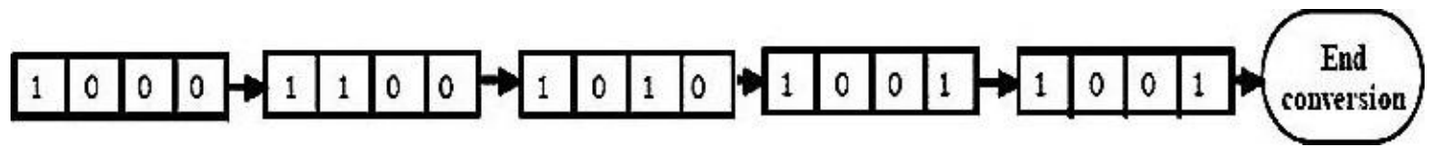
34058023406. 8



34058023407. ✖

34058023408.





Question Number : 93 Question Id : 3405805853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A moving coil mstnment lias a resistance of 0.5 Q alid a full scale deflection of 0. IA.

To conven it into an ammeter of 0-10A. the shunt resistance should be

Options :

34058023409. ✘ 0.004 Q

34058023410. 0.005 Q

3405802341 1 . 0.05 Q

34058023412.
0.1 Q

Question Number : 94 Question Id : 3405805854 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The bridge most suited for measurement of a four tenninal resistance 111 the range of
0.001 0.1 Ois

Options :

34058023413. ✗ Wein's bridge

34058023414. ✓Kelvin double blidge

34058023415. ✗ Maxwell's blidge

34058023416. ✗ Scheling blidge

Question Number : 95 Question Id : 3405805855 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A velY low-loss coil is tested with a Q-meter and the distiibuted (self) capacitance ofthe coil is found to be 820pF. Resonance occun•ed at an angular frequency o of 10^5 rad/s with a capacitance of 9.18 nF, Tlle inductance of the coil is

Options :

1 OOpH

34058023417.

34058023412.

34058023418. 100 PH

s:

100 nil-I

34058023420.

Question Number : 96 Question Id : 3405805856 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The two-wattmeter method is used to measure power in a balanced 3-phase Circuit, drawing laggmg cun•ent. The power factor If one ofthe wattmeter reads zero is

Options :

34058023421. 0.5

34058023422. 0.8

34058023423. 1.0

34058023424. 0.0

Question Number : 97 Question Id : 3405805857 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

34058023412.
The input impedance of a cathode ray oscilloscope (CRO) is equivalent to a 1M Q resistance in parallel with a 45 PF capacitance. It is used with a compensated 10 to I attenuation probe. The effective input capacitance at the probe tip is

Options :

34058023425. 4.5 PF

8

34058023427. ✖ 45 PF

450

34058023428.

Question Number : 98 Question Id : 3405805858 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The Lissajous patten obsewed on screen of CRO is a straight line Inclined at 45 ^{0} to x axis. IfX-plate input is 2 sin ot, the Y-plate input is

Options :

34058023429. e 2 sin ot

34058023430. 8 2 sin (ot + 450)

8 2 sin (ot-

34058023431. 450)

✖ 2.818 sin (ot+

34058023432.450)

34058023412.

Question Number : 99 Question Id : 3405805859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The resistance of a 125 Q strain gauge changes by 1 ohm for 4000 micro strain. The gauge factor is

Options :

34058023433. 1.5

2

34058023435. 2.5

34058023436. 3

Question Number : 100 Question Id : 3405805860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A piezoelectric force transducer has a charge sensitivity of 20 pCN. It is connected to a charge amplifier and overall gam oftransducer and amplifier is 50 mV/N. The gain of amplifier is

Options :

34058023437. 1 mV/pc

s, 1.5 mV/pc 34058023438.

e 2.5 mV/pC

34058023439.

34058023412.

✖ 4mV/pC

34058023440.

Question Number : 101 Question Id : 3405805861 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

IR spectroscopy

Options :

34058023441. ✗ Has a useful range of radiation from 2.5 to 15 microns

34058023442. ✗ Is unsuitable for analysis of mixture of metals

34058023443. 8 Is unsuitable for analysis of organic gases

34058023444.Uses bolometer as one of the detectors

Question Number : 102 Question Id : 3405805862 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Two sensors have measurement errors that are Gaussian distnbuted with zero means and valiances c; and c: respectively. The two sensor measurements Xland l} are combined to fom the weighted average x = + (1- x2. Assuming that the measurement errors ofthe two sensors are unconelated, tlle weighting factor athat yields the smallest enor valiance of x is

Options :

34058023445. ✓ $\frac{\sigma_2^2}{\sigma_2^2+\sigma_1^2}$

34058023446. ✗ $\frac{\sigma_1^2}{\sigma_2^2+\sigma_1^2}$

34058023447. ✗ $\frac{\sigma_1}{\sigma_2^2+\sigma_1^2}$

34058023448. ✗ $\frac{\sigma_2}{\sigma_2^2+\sigma_1^2}$

Question Number : 103 Question Id : 3405805863 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The maximum solid angle of acceptance of light coupled into a step index fibre having core and cladding refractive indices 1.48 and 1.45 respectively is

Options :

34058023449. ✔ 0.28 steradins

34058023450. ✘ 0•30 steradins

34058023451. 0.32 steradins

34058023452. 0.34 steradins

Question Number : 104 Question Id : 3405805864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For a change in elevation level of 1.5gm between an optical flat and a surface, a light wave of wavelength 0.5 gm produces fringes. The number of ffflges is

Options :

34058023453. 3

34058023454.

34058023455. 9

34058023456. 8 12

Question Number : 105 Question Id : 3405805865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A strain gauge is attached to a bar of length 20 cm which is subjected to a tensile force. Tlle nominal resistance of stralll gauge is 100 Q. The changes 111 resistance and elongation in the bar measured are 0.35 Q and 0.2 mnl respectively. The Gauge factor of the stram gauge is

Options :

34058023457. 8 2

34058023458. 3.5

34058023459. 10

34058023460. ✖ 100

Question Number : 106 Question Id : 3405805866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Tlle expression for the capacitance (C ill pF) of a parallel plate capacitor is given as

$C=6.94x1T^3$ — . The diameter (d) of each plate is 20 mm and spacing between the plates

(S) is 0.25 mm. The displacement sensitivity of the capacitor approximately

Options :

34058023461 , ✖ 44.4 pF/mm

-44.4
pF/mm

34058023462.

11.1 pF/mm

34058023463.

-11.1 pF/mm

34058023464. 8

Question Number : 107 Question Id : 3405805867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : 0

To reduce the effect of fringing in a capacitive type transducer

Options :

34058023465.

A guard ring is provided and it is kept at ground potential

34058023466.

The transducer is shielded and the shield is kept at the same potential as the moving plate

34058023467. 8

34058023468. A guard ling is provided and is kept at the same potential as flie moving plate

The transducer is shielded and the shield is kept at ground potential

Question Number : 108 Question Id : 3405805868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A mercu1Y barometer reads h mm Hg with the temperature of the mercu1Y at T^{O} C. The barometer reading con•ected for standard temperature 0 ^{0} C with denoting the volumetric expansion coefficient of mercury in 0' C, is

Options :

34058023469. ✗ 1+ßT

✗ h(P+T)

34058023470.

h(1+ßT)

34058023471.

✗ h(ß-T) 34058023472.

Question Number : 109 Question Id : 3405805869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A differential pressure transmitter is used to measure the flow rate in a pipe. Due to agemg, the sensitivity of the pressure transmitter is reduced by 6%. All other aspects of the flow meter remaining constant, change m the sensitivity of flow measurement is

Options :

34058023473.

34058023474. 8 5%

34058023475. ✗ 2.5%

34058023476M %

Question Number : 110 Question Id : 3405805870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

Liquid flow rate is measured using

Options :

34058023477. s: A Pirani gauge

8 A pyrometer

34058023478.

An 01ifice plate 34058023479.

A Bourdon tube

34058023480. 8

Question Number : 111 Question Id : 3405805871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A shaft encoder attached to a DC motor has a sensitivity of 500 pulses per revolution. A frequency meter connected to the output of encoder mdicates the frequency to be 5500 Hz.The speed ofmotor ill RPM is

Options :

34058023481. ✖ 110

34058023482. 8 220

34058023483. 550

34058023484. 660

Question Number : 112 Question Id : 3405805872 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The relationship between the forcef(t) and the displacement x(t) of a spnng-mass system (with a mass M, viscous damping D and spling constant K) is

$$\frac{(1^2}{x(t)} \quad +D\frac{\cdots\cdots}{\cdot}+K\,x(t)=f(t)$$

$$\frac{\quad}{\quad}\frac{dx(t)\ dt2}{dt}$$

I(s) and F(s) are the Laplace transforms of x(t) andf(t) respectively. With 11=0.1. D=2, K=IO in appropriate The transfer function $\frac{\cdots\cdots}{\cdots\cdots}$ is

Options :

34058023485. ✓ $\frac{10}{s^2+20s+100}$

34058023486. 8 s +20S+100

34058023487. $\frac{I\,Os^2}{+\,20s\,+100}$

34058023488. ✗ $\frac{s}{s^2+20s+100}$

Question Number : 113 Question Id : 3405805873 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

The Sound Pressure Level (SPL) measured in open space (free filed), at a distance of 6 m from a noise source is 80 dB. At a distance of 60 m, the SPL is

Options :

34058023489. 8 80 dB

60 dB

34058023490.

34058023491. 8 dB

1.340

34058023492.

Question Number : 114 Question Id : 3405805874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : O

Correct Marks : 1 Wrong Marks : O

A He-Ne laser of cavity length 500 non has an oscillating bandwidth of 1500 MHz. The maximum number of longitudinal oscillating modes that is accommodated witliin the bandwidth is

Options :

34058023493. 4

34058023494.

34058023495.

34058023496. 8 40

Question Number : 115 Question Id : 3405805875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

An LED emitting at I gm with a spectral width of 50 nm is used 111 a Michelson interferometer. To obtain a sustamed interference, the maximum optical path difference between the two anns of the interferometer is

Options :

34058023497. 8 200 pm

34058023498. ✔20 gm

34058023499.

34058023500. 50 mn

Question Number : 116 Question Id : 3405805876 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The relative penmttivity of an optical medium is 2.5. Its refractive Index is

Options :

34058023501. 04

34058023502. el.25

34058023503. 1.58

34058023504. 8 1.6

Question Number : 117 Question Id : 3405805877 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The resolving power of a spectrometer consisting of a collimator, grating and a telescope can be increased by

Options :

34058023505. s: Increasing the angular magnification of telescope

34058023506. ✖ Increasing the period of grating

34058023507. ✔ Decreasing the peliod of grating

34058023508. 8 Decreasing the slit-width of the collimator

Question Number : 118 Question Id : 3405805878 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

The transmittance of a coloured solution is 0.5. The absorbance of the solution is

Options :

34058023509. 0.3010

34058023510. s: 0.6930

3.1605

3405802351 1 .

34058023512. -1.5238

Question Number : 119 Question Id : 3405805879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

For an ECG amplifier the input signal is 100 BIV conupted by a common mode noise of 5 mV. The output oftlle amplifier colitains 50 mV of signal and 0.001 mV. The CNIRR of the amplifier is

Options :

43 dB

34058023513.

34058023514. '67 dB

88 dB

34058023515.

34058023516. 128 dB

Question Number : 120 Question Id : 3405805880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : O
Correct Marks : 1 Wrong Marks : O

A single sensor, contact tne ultrasonic flaw detector uses a frequency of 330 kHz, when testing a specimen, an echo from a flaw is recorded 0.05 ms after the transmitted pulse. Ifthe velocity of sound ill the test object is 6 lan/s then the flaw is at a depth of

Options :

34058023517. 8 120 cm

34058023518. 60 cm

34058023519. ✖ 30 cm

34058023520. e 15 cm