

# Telangana State Council Higher Education

## Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

<b>Question Paper Name :</b>	Instrumentation Engineering 21st Sept 2020 Shift 1
<b>Subject Name :</b>	Instrumentation Engineering
<b>Creation Date :</b>	2020-09-21 14:47:25
<b>Duration :</b>	120
<b>Total Marks :</b>	120
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console? :</b>	Yes

## Instrumentation Engineering

<b>Group Number :</b>	1
<b>Group Id :</b>	88039680
<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

## Mathematics

<b>Section Id :</b>	880396146
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	10
<b>Number of Questions to be attempted :</b>	10
<b>Section Marks :</b>	10
<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>	880396146
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 8803969481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

$$\oint_{|z|=1} \frac{\sinh(z^2)}{z^3} dz =$$

**Options :**

88039637921. ✖  $-\pi i$

88039637922. ✘  $-2\pi i$

88039637923. ✘  $\pi i$

88039637924. ✔  $2\pi i$

**Question Number : 2 Question Id : 8803969482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Residue of  $f(z) = \frac{1}{1-e^z}$  at  $z = 0$  is

**Options :**

88039637925. ✘  $-2$

88039637926. ✘  $2$

88039637927. ✔  $-1$

88039637928. ✘  $1$

**Question Number : 3 Question Id : 8803969483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Sum of squares of eigen values of the matrix  $\begin{pmatrix} 1 & -2 & 0 \\ 0 & -2 & 1 \\ 0 & 1 & -2 \end{pmatrix}$  is

**Options :**

88039637929. ✓ 11

88039637930. ✗ 10

88039637931. ✗ 9

88039637932. ✗ 8

**Question Number : 4 Question Id : 8803969484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

$$A = \begin{pmatrix} 1 & -1 & 1 \\ -1 & 1 & 1 \\ 1 & 1 & -1 \end{pmatrix} \Rightarrow A^2 - A - 4I =$$

**Options :**

88039637933. ✗  $4A^{-1}$

88039637934. ✓  $-4A^{-1}$

88039637935. ✗  $2A^{-1}$

88039637936. ✗  $-2A^{-1}$

**Question Number : 5 Question Id : 8803969485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The value of  $k$  such that the system of equations :  $x - 2y + z = 4$ ,  $5x - y + 3z = 7$ ,  $4x + y + 2z = k$  to be consistent is

Options :

88039637937. ✖ 1

88039637938. ✖ 2

88039637939. ✔ 3

88039637940. ✖ 4

Question Number : 6 Question Id : 8803969486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\int_1^2 \int_3^4 (x + y^2) dy dx =$$

Options :

88039637941. ✖  $\frac{83}{3}$

88039637942. ✔  $\frac{83}{6}$

88039637943. ✖  $\frac{83}{9}$

88039637944. ✘  $\frac{83}{12}$

Question Number : 7 Question Id : 8803969487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical  
Correct Marks : 1 Wrong Marks : 0

$$u = \sin x \cosh y \Rightarrow \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} =$$

Options :

88039637945. ✔ 0

88039637946. ✘ u

88039637947. ✘ 2u

88039637948. ✘ 3u

Question Number : 8 Question Id : 8803969488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical  
Correct Marks : 1 Wrong Marks : 0

If the particular integral of  $y'' + y' - 20y = \sin 2x$  is  $\frac{1}{290}(a \cos 2x + b \sin 2x)$ , then (a, b) =

Options :

88039637949. ✘ (-1, -6)

88039637950. ✔ (-1, -12)

88039637951. ✘ (1, 12)

88039637952. ✘ (1, 6)

**Question Number : 9 Question Id : 8803969489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Complementary function of  $y''' + y'' = x^3$  is

Options :

88039637953. ✔  $y(x) = a + bx + cx^2$

88039637954. ✘  $y(x) = (a + bx + cx^2) e^x$

88039637955. ✘  $y(x) = a + bx + cx^3$

88039637956. ✘  $y(x) = a + bx$

**Question Number : 10 Question Id : 8803969490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Let S be the set of all four digit numbers formed with the digits 4, 5, 6, 7 with no repeated digits. If a number is chosen at random from S, then the probability that it is a multiple of 4 is

**Options :**

88039637957. ✘  $\frac{1}{8}$

88039637958. ✘  $\frac{1}{4}$

88039637959. ✔  $\frac{1}{12}$

88039637960. ✘  $\frac{1}{24}$

## **Instrumentation Engineering**

<b>Section Id :</b>	880396147
<b>Section Number :</b>	2
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	110
<b>Number of Questions to be attempted :</b>	110
<b>Section Marks :</b>	110
<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>	880396147
<b>Question Shuffling Allowed :</b>	Yes



Question Number : 11 Question Id : 8803969491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The discrete time sequence  $x[n] = \frac{1}{n}u[n-1]$  is

Options :

- 88039637961. ✘ Periodic and energy signal
- 88039637962. ✔ Non-periodic and energy signal
- 88039637963. ✘ Periodic and power signal
- 88039637964. ✘ Non-periodic and power signal

Question Number : 12 Question Id : 8803969492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A discrete time system is defined by the difference equation  $y[n] = x[-n]$ . The system is

Options :

- 88039637965. ✘ Linear time invariant
- 88039637966. ✔ Linear time variant
- 88039637967. ✘ Non-linear time invariant

88039637968. ✘ Non-linear time variant

Question Number : 13 Question Id : 8803969493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The phase delay  $\tau_p(\omega)$  and group delay  $\tau_g(\omega)$  of the FIR filter  $h(n) = \{a, b, c, b, a\}$  is

Options :

88039637969. ✘  $\tau_p(\omega) = 7 \text{ samples}, \tau_g(\omega) = 3 \text{ samples}$

88039637970. ✘  $\tau_p(\omega) = 7 \text{ samples}, \tau_g(\omega) = 7 \text{ samples}$

88039637971. ✔  $\tau_p(\omega) = 4 \text{ samples}, \tau_g(\omega) = 3 \text{ samples}$

88039637972. ✘  $\tau_p(\omega) = 3 \text{ samples}, \tau_g(\omega) = 3 \text{ samples}$

Question Number : 14 Question Id : 8803969494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The range of an electrostatic voltmeter can be extended by using

Options :

A capacitor in series with the voltmeter whose capacitance is greater than the

88039637973. ✘ capacitance of the voltmeter

88039637974. ✓ A capacitor in series with the voltmeter whose capacitance is smaller than the capacitance of the voltmeter

88039637975. ✗ A resistor in series with the voltmeter

88039637976. ✗ An inductor in series with the voltmeter

**Question Number : 15 Question Id : 8803969495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In an Energy meter a slow but continuous rotation is obtained when there is no current through the current coil and when current passes through only the pressure coil. This phenomenon is

**Options :**

88039637977. ✗ Fatigue

88039637978. ✓ Creeping

88039637979. ✗ Loading effect

88039637980. ✗ Braking Torque

**Question Number : 16 Question Id : 8803969496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Correct Marks : 1 Wrong Marks : 0

In an inductor type energy meter, compensation for static friction is provided by

Options :

- 88039637981. ✓ Shielding bands which are actuated to provide a constant torque irrespective of load
- 88039637982. ✗ Lag circuits
- 88039637983. ✗ Drilling holes in the disc
- 88039637984. ✗ Greasing of moving parts

Question Number : 17 Question Id : 8803969497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the sampling frequency of a low pass signal  $x(t)$  is 15 kHz, then the sampling frequency of  $\frac{d x(t)}{d t}$  is

Options :

- 88039637985. ✓ 15 kHz
- 88039637986. ✗ 7.5 kHz
- 88039637987. ✗ 30 kHz
- 88039637988. ✗ 60 kHz

**Question Number : 18 Question Id : 8803969498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

An LTI system with impulse response  $h(t) = e^{-3t} \cos(2t)u(t)$  is

**Options :**

88039637989. ✓ Causal and stable

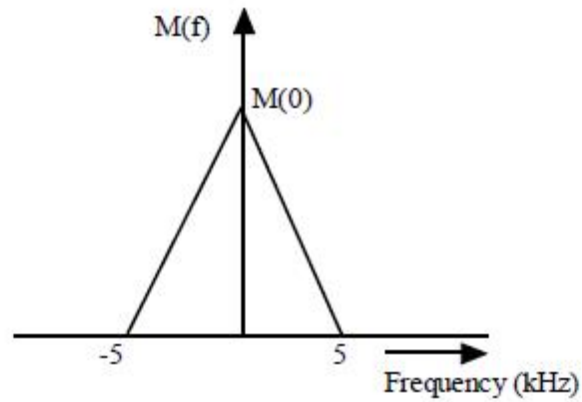
88039637990. ✗ Non-causal and stable

88039637991. ✗ Causal and un-stable

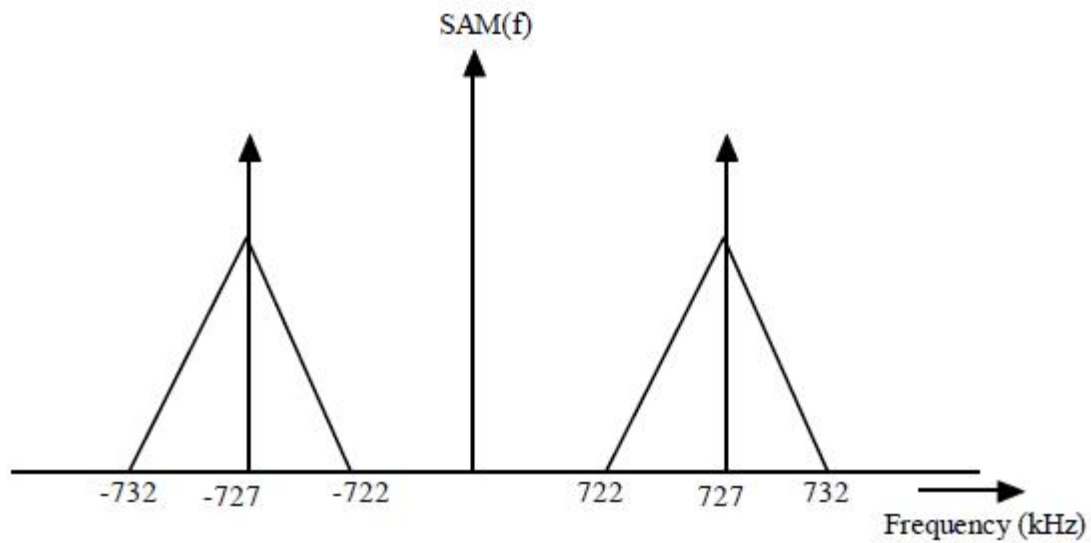
88039637992. ✗ Non-causal and un-stable

**Question Number : 19 Question Id : 8803969499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

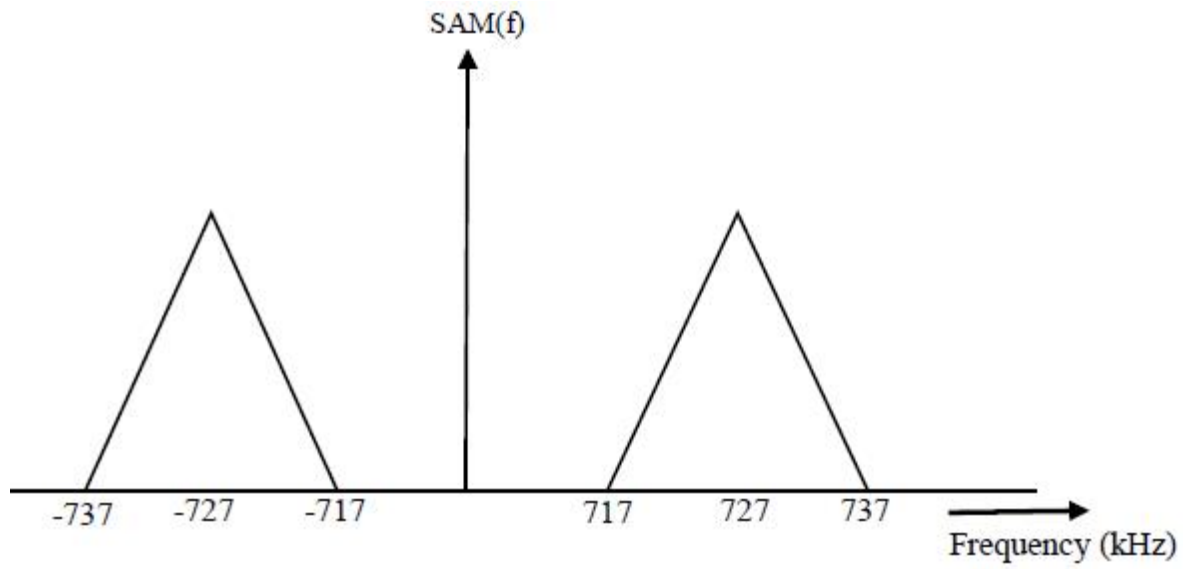
The message signal spectrum is shown below is amplitude modulated by a sinusoidal carrier signal of frequency 727 kHz, then which of the following spectrum represent AM signal.



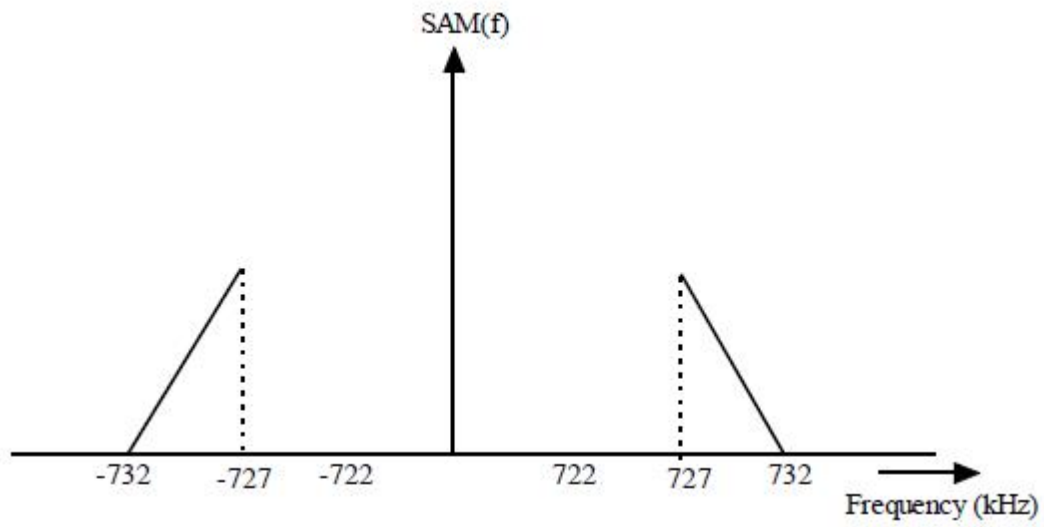
Options :



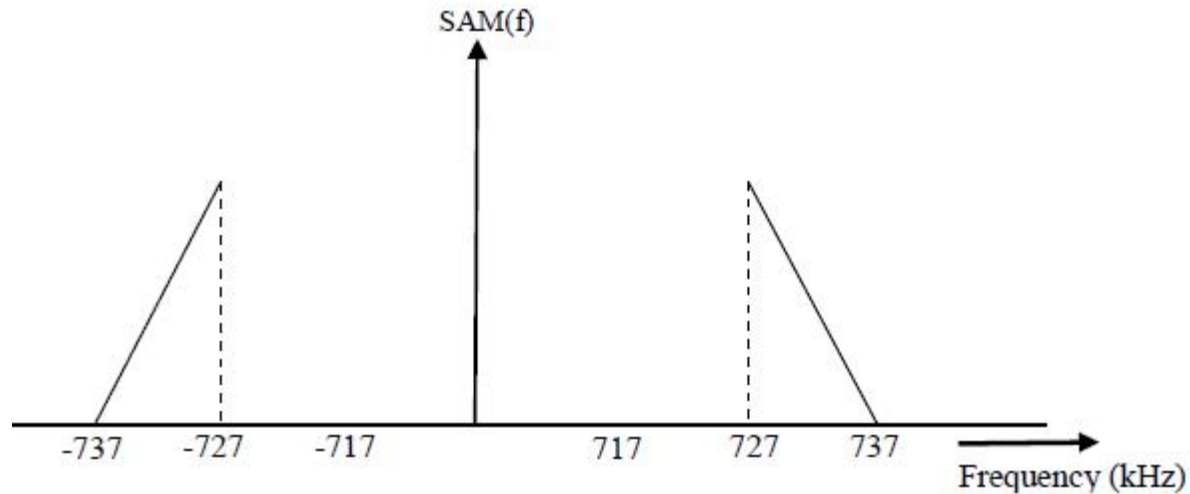
88039637993. ✓



88039637994. ✖



88039637995. ✖



88039637996. ✘

**Question Number : 20 Question Id : 8803969500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following noise occurs in pulse code modulation

Options :

88039637997. ✘ Slope overload noise

88039637998. ✘ Thermal noise

88039637999. ✔ Quantization noise

88039638000. ✘ Shot noise

**Question Number : 21 Question Id : 8803969501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**



$X(f)$  represents the Fourier transform of the signal  $x(t)$ . If  $X(f) = 1; -100 \leq f \leq 100$ , then zero<sup>th</sup> value of its time domain signal  $x(t)$  i.e.  $x(0)$  is

Options :

88039638001. ✘ 100

88039638002. ✔ 200

88039638003. ✘ - 100

88039638004. ✘ - 200

Question Number : 22 Question Id : 8803969502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fourier series of a half wave symmetry wave consists of

Options :

88039638005. ✔ Even values of  $a_n$  and  $b_n$  are zero

88039638006. ✘ Even values of  $a_n$  are zero

88039638007. ✘ Odd values of  $a_n$  are zero

88039638008. ✘ Odd values of  $a_n$  and  $b_n$  are zero

Question Number : 23 Question Id : 8803969503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

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

Correct Marks : 1 Wrong Marks : 0

Sequence of two signals  $x_1(n) = \{1, 2, 3, 4\}$  and  $x_2(n) = \{0.2, 0.5, 1, 0.3\}$ , then convolution of  $x_1(n)$  and  $x_2(n) =$

Options :

88039638009. ✘  $\{1.2, 4.9, 5.6, 4.6, 5.6, 4.9, 1.2\}$

88039638010. ✔  $\{0.2, 0.9, 2.6, 4.6, 5.6, 4.9, 1.2\}$

88039638011. ✘  $\{0.2, 1.0, 2.6, 4.6, 5.6, 2, 1.2\}$

88039638012. ✘  $\{0.2, 0.9, 2.0, 4.6, 5.0, 4.9, 1.2\}$

Question Number : 24 Question Id : 8803969504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

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

Correct Marks : 1 Wrong Marks : 0

Which one of the following is a discrete time non-periodic signal

Options :

88039638013. ✘  $\sin\left(\frac{n\pi}{3}\right) + \cos\left(\frac{n\pi}{4}\right)$

88039638014. ✘  $\cos^2\left(\frac{n\pi}{8}\right)$

$$\sin\left(\frac{n\pi}{4}\right) + \cos\left(\frac{n}{3}\right)$$

88039638015. ✓

88039638016. ✗  $e^{jn\frac{\pi}{4}}$

**Question Number : 25 Question Id : 8803969505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In a typical broadcasting wideband FM, the maximum frequency deviation is 75 kHz, highest modulating frequency is 15 kHz and the carrier frequency is 103.5 MHz, then the approximate bandwidth of this wideband FM is

**Options :**

88039638017. ✗ 30 kHz

88039638018. ✗ 150 kHz

88039638019. ✗ 103.5 MHz

88039638020. ✓ 180 kHz

**Question Number : 26 Question Id : 8803969506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The percentage power saving when carrier and one of the sidebands eliminated in AM for a modulation index of 0.75 is

Options :

88039638021. ✘ 95%

88039638022. ✔ 89%

88039638023. ✘ 85%

88039638024. ✘ 66%

Question Number : 27 Question Id : 8803969507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The relation between z and s domain is

Options :

88039638025. ✔  $z = e^{sT}$

88039638026. ✘  $z = e^{-sT}$

88039638027. ✘  $z = e^{-2sT}$

88039638028. ✘  $z = e^{-sT/2}$

Question Number : 28 Question Id : 8803969508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The base of the numbers for the following operation  $24+17 = 40$ , to be correct is

Options :

88039638029. ✘ 10

88039638030. ✔ 11

88039638031. ✘ 9

88039638032. ✘ 8

Question Number : 29 Question Id : 8803969509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Simplify the following Boolean function

$$f(A, B, C) = ABC + \bar{A}BC + A\bar{B}C + AB\bar{C}$$

Options :

88039638033. ✔  $AC + AB + BC$

88039638034. ✘  $BC + A\bar{B}C + AB\bar{C}$

88039638035. ✘  $AC + \bar{A}BC + AB\bar{C}$

88039638036. ✘  $AB + \bar{A}BC + A\bar{B}C$

Question Number : 30 Question Id : 8803969510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a typical JK flip flop, with inputs J, K, clock pulse, preset and clear, which of the following are called as asynchronous inputs of the flip flop

Options :

88039638037. ✘ J and K only

88039638038. ✔ Preset and clear only

88039638039. ✘ J, K, preset and clear only

88039638040. ✘ J, K, clock pulse, preset and clear

Question Number : 31 Question Id : 8803969511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For the following k-map, the simplified Boolean expression is

	CD	00	01	11	10
AB					
00		1	1		1
01		1	1		1
11				1	1
10					

Options :

88039638041. ✓  $\overline{AC} + \overline{AD} + ABC$

88039638042. ✗  $AC + AD + \overline{ABC}$

88039638043. ✗  $\overline{AB} + \overline{BC} + ABC$

88039638044. ✗  $\overline{AC} + \overline{AB} + ABC$

Question Number : 32 Question Id : 8803969512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The number of address lines required for a memory chip of size  $65536 \times 8$

Options :

88039638045. ✗ 65536

88039638046. ✗ 8

88039638047. ✓ 16

88039638048. ✗ 32768

**Question Number : 33 Question Id : 8803969513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following logic family has a lower power dissipation

**Options :**

88039638049. ✗ TTL

88039638050. ✗ ECL

88039638051. ✗ DCTL

88039638052. ✓ CMOS

**Question Number : 34 Question Id : 8803969514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Using 2's complement, the largest positive and negative number which can be stored with 9 bits are

**Options :**

88039638053. ✗ - 255 to 256



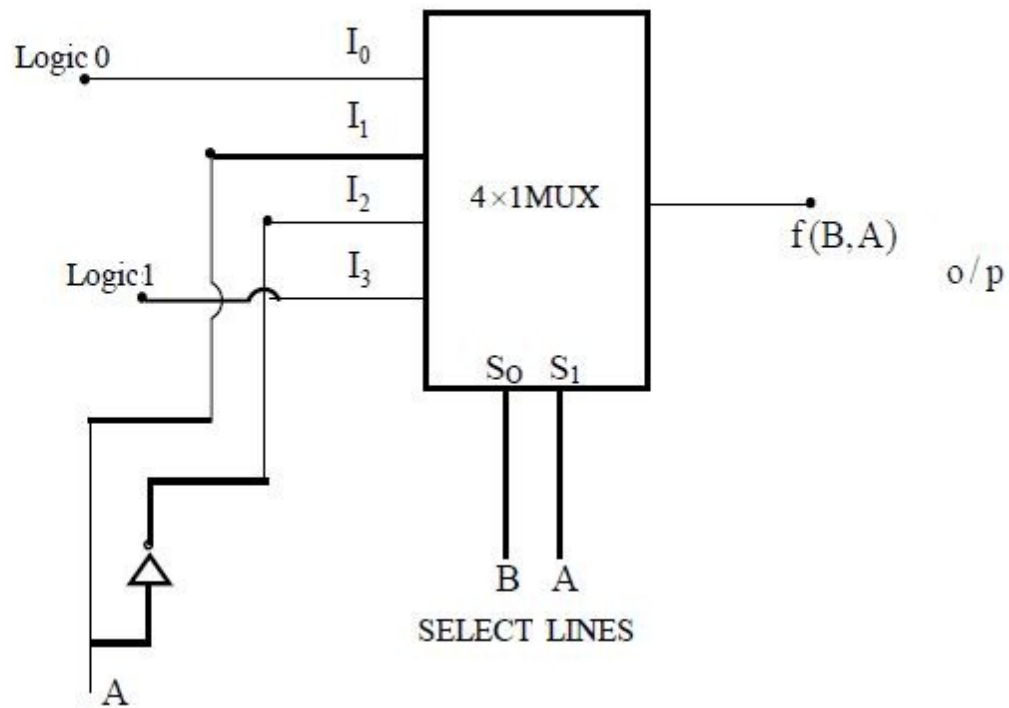
88039638054. ✓ - 256 to 255

88039638055. ✘ - 512 to 511

88039638056. ✘ - 512 to 512

Question Number : 35 Question Id : 8803969515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Boolean function realized by the logic circuit shown is



Options :

88039638057. ✘  $AB + \overline{A}\overline{B}$

88039638058. ✘  $\overline{A}B + A\overline{B}$

88039638059. ✔  $AB$

88039638060. ✘  $\overline{\overline{A}\overline{B}}$

**Question Number : 36 Question Id : 8803969516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

An 8 bit D/A converter give a maximum output of 8.24 V. The resolution is

**Options :**

88039638061. ✘ 8 mV

88039638062. ✘ 16 mV

88039638063. ✘ 24 mV

88039638064. ✔ 32 mV

**Question Number : 37 Question Id : 8803969517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The minimum number of comparators required in an 10 bit flash ADC is

Options :

- 88039638065. ✘ 10
- 88039638066. ✘ 512
- 88039638067. ✘ 1024
- 88039638068. ✔ 1023

Question Number : 38 Question Id : 8803969518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Assume the contents of accumulator register is 64H and the zero (z) flag is '0'. What will be the contents of register A and z flag after execution of instruction XRA A?

Options :

- 88039638069. ✘ A = 64H, z = 0
- 88039638070. ✘ A = 64H, z = 1
- 88039638071. ✔ A = 00H, z = 1
- 88039638072. ✘ A = FFH, z = 0

Question Number : 39 Question Id : 8803969519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In 8085 microprocessor, which of the following interrupts is a non maskable interrupt

Options :

88039638073. ✘ INTR

88039638074. ✘ RST 6.5

88039638075. ✘ RST 7.5

88039638076. ✔ TRAP

Question Number : 40 Question Id : 8803969520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For a number system  $(5436)_R$  its R-1's complement is  $(2341)_R$ , then what is the base of the number system

Options :

88039638077. ✘ 10

88039638078. ✘ 9

88039638079. ✔ 8

88039638080. ✘ 7

Question Number : 41 Question Id : 8803969521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Minimum number of JK flip flops required to construct a BCD counter are

Options :

88039638081. ✘ 2

88039638082. ✘ 3

88039638083. ✔ 4

88039638084. ✘ 5

Question Number : 42 Question Id : 8803969522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

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

$$f_1 = \sum m(1, 2, 5, 7, 9, 11, 14)$$

$$f_2 = \sum m(0, 4, 6, 8, 10, 12, 14)$$

$$f_3 = \sum m(3, 4, 5, 8, 15)$$

The size of minimum suitable decoder is

Options :

88039638085. ✘ 2 to 4 line

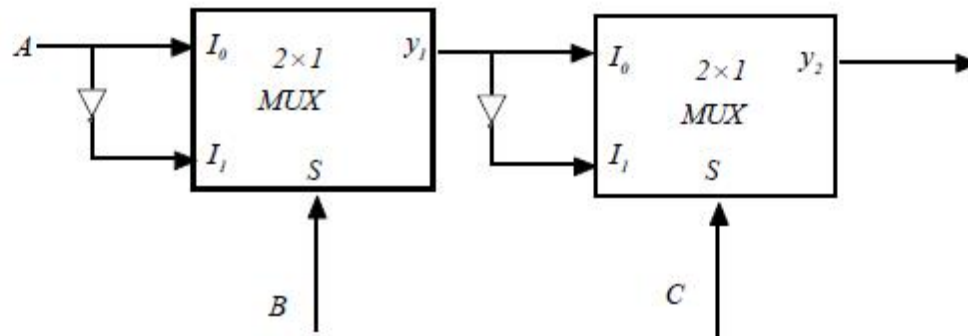
88039638086. ✘ 3 to 8 line

88039638087. ✔ 4 to 16 line

88039638088. ✘ 5 to 32 line

Question Number : 43 Question Id : 8803969523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The logic Boolean equation implemented by the following diagram is



Options :

88039638089. ✔  $A \oplus B \oplus C$

88039638090. ✘  $\bar{A}BC + A\bar{B}C + ABC\bar{C} + ABC$

88039638091. ✘  $(A \oplus B)C$

88039638092. ✘  $(A \oplus C)B$

**Question Number : 44 Question Id : 8803969524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following memories requires periodic recharging?

**Options :**

88039638093. ✘ All ROMs

88039638094. ✘ All RAMs

88039638095. ✘ Static RAM

88039638096. ✔ Dynamic RAM

**Question Number : 45 Question Id : 8803969525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Give the contents of sign (S), zero (Z) and carry(CY) flag after execution of the following

program

MVI A, FE H

MVI B, FD H

CMP B

HLT

**Options :**

88039638097. ✘ S=0, Z=0, CY=0

88039638098. ✔ S=1, Z=0, CY=1

88039638099. ✘ S=0, Z=0, CY=1

88039638100. ✘ S=1, Z=0, CY=0

**Question Number : 46 Question Id : 8803969526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

By placing an inverter between inputs of an J-K flip-flop, the resulting flip-flop becomes

**Options :**

88039638101. ✘ SR Flip flop

88039638102. ✘ JK Flip flop

88039638103. ✔ D Flip flop

88039638104. ✘ T flip flop

**Question Number : 47 Question Id : 8803969527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**



How many input-output ports can be accessed by direct method of 8085 microprocessor

Options :

88039638105. ✘ 8

88039638106. ✘ 16

88039638107. ✘ 128

88039638108. ✔ 256

Question Number : 48 Question Id : 8803969528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following configuration is having high input impedance and low output impedance

Options :

88039638109. ✘ Common base

88039638110. ✘ Common emitter

88039638111. ✔ Common collector

88039638112. ✘ Common base and common emitter

Question Number : 49 Question Id : 8803969529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

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

**Correct Marks : 1 Wrong Marks : 0**

A buffer amplifier has gain of

**Options :**

88039638113. ✘ Infinity

88039638114. ✘ Zero

88039638115. ✔ Unity

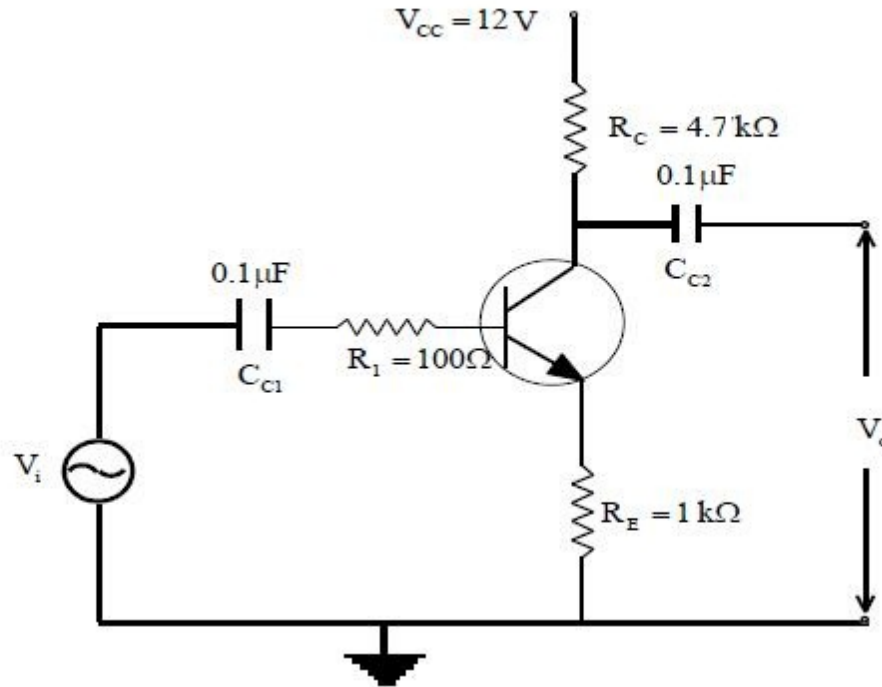
88039638116. ✘ Dependent upon the circuit parameters

**Question Number : 50 Question Id : 8803969530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is**

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

**Correct Marks : 1 Wrong Marks : 0**

Approximate voltage gain of the following configuration is



Options :

88039638117. ✓ - 4.7

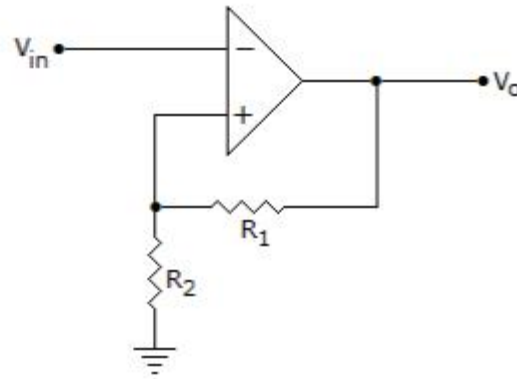
88039638118. ✗ - 1000

88039638119. ✗ - 100

88039638120. ✗ - 47

Question Number : 51 Question Id : 8803969531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the following op-amp circuit configuration



Options :

88039638121. ✘ oscillator

88039638122. ✔ Schmitt trigger

88039638123. ✘ inverting amplifier

88039638124. ✘ non-inverting amplifier

Question Number : 52 Question Id : 8803969532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the low-pass circuit to act as an integrator, the time constant must be

Options :

88039638125. ✘ very small compared to time period of the signal

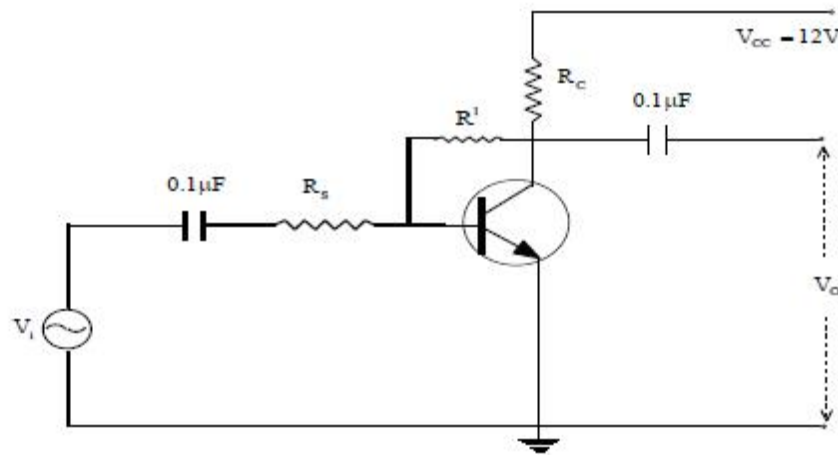
88039638126. ✔ very high compared to time period of the signal

88039638127. ✘ moderate

88039638128. ✘ Infinity

Question Number : 53 Question Id : 8803969533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the feedback configuration



Options :

88039638129. ✘ Voltage series

88039638130. ✘ Current series

88039638131. ✘ Current shunt

88039638132. ✔ Voltage shunt

**Question Number : 54 Question Id : 8803969534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The slew rate of an operational amplifier is  $20 \text{ V}/\mu\text{s}$ . The OP AMP has saturation voltage of  $\pm 10\text{V}$ .

What is the maximum switching time from one saturation region to the other?

**Options :**

88039638133. ✘  $0.5 \mu\text{s}$

88039638134. ✘  $4.0 \mu\text{s}$

88039638135. ✔  $1.0 \mu\text{s}$

88039638136. ✘  $2.0 \mu\text{s}$

**Question Number : 55 Question Id : 8803969535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A Darlington pair consists of

**Options :**

88039638137. ✘ Cascade of 2 CB amplifiers

88039638138. ✘ Cascade of 2 CE amplifiers

88039638139. ✔ Cascade of 2 CC amplifiers

88039638140. ✘ Cascade of CC and CE amplifier

Question Number : 56 Question Id : 8803969536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The output of class A power amplifier consists of a sinusoidal with fundamental frequency and harmonics of fundamental with amplitudes  $A_1, A_2, A_3, \dots, A_n$  respectively, then the total harmonic distortion is

Options :

88039638141. ✘ 
$$\frac{A_2 + A_3 + \dots + A_n}{A_1}$$

88039638142. ✔ 
$$\frac{\sqrt{A_2^2 + A_3^2 + \dots + A_n^2}}{A_1}$$

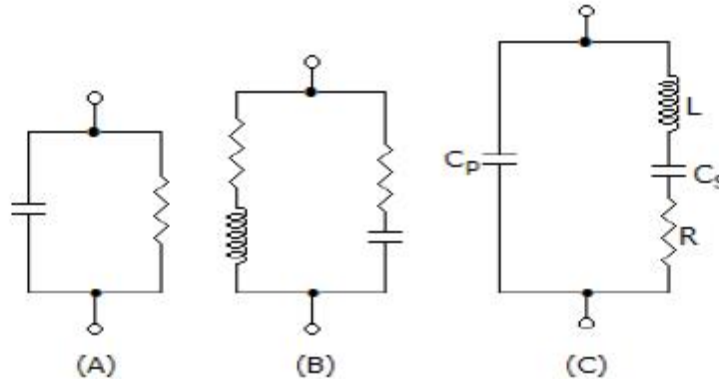
88039638143. ✘ 
$$\frac{\sqrt{A_2^2 + A_3^2 + \dots + A_n^2}}{\sqrt{A_1^2 + A_2^2 + A_3^2 + \dots + A_n^2}}$$

88039638144. ✘ 
$$\frac{A_2^2 + A_3^2 + \dots + A_n^2}{A_1}$$

Question Number : 57 Question Id : 8803969537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following circuits is an electrical equivalent circuit of crystal in a crystal oscillator?



Options :

88039638145. ✘ Figure A

88039638146. ✘ Figure B

88039638147. ✔ Figure C

88039638148. ✘ Figure A and B

Question Number : 58 Question Id : 8803969538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An ideal operational amplifier is having input and output impedance respectively as

Options :

88039638149. ✘ 0 and  $\infty$



88039638150. ✓  $\infty$  and 0

88039638151. ✗ 0 and 0

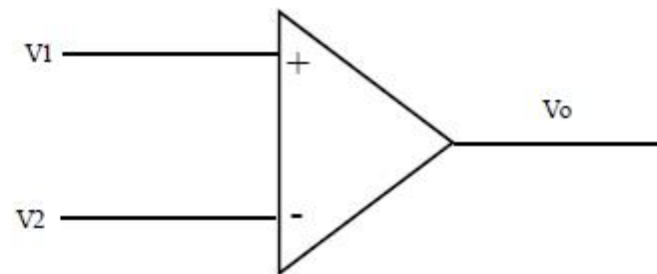
88039638152. ✗  $\infty$  and  $\infty$

Question Number : 59 Question Id : 8803969539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A differential amplifier has a differential mode gain of 200 and a CMRR of 50 dB. If

$v_1=0.55 V$  and  $v_2=0.45 V$ , output  $V_0$  is



Options :

88039638153. ✗ 20.72 V

88039638154. ✓ 20.316 V

88039638155. ✗ 20.17 V

88039638156. ✗ 20.91 V

Question Number : 60 Question Id : 8803969540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An active half wave voltage follower circuit has an input of  $10\sin\omega t$  V. The input resistance has value  $2\text{ k}\Omega$  and feedback resistance is  $10\text{ k}\Omega$ . The expression for the output voltage is

Options :

88039638157. ✓  $50\sin\omega t$  V for  $0 < \omega t < \pi$ ,  $0\text{V}$  for  $\pi < \omega t < 2\pi$

88039638158. ✗  $60\sin\omega t$  V for  $0 < \omega t < \pi$ ,  $0\text{V}$  for  $\pi < \omega t < 2\pi$

88039638159. ✗  $60\sin\omega t$  V for  $0 < \omega t < 2\pi$

88039638160. ✗  $50\sin\omega t$  V for  $0 < \omega t < 2\pi$

Question Number : 61 Question Id : 8803969541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In an amplifier, if the output current flows for  $120^\circ$  of the input cycle, the class of amplifier will be

Options :

88039638161. ✗ Class A

88039638162. ✗ Class B

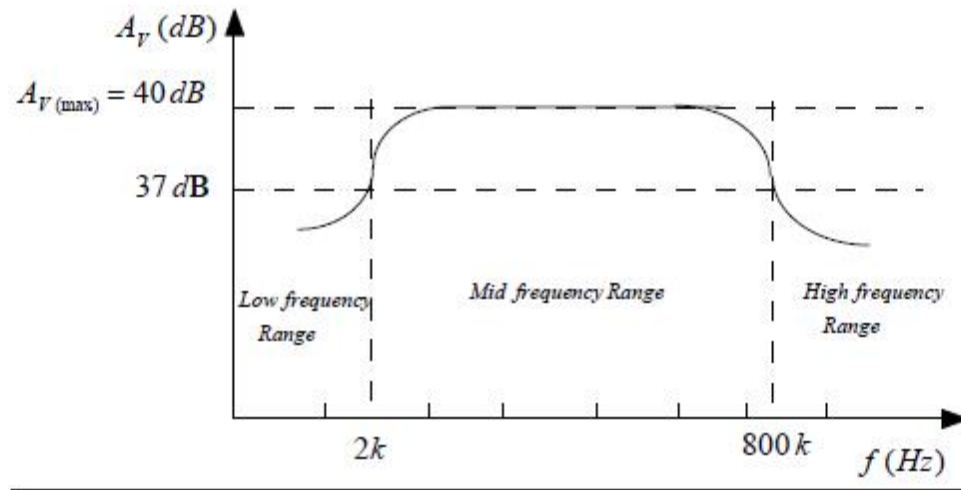
88039638163. ✓ Class C

88039638164. ✖ Class AB

Question Number : 62 Question Id : 8803969542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following waveform represent the frequency response of an RC coupled amplifier, the bandwidth of the amplifier is



Options :

88039638165. ✖ 1 MHz

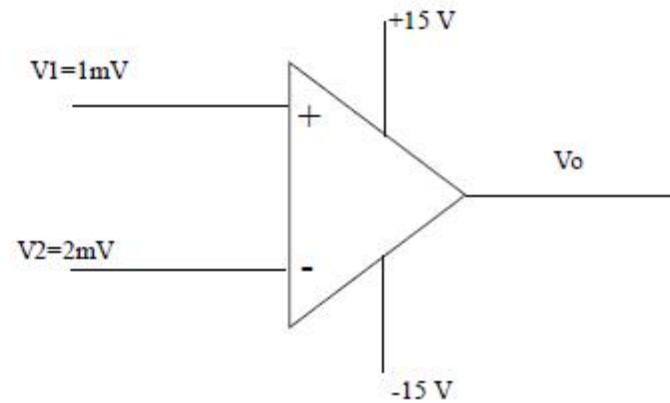
88039638166. ✖ 1 kHz

88039638167. ✖ 802 kHz

88039638168. ✓ 798 kHz

Question Number : 63 Question Id : 8803969543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the following op-amp configuration, open loop voltage gain is 1,00,000; then the output voltage is



Options :

88039638169. ✗ - 100 V

88039638170. ✗ 100 V

88039638171. ✗ 15 V

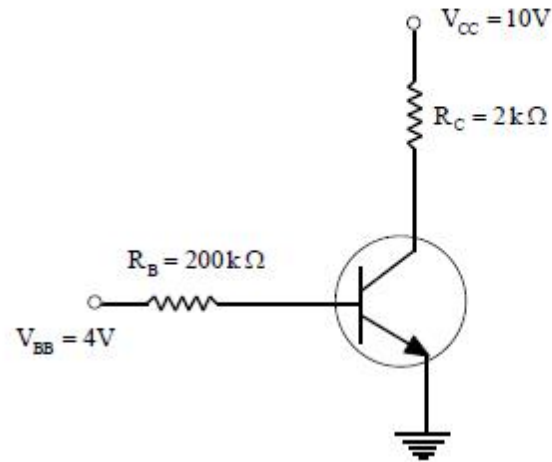
88039638172. ✓ - 15 V

Question Number : 64 Question Id : 8803969544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Find the operating point ( $V_{CE}$ ,  $I_C$ ) of the CE circuit shown in below figure.

$V_{BE}(\text{ON}) = 0.7 \text{ V}$ ,  $\beta = 200$ . Transistor is in active region.



Options :

88039638173. ✘ 4.4 V, 3.3 mA

88039638174. ✘ 4.5 V, 4.3 mA

88039638175. ✔ 3.6 V, 3.2 mA

88039638176. ✘ 3.7 V, 3.6 mA

Question Number : 65 Question Id : 8803969545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If an amplifier with gain of 100 and feedback fraction  $\beta = 0.1$  has a gain change of 20% due to temperature, the change in gain of the feedback amplifier will be

Options :

88039638177. ✘ 20%

88039638178. ✘ 10%

88039638179. ✘ 5%

88039638180. ✔ 2%

Question Number : 66 Question Id : 8803969546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The low pass filter (with cut off frequency 1 MHz) is cascaded with an high pass filter (with cut off frequency 1 kHz), then the resultant one is

Options :

88039638181. ✔ band pass filter

88039638182. ✘ low pass filter

88039638183. ✘ high pass filter

88039638184. ✘ all pass filter

Question Number : 67 Question Id : 8803969547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the differential gain and common mode gain of a differential amplifier are 100 dB and 9 dB respectively, then its CMRR is

Options :

88039638185. ✘ 100 dB

88039638186. ✘ 9 dB

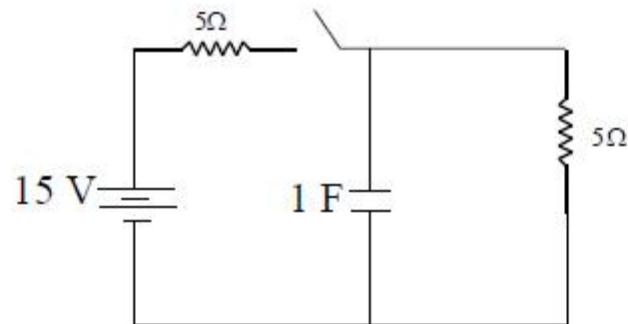
88039638187. ✘ 109 dB

88039638188. ✔ 91 dB

Question Number : 68 Question Id : 8803969548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the circuit shown below, the switch is closed at  $t=0$ , the current flowing through the capacitor at  $t=0+$



Options :

88039638189. ✘ 15 A

88039638190. ✘ 5 A

88039638191. ✔ 3 A

88039638192. ✘ 0 A

Question Number : 69 Question Id : 8803969549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If  $I(s) = \frac{s+1}{s^2+5s+6}$  then  $i(t)$  is

Options :

88039638193. ✔  $i(t) = 2e^{-2t} - e^{-3t}$

88039638194. ✘  $i(t) = -2e^{-2t} + e^{-3t}$

88039638195. ✘  $i(t) = 2e^{-3t} - e^{-2t}$

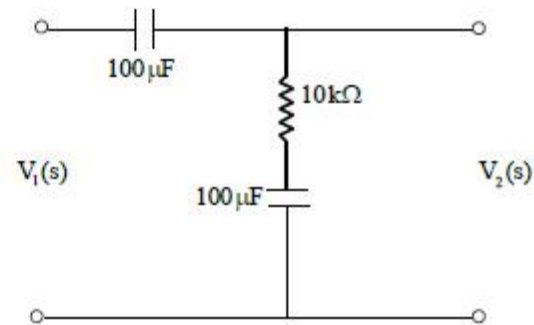
88039638196. ✘  $i(t) = -2e^{-3t} + e^{-2t}$

Question Number : 70 Question Id : 8803969550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical



Correct Marks : 1 Wrong Marks : 0

The transfer function of the circuit is



Options :

88039638197. ✘  $\frac{1+0.5s}{1+s}$

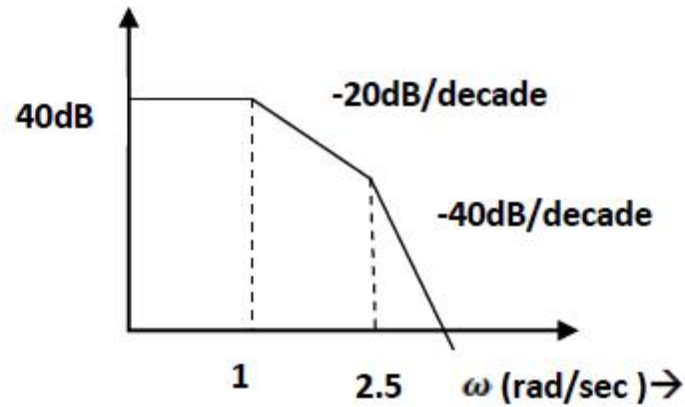
88039638198. ✘  $\frac{6+3s}{2+s}$

88039638199. ✘  $\frac{2+s}{1+s}$

88039638200. ✔  $\frac{1+s}{2+s}$

Question Number : 71 Question Id : 8803969551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Bode plot of a particular system is shown in figure, The transfer function  $G(s)$  is



Options :

88039638201. ✘  $\frac{40}{(s+1)(0.4s+1)}$

88039638202. ✘  $\frac{100}{(s+1)(s+0.4)}$

88039638203. ✔  $\frac{100}{(s+1)(0.4s+1)}$

88039638204. ✘  $\frac{40}{(s+1)(s+2.5)}$

Question Number : 72 Question Id : 8803969552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the two ports are connected in cascade configuration, then which arithmetic operation should be performed between the individual transmission parameters in order to determine overall transmission parameters?

Options :

88039638205. ✘ addition

88039638206. ✘ subtraction

88039638207. ✔ multiplication

88039638208. ✘ division

**Question Number : 73 Question Id : 8803969553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which type of networks allows the physical separability of the network elements (resistors, inductors & capacitors) for analysis purpose?

Options :

88039638209. ✔ Lumped network

88039638210. ✘ distributed network

88039638211. ✘ unilateral network

88039638212. ✘ bilateral network

Question Number : 74 Question Id : 8803969554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For maximum power transfer what should be the value of load impedance if the internal impedance is  $5+j10$

Options :

88039638213. ✘ 5

88039638214. ✘  $5+j10$

88039638215. ✔  $5-j10$

88039638216. ✘  $j10$

Question Number : 75 Question Id : 8803969555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many fundamental cutsets will be generated for a graph with 'n' number of nodes?

Options :

88039638217. ✘  $n+1$

88039638218. ✔  $n-1$

88039638219. ✘  $n(n-1)$

88039638220. ✘  $n/(n-1)$

**Question Number : 76 Question Id : 8803969556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Two impedances  $10 - j10$  and  $10 + j10$  are connected in parallel. Their combined impedance is

**Options :**

88039638221. ✘  $10 - j10$

88039638222. ✘  $10 + j10$

88039638223. ✔  $10 + j0$

88039638224. ✘  $5 + j0$

**Question Number : 77 Question Id : 8803969557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A voltage  $V = 100\sin(100\pi t + 45^\circ)$  V is applied to an impedance  $10 + j10$  ohm. The current is

**Options :**

88039638225. ✔  $5\angle 0^\circ$

88039638226. ✘  $10\angle 45^\circ$

88039638227. ✘  $10\angle -45^\circ$

88039638228. ✘  $5\angle 45^\circ$

**Question Number : 78 Question Id : 8803969558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A series RLC circuit is at resonance at 500 Hz. If capacitance is increased to four times, the circuit will be in resonance at

**Options :**

88039638229. ✘ 500 Hz

88039638230. ✘ 1000 Hz

88039638231. ✔ 250 Hz

88039638232. ✘ 750 Hz

**Question Number : 79 Question Id : 8803969559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Two phasors having rms values  $V_1$  and  $V_2$  which are added to give a phasor having rms value  $V_3$ .  $V_3$  is maximum if phase angle between  $V_1$  and  $V_2$  is

**Options :**

88039638233. ✘  $90^\circ$

88039638234. ✘ 180°

88039638235. ✘ 270°

88039638236. ✔ 360°

**Question Number : 80 Question Id : 8803969560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A system has transfer function  $H(s) = \frac{20}{(s+1)(s+5)}$  the value of transfer function at DC frequency

**Options :**

88039638237. ✘ 20

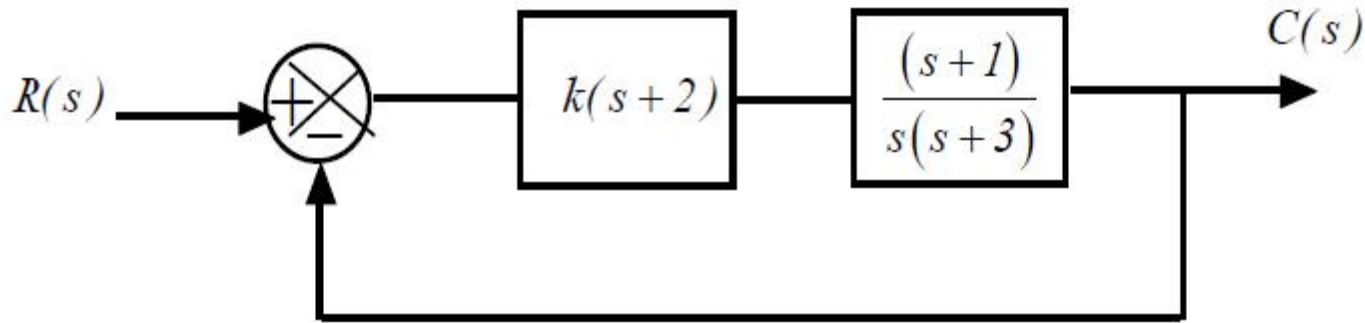
88039638238. ✘ 1

88039638239. ✘ 5

88039638240. ✔ 4

**Question Number : 81 Question Id : 8803969561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The characteristic equation of the following closed loop control system is



Options :

88039638241. ✓  $s^2(1+k) + 3s(1+k) + 2k = 0$

88039638242. ✗  $s^2(2+k) + 4s(2+k) + 3k = 0$

88039638243. ✗  $s^2(1+2k) + 5s(1+2k) + 7k = 0$

88039638244. ✗  $s^2(2+3k) + 5s(3+2k) + 8k = 0$

Question Number : 82 Question Id : 8803969562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

First column elements of Routh's tabulation are  $2, 7, \frac{-3}{4}, \frac{3}{4}, 2$ . It means that there is/are

Options :

88039638245. ✗ One root in left half s plane



88039638246. ✘ Two roots in left half s plane

88039638247. ✔ Two roots in right half s plane

88039638248. ✘ One root in right half s plane

**Question Number : 83 Question Id : 8803969563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In Bode diagram (log magnitude plot) the factor  $(j\omega)^n$  in the transfer function gives a line having slope

**Options :**

88039638249. ✘ 20 dB/decade

88039638250. ✔ 20n dB/decade

88039638251. ✘ 20/n dB/decade

88039638252. ✘ -20 dB/decade

**Question Number : 84 Question Id : 8803969564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In a second order system the natural frequency,  $\omega_n = 10 \text{ rad/sec}$  and damping ratio  $\zeta = 0.1$ , then the damped natural frequency,  $\omega_d$  is

Options :

88039638253. ✘ 9.1 rad/sec

88039638254. ✔ 9.95 rad/sec

88039638255. ✘ 9.5 rad/sec

88039638256. ✘ 9.0 rad/sec

Question Number : 85 Question Id : 8803969565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The open loop transfer function of a feedback control system is  $\frac{1}{(s+1)^3}$ . The gain margin

of the system is

Options :

88039638257. ✘ 16 dB

88039638258. ✔ 8 dB

88039638259. ✘ 4 dB

88039638260. ✘ 2 dB

**Question Number : 86 Question Id : 8803969566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A unity feedback system has a forward path transfer function  $G(s) = \frac{10}{s(s+5)}$ . It is

subjected to a unity ramp input. The integral of the squared error is

**Options :**

88039638261. ✘ 0

88039638262. ✔  $\infty$

88039638263. ✘ 0.5

88039638264. ✘ 1

**Question Number : 87 Question Id : 8803969567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

An ammeter of 0–25 A range has a guaranteed accuracy of 1% of full scale reading. The current measured is 5 A. The limiting error

**Options :**

88039638265. ✘ 2 %

88039638266. ✘ 2.5 %

88039638267. ✘ 4 %

88039638268. ✔ 5 %

**Question Number : 88 Question Id : 8803969568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A moving coil instrument has a resistance of  $0.6 \Omega$  and full scale deflection at  $0.1 \text{ A}$ . To convert it into an ammeter of  $0\text{-}15 \text{ A}$  range, the resistance of shunt should be

**Options :**

88039638269. ✘  $0.6 \Omega$

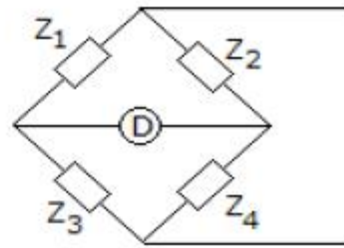
88039638270. ✘  $0.06 \Omega$

88039638271. ✘  $0.1 \Omega$

88039638272. ✔  $0.004 \Omega$

**Question Number : 89 Question Id : 8803969569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In the figure shown below,  $Z_1 = 300\angle 45^\circ \Omega$ ,  $Z_2 = 300\angle -60^\circ \Omega$ ,  $Z_3 = 200\angle 0^\circ \Omega$ . Then  $Z_4$  for bridge to be balanced is



Options :

88039638273. ✘  $300\angle 45^\circ \Omega$

88039638274. ✘  $300\angle -60^\circ \Omega$

88039638275. ✔  $200\angle -105^\circ \Omega$

88039638276. ✘  $300\angle -45^\circ \Omega$

Question Number : 90 Question Id : 8803969570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A digital voltmeter has a read out range from 0 to 999 counts. If the full scale reading is 9.999 V,

the resolution is

Options :

88039638277. ✘ 1 V

88039638278. ✘ 0.1 V

88039638279. ✘ 0.01 V

88039638280. ✔ 1 mV

**Question Number : 91 Question Id : 8803969571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Kelvin's double bridge is used to measure low resistances because

**Options :**

88039638281. ✘ It has high sensitivity

88039638282. ✘ There is no thermoelectric emf

88039638283. ✘ Resistance variation due to temperature is negligible

88039638284. ✔ Effect of contact and lead resistances is eliminated

**Question Number : 92 Question Id : 8803969572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A Hall effect transducer has Hall coefficient  $K_H = -1 \times 10^{-8} \text{ m}^3/\text{A}\cdot\text{sec}$ . If magnetic field

$B = 1 \text{ Wb/m}^2$ , current  $I = 3 \text{ A}$  and bismuth slab is of 2 mm wide, the Hall voltage is

**Options :**

88039638285. ✘  $-7.5 \times 10^{-6} \text{ V}$

88039638286. ✓  $-15 \times 10^{-6} \text{ V}$

88039638287. ✗  $-20 \times 10^{-4} \text{ V}$

88039638288. ✗  $-22.5 \times 10^{-4} \text{ V}$

**Question Number : 93 Question Id : 8803969573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ is an Inverse transducer

**Options :**

88039638289. ✗ Electrical resistance potentiometer

88039638290. ✗ L. V. D. T

88039638291. ✗ Capacitive Transducer

88039638292. ✓ Piezo electric crystals

**Question Number : 94 Question Id : 8803969574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

It is required to study transients during switching process. Which CRO should be preferred?

**Options :**



88039638293. ✘ Ordinary CRO
88039638294. ✘ Dual beam CRO
88039638295. ✘ Dual trace CRO
88039638296. ✔ Storage oscilloscope

**Question Number : 95 Question Id : 8803969575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The output of LVDT with input mechanical motion of 10 Hz and excitation frequency 400 Hz will contain frequencies

**Options :**

88039638297. ✘ 10 Hz and 400 Hz
88039638298. ✘ 400 Hz only
88039638299. ✘ 10 Hz only
88039638300. ✔ 390 Hz and 410 Hz

**Question Number : 96 Question Id : 8803969576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**



A p-type semiconductor strain gauge has a nominal resistance of  $1000 \Omega$  and a gauge factor of  $+200$  at  $25^\circ\text{C}$ . The resistance of the strain gauge in ohms when subjected to a strain of  $+10^{-4}$  at the same temperature is

Options :

88039638301. ✘  $1000 \Omega$

88039638302. ✘  $2000 \Omega$

88039638303. ✔  $1020 \Omega$

88039638304. ✘  $2040 \Omega$

Question Number : 97 Question Id : 8803969577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A piezoelectric type 50 MPa full scale pressure sensor with built-in electronics has a sensitivity of 100 mV per MPa. If this sensor is subjected to a static pressure of 10 MPa then its output at steady state will be

Options :

88039638305. ✔ 0 mV

88039638306. ✘ 100 mV

88039638307. ✘ 1000 mV

88039638308. ✘ 102 mV

Question Number : 98 Question Id : 8803969578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A variable air gap type capacitor consists of two parallel plates: a fixed plate and a moving plate at a distance  $x$ . If a potential  $V$  is applied across the two plates, then force of attraction ( $F$ ) between the plates is related to  $x$  as

Options :

88039638309. ✘  $F \propto x^2$

88039638310. ✔  $F \propto \frac{1}{x^2}$

88039638311. ✘  $F \propto \frac{1}{x}$

88039638312. ✘  $F \propto x$

Question Number : 99 Question Id : 8803969579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following meters has lowest drop for a given range of flow

Options :

88039638313. ✘ Orifice meter

88039638314. ✘ Venturi meter

88039638315. ✘ Flow Nozzle

88039638316. ✔ Rotameter

**Question Number : 100 Question Id : 8803969580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A linear variable differential transformer is excited by 10 V at 400 Hz supply. The output voltage is  $\pm 2.5$  V and the core range is  $\pm 1.5$  cm. If the core is at 1 cm, the output voltage is

**Options :**

88039638317. ✘ 0.375 Volts

88039638318. ✘ 0.6 Volts

88039638319. ✔ 1.67 Volts

88039638320. ✘ 2.02 Volts

**Question Number : 101 Question Id : 8803969581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

A Pirani gauge measures vacuum pressure and works on the principle of

**Options :**

- 88039638321. ✘ Change in ionizing potential
- 88039638322. ✔ Change in thermal conductivity
- 88039638323. ✘ Deformation of elastic body
- 88039638324. ✘ Change in self inductance

**Question Number : 102 Question Id : 8803969582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The temperature being sensed by a negative temperature coefficient type thermistor is linearly increasing. Its resistance will be

**Options :**

- 88039638325. ✘ Linearly increase with temperature
- 88039638326. ✘ Exponentially increase with temperature
- 88039638327. ✘ Linearly decrease with temperature
- 88039638328. ✔ Exponentially decrease with temperature

**Question Number : 103 Question Id : 8803969583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

With stroboscope, synchronism has been obtained at the flashing rates of 25 and 20 pulses per second. The speed of rotation is

**Options :**

88039638329. ✘ 0.6 rev/min

88039638330. ✘ 50 rev/min

88039638331. ✘ 100 rev/min

88039638332. ✔ 6000 rev/min

**Question Number : 104 Question Id : 8803969584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The seismic mass of an accelerometer oscillates sinusoidally at 100 Hz with a maximum displacement of 10 mm from its mean position. The peak acceleration of the seismic mass is

**Options :**

88039638333. ✔  $3943.84 \text{ m/s}^2$

88039638334. ✘  $3141.50 \text{ m/s}^2$

88039638335. ✘  $314.15 \text{ m/s}^2$

88039638336. ✘  $100.00 \text{ m/s}^2$

**Question Number : 105 Question Id : 8803969585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A thermometer at a room temperature of  $30^{\circ}\text{C}$  is suddenly immersed in a steaming water bath. Time constant of the thermometer is 30 seconds. The measured temperature (Approximately) at 30 seconds

**Options :**

88039638337. ✘  $65^{\circ}\text{C}$

88039638338. ✔  $55^{\circ}\text{C}$

88039638339. ✘  $92^{\circ}\text{C}$

88039638340. ✘  $75^{\circ}\text{C}$

**Question Number : 106 Question Id : 8803969586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The conventional way of expressing vibration is in terms of

**Options :**



88039638341. ✘ Richter scale

88039638342. ✔ Acceleration due to gravity

88039638343. ✘ Speed of sound

88039638344. ✘ Atmospheric pressure

**Question Number : 107 Question Id : 8803969587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The electro-dynamometer is represented as transfer instruments because it is

**Options :**

88039638345. ✘ Calibrated in AC and can be used in only for AC measurements

88039638346. ✔ Calibrated in DC and can be used only for AC measurements

88039638347. ✘ Calibrated in DC and can be used for both AC and DC measurements

88039638348. ✘ Calibrated in AC and can be used for both AC and DC measurements

**Question Number : 108 Question Id : 8803969588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In brewing process, the degree of fermentation is measured by

**Options :**

88039638349. ✘ Combustibility meter

88039638350. ✘ Bolometer

88039638351. ✘ Conductivity meter

88039638352. ✔ pH meter

**Question Number : 109 Question Id : 8803969589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A step index optical fiber, whose refractive indices of the core and cladding are 1.44 and 1.40 respectively, is surrounded by air, its numerical aperture is

**Options :**

88039638353. ✘ 0.12

88039638354. ✘ 0.75

88039638355. ✘ 0.06

88039638356. ✔ 0.34

**Question Number : 110 Question Id : 8803969590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**



Correct Marks : 1 Wrong Marks : 0

Hydrogen ion concentration of the liquid corresponds to  $\text{pH} = 4$  is

Options :

88039638357. ✘ 4

88039638358. ✘  $10^4$

88039638359. ✘  $-4$

88039638360. ✔  $10^{-4}$

Question Number : 111 Question Id : 8803969591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two crossed length of the He-Ne laser beam is 120 cm, Its coherence time in seconds is

Options :

88039638361. ✘  $4 \times 10^{-1}$

88039638362. ✘  $4 \times 10^{-3}$

88039638363. ✘  $4 \times 10^5$

88039638364. ✔  $4 \times 10^{-9}$

Question Number : 112 Question Id : 8803969592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The longitudinal mode separation in a glass laser with a cavity length of 0.4 m (velocity of light  $3 \times 10^8$  m/s) is

Options :

88039638365. ✘ 370 MHz

88039638366. ✔ 375 MHz

88039638367. ✘ 748 MHz

88039638368. ✘ 750 MHz

Question Number : 113 Question Id : 8803969593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The minimum number of lines that must be drawn on a grating needed to resolve the sodium doublet having nominal wavelengths of 589.0 nm and 589.6 nm is

Options :

88039638369. ✘ 600

88039638370. ✘ 1200

88039638371. ✔ 982

88039638372. ✘ 300

Question Number : 114 Question Id : 8803969594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The dispersion in an X-ray diffractometer,  $\frac{d\theta}{d\lambda}$  is given by the expression

Options :

88039638373. ✔  $\frac{m}{2d \cos \theta}$

88039638374. ✘  $\frac{m}{2d \sin \theta}$

88039638375. ✘  $2d \sin \theta$

88039638376. ✘  $2d \cos \theta$

Question Number : 115 Question Id : 8803969595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the half-life of a radiation source is 1 year, its decay constant per year is

Options :

88039638377. ✘ 1

88039638378. ✘ 2

88039638379. ✔ 0.693

88039638380. ✘ 63.2

**Question Number : 116 Question Id : 8803969596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The operating voltage of an X-ray tube is changed from 40 kV to 50 kV. The resulting change in the shortest wavelength generated is

**Options :**

88039638381. ✘ +20%

88039638382. ✔ -20%

88039638383. ✘ +25%

88039638384. ✘ -36%

**Question Number : 117 Question Id : 8803969597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In a particular sample, the absorbance is 0.6. For a molar concentration of the solute of  $10 \times 10^{-4}$  M and a 2.0 cm path length, the molar absorptivity (litre per mol per cm) is

**Options :**

88039638385. ✘ 1.2

88039638386. ✘ 1200

88039638387. ✔ 300

88039638388. ✘  $3 \times 10^{-4}$

**Question Number : 118 Question Id : 8803969598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In order to remove respiration related motion artifacts from an ECG signal, the following filter should be used

**Options :**

88039638389. ✘ Low pass filter with  $f_c=0.5$  Hz

88039638390. ✔ High pass filter with  $f_c=0.5$  Hz

88039638391. ✘ High pass filter with  $f_c=49.5$  Hz

88039638392. ✘ Band pass filter with pass band between 0.1 Hz to 0.5 Hz

**Question Number : 119 Question Id : 8803969599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

In Fick's method of cardiac measurement is  $200 \text{ ml/min.}$ , arterial oxygen content is  $0.30 \text{ ml/ml}$  and venous oxygen content is  $0.20 \text{ ml/ml}$ . The cardiac output in  $l/min$  is

Options :

88039638393. ✘ 1

88039638394. ✔ 2

88039638395. ✘ 0.5

88039638396. ✘ 1.5

Question Number : 120 Question Id : 8803969600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An air cored coil has a Q factor of 5 at a frequency of 100 kHz. The Q factor of the coil at 20 kHz (neglecting skin effect) will be

Options :

88039638397. ✘ 5

88039638398. ✘ 4

88039638399. ✘ 2

88039638400. ✔ 1