

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.

Subject Name :	Instrumentation Engineering
Creation Date :	2024-06-12 13:32:57
Duration :	120
Total Marks :	120
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Instrumentation Engineering

Group Number :	1
Group Id :	38382339
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120

Mathematics

Section Id :	383823109
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10

Section Marks : 10
Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 383823109
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 3838235521 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The characteristic polynomial of a 3×3 matrix A is $|A - \lambda I| = \lambda^3 - 9\lambda^2 + 23\lambda - 15$. Let

$X = \text{trace}(A)$ and $Y =$ the determinant of A , then

Options :

1. ✖ $X = Y = 3$

2. ✔ $\frac{X}{Y} = \frac{9}{15}$

3. ✖ $\frac{X}{Y} = \frac{15}{9}$

4. ✖ $X = 15, Y = 8$

Question Number : 2 Question Id : 3838235522 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

x, y and z are in A.P with common difference ' d '. If the rank of the matrix

$$A = \begin{bmatrix} 4 & 5 & x \\ 5 & 6 & y \\ 6 & k & z \end{bmatrix} \text{ is 2 then}$$

Options :

1. ✖ $k \neq 7$ and $d = \frac{z}{4}$

2. ✖ $k \neq 7$ and $d = \frac{y}{4}$

3. ✖

$$k \neq 7 \text{ and } d \neq \frac{x}{4}$$

4. ✓ $x = 7 \text{ or } d = \frac{x}{4}$

Question Number : 3 Question Id : 3838235523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The maximum value of the directional derivative $\phi = x^2yz$ at the point $(1, 4, 1)$ is

Options :

1. ✗ $\sqrt{10}$

2. ✗ 3

3. ✓ 9

4. ✗ $\frac{10}{3}$

Question Number : 4 Question Id : 3838235524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Let $f(x) = \begin{cases} 1 + \frac{2x}{\pi}, & \text{for } -\pi \leq x \leq 0 \\ 1 - \frac{2x}{\pi}, & \text{for } 0 \leq x \leq \pi \end{cases}$. The constant term of the Fourier series of $f(x)$ is

Options :

1. ✓ 0

2. ✗ $\frac{2}{\pi}$

3. ✗ $-\frac{2}{\pi}$

4. ✗

$$\frac{\pi}{2}$$

Question Number : 5 Question Id : 3838235525 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The particular integral of $(D^2 - 6D + 13)y = 8e^{3x} \sin 2x$ is

Options :

1. ✖ $2xe^{3x} \cos 2x$

2. ✔ $-2xe^{3x} \cos 2x$

3. ✖ $2e^{3x} \cos 2x$

4. ✖ $-2e^{3x} \cos 2x$

Question Number : 6 Question Id : 3838235526 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The partial differential equation obtained by eliminating the arbitrary constants a and b from

$$z = (x-a)^2 + (y-b)^2 \text{ is}$$

Options :

1. ✔ $4z = \left(\frac{\partial z}{\partial x}\right)^2 + \left(\frac{\partial z}{\partial y}\right)^2$

2. ✖ $4z = \frac{\partial z}{\partial x} + \frac{\partial z}{\partial y}$

3. ✖ $4z = \left(\frac{\partial z}{\partial x}\right)^2 + \left(\frac{\partial z}{\partial y}\right)^2 + 1$

4. ✖ $4z = \left(\frac{\partial z}{\partial x}\right)^2 - \left(\frac{\partial z}{\partial y}\right)^2$

Question Number : 7 Question Id : 3838235527 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following function is not analytic?

Options :

1. ✖ e^z

2. ✖ $e^{\bar{z}}$

3. ✔ $z + 2\bar{z}$

4. ✖ z^2

Question Number : 8 Question Id : 3838235528 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\frac{dy}{dx} = xy + y^2$, $y(0) = 1$ and $h = 0.1$, then the value of $y(0.1)$ by Euler's method is

Options :

1. ✖ 0.1

2. ✖ 0.11

3. ✖ 1.01

4. ✔ 1.1

Question Number : 9 Question Id : 3838235529 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The probability of getting a total of 5 at least once in three tosses of a pair of fair dice is

Options :

1. ✔ $1 - \left(\frac{8}{9}\right)^3$

2. ✖

$$1 - \left(\frac{3}{7}\right)^3$$

3. ✖ $\left(\frac{8}{9}\right)^3$

4. ✖ $\left(\frac{3}{7}\right)^3$

Question Number : 10 Question Id : 3838235530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The rank correlation coefficient between the marks in two subjects of a class is 0.8, the sum of the squares of the difference between the rank is 33. Then the number of students are

Options :

1. ✖ 46

2. ✖ 22

3. ✖ 60

4. ✔ 10

Instrumentation Engineering

Section Id :	383823110
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	383823110
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 3838235531 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The energy stored in a capacitor C when a voltage V exists across the capacitor is

Options :

1. ✓ $\frac{1}{2}CV^2$

2. ✗ $\frac{1}{2}VC^2$

3. ✗ $\frac{1}{2}CV$

4. ✗ $\frac{1}{2}(CV)^2$

Question Number : 12 Question Id : 3838235532 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The mechanical force per unit charge at a given point is called

Options :

1. ✓ electric field intensity

2. ✗ potential energy

3. ✗ permeability

4. ✗ permittivity

Question Number : 13 Question Id : 3838235533 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Force on a current carrying conductor placed in a magnetic field is given by

(B-magnetic flux density, i - current through the conductor, l-length of the conductor)

Options :

1. ✓ Bil Sin θ Newtons
2. ✗ Bil Cos θ Newtons
3. ✗ Bil Sin($\theta+45$) Newtons
4. ✗ Bil Cos($\theta +45$) Newtons

Question Number : 14 Question Id : 3838235534 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

“Whenever magnetic flux linked with a closed coil changes, an induced emf is setup in the coil and lasts as long as the change in magnetic flux continues” is

Options :

1. ✗ Lenz’s Law
2. ✓ Faraday’s first law of electromagnetic induction
3. ✗ Faraday’s second law of electromagnetic induction
4. ✗ Biot-Savart law

Question Number : 15 Question Id : 3838235535 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Internal resistance of an ideal voltage source is

Options :

1. ✓ 0
2. ✗ 1K
3. ✗ 2K
4. ✗ ∞

Question Number : 16 Question Id : 3838235536 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The total inductance of two inductances L_1 and L_2 with series opposing connection and mutual inductance M , is

Options :

1. ✖ $L_1 - L_2$
2. ✖ $L_1 + L_2$
3. ✖ $L_1 + L_2 + 2M$
4. ✔ $L_1 + L_2 - 2M$

Question Number : 17 Question Id : 3838235537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following law states that “Algebraic sum of the currents at a node is zero.”

Options :

1. ✔ Kirchhoff's current law
2. ✖ Kirchhoff's voltage law
3. ✖ Thevenin's theorem
4. ✖ Norton's theorem

Question Number : 18 Question Id : 3838235538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Voltage across a short circuit is

Options :

1. ✔ Zero
2. ✖ Infinite
3. ✖ Changing between zero and infinite
4. ✖ Unity

Question Number : 19 Question Id : 3838235539 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If there is a common branch with a voltage source alone between two meshes, then the combination is called

Options :

1. ✖ Super node
2. ✔ Super mesh
3. ✖ Single mesh
4. ✖ Single node

Question Number : 20 Question Id : 3838235540 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

“A linear bilateral network containing several sources, the current through or voltage across any branch in the network equals the algebraic sum of the currents or voltages of each individual sources considered separately with all other sources made inoperative” - is according to

Options :

1. ✖ Maximum power transfer theorem
2. ✔ Superposition theorem
3. ✖ Millman's theorem
4. ✖ Reciprocity theorem

Question Number : 21 Question Id : 3838235541 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

“Any two terminal active circuit containing voltage sources and resistances when viewed from its output terminals, is equivalent to a constant current source and an internal resistance” represents

Options :

1. ✖ Maximum power transfer theorem
2. ✖ Super position theorem
3. ✔ Norton's theorem
4. ✖ Thevenin's theorem

Question Number : 22 Question Id : 3838235542 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

“Any linear circuit containing several voltage sources and resistances can be reduced to an equivalent single voltage source and resistance” is according to

Options :

1. ✖ Maximum power transfer theorem
2. ✖ Super position theorem
3. ✖ Norton's theorem
4. ✔ Thevenin's theorem

Question Number : 23 Question Id : 3838235543 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The value of the alternating current, which is equal to the dc current that gives the same heating effect when allowed to pass through a circuit, for a fixed period of time, is

Options :

1. ✖ Average current
2. ✖ Peak current
3. ✔ rms current
4. ✖ Peak to peak current

Question Number : 24 Question Id : 3838235544 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In parallel RC circuit, the supply current always _____ applied voltage

Options :

1. ✓ Lags
2. ✗ Leads
3. ✗ remains in phase
4. ✗ cannot be defined

Question Number : 25 Question Id : 3838235545 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Fractional pitch winding is used in dc machines to

Options :

1. ✗ increase eddy current
2. ✗ decrease the generated voltage
3. ✗ increase distorting harmonics
4. ✓ reduce sparking and save copper

Question Number : 26 Question Id : 3838235546 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Transformation ratio in a transformer is

(1-primary, 2-secondary, N-turns, E-voltage)

Options :

1. ✓ N_1/N_2
2. ✗ N_2/N_1

3. ✖ N1/E2

4. ✖ E1/N2

Question Number : 27 Question Id : 3838235547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Pirani gauge operation is based on the following principle

Options :

1. ✖ change in volume with pressure
2. ✖ change in viscosity with pressure
3. ✔ change in thermal conductivity of gas with pressure
4. ✖ Ionization of gas at low pressure

Question Number : 28 Question Id : 3838235548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is a derived Unit in SI system?

Options :

1. ✖ Candela
2. ✖ Kelvin
3. ✖ Mol
4. ✔ Coulomb

Question Number : 29 Question Id : 3838235549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Among the bonded metal strain gauges, the foil type is more popular than wire type because

Options :

1. ✔

Error due to transverse strain is much less in foil type

- 2. ✖ Gauge factor is much high in foil type
- 3. ✖ The foil type is much more insensitive to temperature variations
- 4. ✖ Error due to transverse strain is much high in foil type

Question Number : 30 Question Id : 3838235550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

- 1. ✖ 10 Hz and 400 Hz
- 2. ✖ 400 Hz only
- 3. ✖ 10 Hz only
- 4. ✔ 390 Hz and 410 Hz

Question Number : 31 Question Id : 3838235551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Poisson's ratio of a metal is 0.35. Neglecting the piezo resistive effect, the gauge factor of the strain gauge made up of this metal is

Options :

- 1. ✖ 0.65
- 2. ✖ 1
- 3. ✖ 1.35
- 4. ✔ 1.70

Question Number : 32 Question Id : 3838235552 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The least suitable transducer for static pressure measurement is

Options :

1. ✖ semiconductor strain gauge
2. ✖ variable capacitor transducer
3. ✖ metal wire strain gauge
4. ✔ piezo electric transducer

Question Number : 33 Question Id : 3838235553 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The primary standard instrument used for calibrating vacuum is

Options :

1. ✔ McLeod gauge
2. ✖ dead weight tester
3. ✖ thermocouple gauge
4. ✖ Kundsens gauge

Question Number : 34 Question Id : 3838235554 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the device with its working principle

List-1		List-2	
a	Bourdon gauge	I	Thermal conductivity
b	Pirani gauge	II	Thermal coefficient of expansion
c	Semiconductor strain gauge	III	Piezo resistive effect
d	Bi-metallic strip	IV	Piezo electric effect
		V	Deformation of element

Options :

1. ✖ a-V, b-I, c-II, d-III
2. ✖ a-V, b-II, c-III, d-I
3. ✔ a-V, b-I, c-III, d-II
4. ✖ a-V, b-III, c-I, d-II

Question Number : 35 Question Id : 3838235555 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ orifice meter
2. ✖ venturi meter
3. ✖ flow nozzle
4. ✔ Rotometer

Question Number : 36 Question Id : 3838235556 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The thermocouple pair that gives the maximum sensitivity of around 273 K is

Options :

1. ✖ Platinum-Constantan
2. ✔ Nichrome-Constantan
3. ✖ Nickil-Constantan
4. ✖ Copper-Nickel

Question Number : 37 Question Id : 3838235557 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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 indicates the frequency to be 5500 Hz. The speed of the motor in rpm is

Options :

1. ✖ 110

2. ✖ 220

3. ✖ 550

4. ✔ 660

Question Number : 38 Question Id : 3838235558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the amplitude is proportional to the core moment, then the output of a Differential Transformer of LVDT is a

Options :

1. ✔ Sine –Wave

2. ✖ Square –Wave

3. ✖ Ramp –Wave

4. ✖ dc Voltage

Question Number : 39 Question Id : 3838235559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A forward biased silicon diode when carrying negligible current has a voltage drop of 0.64 V. When the current is 1A, it dissipates 1W. The ON resistance of the diode is

Options :

1. ✖ 0.36 Ω

2. ✖ 0.64 Ω

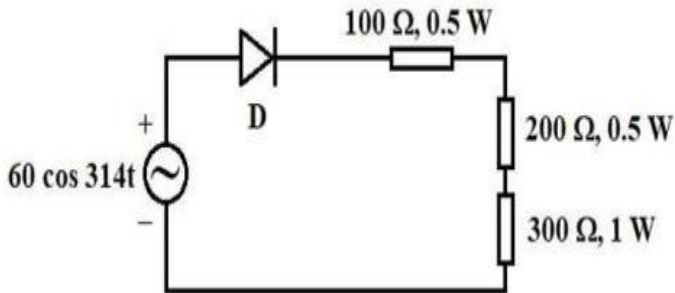
3. ✖ 0.74 Ω

4. ✓ 1Ω

Question Number : 40 Question Id : 3838235560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the circuit shown below, the diode D is ideal. The power dissipated by 300Ω resistor is



Options :

1. ✗ 0.25 W

2. ✗ 0.50 W

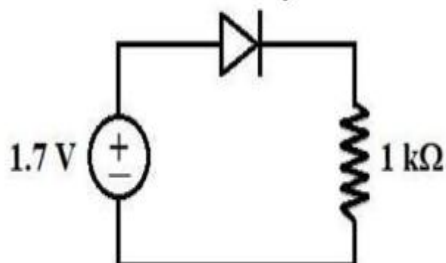
3. ✓ 0.75 W

4. ✗ 1 W

Question Number : 41 Question Id : 3838235561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the circuit shown below, the ideality factor η of the diode is unity and the voltage drop across it is 0.7 V . The dynamic resistance of the diode at room temperature is approximately



Options :

1. ✗ 15Ω

2. ✓ 25Ω

3. ✗ 50Ω

4. ✖ 700 Ω

Question Number : 42 Question Id : 3838235562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The common collector transistor configuration has the following property

Options :

1. ✔ High input and low output resistances
2. ✖ High input and high output resistances
3. ✖ Low input and low output resistances
4. ✖ Low input and High output resistances

Question Number : 43 Question Id : 3838235563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If both the junctions of a transistor are forward biased, then it will be in

Options :

1. ✔ saturation mode
2. ✖ active mode
3. ✖ cutoff mode
4. ✖ inverse active mode

Question Number : 44 Question Id : 3838235564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a single stage BJT common base amplifier

Options :

1. ✖ Current gain as well as voltage gain can be Unity

- 2. ✗ Current gain can be greater than unity, but voltage gain can be less than Unity
- 3. ✓ Current gain can be less than unity, but voltage gain can be greater than Unity
- 4. ✗ Current gain and voltage gain are always less than Unity

Question Number : 45 Question Id : 3838235565 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which of the following application, the operational amplifier is used in Nonlinear mode?

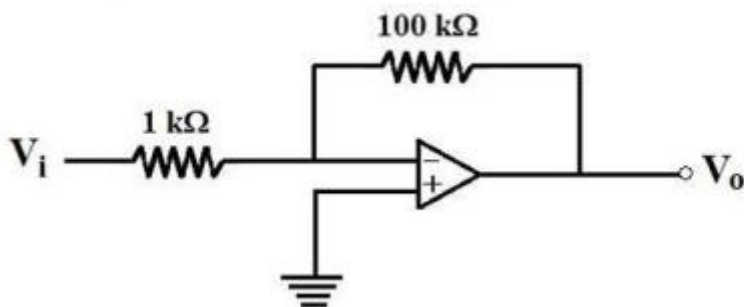
Options :

- 1. ✗ integrators
- 2. ✗ active filters
- 3. ✓ schmitt triggers
- 4. ✗ Instrumentation amplifiers

Question Number : 46 Question Id : 3838235566 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The input resistance of the op amp circuit shown is



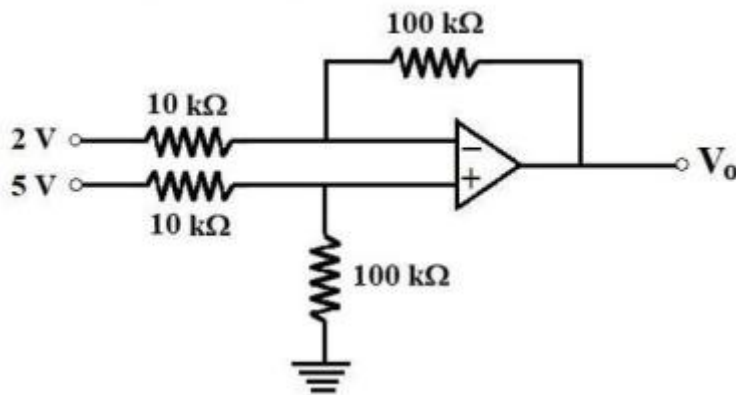
Options :

- 1. ✗ $100\text{ k}\Omega$
- 2. ✓ $1\text{ k}\Omega$
- 3. ✗ $99\text{ k}\Omega$
- 4. ✗ $101\text{ k}\Omega$

Question Number : 47 Question Id : 3838235567 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The output voltage V_o of the circuit is



Options :

1. ✗ -20 V
2. ✗ 20 V
3. ✗ -30 V
4. ✓ 30 V

Question Number : 48 Question Id : 3838235568 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The operational amplifier uses differential input stage with a constant current source is mainly to obtain

Options :

1. ✗ very low common mode gain
2. ✓ very high differential gain
3. ✗ very low input noise
4. ✗ very high input resistance

Question Number : 49 Question Id : 3838235569 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A sample and hold circuit have two buffers one at input and other at the output. The primary requirements of the buffers are

Options :

1. ✖ input buffer should have high slew rate and output buffer should have low bias current
2. ✖ input buffer should have low bias current and output buffer should have high slew rate
3. ✖ both the buffers should have low bias currents
4. ✔ both the buffers should have high slew rate

Question Number : 50 Question Id : 3838235570 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The potential difference between the input terminals of an op-amp can be treated to be nearly zero if

Options :

1. ✖ the two supply voltages are balanced
2. ✖ the output voltage is not saturated
3. ✔ the op amp used in a circuit have negative feedback
4. ✖ there is a dc bias path between each of the terminals and the circuit ground

Question Number : 51 Question Id : 3838235571 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An ideal op-amp has a characteristic of an ideal

Options :

1. ✔ voltage controlled voltage source
2. ✖ voltage controlled current source

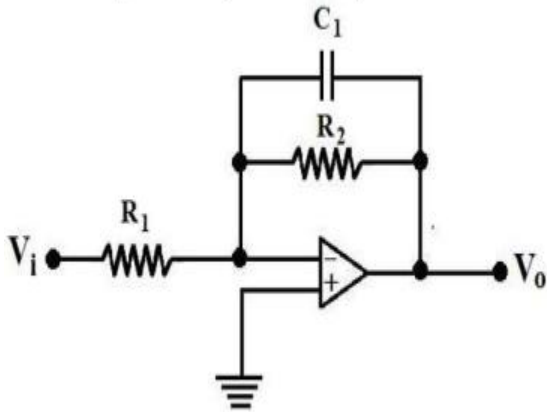
3. ✖ current controlled voltage source

4. ✖ current controlled current source

Question Number : 52 Question Id : 3838235572 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For an active filter shown in the figure, the dc gain and the 3 dB cut off frequency of the filter respectively are nearly



$$C_1 = 1.0 \text{ nF}, R_1 = 15.9 \text{ k}\Omega, R_2 = 159 \text{ k}\Omega$$

Options :

1. ✖ 40 dB, 3.14 kHz

2. ✖ 40 dB, 1 kHz

3. ✖ 20 dB, 6.28 kHz

4. ✔ 20 dB, 1 kHz

Question Number : 53 Question Id : 3838235573 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A class B push pull complementary symmetry amplifier uses

Options :

1. ✖ two npn transistors

2. ✔ one pnp and one npn transistor

3. ✖ two pnp transistors

4. ✖ one pre-amplifier of npn transistor, followed by amplifier of two transistors

Question Number : 54 Question Id : 3838235574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For full cycle of sinusoidal input, match the amplifier class with its conduction cycle

Class list		Cycle list	
A	Class A	P	one half cycle
B	Class B	Q	less than half cycle
C	Class AB	R	full cycle
D	Class C	S	more than half cycle but less than full cycle

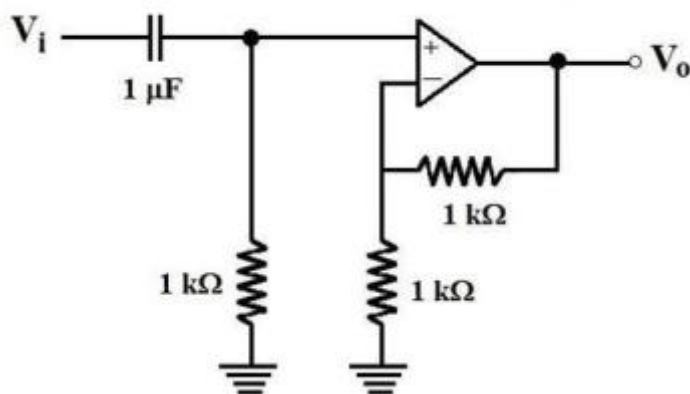
Options :

1. ✖ A-R, B-P, C-Q, D-S
2. ✔ A-R, B-P, C-S, D-Q
3. ✖ A-S, B-R, C-P, D-Q
4. ✖ A-R, B-S, C-Q, D-P

Question Number : 55 Question Id : 3838235575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The OPAMP shown in below figure is



Options :

1. ✖ Low pass filter with a maximum gain of 1
2. ✖ Low pass filter with a maximum gain of 2

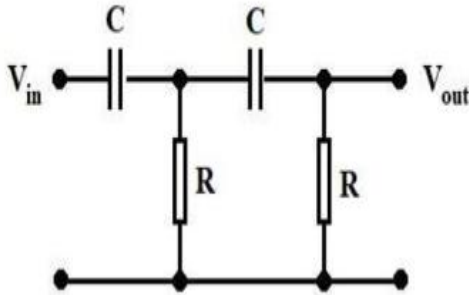
3. ✖ High pass filter with a maximum gain of 1

4. ✔ High pass filter with a maximum gain of 2

Question Number : 56 Question Id : 3838235576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the RC circuit shown, the condition for obtaining $|V_0/V_{in}|$ of $1/3$ at frequency ω rad/sec is



Options :

1. ✖ $3\omega CR - 1 = 0$

2. ✖ $2\omega CR - 1 = 0$

3. ✖ $3\omega CR - 2 = 0$

4. ✔ $\omega CR - 1 = 0$

Question Number : 57 Question Id : 3838235577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Boolean expression $\overline{A + B + C}$ is equal to

Options :

1. ✖ $\overline{A} + \overline{B} + \overline{C}$

2. ✖ $\overline{A} + \overline{B} - \overline{C}$

3. ✔ $\overline{A}.\overline{B}.\overline{C}$

4. ✖ $\overline{A.B + C}$

Question Number : 58 Question Id : 3838235578 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The minimal sum of products form of $f = A\bar{B}CD + \bar{A}BCD + BCD + \bar{A}\bar{B}C$

Options :

1. ✖ $\bar{A}C + BD$

2. ✔ $\bar{A}C + CD$

3. ✖ $AC + \bar{B}D$

4. ✖ $A\bar{B} + C\bar{D}$

Question Number : 59 Question Id : 3838235579 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The expression $a = \overline{AB}$ is equal to

Options :

1. ✔ $\bar{A} + \bar{B}$

2. ✖ $AB + A$

3. ✖ $A + B$

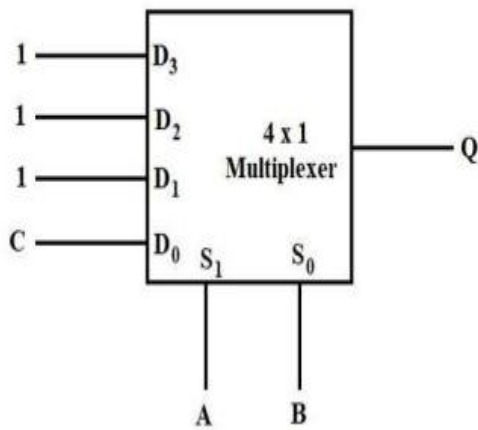
4. ✖ AB

Question Number : 60 Question Id : 3838235580 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The combinational circuit shown in the figure employs a 4x1 multiplexer. The output Q of the circuit is



Options :

1. ✗ $\overline{A} \cdot \overline{B} C$
2. ✓ $A+B+C$
3. ✗ $A \oplus B \oplus C$
4. ✗ $\overline{A} \overline{B} \overline{C}$

Question Number : 61 Question Id : 3838235581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The output Q_{n+1} of a JK flipflop for the input $J = 1, K = 1$ is

Options :

1. ✗ 0
2. ✗ 1
3. ✗ Q_n
4. ✓ $\overline{Q_n}$

Question Number : 62 Question Id : 3838235582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The minimum number of flipflops required to design a mod 10 counter is

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖ 10

Question Number : 63 Question Id : 3838235583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The binary representation of the decimal number 1.375 is

Options :

1. ✖ 1.111

2. ✖ 1.010

3. ✔ 1.011

4. ✖ 1.001

Question Number : 64 Question Id : 3838235584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The result of $45_{10} - 45_{16}$ expressed in 6-bit 2's complement representation is

Options :

1. ✖ 011000

2. ✖ 100111

3. ✔ 101000

4. ✖ 101001

Question Number : 65 Question Id : 3838235585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following logic family has the highest fanout

Options :

1. ✖ TTL
2. ✖ ECL
3. ✖ NMOS
4. ✔ CMOS

Question Number : 66 Question Id : 3838235586 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following has the refreshing circuitry?

Options :

1. ✖ Static RAM
2. ✔ Dynamic RAM
3. ✖ PROM
4. ✖ EPROM

Question Number : 67 Question Id : 3838235587 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A 4-bit synchronous counter with a series carry, uses a flip-flop and two AND gates having a propagation delay of 30 ns and 10 ns respectively. The maximum time interval required between two successive clock pulses for reliable operation of the counter is

Options :

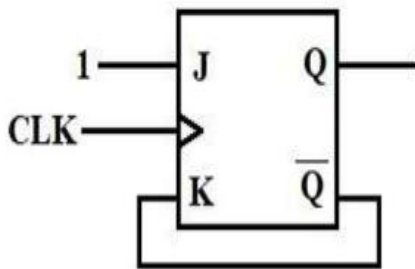
1. ✖ 10 ns
2. ✖ 30 ns
3. ✖ 40 ns
4. ✔ 50 ns

Question Number : 68 Question Id : 3838235588 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the figure shown, the initial state of Q is zero and the output is observed after the application of each clock pulse. The output sequence at Q is



Options :

1. ✗ 0000....

2. ✗ 1010....

3. ✓ 1111....

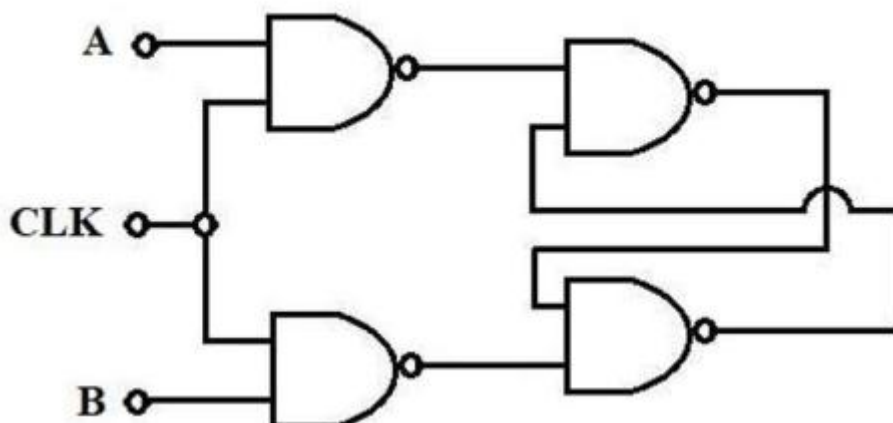
4. ✗ 1000....

Question Number : 69 Question Id : 3838235589 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the given circuit, the race around condition



Options :

1. ✗ Does not occur

2. ✗ Occurs when clock is zero

3. ✓ Occurs when clock is one, A=B=1

4. ✖ Occurs when clock is one and $A = B = 0$

Question Number : 70 Question Id : 3838235590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Introducing the Schottky diode between the base and collector of the output transistor in the TTL circuit

Options :

1. ✔ increases the speed of operation by inhibiting saturation
2. ✖ decreases the speed of the operation by inhibiting the saturation
3. ✖ increases the fan out by enabling saturation
4. ✖ increases the speed of operation by enabling saturation

Question Number : 71 Question Id : 3838235591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The computer has a memory space of 2^{16} and word length of 24 bits. The memory chips available have 10 address and eight data lines. The number of chips required for the computer memory space is

Options :

1. ✔ 192
2. ✖ 256
3. ✖ 512
4. ✖ 1024

Question Number : 72 Question Id : 3838235592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An 8-bit microcontroller has an external memory map from 8000H to 9FFFH. The number of bytes this RAM can store is

Options :

1. ✖ 8193
2. ✖ 8191
3. ✔ 8192
4. ✖ 8000

Question Number : 73 Question Id : 3838235593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statement is correct?

Options :

1. ✔ Static RAMs are faster than dynamic RAMs
2. ✖ RAMs cannot be used to realise read/write memory
3. ✖ RAMs are not random access devices
4. ✖ RAMs are generally non-volatile

Question Number : 74 Question Id : 3838235594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The advantage of Dual slope A/D converter over successive approximation A/D converter is that the dual slope converter

Options :

1. ✖ is faster
2. ✖ eliminates error due to drift
3. ✔ can reduce errors due to power supply
4. ✖ does not require a stable voltage source

Question Number : 75 Question Id : 3838235595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The stack pointer in microprocessor is a register containing

Options :

1. ✖ the address of the next operand
2. ✖ the current size of the stack
3. ✖ the address of the top of the stack
4. ✔ the address for storing the result of automatic operations temporarily

Question Number : 76 Question Id : 3838235596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A m-Bit microprocessor has a m-bit

Options :

1. ✖ flag register
2. ✖ instruction register
3. ✔ data register
4. ✖ program counter

Question Number : 77 Question Id : 3838235597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider the periodic signal $x(t) = [1 + 0.5 \cos 40\pi t] \cos 200\pi t$, where t in seconds, its fundamental frequency in Hz is

Options :

1. ✔ 20

2. ✖ 40

3. ✖ 100

4. ✖ 200

Question Number : 78 Question Id : 3838235598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following statements is not true for a continuous time causal and stable LTI system?

Options :

1. ✖ All the poles of the system must lie on the left side of the imaginary axis

2. ✖ Zeros of the system can lie anywhere in the s-plane

3. ✔ All the poles must lie within $|s|=1$

4. ✖ All the roots of the characteristic equation must be located on the left side of the $j\omega$ axis.

Question Number : 79 Question Id : 3838235599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The impulsive response of a continuous time system is given by $h(t) = \delta(t-1) + \delta(t-3)$.

The value of the step response at $t = 2$ is

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ 3

Question Number : 80 Question Id : 3838235600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following discrete time systems is time invariant?

Options :

1. ✖ $y(n) = nx(n)$
2. ✖ $y(n) = x(3n)$
3. ✖ $y(n) = x(-n)\pi$
4. ✔ $y(n) = x(n-3)$

Question Number : 81 Question Id : 3838235601 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following sequence $f(n)$ have z-transform $x(z) = e^{1/z}$?

Options :

1. ✔ $[1/n!][u(n)]$
2. ✖ $[-1/n!][u(-n)]$
3. ✖ $(-1)^n[1/n!][u(n)]$
4. ✖ $u(-n-1)/-(n+1)!$

Question Number : 82 Question Id : 3838235602 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If a real function $f(t)$ has a Fourier Transform $f(\omega)$, then the Fourier transform of $f(t)-f(-t)$ is

Options :

1. ✖ 0
2. ✖ real
3. ✖ real and odd
4. ✔ imaginary

Question Number : 83 Question Id : 3838235603 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The following is the Fourier inverse of $F(f) = \frac{3\pi f}{1 + j\pi f}$

Options :

1. ✓ $3\delta(t) - 6e^{-2t}u(t)$
2. ✗ $3e^{-t}u(t)$
3. ✗ $2\delta(t) + 3e^{-t}u(t)$
4. ✗ $6e^{-3t}u(t)$

Question Number : 84 Question Id : 3838235604 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A signal $x(t) = 5\cos(150\pi t - 60)$ is sampled at 200 Hz. The fundamental period of the sampled sequence $x(n)$ is

Options :

1. ✗ $\frac{1}{200}$
2. ✗ $\frac{2}{200}$
3. ✗ 4
4. ✓ 8

Question Number : 85 Question Id : 3838235605 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A band limited signal with highest frequency content of 1000 Hz is undergoing sampling at uniform intervals. For recovery of original signal in an unambiguous way, the sampling frequency should be necessarily greater than

Options :

1. ✖ 500Hz
2. ✖ 100Hz
3. ✖ 1500Hz
4. ✔ 2000Hz

Question Number : 86 Question Id : 3838235606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the modulation (List-1) with the type of demodulator (List-2)

List-1		List-2	
A	AM	P	Envelope detector
B	FM	Q	Slope detector
		R	Peak detector

Options :

1. ✔ A- P, B-Q
2. ✖ A-Q, B-R
3. ✖ A-Q, B-P
4. ✖ A-P, B-R

Question Number : 87 Question Id : 3838235607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A phase locked loop can be employed for demodulation of

Options :

1. ✖ pulse amplitude modulation signal
2. ✖ pulse code modulation signal
3. ✔ frequency modulation signal
4. ✖ signal side band amplitude modulation signals

Question Number : 88 Question Id : 3838235608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In an FM Broadcast, the maximum frequency deviation allowed is 75 kHz and the maximum modulation frequency is 15 KHz. The bandwidth is closest to

Options :

1. ✓ 180 kHz
2. ✗ 60 kHz
3. ✗ 105 kHz
4. ✗ 120 kHz

Question Number : 89 Question Id : 3838235609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The type of A/D converter normally used in a 3 ½ digit multimeter is

Options :

1. ✗ voltage to frequency converter type
2. ✗ flash type
3. ✗ successive approximation type
4. ✓ dual slope integrating type

Question Number : 90 Question Id : 3838235610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The instrument that does not have any restoring torque is

Options :

1. ✓ Moving iron instrument
2. ✗ Flux meter

3. ✖ Ballistic galvanometer

4. ✖ D'arsonval Galvanometer

Question Number : 91 Question Id : 3838235611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An ammeter with input resistance of $50\ \Omega$ gives full scale deflection for $50\ \mu\text{A}$ current. The input resistance of a $0\text{-}1\text{mA}$ ammeter obtained by connecting a shunt across the $0\text{-}50\ \mu\text{A}$ meter will be

Options :

1. ✖ $50\ \Omega$

2. ✖ $25\ \Omega$

3. ✖ $5\ \Omega$

4. ✔ $2.5\ \Omega$

Question Number : 92 Question Id : 3838235612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the parameter (List-1) with the type of bridge (List-2) used for measurement

List-1		List-2	
A	Low value of R	P	Schering bridge
B	High value of Q	Q	Maxwell bridge
C	Inductance L	R	Kelvin double bridge
D	Capacitance C	S	Hay's bridge

Options :

1. ✔ A-R, B-S, C-Q, D-P

2. ✖ A-R, B-S, C-P, D-Q

3. ✖ A-S, B-R, C-Q, D-P

4. ✖ A-S, B-R, C-P, D-Q

Question Number : 93 Question Id : 3838235613 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Wien bridge is best suited for the measurement of

Options :

1. ✓ frequency
2. ✗ capacitance
3. ✗ inductance
4. ✗ resistance

Question Number : 94 Question Id : 3838235614 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the open loop transfer function of the negative feedback control system is $G(s)H(s) = \frac{k}{(s+1)^3}$,

then the gain k for a closed loop pole at $\left(-\frac{1}{2} + j\frac{\sqrt{3}}{2}\right)$ is

Options :

1. ✓ 1
2. ✗ 2
3. ✗ 3
4. ✗ 4

Question Number : 95 Question Id : 3838235615 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A transfer function has two zeros at infinity. Then the relation between the numerator degree(N) and the denominator degree(M) of the transfer function is

Options :

1. ✖ $N=M+2$

2. ✖ $N=M-2$

3. ✔ $N=M+1$

4. ✖ $N=M-1$

Question Number : 96 Question Id : 3838235616 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The transfer function of the system is the Laplace transform of its

Options :

1. ✖ square wave response

2. ✖ step response

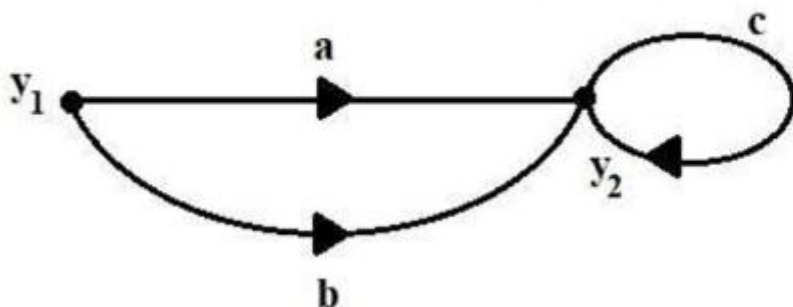
3. ✖ ramp response

4. ✔ impulse response

Question Number : 97 Question Id : 3838235617 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The transfer function between y_2 and y_1 in below figure is



Options :

1. ✖ $a+b$

2. ✖ $(a+b)c$

3. ✔ $(a+b)/(1-c)$

4. ✖ $(a+b)/(1+c)$

Question Number : 98 Question Id : 3838235618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A temperature control system is usually very sluggish. To improve its dynamics

Options :

1. ✖ a PI controller can be used
2. ✖ an I controller can be used
3. ✖ PID controller with large I and negligible D can be used
4. ✔ PD controller can be used

Question Number : 99 Question Id : 3838235619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A first order system with a proportional controller exhibits an offset to step input. The offset can be reduced by

Options :

1. ✖ increasing the gain
2. ✔ adding integral mode
3. ✖ adding derivative mode
4. ✖ decreasing the gain

Question Number : 100 Question Id : 3838235620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An integral controller is used to

Options :

1. ✖ improve transient response

2. ✖ reduce the offset
3. ✔ eliminate the offset
4. ✖ reduce the settling time

Question Number : 101 Question Id : 3838235621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The system $G(s) = \frac{0.8}{s^2 + s - 2}$ is subjected to a step input. The system output $y(t)$ as $t \rightarrow \infty$, is

Options :

1. ✖ 0.8
2. ✖ 0.4
3. ✖ -0.4
4. ✔ unbounded

Question Number : 102 Question Id : 3838235622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the transfer function of a system is $G(s) = \frac{A}{s^2 + \omega^2}$, then the steady state gain of the system to a unit step input is

Options :

1. ✔ A/ω^2
2. ✖ zero
3. ✖ infinity
4. ✖ Not possible to be determined

Question Number : 103 Question Id : 3838235623 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Consider a unity feedback control system whose forward path transfer function $G(s) = \frac{K}{s^2}$.

The steady state error for a step input is

Options :

1. ✖ 1.0
2. ✖ infinity
3. ✔ 0.0
4. ✖ does not exist

Question Number : 104 Question Id : 3838235624 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The breakaway point of the root locus on the real axis for a closed loop system with a

loop gain $G(s) = \frac{K(s+10)}{(s+2)(s+5)}$ is

Options :

1. ✖ between -2 and origin
2. ✔ between -2 and -5
3. ✖ between -10 and $-\infty$
4. ✖ at $-\infty$

Question Number : 105 Question Id : 3838235625 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The phase margin of the system for which the loop gain $GH(j\omega) = \frac{A_1}{(j\omega+1)^3}$ is

Options :

1. ✖ $-\pi$

2. ✔ π

3. ✖ 0

4. ✖ $\frac{\pi}{2}$

Question Number : 106 Question Id : 3838235626 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An optical fiber is characterized by

Options :

1. ✔ Total internal reflection

2. ✖ A core material of reflective index lower than that of cladding

3. ✖ Scattering loss

4. ✖ Diffraction

Question Number : 107 Question Id : 3838235627 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

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 :

1. ✖ 0.12

2. ✖ 0.75

3. ✖ 0.06

4. ✔ 0.34

Question Number : 108 Question Id : 3838235628 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

An optical fiber has a refractive index of 1.641 for the core and 1.422 for the cladding.
The critical angle above which a ray will be totally internally reflected is

Options :

1. ✓ 60°

2. ✗ 41°

3. ✗ 45°

4. ✗ 37°

Question Number : 109 Question Id : 3838235629 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The crossed length of the He-Ne laser beam is 120 cm. It's coherence time in seconds is

Options :

1. ✗ 4×10^{-1}

2. ✗ 4×10^{-3}

3. ✗ 4×10^{-5}

4. ✓ 4×10^{-9}

Question Number : 110 Question Id : 3838235630 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Collimated light beams from a He-Ne laser and a sodium vapor lamp are focused using a lens. The size of the spot at the focal point due to the laser is relatively smaller because

Options :

1. ✗ Laser light is relatively more monochromatic

2. ✓ The limiting divergence of the laser light is relatively smaller

3. ✗ The output power of the laser is relatively larger

4. ✖ The wavelength of the laser is relatively longer

Question Number : 111 Question Id : 3838235631 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Geiger counter has high quantum efficiency in the wavelength range of

Options :

1. ✖ 0.2 to 0.3

2. ✖ 0.4 to 0.5

3. ✖ 1.5 to 2.1

4. ✔ 6 to 7

Question Number : 112 Question Id : 3838235632 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Match the instruments with the parameters they measure

List-1		List-2	
A	Autocollimeter	P	Radiation scattered
B	Hygrometer	Q	Angular error
C	Nephelometer	R	Molecular weight
D	Mass spectrometer	S	Humidity
		T	Density

Options :

1. ✔ A-Q, B-S, C-T, D-R

2. ✖ A-S, B-T, C-R, D-Q

3. ✖ A-T, B-R, C-Q, D-S

4. ✖ A-R, B-Q, C-S, D-T

Question Number : 113 Question Id : 3838235633 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A psychometric chart is used to determine

Options :

1. ✖ pH value
2. ✖ sound velocity in glasses
3. ✖ CO₂ concentration
4. ✔ Relative humidity

Question Number : 114 Question Id : 3838235634 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

IR spectroscopy

Options :

1. ✖ has useful range of radiation from 2.5 to 15 microns
2. ✔ uses Bolo meter as one of the detectors
3. ✖ is unsuitable for analysis of organic gases
4. ✖ is unsuitable for analysis of mixture of metals

Question Number : 115 Question Id : 3838235635 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Gas chromatography is used for

Options :

1. ✖ measuring flow rate of a gas
2. ✖ measuring temperature of a gas
3. ✖ measuring pressure of a gas
4. ✔ analysing the composition of a gas

Question Number : 116 Question Id : 3838235636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Korot-koff sounds are used

Options :

1. ✖ as a reference for sound level measurement
2. ✖ for studying hard muscle functioning
3. ✔ for BP measurement
4. ✖ for study of heart valve functioning

Question Number : 117 Question Id : 3838235637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the standard 12-lead ECG recording system, the minimum number of electrodes required to be attached to the human subject for recording any one of the unipolar chest lead signals is

Options :

1. ✖ 1
2. ✖ 2
3. ✔ 4
4. ✖ 6

Question Number : 118 Question Id : 3838235638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A standard three lead frontal plane ECG is taken from a person with a normal heart. The peak amplitude of R wave is

Options :

1. ✖ Greatest in lead I
2. ✔ Greatest in lead II

3. ✖ Greatest in lead III
4. ✖ Equal in all the leads

Question Number : 119 Question Id : 3838235639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The treadmill test is used to diagnose

Options :

1. ✖ The balance in style during walk of the patient
2. ✖ The auditory activity of the patient
3. ✖ The visual activity of the patient
4. ✔ The cardiac activity of the patient

Question Number : 120 Question Id : 3838235640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In an electromagnetic blood flow meter, the induced voltage is directly proportional to the

Options :

1. ✔ Blood flow rate
2. ✖ Square root of the blood flow rate
3. ✖ Square of the blood flow rate
4. ✖ Logarithm of the blood flow rate