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Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

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Instrumentation Engineering

Group Number :	1
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Instrumentation Engineering

Section Id :	83189673
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Sub-Section Number :	1
Sub-Section Id :	83189673
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8318968641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The guge factor of semiconductor strain gauge is higher than ordinary metal wire resistive strain gauge because of:

Options :

1. ✔ piezoresistive effect

2. ✖ temperature effect

zener breakdown in the material

3. ✖

its small size

4. ✖

Question Number : 2 Question Id : 8318968642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Gauge factor of strain gauge indicates its:

Options :

accuracy

1. ✖

sensitivity

2. ✔

Dead zone

3. ✖

Precision

4. ✖

Question Number : 3 Question Id : 8318968643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Dummy strain gauge is used:

Options :

1. ✖ to increase sensitivity

2. ✖ to measure tensile strength

3. ✔ for temperature compensation

4. ✖ to measure compressive strain

Question Number : 4 Question Id : 8318968644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The gauge factor of semiconductor strain gauge is in the range of:

Options :

1. ✖ 2 to 10

2. ✔ 100 to 150

3. ✖ more than 200

4. ✖ 50 to 100

Question Number : 5 Question Id : 8318968645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The input impedence of CRO is nearly:

Options :

1. ✖ Zero

2. ✖ Around 10Ω

3. ✖ Around 100Ω

4. ✔ Around 1MΩ

Question Number : 6 Question Id : 8318968646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The principle of operation of LVDT is based on the operation of:

Options :

1. ✖ self-inductance

2. ✔ mutual inductance

3. ✖ reluctance

4. ✖ permeance

Question Number : 7 Question Id : 8318968647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following will be the best selection for the core of an LVDT?

Options :

1. ✖ Air

2. ✔ Nickel-iron

3. ✖ Rubber

4. ✖ Platinum

Question Number : 8 Question Id : 8318968648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The devices which are used for the measurement of very high temperature are:

Options :

1. ✖ Thermistors

2. ✖ Thermocouples

3. ✔ Pyrometers

4. ✖ RTD's

Question Number : 9 Question Id : 8318968649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

An example of variable area device for measuring flow is:

Options :

1. ✖ Flow nozzle

2. ✖ Orifice meter

3. ✖ Venturi meter

4. ✔ Rotameter

Question Number : 10 Question Id : 8318968650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a venturimeter, the flow is 0.15 m^3 /s when the differential pressure is 30 kN/m^2 . What is the flow when the differential pressure is 60 kN/m^2 ?

Options :

1. ✔ 0.212 m^3 /s

2. ✖ 0.106 m^3 /s

3. ✖ $0.3\ m^3/s$

4. ✖ $0.075\ m^3/s$

Question Number : 11 Question Id : 8318968651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A variable reluctance types tachometer has 60 rotor slots. If counter records 3600 counter per second, then the speed is:

Options :

1. ✖ 60 rpm

2. ✖ 360 rpm

3. ✖ 1800 rpm

4. ✔ 3600 rpm

Question Number : 12 Question Id : 8318968652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A force digital transducers measures the pressure in the range of 0-200 N with a resolution of 0.1% of full scale. The smallest charge it can measure is:

Options :

1. ✔ 0.2 N

2. ✖ 0.4 N

3. ✖ 0.5 N

4. ✖ 1.0 N

Question Number : 13 Question Id : 8318968653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Value of pH solution is 4. It indicates that concentration of hydrogen ions is:

Options :

1. ✔ 10^{-4} g/*l* and the solution is acidic

2. ✖ 10^{-4} g/*l* and the solution is alkaline

3. ✖ 10^{-4} mg/*l* and the solution is acidic

4. ✖ 10^{-4} mg/*l* and the solution is alkaline

Question Number : 14 Question Id : 8318968654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is used to measure the thermal conductivity?

Options :

1. ✖ RTD

2. ✖ Thermocouple

3. ✖ Strain gauge

4. ✔ Thermistor

Question Number : 15 Question Id : 8318968655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The resistance of thermistor is 5000 Ω at 20° C and its resistance temperature coefficient is 0.04/°C. A measurement with a lead resistance of 10 Ω will cause an error of:

Options :

1. ✔ 0.05°C

2. ✖ 0.1°C

3. ✖ 0.4°C

4. ✖ 0.8°C

Question Number : 16 Question Id : 8318968656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is inverse transducer?

Options :

1. ✔ Piezoelectric

2. ✖ Thermistor

3. ✖ Photovoltaic cell

4. ✖ LVDT

Question Number : 17 Question Id : 8318968657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Psychrometer is used for the measurement of:

Options :

1. ✖ pH

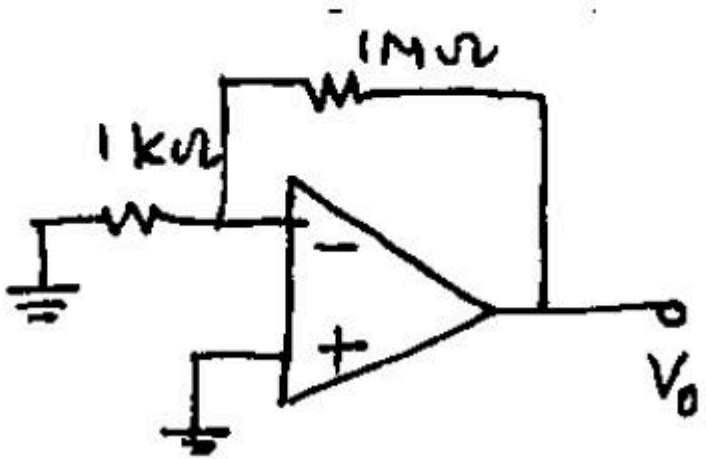
2. ✖ Viscosity

3. ✖ Conductivity

4. ✔ Humidity

Question Number : 18 Question Id : 8318968658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

An op-amp has an offset voltage of 1 mV and is ideal in all other respects. If this op-amp is used in the circuit shown in figure below, the output voltage will be (select the nearest value)



Options :

1. ✖ 1 mV

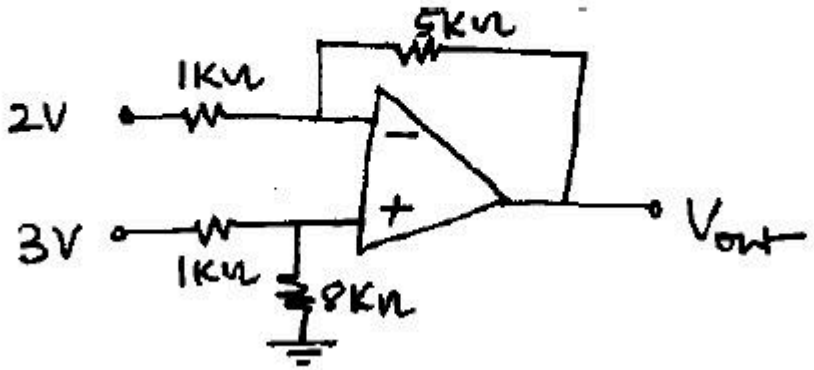
2. ✖ 1 V

3. ✔ ±1 V

4. ✖ ±5 V

Question Number : 19 Question Id : 8318968659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the op-amp in figure is ideal, the output voltage V_{out} will be equal to:



Options :

1. ✖ 1 V

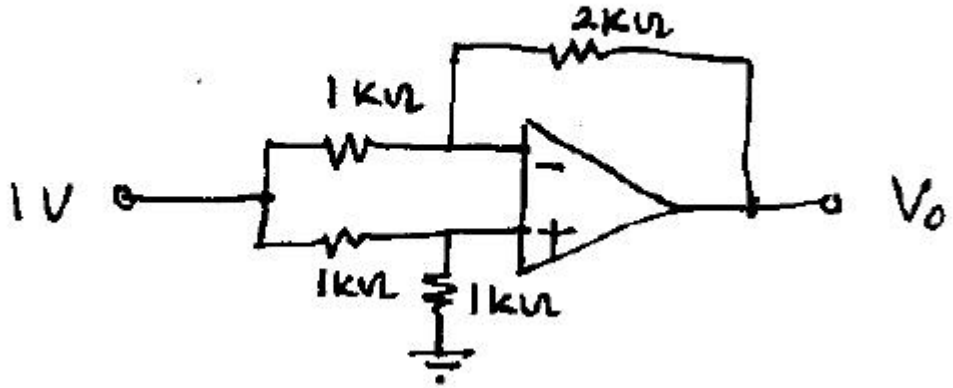
2. ✔ 6 V

3. ✖ 14 V

4. ✖ 17 V

Question Number : 20 Question Id : 8318968660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For the op-amp circuit shown in the figure below, V_o is:



Options :

1. ✖ -2 V

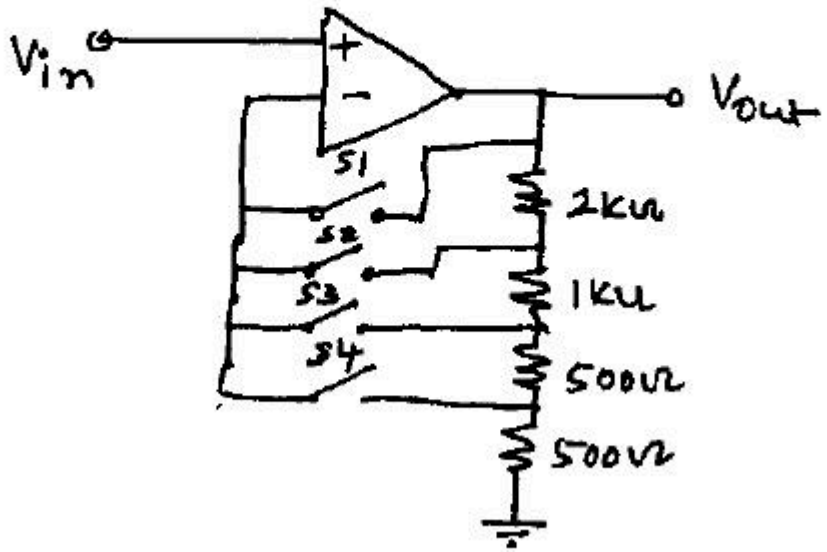
2. ✖ -1 V

3. ✔ -0.5 V

4. ✖ 0.5 V

Question Number : 21 Question Id : 8318968661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

When the switch S_2 is closed, the gain of the programmable gain amplifier shown in the following figure is:



Options :

1. ✖ 0.5

2. ✔ 2

3. ✖ 4

4. ✖ 8

Question Number : 22 Question Id : 8318968662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the differential voltage gain and the common mode voltage gain of the differential amplifier are 48 dB and 2 dB respectively then its common mode rejection ratio is:

Options :

1. ✖ 23 dB

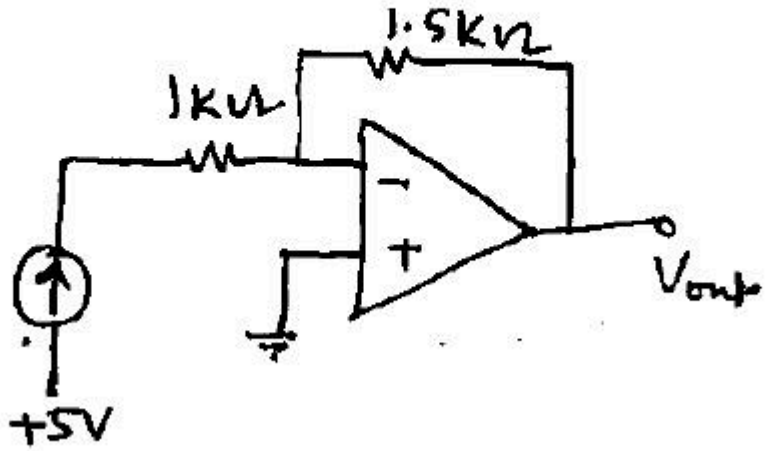
2. ✖ 25 dB

3. ✔ 46 dB

4. ✖ 50 dB

Question Number : 23 Question Id : 8318968663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The op-amp and the 1 mA current source in the circuit of figure are ideal. The output of the op-amp is:



Options :

1. ✖ -1.5 mA

2. ✔ -1.5 V

3. ✖ -7.5 V

4. ✖ +1.5 V

Question Number : 24 Question Id : 8318968664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A 741-type op-amp has a gain bandwidth product of 1 MHz. A non-inverting amplifier using this op-amp and having a voltage gain of 20 dB will exhibit a 3 dB bandwidth of:

Options :

1. ✖ 50 kHz

2. ✔ 100 kHz

3. ✖ 1000/17 kHz

4. ✖ 1000/7.07 kHz

Question Number : 25 Question Id : 8318968665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the order of minimum displacement that can be measured with capacitive transducer?

Options :

1. ✖ 1 cm

2. ✖ 1 mm

3. ✖ 1 μm

4. ✔ 1×10^{-8} m

Question Number : 26 Question Id : 8318968666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Capacitive transducers are normally used for:

Options :

1. ✖ static measurement

2. ✖ dynamic measurement

3. ✔ both static and dynamic measurements

4. ✖ transient measurement

Question Number : 27 Question Id : 8318968667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

To reduce the effect of fringing in a capacitive type transducer,

Options :

1. ✖ The transducer is shielded and the shield is kept at ground potential

2. ✖ A guard ring is provided and it is kept at ground potential

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

4. ✔ A guard ring is provided and it is kept at the same potential as the moving plate

Question Number : 28 Question Id : 8318968668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Piezoelectric transducers are:

Options :

1. ✖ passive transducers

2. ✖ active transducers

3. ✖ inverse transducers

4. ✔ both active and inverse transducers

Question Number : 29 Question Id : 8318968669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Piezoelectric crystals produce an EMF when:

Options :

1. ✔ an external mechanical force is applied to it

2. ✖ an external magnetic field is applied

3. ✖ a radiant energy stimulates the crystal

4. ✖ the junction of two such crystals is heated

Question Number : 30 Question Id : 8318968670 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. ✔ piezoelectric transducer

Question Number : 31 Question Id : 8318968671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A linear variable differential transformer (LVDT) is:

Options :

1. ✖ an impedance matching transformer

2. ✔ a displacement transducer

3. ✖ a differential temperature sensor

4. ✖ an auto transformer

Question Number : 32 Question Id : 8318968672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A properly biased JFET will act as a:

Options :

1. ✖ Current controlled current source

2. ✖ Voltage controlled voltage source

3. ✔ Voltage controlled current source

4. ✖ Current controlled voltage source

Question Number : 33 Question Id : 8318968673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The type of power amplifier which exhibits crossover distortion in its output is:

Options :

1. ✖ Class A

2. ✔ Class B

3. ✖ Class AB

4. ✖ Class C

Question Number : 34 Question Id : 8318968674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following oscillators is used for generation of high frequencies?

Options :

1. ✖ R.C. phase shift

2. ✖ Wien-bridge

3. ✔ L.C. oscillator

4. ✖ Blocking oscillator

Question Number : 35 Question Id : 8318968675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the main advantage of a JFET-cascade amplifier?

Options :

1. ✔ High voltage gain

2. ✖ Low output impedance

3. ✖ Very low input capacitance

4. ✖ High input impedance

Question Number : 36 Question Id : 8318968676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A differential amplifier has R_L = 10 kΩ (equal values in both collectors). h_{ie} = 1 kΩ, R_e = 50 kΩ, h_{fe} = 100. The common mode is given by:

Options :

1. ✖ 1500

2. ✖ 20

3. ✖ 0.2

4. ✔ 0.1

Question Number : 37 Question Id : 8318968677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The open loop voltage gain of an amplifier is 240. The noise level in the output without feedback is 100 mV. If a negative feedback with $\beta = 1/60$ is used, the noise level in the output will be:

Options :

1. ✖ 1.66 mV

2. ✖ 2.4 mV

3. ✖ 4.0 mV

4. ✔ 20 mV

Question Number : 38 Question Id : 8318968678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

PMMC type instrument normally used for:

Options :

1. ✖ air friction damping

2. ✖ fluid friction damping

3. ✔ eddy current damping

4. ✖ under damped system

Question Number : 39 Question Id : 8318968679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Kelvin's double bridge is used for the measurement of:

Options :

1. ✖ High resistance

2. ✖ Medium resistance

3. ✔ Low resistance

4. ✖ Mega-Ohm range resistance

Question Number : 40 Question Id : 8318968680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Two resistance $100 \pm 5\Omega$ and $150 \pm 15\Omega$ are connected in series. If the errors are specified as standard deviations, the resultant error will be:

Options :

1. ✖ $\pm 10\Omega$

2. ✖ $\pm$ 10.6Ω

3. ✔ $\pm$ 15.8Ω

4. ✖ $\pm$ 20Ω

Question Number : 41 Question Id : 8318968681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A PMMC meter rated at 100 μA is used in a rectifier type of instrument which uses full wave rectification. What is the sensitivity on sinusoidal AC?

Options :

1. ✖ 4.5 kΩ/V

2. ✖ 18 kΩ/V

3. ✖ 10 kΩ/V

4. ✔ 9 kΩ/V

Question Number : 42 Question Id : 8318968682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

When testing a coil having a resistance of 10Ω, resonance occurred when the oscillator frequency was 10 MHz and the rotating capacitor was set at 500/2πpF. The effective value of the Q of the coil is:

Options :

1. ✔ 200

2. ✖ 254

3. ✖ 314

4. ✖ 542

Question Number : 43 Question Id : 8318968683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The resistance can be measured must accurately by:

Options :

1. ✖ Voltmeter-ammeter method

2. ✔ Bridge method

3. ✖ Multi-meter

4. ✖ Megger

Question Number : 44 Question Id : 8318968684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Schering bridge is used to:

Options :

1. ✔ determine capacitance

2. ✖ determine the inductance

3. ✖ measure low resistance

4. ✖ measure mutual inductance

Question Number : 45 Question Id : 8318968685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

X and Y plates of a CRO are connected to unequal voltages of equal frequency with phase shift of 90°. The Lissajous pattern observed on the CRO screen is_____.

Options :

1. ✖ circle

2. ✖ straight line

3. ✔ ellipse

4. ✖ figure of eight

Question Number : 46 Question Id : 8318968686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Q meter operates on the principle of:

Options :

1. ✔ series resonance

2. ✖ current resonance

3. ✖ self-inductance

4. ✖ eddy currents

Question Number : 47 Question Id : 8318968687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The transmittance of a particular solution measured is T. The concentration of the solution is now doubled. Assuming that Beer-Lambert's law holds good for both the cases, the transmittance for the second would be:

Options :

1. ✖ $\frac{T}{2}$

2. ✖ 2T

3. ✔ T^2

4. ✖ $\sqrt{T}$

Question Number : 48 Question Id : 8318968688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a spectrophotometer, the monochromator must be able to resolve two wavelengths 599.9 nm and 600.1 nm. The required resolution is:

Options :

1. ✖ 100

2. ✖ 500

3. ✖ 1000

4. ✔ 3000

Question Number : 49 Question Id : 8318968689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is the value for the action potential of a cell?

Options :

1. ✖ 0.70 mV

2. ✖ -20 mV

3. ✔ +20 mV

4. ✖ +50 mV

Question Number : 50 Question Id : 8318968690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The mathematical basic for Nuclear Magnetic Resonance (NMR) states that if μ is the nuclear magnetic moment of the molecule, the gyromagnetic ratio is proportional to:

Options :

1. ✔ μ

2. ✖ $\left[\frac{1}{\mu}\right]$

3. ✖ $\sqrt{\mu}$

4. ✖ μ^2

Question Number : 51 Question Id : 8318968691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Normal diastolic blood pressure ranges from (in mm Hg):

Options :

1. ✖ 0-30

2. ✖ 30-60

3. ✔ 60-90

4. ✖ 90-120

Question Number : 52 Question Id : 8318968692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The counter method used for counting of the blood cells is based in the principle of the:

Options :

1. ✔ electrical conductivity

2. ✖ volume

3. ✖ weight

4. ✖ number of blood cells

Question Number : 53 Question Id : 8318968693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

On testing a blood sample it is found that it contains 15g of Hb per decilitre of blood sample and a PVC of 0.45. Find the mean cell haemoglobin concentration for the blood sample:

Options :

1. ✔ 33.3 g/dl

2. ✖ 28.3 g/dl

3. ✖ 33.9 g/dl

4. ✖ 31.2 g/dl

Question Number : 54 Question Id : 8318968694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A good indicator of cardiovascular system is:

Options :

1. ✔ blood pressure

2. ✖ water flow

3. ✖ heart beat

4. ✖ brain

Question Number : 55 Question Id : 8318968695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following type of image is produced by CT scan machine?

Options :

1. ✖ 1-D image

2. ✖ 2-D image

3. ✔ 3-D image

4. ✖ 4-D image

Question Number : 56 Question Id : 8318968696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a preferred electrode for measuring EMG?

Options :

1. ✖ Surface electrodes

2. ✔ Needle electrodes

3. ✖ Pregelled electrodes

4. ✖ Scalp electrodes

Question Number : 57 Question Id : 8318968697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

When intramuscular EMG is required to look into the electrical activities of deeper or overlaid muscles, _____ electrodes are used.

Options :

1. ✖ plate shape electrodes

2. ✖ surface electrodes

3. ✖ thin thread electrodes

4. ✔ fine wire electrodes

Question Number : 58 Question Id : 8318968698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The contraction of the skeletal muscles results in the generation of action potential in the individual muscle fibers. Record of this action potential is called _____.

Options :

1. ✖ ECG

2. ✔ EMG

3. ✖ EEG

4. ✖ EKG

Question Number : 59 Question Id : 8318968699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Disturbance in the EEG pattern resulting from the external stimuli is called _____.

Options :

1. ✖ provoked response

2. ✖ ckoored response

3. ✔ evoked response

4. ✖ impulse response

Question Number : 60 Question Id : 8318968700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which rhythm is the principal component of the EEG that indicates the alertness of the brain?

Options :

1. ✖ Theta rhythm

2. ✖ Gamma rhythm

3. ✖ Beta rhythm

4. ✔ Alpha rhythm

Question Number : 61 Question Id : 8318968701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Normal EEG frequency range is _____.

Options :

1. 50 – 500 Hz ✖

2. 0.5 – 50 Hz ✔

3. 0.05 – 5 Hz ✖

4. 1 – 200 Hz ✖

Question Number : 62 Question Id : 8318968702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a wireless ECG acquiring system?

Options :

1. Pregelled disposable electrodes ✖

2. Limb electrodes ✖

3. Paste less electrodes ✖

4. ✔ Smart pad

Question Number : 63 Question Id : 8318968703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Recording electrical activities associated with heart is known as _____.

Options :

1. ✖ EEG

2. ✖ EOG

3. ✖ EMG

4. ✔ ECG

Question Number : 64 Question Id : 8318968704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Welsh cup electrodes have _____.

Options :

1. ✖ low contact impedance

2. ✖ negligible contact impedance

3. ✔ high contact impedance

4. ✖ zero contact impedance

Question Number : 65 Question Id : 8318968705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In X-ray spectrometers, the specimen or the sample is placed after which of the following components?

Options :

1. ✔ X-ray tube

2. ✖ Monochromator

3. ✖ Collimator

4. ✖ Detector

Question Number : 66 Question Id : 8318968706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In calibration of a dynamometer Wattmeter by potentiometer, phantom loading arrangement is used because:

Options :

1. ✖ the arrangement gives accurate results

2. ✔ the power consumed in calibration work is minimum

3. ✖ the method gives quick results

4. ✖ the onsite calibration is possible

Question Number : 67 Question Id : 8318968707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In electrodynamometer type wattmeter, the inductance of pressure coil produces error. The error is:

Options :

1. ✖ constant irrespective of the power factor of the load

2. ✖ higher at higher power factor loads

3. ✔ higher at lower power factor loads

4. ✖ highest at unity power factor loads

Question Number : 68 Question Id : 8318968708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The phenomena of 'creeping' occurs in:

Options :

1. ✖ Ammeters

2. ✖ Voltmeters

3. ✔ Wattmeters

4. ✖ Watt-hour meters

Question Number : 69 Question Id : 8318968709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A moving-coil instrument gives full-scale deflection for 1 mA and has a resistance of 5 Ω. If a resistance of 0.55 Ω is connected in parallel to the instrument, what is the maximum value of current it can measure?

Options :

1. ✖ 5 mA

2. ✔ 10 mA

3. ✖ 50 mA

4. ✖ 100 mA

Question Number : 70 Question Id : 8318968710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a permanent magnet moving coil instrument, if the control spring is replaced by another one having a higher spring constant, then the natural frequency and damping ratio will:

Options :

1. ✖ decrease

2. ✔ increase and decrease respectively

3. ✖ decrease and increase respectively

4. ✖ increase

Question Number : 71 Question Id : 8318968711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Rectifier moving coil instrument responds to:

Options :

1. ✖ peak value, irrespective of the nature of the waveform

2. ✔ average value, for all waveforms

3. ✖ rms value, for all waveforms

4. ✖ rms value, for symmetrical square waveforms

Question Number : 72 Question Id : 8318968712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For increasing the range of voltmeter, connect a:

Options :

1. ✔ high value resistance in series with voltmeter

2. ✖ low value resistance in series with voltmeter

3. ✖ high value resistance in parallel with voltmeter

4. ✖ low value resistance in parallel with voltmeter

Question Number : 73 Question Id : 8318968713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A dual-trace CRO has:

Options :

1. ✖ one electron gun

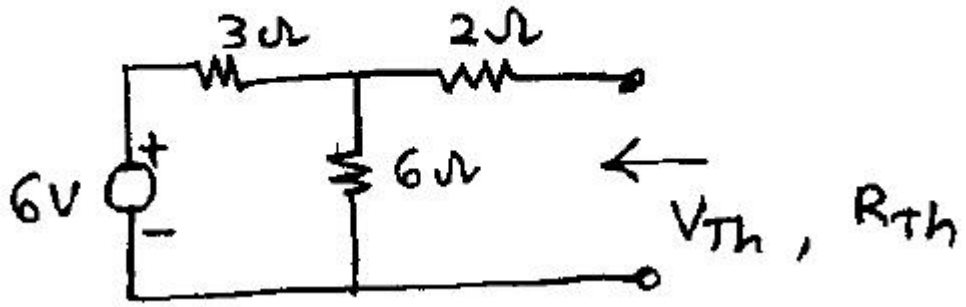
2. ✔ two electron guns

3. ✖ one electron gun and one two pole switch

4. ✖ two electron guns and one two pole switch

Question Number : 74 Question Id : 8318968714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Find V_{Th} and R_{Th} in the figure is given below.



Options :

1. ✖ 2V,4Ω

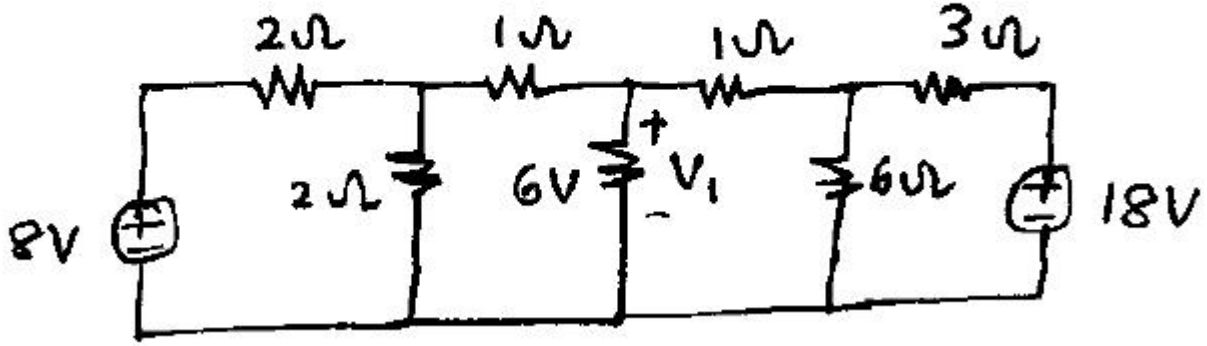
2. ✔ 4V,4 Ω

3. ✖ 6V,4 Ω

4. ✖ 2V,5 Ω

Question Number : 75 Question Id : 8318968715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the below circuit, the value of V_1 is:



Options :

1. ✔ 6 V

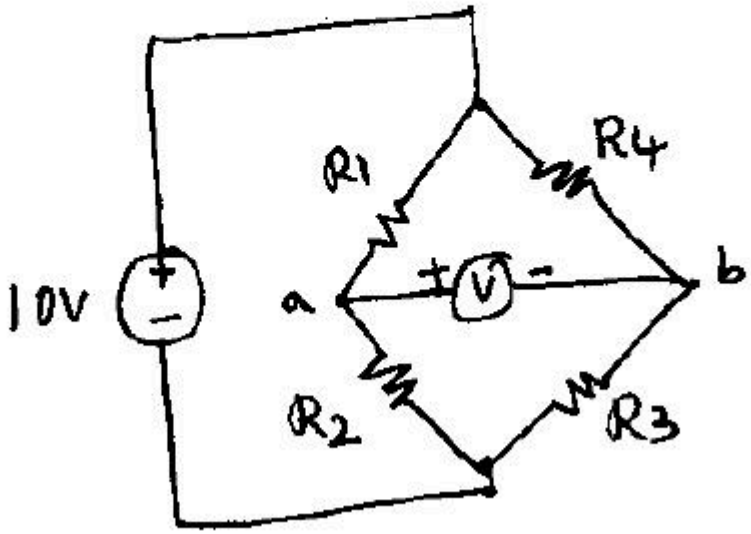
2. ✖ 7V

3. ✖ 8V

4. ✖ 10V

Question Number : 76 Question Id : 8318968716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $R_1 = R_2 = R$ and $R_3 = 1.1R_4$ in the bridge circuit shown in figure, then the reading in the ideal voltmeter connected between a and b is:



Options :

1. 0.238 V ✖

2. 0.138 V ✖

3. -0.238 V ✔

4. ✖ 1 V

Question Number : 77 Question Id : 8318968717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The energy required to charge a 10μF capacitor to 100V is:

Options :

1. ✖ 0.10 J

2. ✔ 0.05 J

3. ✖ $5x10^{-9}$ J

4. ✖ $10x10^{-9}$ J

Question Number : 78 Question Id : 8318968718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A 100 Ω, 1 W resistor and a 800 Ω, 2 W resistor are connected in series. The maximum DC voltage that can be applied continuously to the series circuit without exceeding the power limit of any of the resistors is:

Options :

1. ✖ 90 V

2. ✖ 50 V

3. ✔ 45 V

4. ✖ 40 V

Question Number : 79 Question Id : 8318968719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A piezoelectric type accelerator has a sensitivity of 100 mV/g. The transducer is subjected to a constant acceleration of 5 g. The steady state output of the transducer will be:

Options :

1. ✖ Zero

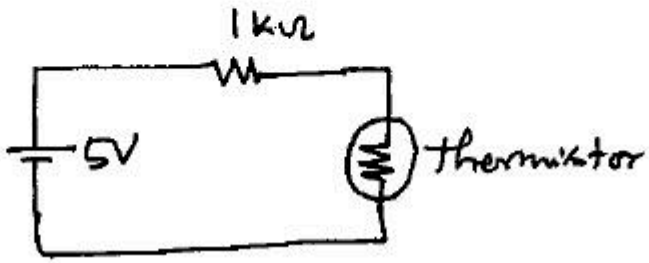
2. ✖ 100 mV

3. ✔ 0.5 V

4. ✖ 5 V

Question Number : 80 Question Id : 8318968720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A thermistor has a resistance of 10kΩ at 25° C and 1kΩ at 100° C. The range of operation is 0° C to 150° C. The excitation voltage is 5 V and a series resistor of 1 kw is connected to the thermistor. The power dissipated in the thermistor is



Options :

1. ✖ 4.0 mW

2. ✖ 4.7 mW

3. ✖ 5.4 mW

4. ✔ 6.1 mW

Question Number : 81 Question Id : 8318968721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following logics possesses highest noise immunity?

Options :

1. ✖ DTL

2. ✔ HTL

3. ✖ ECL

TTL

4. ✖

Question Number : 82 Question Id : 8318968722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What decides the bit size of 8085 up?

Options :

Data bus

1. ✖

Address bus

2. ✖

Control bus

3. ✖

ALU

4. ✔

Question Number : 83 Question Id : 8318968723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the maximum addressing capacity of 8085 microprocessor?

Options :

1. ✔ 64 KB

2. ✖ 32 KB

3. ✖ 16 KB

4. ✖ 8 KB

Question Number : 84 Question Id : 8318968724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The number of hardware interrupt (which require an external signal to interrupt) present in an 8085 microprocessor are?

Options :

1. ✖ 1

2. ✖ 4

3. ✔ 5

4. ✖ 13

Question Number : 85 Question Id : 8318968725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the vector address of RST 6.5 interrupt?

Options :

1. ✖ 002CH

2. ✔ 0034H

3. ✖ 0038H

4. ✖ 003CH

Question Number : 86 Question Id : 8318968726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

How many special function registers are there in 8051 microcontroller

Options :

1. ✖ 10

2. ✔ 20

3. ✖ 30

4. ✖ 40

Question Number : 87 Question Id : 8318968727 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 : 88 Question Id : 8318968728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following controller produces zero offset?

Options :

1. ✖ Proportional

2. ✖ Derivative

3. ✔ Integral

4. ✖ Proportional - Derivative

Question Number : 89 Question Id : 8318968729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The maximum phase shift that can be provided by a lead compensator with transfer function $G(s) = \frac{1+6s}{1+2s}$ is

Options :

1. ✖ 15°

2. ✔ 30°

3. ✖ 45°

4. ✖ 60°

Question Number : 90 Question Id : 8318968730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the characteristic equation of a closed-loop system is $s^2 + 2s + 2 = 0$, then the system is:

Options :

1. ✖ overdamped

2. ✖ critically damped

3. ✔ underdamped

4. ✖ un-damped

Question Number : 91 Question Id : 8318968731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Bode plot of the transfer function G(s) = 5 is :

Options :

1. ✖ constant magnitude and constant phase shift angle

2. ✖ -20dB/decade and constant phase shift

3. ✔ +20dB/decade and constant phase shift of $\pi/2$

4. ✖ zero magnitude and phase shift

Question Number : 92 Question Id : 8318968732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The type denotes the number of:

Options :

1. ✖ Poles of infinity

2. ✔ Poles of origin

3. ✖ Zeros of infinity

4. ✖ Zeros of origin

Question Number : 93 Question Id : 8318968733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In majority of instruments damping is provided by :

Options :

1. ✖ Fluid friction

2. ✖ Spring

3. ✔ Eddy currents

4. ✖ Counter weights

Question Number : 94 Question Id : 8318968734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What determines the light intensity in a CRT?

Options :

1. ✖ Voltage

2. ✖ Current

3. ✖ Screen

4. ✔ Momentum of electrons

Question Number : 95 Question Id : 8318968735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

An ideal op-amp has CMRR:

Options :

1. ✖ Unity

2. ✖ -1

3. ✔ Infinity

4. ✖ Zero

Question Number : 96 Question Id : 8318968736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is the best method for determining the stability and transient response?

Options :

1. ✔ Root locus

2. ✖ Bode plot

3. ✖ Nyquist plot

Polar plots

4. ✖

Question Number : 97 Question Id : 8318968737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A 10μF capacitance charged to 10V has a stored charge equal to:

Options :

1. ✖ 10μC

2. ✔ 100μC

3. ✖ 200μC

4. ✖ 100C

Question Number : 98 Question Id : 8318968738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The internal resistance of armature should ideally be:

Options :

1. ✔ Zero

2. ✖ Very large

3. ✖ Very small

4. ✖ Infinite

Question Number : 99 Question Id : 8318968739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Hot wire anemometer is used to measure:

Options :

1. ✖ Pressure in gases

2. ✖ Liquid discharges

3. ✔ Gas velocities

4. ✖ Wind velocities

Question Number : 100 Question Id : 8318968740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The electrical output down a thermocouple circuit is detected by using:

Options :

1. ✖ Wheatstone bridge

2. ✔ Voltage balancing circuit

3. ✖ Current sensitive device

4. ✖ Current balancing circuit

Question Number : 101 Question Id : 8318968741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Load cells are used for measurement of :

Options :

1. ✖ Strain

2. ✖ Stress

3. ✖ Velocity

4. ✔ Weight

Question Number : 102 Question Id : 8318968742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A dead weight tester is used for:

Options :

1. ✔ Calibrating pressure gauges

2. ✖ Testing the Magnitude of given weight

3. ✖ Providing high pressures

4. ✖ Measurement of Load

Question Number : 103 Question Id : 8318968743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which instrument has the manual Null balance operation?

Options :

1. ✔ Optical pyrometer

2. ✖ Resistance Thermometer

3. ✖ Glass Thermometer

4. ✖ Thermistor

Question Number : 104 Question Id : 8318968744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Flapper nozzle is used un following controller?

Options :

1. ✖ Hydraulic

2. ✖ Electric

3. ✔ Pneumatic

4. ✖ Electronic

Question Number : 105 Question Id : 8318968745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The most common pneumatic signal standard for industrial process instruments is:

Options :

1. ✖ (0-20)psi

2. ✔ (3-15)psi

3. ✖ (4-20)psi

4. ✖ (0-10)psi

Question Number : 106 Question Id : 8318968746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Cavitation in a control valve is caused by:

Options :

1. ✖ Process noise

2. ✖ Vibration in pipe

3. ✖ The Von karman effect

4. ✔ Pressure recovery

Question Number : 107 Question Id : 8318968747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Photo conductive cells are made by:

Options :

1. ✔ Lead sulphide

2. ✖ Tin sulphide

3. ✖ Zinc sulphide

4. ✖ Magnesium sulphide

Question Number : 108 Question Id : 8318968748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A system defined by the difference equation $y(n) = x(-n)$ is:

Options :

1. ✖ casual but not stable

2. ✔ non-casual but stable

3. ✖ casual as well as stable

4. ✖ non-casual as well as not stable

Question Number : 109 Question Id : 8318968749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A linear discrete time system has the characteristics equation, $z^3 - 0.81z = 0$, the system is:

Options :

1. stable ✔

2. marginally stable ✖

3. unstable ✖

4. stability cannot be assessed from the given information ✖

Question Number : 110 Question Id : 8318968750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Kirchhoff's current law is valid for:

Options :

1. DC circuit only ✖

2. ✖ AC circuit only

3. ✔ Both DC and AC circuits

4. ✖ Sinusoidal source only

Question Number : 111 Question Id : 8318968751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 1 & -1 \\ 2 & 3 \end{pmatrix}$ is a 2×2 matrix, then the eigenvalues of the matrix $2A^2 - 4A + 5I$ are _____, where I is the 2×2 unit matrix.

Options :

1. ✖ $2 \pm i$

2. ✔ $3 \pm 4i$

3. ✖ $3 \pm 2i$

4. ✖ $-3 \pm i$

Question Number : 112 Question Id : 8318968752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If (a, b, c) is the unique solution of the system of linear equations

$x + y + z = 2, 2x + y - z = 3, 3 + 2y + z = 4,$

then $b^2 + c^2 =$ _____

Options :

1. ✖ 5

2. ✖ 15

3. ✔ 17

4. ✖ 20

Question Number : 113 Question Id : 8318968753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Let $f(x) = x^3 - \frac{9}{2}x^2 + 6x - 2$ be a function defined on the closed interval [0,3]. Then, the global maximum value of $f(x)$ is _____

Options :

1. ✖ 4.5

2. ✖ 0.5

3. ✔ 2.5

4. ✖ 3.0

Question Number : 114 Question Id : 8318968754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The directional derivative of $f(x, y, z) = xyz$ at the point (1,2,3) in the direction of the vector $2\hat{\imath} + \hat{\jmath} - 2\hat{k}$ is _____

Options :

1. ✖ $\frac{5}{3}$

2. ✖ $\frac{-5}{3}$

3. ✔ $\frac{11}{3}$

4. ✖ $\frac{19}{3}$

Question Number : 115 Question Id : 8318968755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If C is the boundary of the region enclosed by the curves $y = \sqrt{x}$ and $y = x^2$, then the value of the line integral

$\int_C (3x^2 - 8y^2)dx + (4y - 6xy)dy$ is _____

Options :

1. ✖ $\frac{7}{2}$

2. ✔ $\frac{3}{2}$

3. ✖ $\frac{3}{10}$

4. ✖ $\frac{7}{10}$

Question Number : 116 Question Id : 8318968756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The particular integral of the differential equation

$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = e^{3x}$ is _____

Options :

1. ✖ e^{3x}

2. ✖ $\frac{xe^{3x}}{2}$

3. ✖ xe^{3x}

4. ✔ $\frac{x^2 e^{3x}}{2}$

Question Number : 117 Question Id : 8318968757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The value of the integral $\int_C \frac{6z-5}{z^2+4z+5} dz$, where C is the circle $|z| = 1$, is _____

Options :

1. ✔ 0

2. ✖ $2\pi i$

3. ✖ π

4. ✖ $\frac{i\pi}{2}$

Question Number : 118 Question Id : 8318968758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If X is a continuous random variable with the probability density function $f(x) = \begin{cases} K(1-x^3), & \text{if } 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$

Then, the value of K is _____

Options :

1. ✖ $\frac{3}{4}$

2. ✔ $\frac{4}{3}$

3. ✖ $\frac{1}{3}$

4. ✖ 3

Question Number : 119 Question Id : 8318968759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A machine produces 0, 1 or 2 defective items in a day with probabilities of $\frac{1}{4}, \frac{1}{2}, \frac{1}{4}$, respectively. Then, the standard deviation of the number of defective items produced by the machine in a day, is

_____

Options :

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{1}{\sqrt{2}}$

3. ✖ $\frac{1}{4}$

4. ✖ 1

Question Number : 120 Question Id : 8318968760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Newton-Raphson method is used to find the root of the equation $f(x) = e^{-x} - x$. If the initial guess for the root is 0, then the estimate of the root after first iteration is _____

Options :

1. ✖ 0.56

2. ✖ -0.50

3. ✔ 0.50

4. ✖ -0.56