

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.

| | |
|------------------------------------------------|-------------------------------------------------|
| Question Paper Name : | Biomedical Engineering 31st May 2023 Shift 2 |
| Subject Name : | Biomedical Engineering |
| Creation Date : | 2023-05-31 16:35:22 |
| Duration : | 120 |
| Total Marks : | 120 |
| Display Marks: | No |
| Share Answer Key With Delivery Engine : | Yes |
| Actual Answer Key : | Yes |
| Calculator : | None |
| Magnifying Glass Required? : | No |
| Ruler Required? : | No |
| Eraser Required? : | No |
| Scratch Pad Required? : | No |
| Rough Sketch/Notepad Required? : | No |
| Protractor Required? : | No |
| Show Watermark on Console? : | Yes |
| Highlighter : | No |
| Auto Save on Console? | Yes |
| Change Font Color : | No |
| Change Background Color : | No |
| Change Theme : | No |

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|----------------------------|----|
| Help Button : | No |
| Show Reports : | No |
| Show Progress Bar : | No |

Biomedical Engineering

| | |
|--------------------------------------|-----------|
| Group Number : | 1 |
| Group Id : | 28393672 |
| Group Maximum Duration : | 0 |
| Group Minimum Duration : | 120 |
| Show Attended Group? : | No |
| Edit Attended Group? : | No |
| Break time : | 0 |
| Group Marks : | 120 |
| Is this Group for Examiner? : | No |
| Examiner permission : | Cant View |
| Show Progress Bar? : | No |

Mathematics

| | |
|---------------------------------------------------------------------|-----------|
| Section Id : | 283936193 |
| Section Number : | 1 |
| Section type : | Online |
| Mandatory or Optional : | Mandatory |
| Number of Questions : | 10 |
| Number of Questions to be attempted : | 10 |
| Section Marks : | 10 |
| Enable Mark as Answered Mark for Review and Clear Response : | Yes |
| Maximum Instruction Time : | 0 |

Sub-Section Number : 1
Sub-Section Id : 283936193
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 1 Question Id : 28393610001 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An eigenvector of the matrix $A = \begin{bmatrix} 1 & 2 \\ 0 & 2 \end{bmatrix}$ is in the form $\begin{bmatrix} 1 \\ k_1 \end{bmatrix}$, ($k_1 \neq 0$), then $k_1 =$

Options :

1. ✓ $\frac{1}{2}$

2. ✗ $\frac{1}{3}$

3. ✗ $\frac{1}{4}$

4. ✗ $\frac{1}{5}$

Question Number : 2 Question Id : 28393610002 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If 1, 2, 3 are the eigenvalues of a square matrix A , then the eigenvalues of $3A^3 - 6A + 2I$ are

Options :

1. ✘ -1, 14, 9

2. ✘ -1, 4, 65

3. ✔ -1, 14, 65

4. ✘ 1, 14, 65

Question Number : 3 Question Id : 28393610003 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^a \int_0^{\sqrt{a^2-y^2}} \sqrt{a^2-x^2-y^2} dx dy$ is

Options :

1. ✘ $\frac{\pi}{3} a^3$

2. ✘ $\frac{\pi}{4} a^3$

3. ✘ $\frac{\pi}{5} a^3$

4. ✔ $\frac{\pi}{6} a^3$

Question Number : 4 Question Id : 28393610004 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The value of $\int_C (x^2 + xy)dx + (x^2 + y^2)dy$, where C is the square formed by the lines

$x = \pm 1, y = \pm 1$, is

Options :

1. ✘ -1

2. ✔ 0

3. ✘ 1

4. ✘ 2

Question Number : 5 Question Id : 28393610005 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The residue of the function $f(z) = \frac{z}{(z-1)(z-2)^2}$ at the point which lie inside the circle

$|z-2| = \frac{1}{2}$ is

Options :

1. ✘ 2

2. ✘ 1

3. ✔ -1

4. ✘ -2

Question Number : 6 Question Id : 28393610006 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Let K be the standard error of a sample of size n taken from an infinite population. If the sample size is increased to $9n$, then the standard error of this new sample is

Options :

1. ✔ $K/3$

2. ✘ $3K$

3. ✘ $K+3$

4. ✘ $K-3$

Question Number : 7 Question Id : 28393610007 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The coefficient of the correlation between the two variables X and Y is 0.48 and the covariance is 48 also the variance of Y is 64 , then the standard deviation of X is

Options :

1. ✘ 11.5

2. ✔ 12.5

3. ✘ 13.5

4. ✘ 14.5

Question Number : 8 Question Id : 28393610008 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Particular integral of $(D^3 - 3D^2 + 3D - 1)y = x^2 e^x$, where $D^n = \frac{d^n}{dx^n}$, is _____

Options :

1. ✔ $\frac{x^5 e^x}{60}$

2. ✘ $\frac{x^4 e^x}{12}$

3. ✘ $\frac{x^3 e^x}{3}$

4. ✘ $\frac{x^2 e^x}{2}$

Question Number : 9 Question Id : 28393610009 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The solution of $\frac{\partial u}{\partial x} = 2 \frac{\partial u}{\partial t} + u$ where $u(x, 0) = 6e^{-3x}$ is

Options :

1. ✘ $6e^{-3x-2t}$

2. ✘ $6e^{-3x+2t}$

3. ✔ $6e^{-3x+t}$

4. ✘ $6e^{-x-t}$

Question Number : 10 Question Id : 28393610010 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Iterative formula to find the reciprocal of a given number N by Newton's method is

Options :

1. ✘ $x_{i+1} = x_i(2 + Nx_i)$

2. ✘ $x_{i+1} = x_i(N - 2x_i)$

3. ✘ $x_{i+1} = x_i(N + 2x_i)$

4. ✔ $x_{i+1} = x_i(2 - Nx_i)$

| | |
|---------------------------------------------------------------------|-----------|
| Section Id : | 283936194 |
| Section Number : | 2 |
| Section type : | Online |
| Mandatory or Optional : | Mandatory |
| Number of Questions : | 110 |
| Number of Questions to be attempted : | 110 |
| Section Marks : | 110 |
| Enable Mark as Answered Mark for Review and Clear Response : | Yes |
| Maximum Instruction Time : | 0 |
| Sub-Section Number : | 1 |
| Sub-Section Id : | 283936194 |
| Question Shuffling Allowed : | Yes |
| Is Section Default? : | null |

Question Number : 11 Question Id : 28393610011 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The nature of the voltage source to be connected to a series inductor to have a constant direct current is _____.

Options :

1. ✘ Constant voltage source
2. ✘ Linearly increasing voltage source
3. ✔ An ideal impulse
4. ✘ Exponentially increasing voltage

Question Number : 12 Question Id : 28393610012 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A practical current source is represented as _____.

Options :

1. ✘ Ideal current source in series with a resistance
2. ✘ Ideal voltage source in parallel with a resistance
3. ✔ Ideal current source in parallel with a resistance
4. ✘ Dependent voltage source in parallel with resistance

Question Number : 13 Question Id : 28393610013 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If a capacitor is charged by a symmetrical square wave current source, then the steady state voltage across the capacitor will be a _____.

Options :

1. ✘ Square wave
2. ✔ Triangular wave
3. ✘ Step function

4. ✘ Impulse function

Question Number : 14 Question Id : 28393610014 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two light bulbs of 40W and 60W rating are connected in series across the mains, then _____.

Options :

1. ✘ The bulbs consume 100W together
2. ✘ The bulb consumes 50W together
3. ✘ The 60W bulb glows brighter
4. ✔ The 40W bulb glows brighter

Question Number : 15 Question Id : 28393610015 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The resistances between the terminals A and B, B and C, A and C of a star network are 6Ω , 11Ω
and 9Ω respectively. Find the resistances R_A , R_B , R_C .

Options :

1. ✘ $R_A = 4\Omega$, $R_B = 2\Omega$, $R_C = 5\Omega$
2. ✔ $R_A = 2\Omega$, $R_B = 4\Omega$, $R_C = 7\Omega$

3. ✘ $R_A = 3\Omega, R_B = 3\Omega, R_C = 4\Omega$

4. ✘ $R_A = 5\Omega, R_B = 1\Omega, R_C = 10\Omega$

Question Number : 16 Question Id : 28393610016 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A network contains only independent current sources and resistors. If the values of all resistors are doubled, the values of the node voltages _____.

Options :

1. ✘ Will become half

2. ✘ Will remain unchanged

3. ✔ Will become double

4. ✘ Cannot be determined unless the circuit configuration and the values of the resistors are known

Question Number : 17 Question Id : 28393610017 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The RMS value of a half-wave rectified symmetrical square wave current of 2A is _____

Options :

1. ✔ $\sqrt{2}$ A

2. ✘ 1 A

3. ✘ $\frac{1}{\sqrt{2}}$ A

4. ✘ $\sqrt{3}$ A

Question Number : 18 Question Id : 28393610018 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Currents i_1 , i_2 and i_3 meet at a junction (node) in a circuit. All currents are marked as entering the node. If $i_1 = -6\sin(\omega t)$ mA and $i_2 = 8 \cos(\omega t)$ mA, then i_3 will be _____.

Options :

1. ✘ $10 \cos(\omega t + 36.87)$ mA

2. ✘ $14 \cos(\omega t + 36.87)$ mA

3. ✘ $-14 \sin(\omega t + 36.87)$ mA

4. ✔ $-10 \cos(\omega t + 36.87)$ mA

Question Number : 19 Question Id : 28393610019 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a series RLC circuit at resonance, the magnitude of the voltage developed across the capacitor _____.

Options :

1. ✘ Is always zero
2. ✘ Can never be greater than the input voltage
3. ✔ Can be greater than the input voltage and is 90° out of phase with the input voltage
4. ✘ Can be greater than the input voltage and is in phase with the input voltage

Question Number : 20 Question Id : 28393610020 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An RLC series circuit, has Q-factor given by _____ where f_1 and f_2 are half power frequencies and f_0 is the resonant frequency.

Options :

1. ✘ $\frac{f_1 + f_2}{2f_0}$

2. ✘ $\frac{f_1 - f_0}{f_2 - f_0}$

3. ✔ $\frac{f_0}{f_1 - f_2}$

4. ✘ $\frac{f_2 - f_1}{f_0}$

Question Number : 21 Question Id : 28393610021 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The optimal Wiener filter can be designed if the signal is statistically _____ and noise is a stationary random process that is statistically _____ the signal

Options :

1. ✘ stationary, dependent on
2. ✘ non-stationary, independent of
3. ✘ non-stationary, dependent on
4. ✔ stationary, independent of

Question Number : 22 Question Id : 28393610022 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Real-time processing speeds can be achieved for QRS detection by using digital filters with only _____ coefficients.

Options :

1. ✔ integer
2. ✘ floating point
3. ✘ positive
- 4.

✘ negative

Question Number : 23 Question Id : 28393610023 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

_____ can be employed to detect the spike-and-wave complex in the EEG signal.

Options :

1. ✘ HPF
2. ✘ Wiener filter
3. ✔ Template matching
4. ✘ Fourier Filter

Question Number : 24 Question Id : 28393610024 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The sleep pattern of a subject is analyzed through _____.

Options :

1. ✘ Event detection
2. ✘ Adaptive technique
3. ✔ Morkov model

4. ✘ LMS algorithm

Question Number : 25 Question Id : 28393610025 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Temporal MA filtering is suitable only when _____.

Options :

1. ✘ the noise is stationary random process that is statistically independent of the signal
2. ✘ the noise is stationary random process that is uncorrelated with the signal
the signal is of relatively low frequency and is statistically stationary at least over the
3. ✔ moving window duration
4. ✘ on-line, real-time filtering is not required

Question Number : 26 Question Id : 28393610026 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

While employing Pan-Tompkins algorithm for QRS detection, the sequence of tasks are
_____.

Options :

1. ✘ high pass filtering, squaring, integrating and moving-window averaging
2. ✘ low pass filtering, squaring, differentiating and moving-window integration

3. ✘ high pass filtering, squaring, differentiating and moving-window integration

4. ✔ bandpass filtering, differentiating, squaring and moving-window integration

Question Number : 27 Question Id : 28393610027 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

_____ cannot be the Fourier series expansion of a periodic signal.

Options :

1. ✘ $x(t) = 2 \cos(t) + 3 \cos(3t)$

2. ✔ $x(t) = 2 \cos(\pi t) + 7 \cos(t)$

3. ✘ $x(t) = \cos(t) + 0.5$

4. ✘ $x(t) = 2 \cos(1.5\pi t) + \sin(3.5\pi t)$

Question Number : 28 Question Id : 28393610028 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $x(t)$ is the input and $4x(t-2)$ is the output of a linear time-invariant system, its transfer function is

_____.

Options :

1. ✘ $4e^{j4\pi f}$

2. ✘ $2e^{j8\pi f}$

3. ✔ $4e^{-j4\pi f}$

4. ✘ $2e^{-j8\pi f}$

Question Number : 29 Question Id : 28393610029 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The z-transform of a system is $H(z) = \frac{z}{z-0.2}$. If ROC is $|z| = 0.2$, then the impulse response of the

system is

Options :

1. ✘ $(0.2)^n u[n]$

2. ✘ $(0.2)^n u[-n-1]$

3. ✘ $-(0.2)^n u[n]$

4. ✔ $-(0.2)^n u[-n-1]$

Question Number : 30 Question Id : 28393610030 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The impulse response of a linear time-invariant system is $h[n] = u[n + 3] + u[n-2] - 2u[n - 7]$ where $u[n]$ is the unit step sequence. The given system is _____.

Options :

1. ✘ stable and causal
2. ✔ stable but not causal
3. ✘ causal but not stable
4. ✘ unstable and not causal

Question Number : 31 Question Id : 28393610031 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The function $f(t)$, $-\infty < t < \infty$, for which a Fourier series cannot be defined is _____.

Options :

1. ✘ $3 \sin (25 t)$
2. ✘ $4 \cos (20 t + 3) + 2 \sin (710 t)$
3. ✔ $\exp(-|t|) \sin (25 t)$
4. ✘ 1

Question Number : 32 Question Id : 28393610032 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the discrete time sequence $[1, 0, 2, 3]$, the 4-point DFT is _____.

Options :

1. ✘ $[2, 2+2j, 6, 2-2j]$
2. ✘ $[6, 1-3j, 0, 1+3j]$
3. ✔ $[6, -1+3j, 0, -1-3j]$
4. ✘ $[0, -2+2j, 2, -2-2j]$

Question Number : 33 Question Id : 28393610033 Question Type : MCQ Option Shuffling : Yes

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

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When two discrete time systems with impulse responses $\delta[n-1]$ and $\delta[n-2]$ are connected in cascade, the overall impulse response is _____.

Options :

1. ✔ $\delta[n-3]$
2. ✘ $\delta[n-1] + \delta[n-2]$
3. ✘ $\delta[n-1]\delta[n-2]$
4. ✘ $\delta[n-2]$

Question Number : 34 Question Id : 28393610034 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The operations to be performed to realize linear phase IIR filter are as follows:

- (i) Passing $x(-n)$ through a digital filter $H(z)$
- (ii) Time reversing the output of $H(z)$
- (iii) Time reversal of the input signal $x(n)$
- (iv) Passing the result through $H(z)$

The correct order of these operations is _____.

Options :

- 1. ✘ (i), (ii), (iii), (iv)
- 2. ✔ (iii), (i), (ii), (iv)
- 3. ✘ (ii), (iii), (iv), (i)
- 4. ✘ (i), (iii), (iv), (ii)

Question Number : 35 Question Id : 28393610035 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

FIR filters are _____ and _____.

Options :

- 1. ✘ Recursive, do not use feedback
- 2. ✘ Recursive, use feedback

3. ✓ Non-recursive, do not use feedback

4. ✘ Non-recursive, use feedback

Question Number : 36 Question Id : 28393610036 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Arrange common base (CB), common emitter (CE) and common collector (CC) in the decreasing order of their input resistance.

Options :

1. ✘ CB, CE, CC

2. ✓ CC, CE, CB

3. ✘ CC, CB, CE

4. ✘ CE, CC, CB

Question Number : 37 Question Id : 28393610037 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Negative feedback in an amplifier

Options :

1. ✘ Reduces bandwidth

2. ✘ Increases frequency

3. ✔ Reduces gain

4. ✘ Increases noise

Question Number : 38 Question Id : 28393610038 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In FET, as V_{GS} is changed from zero to increasing reverse bias, the value of g_m is

Options :

1. ✔ Decreased

2. ✘ Increased

3. ✘ Constant

4. ✘ Zero

Question Number : 39 Question Id : 28393610039 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Mobility of an electron in a conductor is expressed in terms of.....

Options :

1. ✔ $\text{cm}^2/\text{v-s}$

2. ✘ cm/v-s

3. ✘ cm²/v

4. ✘ cm/s

Question Number : 40 Question Id : 28393610040 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If maximum ac power delivered to an ideal class A series fed amplifier is 1Watt, then maximum transistor dissipation capability is..... Watt.

Options :

1. ✘ 1

2. ✔ 2

3. ✘ 3

4. ✘ 0

Question Number : 41 Question Id : 28393610041 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The bandwidth of an RF tuned amplifier is dependent on Q-factor of

Options :

1. ✓ Tuned output circuit
2. ✗ Tuned input circuit
3. ✗ Operating point
4. ✗ Output, input circuits and quiescent point

Question Number : 42 Question Id : 28393610042 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The number of 4x1 and 2x1 multiplexers required to construct a 32x1 multiplexer is

Options :

1. ✗ 8, 0
2. ✓ 12, 1
3. ✗ 8, 2
4. ✗ 12, 2

Question Number : 43 Question Id : 28393610043 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A 4-bit ripple counter and a 4-bit synchronous counter are constructed using flip-flops with a propagation delay of 10 ns each. If the worst-case delay in the ripple counter and the synchronous counter be R and S respectively, then

Options :

1. ✓ R = 40 ns and S = 10 ns
2. ✗ R = 10 ns and S = 40 ns
3. ✗ R = 10 ns and S = 30 ns
4. ✗ R = 30 ns and S = 10 ns

Question Number : 44 Question Id : 28393610044 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

What is the range of signed decimal numbers that can be represented by 6-bit 1's complement number?

Options :

1. ✗ -32 to +31
2. ✗ -63 to +63
3. ✓ -31 to +31
4. ✗ -64 to +63

Question Number : 45 Question Id : 28393610045 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An amplifier has an open loop voltage gain of -500. This gain is reduced to -100 when negative feedback is applied. The reverse transmission factor β of the system is:

Options :

1. ✘ -0.008

2. ✔ -0.025

3. ✘ 0.1

4. ✘ -0.2

Question Number : 46 Question Id : 28393610046 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A single-chip data acquisition system incorporates

Options :

1. ✘ An ADC and a multiplexer

2. ✘ An ADC and a DAC

3. ✘ A DAC and a demultiplexer

4. ✔ An ADC and a demultiplexer

Question Number : 47 Question Id : 28393610047 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The output of a 2-bit comparator is logic 1 whenever 2-bit input A is greater than the 2-bit input B.

The number of combinations for which the output is logic 1 is _____.

Options :

1. ✘ 4

2. ✔ 6

3. ✘ 8

4. ✘ 10

Question Number : 48 Question Id : 28393610048 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A mod 8 counter is also called.....

Options :

1. ✔ Divided by 8 counters

2. ✘ Divided by 16 counters

3. ✘ Divided by 4 counters

4. ✘ Divided by 32 counters

Question Number : 49 Question Id : 28393610049 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Registers in memory generally use flip flops.

Options :

1. ✘ RS flip flop

2. ✘ T flip flop

3. ✘ JK flip flop

4. ✔ D flipflop

Question Number : 50 Question Id : 28393610050 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a microprocessor, the service routine for a certain interrupt starts from a fixed memory location which cannot be externally set, but the interrupt can be delayed or rejected. Such an interrupt is

_____.

Options :

1. ✘ maskable and non-vectorized

2. ✘ non-maskable and vectored

3. ✓ maskable and vectored

4. ✗ non-maskable and non-vectored

Question Number : 51 Question Id : 28393610051 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Each cell of an SRAM contains.....

Options :

1. ✓ 6 MOS transistors

2. ✗ 4MOS transistors and 2 capacitors

3. ✗ XOR gates and shift registers

4. ✗ 1 flip flop

Question Number : 52 Question Id : 28393610052 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The width of data bus and address bus of a 4Kx16 bit memory chip is.....

Options :

1. ✗ 4, 16

2. ✗ 16, 4

3. ✓ 16, 12

4. ✗ 12, 16

Question Number : 53 Question Id : 28393610053 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which one of the following is not true about program counter?

Options :

1. ✗ It holds the address of the next instruction
2. ✗ Its value is stacked when there is a subroutine
3. ✓ It is an 8-bit register
4. ✗ Its value is stacked when there is an interrupt routine

Question Number : 54 Question Id : 28393610054 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following interrupts are maskable and non-vectored?

Options :

1. ✗ RST5.5

2.

✘ RST6.5

3. ✘ TRAP

4. ✔ INTR

Question Number : 55 Question Id : 28393610055 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is not on-chip of a microcontroller?

Options :

1. ✔ DMA

2. ✘ UART

3. ✘ Memory

4. ✘ IO ports

Question Number : 56 Question Id : 28393610056 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The closed loop transfer function of a system is given by $K/(s+5)(s^2+2)$. The system is

_____.

Options :

1. ✘ stable
2. ✘ unstable
3. ✔ marginally stable
4. ✘ asymptotically stable.

Question Number : 57 Question Id : 28393610057 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The open loop transfer function of a system is given by $1/(1+s)(1+2s)$. The polar plot of this system _____.

Options :

1. ✘ crosses the negative real axis and does not cross the imaginary axis
2. ✔ crosses the imaginary axis and does not cross the real axis
3. ✘ crosses both the imaginary and real axes
4. ✘ does not cross both the real and imaginary axes

Question Number : 58 Question Id : 28393610058 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which errors are caused by inherent short comings of the instrument and component used?

Options :

1. ✘ Gross errors
2. ✔ Systemic errors
3. ✘ Random errors
4. ✘ Negligent errors

Question Number : 59 Question Id : 28393610059 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a Permanent Magnet Moving Coil the angular deflection of the coil is proportional to

Options :

1. ✔ Current through the coil
2. ✘ Deflecting torque
3. ✘ Angle between the plane of the coil and direction of field
4. ✘ Static sensitivity of the coil

Question Number : 60 Question Id : 28393610060 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which is the device that can measure self inductance, self capacitance and self resistance?

Options :

1. ✘ Galvanometer
2. ✘ Anderson's bridge
3. ✘ Maxwell's bridge
4. ✔ Q-meter

Question Number : 61 Question Id : 28393610061 Question Type : MCQ Option Shuffling : Yes

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

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In voltage pacemaker the current in the circuit is determined by the available _____.

Options :

1. ✘ Contact impedance at the site
2. ✘ Resistance of the tissue
3. ✔ Voltage during the entire duration of the impulse
4. ✘ Voltage during the rising phase of the impulse

Question Number : 62 Question Id : 28393610062 Question Type : MCQ Option Shuffling : Yes

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

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

What is the material used to make pacemaker electrodes?

Options :

1. ✘ Platinum
2. ✔ Platinum-iridium alloy
3. ✘ Silver-silver chloride
4. ✘ Silver

Question Number : 63 Question Id : 28393610063 Question Type : MCQ Option Shuffling : Yes

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

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

There is provision for automatic adjustment of stimulus intensity and gains for the various sensing channels in ____.

Options :

1. ✘ Fixed Pacemakers
2. ✘ Atrial Triggered Pacemakers
3. ✘ Demand Pacemakers
4. ✔ Dual Chamber Pacemakers

Question Number : 64 Question Id : 28393610064 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In modern biopotential amplifiers, the input impedance is atleast _____.

Options :

1. ✘ 100 M Ω
2. ✘ 1000 k Ω
3. ✔ 10 M Ω
4. ✘ 100 k Ω

Question Number : 65 Question Id : 28393610065 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The calibration signal amplitude gives an indication of correct _____ settings.

Options :

1. ✔ sensitivity
2. ✘ linearity
3. ✘ precision
4. ✘ accuracy

Question Number : 66 Question Id : 28393610066 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Advisory external defibrillators use self-adhesive electrodes because the signal acquired from
them_____.

Options :

1. ✘ More noise but allows for faster accurate analysis.
2. ✘ Allows quick calibration and has low noise
3. ✔ Has less noise and allows for faster accurate analysis.
4. ✘ Allows quick calibration and faster analysis

Question Number : 67 Question Id : 28393610067 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The most commonly used hemodialyzer:

Options :

1. ✘ parallel plate dialyzer
2. ✔ hollow fiber dialyzer
3. ✘ membrane dialyzer
- 4.

✘ bubble dialyzer

Question Number : 68 Question Id : 28393610068 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The maximum negative pressure in dialysate pressure control and measurement system of haemodialysis machine is limited by _____

Options :

1. ✘ control valve
2. ✘ fluid valve
3. ✔ relief valve
4. ✘ safety valve

Question Number : 69 Question Id : 28393610069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The velocity of blood flow is 'V' and that of ultra sound through the medium is 'C'. If an ultrasonic signal at frequency f is directed at right angles to the flow, then the Doppler shifted frequency is _____.

Options :

1. ✔ zero

2. ✘ $\left(\frac{V}{C}\right) \times f$

3. ✘ $\left(\frac{C}{V}\right) \times f$

4. ✘ $\frac{2Vf}{C}$

Question Number : 70 Question Id : 28393610070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The transformer voltage induced in A.C. excited electromagnetic blood flow meters is minimised by _____.

Options :

1. ✘ Low pass filter

2. ✘ Band pass filter

3. ✘ High pass filter

4. ✔ Phase sensitive demodulator

Question Number : 71 Question Id : 28393610071 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In the driven right leg ECG amplifier, the right leg is connected to the

Options :

1. ✘ ground
2. ✘ inverting input of the op-amp
3. ✔ common mode potential
4. ✘ non-inverting input of the op-amp

Question Number : 72 Question Id : 28393610072 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a thermocouple, the thermal energy is converted to electrical energy by _____.

Options :

1. ✘ Johnson effect
2. ✔ Seebeck effect
3. ✘ Hall effect
4. ✘ Faraday effect

Question Number : 73 Question Id : 28393610073 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The spirometer performs the physical integration of _____.

Options :

1. ✘ Air pressure at the mouth
2. ✘ Air pressure at the nose
3. ✘ Air flow at the nose
4. ✔ Air flow at the mouth

Question Number : 74 Question Id : 28393610074 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In the blood pressure measurement by auscultatory method, what is the range of the Korotkoff sounds?

Options :

1. ✘ 0 to 20 Hz
2. ✔ 20 to 100 Hz
3. ✘ 100 to 1000 Hz
4. ✘ 100 to 2000 Hz

Question Number : 75 Question Id : 28393610075 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Normal EEG frequency range is _____

Options :

1. ✘ 50-500Hz

2. ✘ 0.5-50HZ

3. ✘ 0.05-5Hz

4. ✔ 1-200Hz

Question Number : 76 Question Id : 28393610076 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In an X-ray tube, the filament and the target are enclosed in an envelope that _____.

Options :

1. ✔ Provides vacuum and support

2. ✘ Prevents cathode failure.

3. ✘ Prevents anode melt down.

4. ✘ Provides free air for cooling

Question Number : 77 Question Id : 28393610077 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Coil dialyzers are characterized by _____ resistance to blood and _____ dialysate flow rates.

Options :

1. ✘ low, high
2. ✘ low, low
3. ✘ high, low
4. ✔ high, high

Question Number : 78 Question Id : 28393610078 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In an EEG machine, _____ serves as the calibration signal.

Options :

1. ✔ 5-1000 μ V peak-to-peak rectangular wave
2. ✘ rectangular wave of 50-100 μ V peak-to-peak
3. ✘ rectangular wave of 1-500 μ V peak-to-peak
4. ✘ 5-100 μ V peak-to-peak rectangular wave

Question Number : 79 Question Id : 28393610079 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The order in which the temperature transducers exhibit non-linearity (highest to lowest):

Options :

1. ✘ Thermocouple, RTD, Thermistor
2. ✔ Thermistor, Thermocouple, RTD
3. ✘ Thermistor, RTD, Thermocouple
4. ✘ RTD, Thermocouple, Thermistor

Question Number : 80 Question Id : 28393610080 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Sensitivity of LVDT is calculated as _____.

Options :

1. ✘
$$\text{Sensitivity} = \frac{V_{\text{output}}}{V_{\text{primary}}}$$
2. ✔
$$\text{Sensitivity} = \frac{V_{\text{output}}}{\text{Core Displacement}}$$
3. ✘
$$\text{Sensitivity} = \frac{V_{\text{primary}}}{V_{\text{output}} \times \text{Core Displacement}}$$

4. ✘
$$\text{Sensitivity} = \frac{V_{\text{output}}}{V_{\text{primary}} \times \text{Core Displacement}}$$

Question Number : 81 Question Id : 28393610081 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In in-vivo oximetry, the blood is _____ and both techniques _____ and _____ can be used.

Options :

1. ✔ unhemolyzed, reflection and transmission
2. ✘ hemolysed, scattering and transmission
3. ✘ unhemolysed, scattering and transmission
4. ✘ hemolysed, transmission and reflection

Question Number : 82 Question Id : 28393610082 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Synchronised intermittent mandatory ventilation combines _____ breathing and _____ ventilation.

Options :

1. ✘ Cellular, spontaneous
2. ✘ Cellular, alveolar

3. ✓ Spontaneous, mechanical

4. ✘ Cellular, mechanical

Question Number : 83 Question Id : 28393610083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A strain gauge has _____ parts and it is _____.

Options :

1. ✘ Moving, linear

2. ✘ No moving, linear

3. ✘ Moving, non-linear

4. ✓ No moving, non-linear

Question Number : 84 Question Id : 28393610084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The bandwidth of Phonocardiography for recording of the indirect carotid, jugular and apex cardiogram pulses:

Options :

1. ✘ 30 to 1000 Hz

2. ✘ 0 to 70 Hz
3. ✔ 0.1 to 100 Hz
4. ✘ 10 to 500 Hz

Question Number : 85 Question Id : 28393610085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The amplitude of EMG signals depend upon which of the following factor?

Options :

1. ✘ Respiration
2. ✔ Position of electrode
3. ✘ Blood Resistivity
4. ✘ Ventricular Volume

Question Number : 86 Question Id : 28393610086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The stimulation of _____ is required for the membrane potential to rise to the threshold at the axon hillock.

Options :

1. ✘ pre-synaptic membrane along the dendrite and cell body
2. ✘ dendrite
3. ✘ cell body
4. ✔ post synaptic membrane along the dendrite and cell body

Question Number : 87 Question Id : 28393610087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

During an action potential propagation in an unmyelinated nerve fiber the _____ region is small relative to the fiber _____.

Options :

1. ✘ Amplitude of the activation wave, length
2. ✘ Diameter of the passive, length
3. ✔ length of the active, length
4. ✘ Diameter of the passive, diameter

Question Number : 88 Question Id : 28393610088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For gas exchange to occur, the surface area contributed by the alveoli in each normal lung is around _____ m².

Options :

1. ✓ 70

2. ✗ 30

3. ✗ 100

4. ✗ 120

Question Number : 89 Question Id : 28393610089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The peak systolic pressure in the right ventricle is _____ mm of Hg.

Options :

1. ✗ 60 – 100

2. ✗ 4 - 12

3. ✓ 15 – 30

4. ✗ < 6

Question Number : 90 Question Id : 28393610090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The autonomic nervous system does NOT regulate the

Options :

1. ✘ Digestive system
2. ✘ Circulation
3. ✔ Skeletal muscles
4. ✘ Excretory system

Question Number : 91 Question Id : 28393610091 Question Type : MCQ Option Shuffling : Yes

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

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Starling's law of the heart states that _____.

Options :

1. ✔ if the radius of the heart increases, then the muscle tension and the systolic pressure increase
2. ✘ if the radius of the heart decreases, then the muscle tension and the systolic pressure increase
3. ✘ if the radius of the heart decreases, then the muscle tension decreases and the systolic pressure increases
4. ✘ if the radius of the heart increases, then the muscle tension increases and the systolic pressure decreases

Question Number : 92 Question Id : 28393610092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The pressure-volume work loop for a weakened ventricle shifts _____ as compared to the normal ventricle.

Options :

1. ✘ to the left
2. ✔ to the right
3. ✘ down
4. ✘ up

Question Number : 93 Question Id : 28393610093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is a characterization technique used to measure Young's modulus of a biomaterial?

Options :

1. ✘ Tensile test
2. ✔ Compression test
3. ✘ Calculation from the stress-strain curve

4. ✘ Three- and four-point bend test

Question Number : 94 Question Id : 28393610094 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Collagen, with an elastic modulus of approximately _____, is _____ than elastin.

Options :

1. ✔ 1GPa, stronger
2. ✘ 0.6 MPa, less stronger
3. ✘ 1MPa, stronger
4. ✘ 100 MPa, less stronger

Question Number : 95 Question Id : 28393610095 Question Type : MCQ Option Shuffling : Yes
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In comparison to tendons, ligaments have:

Options :

1. ✘ More collagen, less elastin
2. ✔ More elastin, less collagen

3. ✘ More elastin, more collagen

4. ✘ Less elastin, less collagen

Question Number : 96 Question Id : 28393610096 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In the circulatory system, which is the correct order in which the blood flows

Options :

1. ✔ Right ventricle, Semi-lunar valve, Pulmonary artery, Lungs

2. ✘ Left ventricle, Semi-lunar valve, Pulmonary artery, Lungs

3. ✘ Right ventricle, Semi-lunar valve, Pulmonary Vein, Lungs

4. ✘ Left ventricle, Semi-lunar valve, Pulmonary Vein, Lungs

Question Number : 97 Question Id : 28393610097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Examples of viscoelastic models are _____.

Options :

1. ✘ Wind Kessel and Kelvin

2. ✘ Voigt and thick-walled hemisphere

3. ✓ Maxwell and Standard solid

4. ✘ Wind Kessel and Voigt

Question Number : 98 Question Id : 28393610098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The ratio of change in ventricular pressure to change in ventricular volume is a _____ measure of the ventricle and is called _____.

Options :

1. ✘ resistance, peripheral resistance

2. ✓ stiffness, elastance

3. ✘ stiffness, compliance

4. ✘ compliance, resistance

Question Number : 99 Question Id : 28393610099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The distance between the heel strike of one foot and the next heel strike of the foot.

Options :

1. ✘ step length

2. ✓ stride length

3. ✗ step width

4. ✗ cadence

Question Number : 100 Question Id : 28393610100 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

_____ allows forward-backward and side to side movement and do not allow rotation.

Options :

1. ✗ Hinge joint

2. ✗ Ball and Socket joint

3. ✓ Condylloid joint

4. ✗ Gliding joint

Question Number : 101 Question Id : 28393610101 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In an X-ray machine, _____ and _____ are employed for automatic exposure control.

Options :

1. ✗ Image intensifier, fluoroscopy

2. ✘ Gain control, photocell
3. ✘ Photocell, image intensifier Photo timer
4. ✔ Photocell, ionization chamber Photo timer

Question Number : 102 Question Id : 28393610102 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A-mode ultrasound device shows _____ as an x-y plot and is used to measure the displacement of the _____.

Options :

1. ✘ Echo amplitude, mitral valve
2. ✘ Echo distance, cerebral midline
3. ✔ Echo intensity, brain midline
4. ✘ Echo amplitude, interventricular septum

Question Number : 103 Question Id : 28393610103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The amplitude and the frequency of the NMR signals are used to assign _____ and _____.

Options :

1. ✘ Number of projections, orientation of the gradient
2. ✘ Orientation of the gradient, number of slices
3. ✔ Number of nuclei present, spatial location
4. ✘ Number of projections, spatial location

Question Number : 104 Question Id : 28393610104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The ratio of the area of the input phosphor to the area of output phosphor in the image intensifier is

Options :

1. ✘ phosphorescence factor
2. ✘ phosphor factor
3. ✘ phosphor number
4. ✔ brightness gain

Question Number : 105 Question Id : 28393610105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

As the active element diameter of the ultrasonic transducer increases, the beam width _____ and therefore, lateral resolution _____.

Options :

1. ✘ Increases, improves
2. ✘ Does not change, does not change
3. ✔ Decreases, improves
4. ✘ Decreases, deteriorates

Question Number : 106 Question Id : 28393610106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

NMR images that display T1 and T2 properties of the tissue provide very high contrasts between various soft tissues approaching _____ whereas it is only few percent with X-rays.

Options :

1. ✘ 1000%
2. ✘ 600%
3. ✔ 150%
4. ✘ 300%

Question Number : 107 Question Id : 28393610107 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The PET scanners constructed using a bismuth germinate detector have _____ and _____ than those with thallium-doped sodium iodide detector.

Options :

1. ✓ High resolution, high efficiency
2. ✗ low resolution, high efficiency
3. ✗ high resolution, low efficiency
4. ✗ Low resolution, low efficiency

Question Number : 108 Question Id : 28393610108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The factors playing an important role in the biological interaction of tissue and ultrasound waves are _____.

Options :

1. ✗ Frequency, wavelength and intensity
2. ✗ Time, frequency and duty cycle
3. ✗ Frequency, time and wavelength
4. ✓ Frequency, irradiation time, beam intensity and duty cycle

Question Number : 109 Question Id : 28393610109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The filters used to reduce the unwanted X-rays exposure to the patient are made of :

Options :

1. ✓ aluminium, copper

2. ✗ steel, lead

3. ✗ copper, aluminium

4. ✗ lead, copper

Question Number : 110 Question Id : 28393610110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Rad is a measure of _____ energy while Rem is a measure of _____.

Options :

1. ✗ incident, absorbed energy

2. ✗ absorbed, incident energy

3. ✗ biological damage caused, incident energy

4.

✓ absorbed, biological damage caused

Question Number : 111 Question Id : 28393610111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

SPECT cameras detect only radio-nuclides that produce a _____ of single photons and these radio-nuclides _____ an on-site cyclotron.

Options :

1. ✘ single emission, do not require
2. ✘ cascaded emission, require
3. ✓ cascaded emission, do not require
4. ✘ single emission, require

Question Number : 112 Question Id : 28393610112 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The presence of noise in a medical image will generally _____.

Options :

1. ✘ produce artifacts
2. ✘ produce blurring

3. ✓ reduce visibility of low contrast objects

4. ✘ produce image distortion

Question Number : 113 Question Id : 28393610113 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Polymeric biomaterials are preferred due to:

Options :

1. ✘ hardness and stability

2. ✓ flexibility and stability

3. ✘ wear resistance applications

4. ✘ Load bearing applications

Question Number : 114 Question Id : 28393610114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The material used for neural stimulation devices is _____.

Options :

1. ✓ Platinum

2. ✘ Stainless steel

3. ✘ Gold

4. ✘ Silver

Question Number : 115 Question Id : 28393610115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A material used for a blood bag should have :

Options :

1. ✘ flexibility and optimal porosity
2. ✘ optimal porosity and relative inertness
3. ✘ reasonable brittleness and relative inertness
4. ✔ chemical stability and flexibility

Question Number : 116 Question Id : 28393610116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Alumina and Zirconia are examples of _____ bioceramics.

Options :

1. ✘ porous to allow tissue in growth

2.

✘ bioactive

3. ✘ resorbable

4. ✔ bioinert

Question Number : 117 Question Id : 28393610117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The biomaterials are expected to mimic the functions of

Options :

1. ✔ Cell Organelles

2. ✘ Transmembrane proteins

3. ✘ Cytoplasm

4. ✘ Extracellular Matrix (ECM)

Question Number : 118 Question Id : 28393610118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The most important aspects of biomaterial-tissue interactions.

Options :

1. ✔ Biocompatibility

2. ✘ Bioavailability

3. ✘ Bioequivalence

4. ✘ Bioluminescence

Question Number : 119 Question Id : 28393610119 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Biodegradation will be more for materials with _____.

Options :

1. ✘ More molecular weights and high crystallinity

2. ✘ Low molecular weights and high crystallinity

3. ✘ More molecular weights and less crystallinity

4. ✔ Low molecular weights and less crystallinity

Question Number : 120 Question Id : 28393610120 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Image formation in electron microscope is based on _____

Options :

1.

✘ column length

2. ✘ electron number

3. ✔ differential scattering

4. ✘ specimen size