

# Telangana State Council Higher Education

## Notations :

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

<b>Question Paper Name :</b>	Biomedical Engineering 12th June 2024 Shift 2
<b>Subject Name :</b>	Biomedical Engineering
<b>Creation Date :</b>	2024-06-12 17:30:45
<b>Duration :</b>	120
<b>Total Marks :</b>	120
<b>Display Marks:</b>	Yes
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Change Font Color :</b>	No
<b>Change Background Color :</b>	No
<b>Change Theme :</b>	No
<b>Help Button :</b>	No
<b>Show Reports :</b>	No
<b>Show Progress Bar :</b>	No

## Biomedical Engineering

<b>Group Number :</b>	1
<b>Group Id :</b>	38382344
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	120

## Mathematics

<b>Section Id :</b>	383823118
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory

Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	383823118
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 3838236121 Question Type : MCQ Option Shuffling : Yes  
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The eigenvalues of a  $3 \times 3$  matrix A are 1, 3, 7 then the eigenvalues of  $adj(A)$  are

Options :

1. ✘  $1, \frac{3}{4}, \frac{7}{4}$

2. ✘  $\frac{1}{21}, \frac{3}{21}, \frac{7}{21}$

3. ✘  $\frac{1}{21}, \frac{3}{21}, \frac{21}{7}$

4. ✔ 21, 7, 3

Question Number : 2 Question Id : 3838236122 Question Type : MCQ Option Shuffling : Yes  
 Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The rank of the matrix  $A = \begin{bmatrix} 1 & 3 & 4 & 3 \\ 3 & 9 & 12 & 9 \\ -1 & -3 & -4 & -3 \end{bmatrix}$  is

Options :

1. ✘ 3

2. ✘ 2

3. ✔ 1

4. ✘ 0

Question Number : 3 Question Id : 3838236123 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If  $u = \frac{x+y}{x-y}$  and  $v = \frac{xy}{(x-y)^2}$  are functionally dependent, then the relation between  $u$  &  $v$  is

Options :

1. ✘  $u = 1 + 4v$

2. ✔  $u^2 = 1 + 4v$

3. ✘  $v^2 = 1 + 4u$

4. ✘  $v = 1 + 4u$

Question Number : 4 Question Id : 3838236124 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If  $f(x) = \begin{cases} -\pi, & \text{in } -\pi < x < 0 \\ x, & \text{in } 0 < x < \pi \end{cases}$  then the constant term of the Fourier series is

Options :

1. ✔  $-\frac{\pi}{4}$

2. ✘  $-\frac{\pi}{2}$

3. ✘  $-\frac{4}{\pi}$

4. ✘  $\frac{2}{\pi}$

Question Number : 5 Question Id : 3838236125 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of  $(D^2 - 2D + 1)y = x^2 e^x$  is

Options :

1. ✘  $(c_1 + xc_2)e^x + \frac{x^2 e^x}{6}$

2. ✔  $(c_1 + xc_2)e^x + \frac{x^4 e^x}{12}$

3. ✘  $c_1 e^x + c_2 e^{-x} + \frac{x^4 e^x}{6}$

4. ✘  $c_1 e^x + c_2 e^{2x} + \frac{x e^x}{3}$

Question Number : 6 Question Id : 3838236126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The general solution of  $\frac{\partial u}{\partial x} = 4 \frac{\partial u}{\partial y}$ , given  $u(0, y) = 8e^{-3y}$  is

Options :

1. ✘  $u(x, y) = 3e^{-3(4x+y)}$

2. ✘  $u(x, y) = 8e^{12x-3y}$

3. ✘  $u(x, y) = -3e^{-12x+3y}$

4. ✔  $u(x, y) = 8e^{-12x-3y}$

Question Number : 7 Question Id : 3838236127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The residue of the function  $f(z) = \frac{z e^z}{(z-1)^3}$ , at its pole

Options :

1. ✔  $\frac{3e}{2}$

2. ✘  $\frac{4e}{3}$

3. ✘  $\frac{e}{2}$

4. ✘  $e$

**Question Number : 8 Question Id : 3838236128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The equation  $x^4 - x - 10 = 0$  is to be solved using the Newton-Raphson method. If  $x = 2$  is taken as the initial approximation of the equation, then the next approximation of the solution is

**Options :**

1. ✘  $\frac{38}{31}$

2. ✘  $\frac{48}{31}$

3. ✔  $\frac{58}{31}$

4. ✘  $\frac{28}{31}$

**Question Number : 9 Question Id : 3838236129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

For two events A and B, let  $P(A) = \frac{1}{3}$ ,  $P(B) = \frac{1}{4}$  and  $P(A \cup B) = \frac{1}{2}$  then  $P(A/B)$  is

**Options :**

1. ✘  $\frac{1}{2}$

2. ✔  $\frac{1}{3}$

3. ✘  $\frac{1}{12}$

4. ✘  $\frac{1}{4}$

**Question Number : 10 Question Id : 3838236130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A biased coin was thrown 300 times and the tail turned up 120 times, then the standard error of the observed proportion of tails is

**Options :**

1. ✔ 0.028

2. ✘ 0.28

3. ✘ 0.82

4. ✘ 0.082

## Biomedical Engineering

<b>Section Id :</b>	383823119
<b>Section Number :</b>	2
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	110
<b>Number of Questions to be attempted :</b>	110
<b>Section Marks :</b>	110
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	383823119
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 11 Question Id : 3838236131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The voltage applied to a 212 mH inductor is given by  $V(t) = 15e^{-5t}$  V . Calculate the current

Options :

- ✘  $16.782e^{-10t}$
- ✘  $15.75e^{-5t}$
- ✘  $11.27e^{-10t}$
- ✔  $14.15e^{-5t}$

Question Number : 12 Question Id : 3838236132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The voltage across a capacitor of 0.5F is defined by  $V(t) = \begin{cases} 0, & t < 0 \\ 2t, & 0 < t < 2s \\ 4e^{-(t-2)}, & t > 2s \end{cases}$ .

Find  $i(t)$

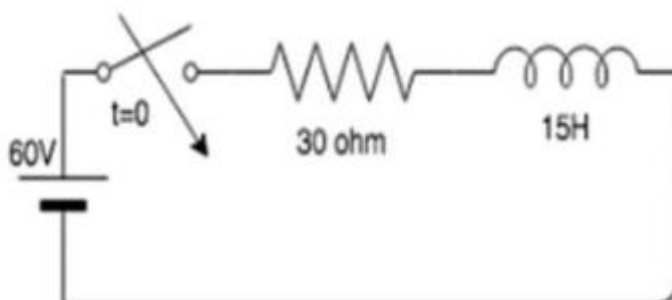
Options :

- ✔  $-2e^{-(t-2)}$
- ✘  $-4e^{-(t-2)}$
- ✘  $-20e^{-(t-2)}$
- ✘  $-12e^{-(t-2)}$

Question Number : 13 Question Id : 3838236133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the voltage across the inductor at  $t = 0$ ?



Options :

- ✘ 0 V

2. ✘ 20 V

3. ✔ 60 V

4. ✘ 58 V

**Question Number : 14 Question Id : 3838236134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which law states that the current flowing into junction must be equal to the current flowing out of it?

**Options :**

1. ✘ Boolean

2. ✔ Kirchoff's

3. ✘ Laplace

4. ✘ Fourier

**Question Number : 15 Question Id : 3838236135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

For a voltage source to be neglected, the terminals across the source should be

**Options :**

1. ✘ replaced by an inductor

2. ✔ short-circuited

3. ✘ replaced by some resistance

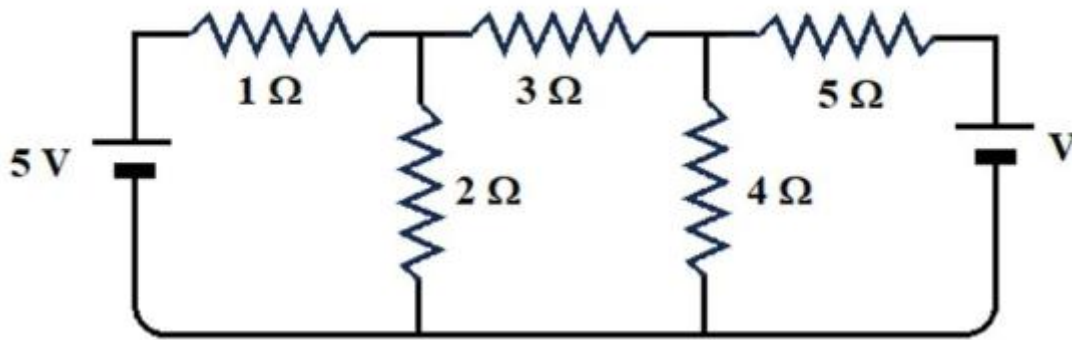
4. ✘ open circuited

**Question Number : 16 Question Id : 3838236136 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**



Correct Marks : 1 Wrong Marks : 0

Find the value of  $V$  when the current in the  $3\ \Omega$  resistor is 0.



Options :

1. ✘ 3.5 V
2. ✘ 6.5 V
3. ✔ 7.5 V
4. ✘ 8.5 V

Question Number : 17 Question Id : 3838236137 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Nodal analysis is generally used to determine

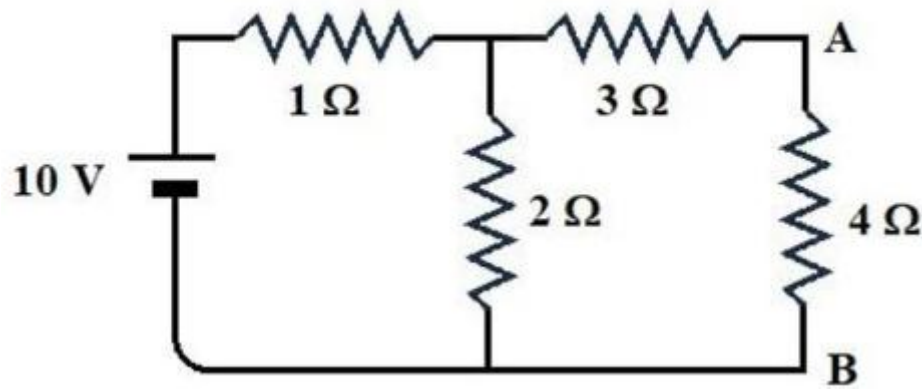
Options :

1. ✔ Voltage
2. ✘ Current
3. ✘ Resistance
4. ✘ Power

Question Number : 18 Question Id : 3838236138 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Calculate  $V_{th}$  for the given circuit.



Options :

1. ✘ 5.54V
2. ✘ 3.33V
3. ✔ 6.67V
4. ✘ 3.67V

Question Number : 19 Question Id : 3838236139 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Norton's theorem is true for

Options :

1. ✔ Linear networks
2. ✘ Non-Linear networks
3. ✘ Both linear networks and nonlinear networks
4. ✘ Neither linear networks nor non-linear networks

Question Number : 20 Question Id : 3838236140 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a network maximum power transfer occurs when

Options :

1. ✘  $R_{Th} = -R_L$

2. ✘  $\frac{R_{Th}}{R_L} = 0$

3. ✔  $R_{Th} = R_L$

4. ✘  $R_{Th} + R_L = 1$

**Question Number : 21 Question Id : 3838236141 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A band-limited signal with a maximum frequency of 5 kHz is to be sampled. According to the sampling theorem, the sampling frequency which is not valid is

**Options :**

1. ✘ 12 kHz

2. ✔ 5 kHz

3. ✘ 15 kHz

4. ✘ 20 kHz

**Question Number : 22 Question Id : 3838236142 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Consider two signals  $x(n) = \{0, 1, 1, 2\}$  and  $h(n) = \{a, b, c\}$ . The signal  $y(n) = x(n) \otimes h(n)$ . The

DFT of  $y(n)$  is given as  $Y(e^{j\Omega})$ . If  $Y(e^{j0})$  is 36, then which of the following relation is correct?

**Options :**

1. ✘  $a \times b \times c = 27$

2. ✘  $ab + c = 9$

3. ✔  $a + b + c = 9$

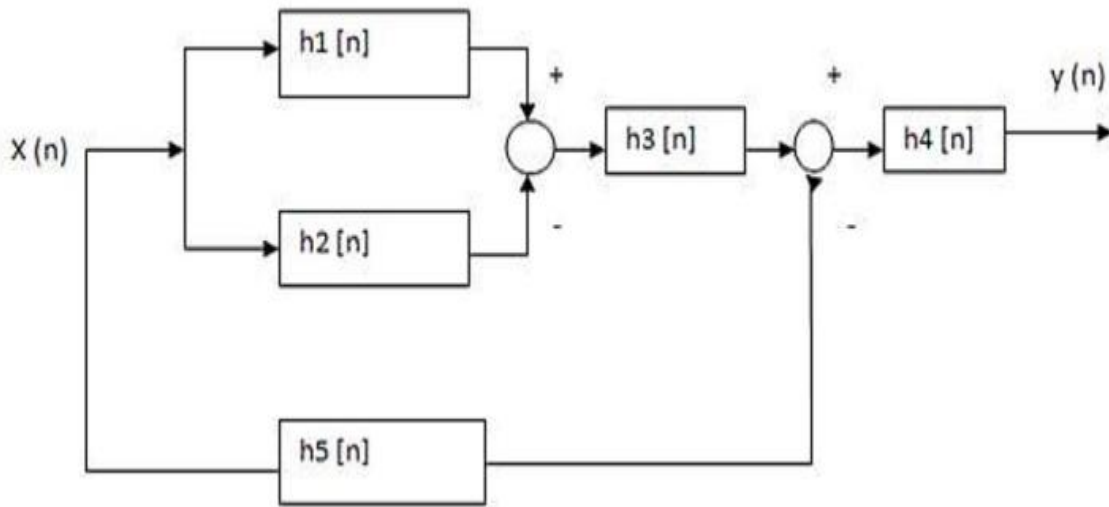
4. ✘  $a + b - c = 12$

Question Number : 23 Question Id : 3838236143 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The overall impulse response of the system shown in figure is given by



Options :

1. ✓  $h[n] = (((h1[n]-h2[n])*h3[n])-h5[n])*h4[n]$
2. ✗  $h[n] = (((h1[n]-h2[n])*-h3[n])-h5[n])*h4[n]$
3. ✗  $h[n] = (((h1[n]-h2[n])*h3[n])+h5[n])*h4[n]$
4. ✗  $h[n] = (h1[n]-h2[n])*h3[n]+h5[n]*h4[n]$

Question Number : 24 Question Id : 3838236144 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The input  $x(t)$  is related to its output  $y(t)$  as:  $\frac{dy(t)}{dt} + y(t) = 3x(t-3)u(t-3)$ .

Here  $u(t)$  represents a step function. The transfer function of this system is

Options :

1. ✗  $\frac{e^{-3s}}{s+3}$
2. ✗  $\frac{e^{-s/3}}{s+3}$
3. ✓  $3 \frac{e^{-3s}}{s+1}$

4. ✘  $3 \frac{e^{-s/3}}{s+1}$

Question Number : 25 Question Id : 3838236145 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of  $u(t)$  and its ROC is given as

Options :

1. ✘  $\frac{1}{s}, \sigma < 0$

2. ✔  $\frac{1}{s}, \sigma > 0$

3. ✘  $\frac{1}{s-1}, \sigma = 0$

4. ✘  $\frac{1}{1-s}, \sigma \leq 0$

Question Number : 26 Question Id : 3838236146 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct?

- I. All periodic signals are energy signals while aperiodic signals are power signals
- II. Periodic signals have finite and non-zero average power
- III. Both periodic and aperiodic signals have infinite power and energy
- IV. All periodic signals are power signals while aperiodic signals are energy signals

Options :

1. ✘ I and II only

2. ✘ II only

3. ✘ III only

4. ✔ II and IV only

Question Number : 27 Question Id : 3838236147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The auto-correlation function of a rectangular pulse of duration T is

Options :

1. ✓ A triangular pulse of duration 2T
2. ✗ A rectangular pulse of duration 2T
3. ✗ A triangular pulse of duration T
4. ✗ A rectangular pulse of duration T

Question Number : 28 Question Id : 3838236148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The ROC of the signal  $x(n) = \delta(n - k)$ ,  $k > 0$  is defined as

Options :

1. ✗  $z = 0$
2. ✗  $z = \infty$
3. ✓ Entire z-plane, except at  $z = 0$
4. ✗ Entire z-plane, except at  $z = \infty$

Question Number : 29 Question Id : 3838236149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A digital signal processing system is described by the expression

$y(n) = 2x(n) + x(n - 1) + 2y(n - 1)$ . The system is

Options :

1. ✗ A stable IIR filter
2. ✗ A stable FIR filter

3. ✘ An unstable FIR filter

4. ✔ An unstable IIR filter

**Question Number : 30 Question Id : 3838236150 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

How many complex additions are needed for 16 direct computations in discrete Fourier transform?

**Options :**

1. ✔ 240

2. ✘ 56

3. ✘ 756

4. ✘ 32

**Question Number : 31 Question Id : 3838236151 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which among the below assertions is precise in accordance to the effect of time scaling?

A: Inverse relationship exists between the time and frequency domain representation of signal

B: A signal must be necessarily limited in time as well as frequency domains

**Options :**

1. ✔ A is true & B is false

2. ✘ A is false & B is true

3. ✘ Both A & B are true

4. ✘ Both A & B are false

**Question Number : 32 Question Id : 3838236152 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**



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

The most appropriate sequence of steps in the implementation of Pan-Tompkins algorithm is given by

**Options :**

1. ✘ Pre-processing, Differentiation, Integration, Squaring, Normalization, Thresholding
2. ✔ Pre-processing, Differentiation, Squaring, Integration, Normalization, Thresholding
3. ✘ Differentiation, pre-processing, Squaring, Integration, Normalization, Thresholding
4. ✘ Differentiation, pre-processing, Integration, Squaring, Thresholding, Normalization

**Question Number : 33 Question Id : 3838236153 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

If the AZTEC coded data is given by [5, 10, -5, 100, 2, 5, -4, 100], the compression ratio obtained for following reconstruction is

**Options :**

1. ✘ 1:8
2. ✘ 1:4
3. ✔ 1:2
4. ✘ 1:16

**Question Number : 34 Question Id : 3838236154 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Stage 2 sleep is defined by the presence of

**Options :**

1. ✘ spikes and slow waves
2. ✔ sleep spindles and K complexes
3. ✘ rapid eye movements
4. ✘



1 to 2 Hz delta frequencies

**Question Number : 35 Question Id : 3838236155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Higher-order differentiation filter coefficients in Pan Tompkins algorithm is

**Options :**

1. ✘ [-1 -2 0 2 1]

2. ✔ [1 2 0 -2 -1]

3. ✘ [-2 -1 0 1 2]

4. ✘ [2 1 0 -1 -2]

**Question Number : 36 Question Id : 3838236156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Slew rate of an ideal op-amp is

**Options :**

1. ✔ Infinite

2. ✘ Very high

3. ✘ Low

4. ✘ Zero

**Question Number : 37 Question Id : 3838236157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A shunt regulator utilizing a zener diode with an incremental resistance of  $5\ \Omega$  is fed through an  $82\text{-}\Omega$  resistor. If the raw supply changes by  $1.0\ \text{V}$ , what is the corresponding change in the regulated output voltage?

**Options :**

1. ✘  $72.7\text{mV}$

2. ✘ 73.7mV

3. ✔ 74.7mV

4. ✘ 75.7Mv

**Question Number : 38 Question Id : 3838236158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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 : 3838236159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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,  $\beta$  of the system is

**Options :**

1. ✔ 0.008

2. ✘ -0.025

3. ✘ 0.1

4. ✘ -0.2

**Question Number : 40 Question Id : 3838236160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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 : 41 Question Id : 3838236161 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

An instrumentation amplifier has a high

**Options :**

1. ✗ Output impedance
2. ✓ CMRR
3. ✗ Input offset currents
4. ✗ Supply voltage

**Question Number : 42 Question Id : 3838236162 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

How many AND gates are required to realize  $Y = CD + EF + G$

**Options :**

1. ✓ 4
2. ✗ 5
3. ✗ 3
4. ✗ 2

**Question Number : 43 Question Id : 3838236163 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Determine the output frequency of a frequency division circuit which contains 12 flip-flops with an input clock frequency of 20.48 MHz.

**Options :**

1. ✘ 10.24 kHz

2. ✔ 05 kHz

3. ✘ 30.24 kHz

4. ✘ 15 kHz

**Question Number : 44 Question Id : 3838236164 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Multivibrator which can produce a very short pulse or a much longer rectangular shaped waveform whose leading edge rises in time with an externally applied trigger pulse is called

**Options :**

1. ✘ Astable multivibrator

2. ✘ Distable multivibrator

3. ✔ Monostable multivibrator

4. ✘ Tristable multivibrator

**Question Number : 45 Question Id : 3838236165 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following is a function of shift register?

**Options :**

1. ✘ To convert digital information into analog signals

2. ✘ To control current levels according to data pulses

To translate serial digital information into parallel or parallel digital information into

3. ✓ serial data

4. ✗ To control voltage levels according to clock pulses

**Question Number : 46 Question Id : 3838236166 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What is the maximum possible range of bit-count specifically in n-bit binary counter consisting of 'n' number of flip-flops?

**Options :**

1. ✗ 0 to  $2^n$

2. ✓ 0 to  $2^n - 1$

3. ✗ 0 to  $2^{n+1/2}$

4. ✗ 0 to  $2^n + 1$

**Question Number : 47 Question Id : 3838236167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A 4-bit R/2R digital-to-analog (DAC) converter has a reference of 5 V. What is the analog output for the input code 0101?

**Options :**

1. ✗ 0.3125 V

2. ✓ 3.125 V

3. ✗ 0.78125 V

4. ✗ 31.25 V

**Question Number : 48 Question Id : 3838236168 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Sample and hold circuits in A/D converters are designed to

**Options :**

1. ✘ Stabilize the comparator's threshold voltage during the conversion process
2. ✘ Sample and hold the output of the binary counter during the conversion process
3. ✘ Sample and hold the D/A converter staircase waveform during the conversion process
4. ✔ Stabilize the input analog signal during the conversion process

**Question Number : 49 Question Id : 3838236169 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

What type of register would shift a complete binary number in one bit at a time and shift all the stored bits out one bit at a time?

**Options :**

1. ✘ PIPO
2. ✔ SISO
3. ✘ SIPO
4. ✘ PISO

**Question Number : 50 Question Id : 3838236170 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

What is the status of the carry, auxiliary carry and parity flag for the following instructions?

MOV A,#9C

ADD A,#64H

**Options :**

1. ✘ CY = 0, AC = 0, P = 0
2. ✘ CY = 0, AC = 1, P = 0

3. ✓ CY = 1, AC = 1, P = 0

4. ✗ CY = 1, AC = 1, P = 1

**Question Number : 51 Question Id : 3838236171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What registers are significantly incremented and decremented respectively for the transmission of each byte by Direct Memory Access (DMA)?

**Options :**

1. ✓ Address Register & Byte Count Register

2. ✗ Control Register & Byte Count Register

3. ✗ Transmitter Register & Byte Count Register

4. ✗ Status- Register & Byte Count Register

**Question Number : 52 Question Id : 3838236172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Frequency range of 8257 is

**Options :**

1. ✗ 500Hz to 3MHz

2. ✓ 250Hz to 3MHz

3. ✗ 500Hz to 2MHz

4. ✗ 250Hz to 2MHz

**Question Number : 53 Question Id : 3838236173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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 : 54 Question Id : 3838236174 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

The external interrupts of 8051 microcontroller are

**Options :**

1. ✗ TRAP and INT1
2. ✗ INT2 and INT1
3. ✓ INT0 and INT1
4. ✗ TRAP and INTR

**Question Number : 55 Question Id : 3838236175 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following is a register-indirect addressing mode in instruction set?

**Options :**

1. ✗ LDA 2700H
2. ✗ ADI 36H
3. ✗ DAA
4. ✓ LDAX B

**Question Number : 56 Question Id : 3838236176 Question Type : MCQ Option Shuffling : Yes**



**Display Question Number : Yes**

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

Systematic errors lead due to a lack of

**Options :**

1. ✘ Accuracy in the measurement
2. ✘ Significant digits in the measurement
3. ✘ Precision in the measurement
4. ✔ Gradation of the instrument

**Question Number : 57 Question Id : 3838236177 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Starting position of an object is represented as  $x = 5.1 \pm 0.2$  m and the finishing position as  $y = 6.9 \pm 0.3$  m. What will be the displacement and error in displacement?

**Options :**

1. ✘ Displacement = 1 m, Error = 0.5 m
2. ✘ Displacement = 2 m, Error = 0.36 m
3. ✔ Displacement = 1.8 m, Error = 0.36 m
4. ✘ Displacement = 1.5 m, Error = 0.4 m

**Question Number : 58 Question Id : 3838236178 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

A Daniel cell is balanced at 240 cm in length of a potentiometer. Now the cell is short-circuited by a resistance of 0.25 ohm and the balance is obtained at 80 cm. The internal resistance of the Daniel cell is

**Options :**

1. ✔ 0.5 ohm
2. ✘ 2 ohms

3. ✘ 0.25 ohm

4. ✘ 1 ohm

**Question Number : 59 Question Id : 3838236179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

In a Q Meter, the values of the tuning capacitor are  $C_3$  and  $C_4$  for resonant frequencies  $f_3$  and  $2f_4$  respectively. The value of distributed capacitance is

**Options :**

1. ✘  $\frac{(C_3 - C_4)}{2}$

2. ✘  $\frac{(C_3 - 2C_4)}{3}$

3. ✔  $\frac{(C_3 - 4C_4)}{3}$

4. ✘  $\frac{(C_3 - 4C_4)}{2}$

**Question Number : 60 Question Id : 3838236180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

In Maxwell's capacitance bridge for calculating unknown inductance, the various values at balance are  $R_2 = 300 \Omega$ ,  $R_3 = 700 \Omega$ ,  $R_4 = 1500 \Omega$ ,  $C_4 = 0.8 \mu\text{F}$ . Calculate  $R_1$ ,  $L_1$ , and Q factor, if the frequency is 1100 Hz.

**Options :**

1. ✘ 240  $\Omega$ , 0.12 H, 3.14

2. ✔ 140  $\Omega$ , 0.168 H, 8.29

3. ✘ 140  $\Omega$ , 0.12 H, 5.92

4. ✘ 240  $\Omega$ , 0.36 H, 8.29

**Question Number : 61 Question Id : 3838236181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following instrument is used for recording the movements imparted to the body with each beat of the heart cycle?

**Options :**

1. ✘ Apexcardiograph
2. ✔ Ballistocardiograph
3. ✘ Electro-oculograph
4. ✘ Electro-retinograph

**Question Number : 62 Question Id : 3838236182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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 : 63 Question Id : 3838236183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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 : 3838236184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What should be CMRR of pre-amplifier up to 5 kHz?

**Options :**

1. ✘ 10 dB

2. ✘ 30 dB

3. ✘ 90 dB

4. ✔ greater than 90 dB

**Question Number : 65 Question Id : 3838236185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Linearity of transducer is closeness of the transducer's calibration curve to a special

**Options :**

1. ✘ curved line within a given percentage of full scale output

2. ✔ straight line within a given percentage of full scale output

3. ✘ straight line within a given percentage of half scale output

4. ✘ curved line within a given percentage of half scale output

**Question Number : 66 Question Id : 3838236186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Change in signal over long period of time is called

**Options :**

1. ✘ Noise
2. ✘ Offset
3. ✘ Hysteresis
4. ✔ Drift

**Question Number : 67 Question Id : 3838236187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The smallest change in measurant that will result in a measurable change in the transducer output is called

**Options :**

1. ✘ Offset of the transducer
2. ✘ Linearity of the transducer
3. ✘ Resolution of the transducer
4. ✔ Threshold of the transducer

**Question Number : 68 Question Id : 3838236188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

ECG was developed by

**Options :**

1. ✘ Wilhelm His
2. ✘ Steward
3. ✔ Willem Einthoven
4. ✘ Hubert Mann

**Question Number : 69 Question Id : 3838236189 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Widen QRS and tall-tented T waves are observed in

**Options :**

1. ✘ Hyponatremia
2. ✔ Hyperkalemia
3. ✘ Hyperglycemia
4. ✘ Hyperphosphatemia

**Question Number : 70 Question Id : 3838236190 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

According to the International 10/20 system to measure EEG, even number electrodes denotes which side of the brain?

**Options :**

1. ✘ Left
2. ✘ Top
3. ✘ Bottom
4. ✔ Right

**Question Number : 71 Question Id : 3838236191 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 : 72 Question Id : 3838236192 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The typical range for EMG is

Options :

1. ✘ 0 – 1 mV
2. ✘ 1 – 5 mV
3. ✘ 0 – 0.1 mV
4. ✔ 0.1 – 0.5 mV

Question Number : 73 Question Id : 3838236193 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Capacitive transducer displays

Options :

1. ✘ Linear behaviour
2. ✔ Non-linear behaviour
3. ✘ Like  $y = 2x$  curve
4. ✘ Like  $y = mx + b$  curve

Question Number : 74 Question Id : 3838236194 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Frequency response of capacitive transducers is

Options :

1. ✘ High
2. ✘ Medium
3. ✔ Low



4. ✘ Zero

**Question Number : 75 Question Id : 3838236195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What happens to resistance if the length of the conductor is increased?

**Options :**

1. ✘ Decreases
2. ✘ No change
3. ✔ Increases
4. ✘ Doubles

**Question Number : 76 Question Id : 3838236196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A metal with temperature coefficient of resistance has a value 200, its initial resistance is given by  $40\ \Omega$ . For an increase in  $30\ ^\circ\text{C}$  to  $35\ ^\circ\text{C}$  what will be the final resistance value?

**Options :**

1. ✔  $40\ \text{K}\Omega$
2. ✘  $4\ \text{K}\Omega$
3. ✘  $40\ \Omega$
4. ✘  $400\ \Omega$

**Question Number : 77 Question Id : 3838236197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following statement is correct with respect to blood pressure?

**Options :**

1. ✘ 130/90 mm Hg is considered high and require treatment



2. ✘ 100/55 mm Hg is considered an ideal
3. ✘ 105/50 mm Hg makes one active
4. ✔ 190/110 mm Hg harm vital organs

**Question Number : 78 Question Id : 3838236198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Unhealthy growth of tissue due to higher pressures on the walls of the artery is termed as

**Options :**

1. ✔ Atheroma
2. ✘ Aroma
3. ✘ Adenoma
4. ✘ Aroma and Adenoma

**Question Number : 79 Question Id : 3838236199 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which mixture of gases are used in anesthesia?

**Options :**

1. ✘ O<sub>2</sub> and CO<sub>2</sub>
2. ✔ O<sub>2</sub> and N<sub>2</sub>O
3. ✘ CO<sub>2</sub> and N<sub>2</sub>O
4. ✘ O<sub>2</sub> , CO<sub>2</sub> and N<sub>2</sub>O

**Question Number : 80 Question Id : 3838236200 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

AEP stands for

**Options :**

1. ✓ Auditory Evoked Potential
2. ✗ Auxiliary Evoked Potential
3. ✗ Audiovisual Evoked Potential
4. ✗ Ambulatory Evoked Potential

**Question Number : 81 Question Id : 3838236201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What causes the pre-selected volume of air to flow into the patient by communicating directly with a breathing circuit?

**Options :**

1. ✗ Nebulizer
2. ✗ Microcontroller
3. ✓ Bellows
4. ✗ Humidifier

**Question Number : 82 Question Id : 3838236202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What is the pH range of extracellular fluid?

**Options :**

1. ✗ 7.15 to 7.20
2. ✗ 7.25 to 7.30
3. ✓ 7.35 to 7.45
4. ✗ 7.50 to 7.60

**Question Number : 83 Question Id : 3838236203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

With a 1°C change in temperature, the emf changes by

**Options :**

1. ✘ 0.1 mV
2. ✔ 0.2 mV
3. ✘ 0.5 mV
4. ✘ 0.8 mV

**Question Number : 84 Question Id : 3838236204 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Any disturbance in the heart's normal rhythmic contraction is called

**Options :**

1. ✘ Heart stroke
2. ✘ Cardiac arrest
3. ✔ Arrhythmias
4. ✘ Premature contraction

**Question Number : 85 Question Id : 3838236205 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

When the heartbeat is slower than the normal rate of the heart (less than 60), this type of arrhythmias called

**Options :**

1. ✔ Bradycardia
2. ✘ Tachycardia
3. ✘ Arterial contraction
4. ✘ Ventricular contraction

**Question Number : 86 Question Id : 3838236206 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following type of cartilage is present at the joints of long bones in humans?

**Options :**

1. ✘ Fibrous
2. ✔ Hyaline
3. ✘ Elastic
4. ✘ Calcified

**Question Number : 87 Question Id : 3838236207 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following clinical sign indicates ischaemia of forearm?

**Options :**

1. ✘ Carpel tunnel syndrome
2. ✘ Hand of benediction
3. ✘ Ulnar claw
4. ✔ Volkmann's Contracture

**Question Number : 88 Question Id : 3838236208 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

What does corpus callosum connects in human brain?

**Options :**

1. ✘ Two optic lobes
2. ✘ Bone and muscle
3. ✔ Two cerebral hemisphere

4. ✖ Two lobes of pituitary gland

**Question Number : 89 Question Id : 3838236209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following taste bud is present on the lateral sides of the human tongue?

**Options :**

1. ✖ Bitter

2. ✖ Salty

3. ✔ Sour

4. ✖ Sweet

**Question Number : 90 Question Id : 3838236210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following is the largest gland in human body?

**Options :**

1. ✖ Thymus

2. ✖ Kidneys

3. ✔ Liver

4. ✖ Pancreas

**Question Number : 91 Question Id : 3838236211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The study of fluid at rest is

**Options :**

1. ✖ Fluid Dynamics

2. ✖ Fluid Mechanics

3. ✓ Fluid Statics

4. ✗ Fluid Kinematics

**Question Number : 92 Question Id : 3838236212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following method is used exclusively in fluid mechanics?

**Options :**

1. ✓ Eulerian method

2. ✗ Lagrangian method

3. ✗ Neither Lagrangian nor Eulerian method

4. ✗ Both Lagrangian and Eulerian methods

**Question Number : 93 Question Id : 3838236213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Cartilaginous joint is a joint between

**Options :**

1. ✓ Skull bones

2. ✗ Vertebrae

3. ✗ Phalanges

4. ✗ Elbow

**Question Number : 94 Question Id : 3838236214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Joints act as \_\_\_\_\_ during movement

**Options :**

1. ✗ Effort

2. ✘ Lever

3. ✔ Fulcrum

4. ✘ Load

**Question Number : 95 Question Id : 3838236215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following is an example of hinge joint?

**Options :**

1. ✘ Between the carpals

2. ✘ Between carpal and metacarpal of thumb

3. ✔ Knee joint

4. ✘ Between atlas and axis

**Question Number : 96 Question Id : 3838236216 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Which of the following is an example of gliding joint?

**Options :**

1. ✘ Knee joint

2. ✔ Between the carpals

3. ✘ Between carpal and metacarpal of thumb

4. ✘ Between atlas and axis

**Question Number : 97 Question Id : 3838236217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

A sprain is defined as

**Options :**

1. ✘ Acute pain in bone
2. ✔ Ligament tear
3. ✘ Muscle tear
4. ✘ Tendon tear

**Question Number : 98 Question Id : 3838236218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Group of cells, which is similar in structure and function are structured into

**Options :**

1. ✘ Organ system
2. ✘ Muscles
3. ✘ Bone
4. ✔ Tissues

**Question Number : 99 Question Id : 3838236219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What is the name of the tissues which helps in protection and support of the body?

**Options :**

1. ✘ Muscular tissue
2. ✘ Nervous tissue
3. ✔ Connective tissue
4. ✘ Epithelial tissue

**Question Number : 100 Question Id : 3838236220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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



Which of the following tissues has the most regenerative property?

**Options :**

1. ✓ Epithelial tissue
2. ✗ Connective tissue
3. ✗ Muscular tissue
4. ✗ Neural tissue

**Question Number : 101 Question Id : 3838236221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Production of X-rays for diagnostic applications requires voltage range of

**Options :**

1. ✓ 30-200 kV
2. ✗ 300-2000 kV
3. ✗ 2000-20000 kV
4. ✗ 2-20 kV

**Question Number : 102 Question Id : 3838236222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

Angiography is used to check

**Options :**

1. ✗ Kidney stones
2. ✓ Blood vessels
3. ✗ Tumors
4. ✗ Breast cancer

**Question Number : 103 Question Id : 3838236223 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

X-rays are emitted by

**Options :**

1. ✘ Photons
2. ✘ Neutrons
3. ✘ Atoms
4. ✔ Electrons

**Question Number : 104 Question Id : 3838236224 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

What is the wavelength range of X-rays

**Options :**

1. ✘ 700 nm to 1 nm
2. ✘ 1 mm to 700 nm
3. ✘ 0.1 to 1 mm
4. ✔ 0.01 to 10 nm

**Question Number : 105 Question Id : 3838236225 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

What is the purpose of contrast in CT scan?

**Options :**

1. ✘ To suppress particular tissues
2. ✔ To enhance a particular tissue
3. ✘ To ensure correct tissue is being imaged
4. ✘ To reduce bone interference

**Question Number : 106 Question Id : 3838236226 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

The cooling agent for the MRI magnet is

**Options :**

1. ✓ Helium
2. ✗ Neon
3. ✗ Argon
4. ✗ Xenon

**Question Number : 107 Question Id : 3838236227 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

The smallest unit in the reconstruction/projection of an MRI image is called as

**Options :**

1. ✗ Pixel
2. ✓ Voxel
3. ✗ Binary unit
4. ✗ Dot

**Question Number : 108 Question Id : 3838236228 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which property of sound waves acts like the principle of ultrasound?

**Options :**

1. ✓ Reflection and Refraction
2. ✗ Reflection only
3. ✗ Refraction only

#### 4. ✖ Propagation

**Question Number : 109 Question Id : 3838236229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What kind of ultrasound is produced by piezoelectric crystal?

**Options :**

1. ✔ Pressure wave ultrasound
2. ✖ Electrical wave ultrasound
3. ✖ Sound wave ultrasound
4. ✖ Simple ultrasound

**Question Number : 110 Question Id : 3838236230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

How is a medium characterized?

**Options :**

1. ✖ By its thickness
2. ✔ By its acoustic impedance
3. ✖ By its water content
4. ✖ By its density

**Question Number : 111 Question Id : 3838236231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The wave velocity of ultrasound in soft tissues is 1540 m/s and the impedance offered by it is  $1.63 \times 10^6 \text{ kg/m}^2\text{s}$ . What is the density of the soft tissue?

**Options :**

1. ✖  $0.1058441 \text{ kg/m}^3$

2. ✘ 10.58441 kg/m<sup>3</sup>

3. ✔ 1058.441kg/m<sup>3</sup>

4. ✘ 105844.1 kg/m<sup>3</sup>

**Question Number : 112 Question Id : 3838236232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What makes PET and SPECT so unique when it comes to nuclear imaging?

**Options :**

1. ✘ Do not require dyes

2. ✘ Do not require X – Rays

3. ✔ They show the metabolic functions

4. ✘ They give more details about the imaged organ/tissue

**Question Number : 113 Question Id : 3838236233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

**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. ✘ Three- and four-point bend test

4. ✔ Calculation from the stress-strain curve

**Question Number : 114 Question Id : 3838236234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

AFM stands for

**Options :**

1. ✘ Auto focusing microscope
2. ✘ Antenna focusing microscope
3. ✔ Atomic force microscope
4. ✘ Atomic focusing microscope

**Question Number : 115 Question Id : 3838236235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

What is the first step in biomaterial-tissue interactions?

**Options :**

1. ✘ Cell Migration
2. ✔ Adsorption of proteins
3. ✘ Cell Development
4. ✘ Cell adhesion

**Question Number : 116 Question Id : 3838236236 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes**

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

The biomaterials are expected to mimic the functions of

**Options :**

1. ✔ Extracellular Matrix (ECM)
2. ✘ Transmembrane proteins
3. ✘ Cytoplasm
4. ✘ Cell Organelles

**Question Number : 117 Question Id : 3838236237 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Constant stress test is used for a biomaterial to measure

**Options :**

1. ✓ Ductility
2. ✗ Toughness
3. ✗ Creep
4. ✗ Fatigue

**Question Number : 118 Question Id : 3838236238 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following gel/hydrogel is formed by a physical gelation mechanism?

**Options :**

1. ✗ Polyester gel
2. ✓ Gelatin
3. ✗ CMC-g-acrylic acid
4. ✗ Polydimethyl siloxane

**Question Number : 119 Question Id : 3838236239 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes**

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

Which of the following component of TEM focuses the beam of electrons on the sample?

**Options :**

1. ✗ Ocular lens
2. ✓ Condenser lens
3. ✗ Stage



4. ✘ Column

Question Number : 120 Question Id : 3838236240 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes

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