

Question Paper Preview

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: | Bio medical Engineering 28th May 2018 Shift2 |
| Subject Name: | Bio medical Engineering |
| Creation Date: | 2018-05-28 16:58:48 |
| Duration: | 120 |
| Total Marks: | 120 |
| Display Marks: | No |
| Calculator: | None |
| Magnifying Glass Required?: | No |
| Ruler Required?: | No |
| Eraser Required?: | No |
| Scratch Pad Required?: | No |
| Rough Sketch/Notepad Required?: | No |
| Protractor Required?: | No |

| | |
|------------------------------|-----|
| Display Number Panel: | Yes |
| Group All Questions: | No |

Question Number : 1 Question Id : 5113465641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical

If $x = a t^2$ and $y = 2 a t$, then $\frac{d^2y}{dx^2} =$

Options :

1. ✗ $\frac{1}{2a}$

2. ✓ $-\frac{1}{2at^3}$

3. ✗ $2 a$

4. ✘ $\frac{1}{at^2}$

Question Number : 2 Question Id : 5113465642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\int e^x \frac{(1+x \log x)}{x} dx = k$ then $k =$

Options :

1. ✔ $e^x \log x$

2. ✘ $\frac{e^x}{x}$

3. ✘ $x e^x$

4. ✘ $e^x (1 + \log x)$

Question Number : 3 Question Id : 5113465643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

It is given that $z = \sin^{-1} \left(\frac{x+y}{\sqrt{x} + \sqrt{y}} \right)$, then $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} =$

Options :

1. ✘ $\frac{1}{2} \sin z$

2. ✘ $\frac{1}{2} \cos z$

3. ✘ $\frac{1}{2} \cot z$

4. ✔ $\frac{1}{2} \tan z$

Question Number : 4 Question Id : 5113465644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

It is given that $A = \begin{bmatrix} 1 & 3 & 4 \\ 2 & 5 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 7 & 9 \\ 4 & 0 \\ 3 & 2 \end{bmatrix}$ then the matrix AB is

Options :

1. ✘ $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

2. ✔ $\begin{bmatrix} 31 & 17 \\ 58 & 34 \end{bmatrix}$

3. ✘ $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

4. ✘ $\begin{bmatrix} 34 & 20 \\ 40 & 10 \end{bmatrix}$

Question Number : 5 Question Id : 5113465645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $x \frac{dy}{dx} + y = x^3$ is

Options :

1. ✘ $y = \frac{x^4}{4} + c$

2. ✘ $xy = \frac{x^3}{4} + c$

3. ✔ $xy = \frac{x^4}{4} + c$

4. ✘ $y = x^3 + cx$

Question Number : 6 Question Id : 5113465646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The particular integral of the equation $(D^2 + 4D + 4)Y = e^{-2x}$ where $D = \frac{d}{dx}$ is

Options :

1. ✘ e^{-2x}

2. ✘ xe^{-2x}

3. ✘ x^2e^{-2x}

4. ✔ $\frac{x^2}{2}e^{-2x}$

Question Number : 7 Question Id : 5113465647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} -2 & 0 & 3 \\ 1 & -6 & 5 \\ -1 & 2 & 0 \end{bmatrix}$ then $\det A =$

Options :

1. ✔ 8

2. ✘ 10

3. ✘ 12

4. ✘ -8

Question Number : 8 Question Id : 5113465648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{z}{z-2} dz$ over C where C is the circle $|z|=1$ is

Options :

1. ✘ $2\pi i$

2. ✔ 0 (zero)

3. ✘ 4π

4. ✘ $4\pi i$

Question Number : 9 Question Id : 5113465649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the median of a distribution is 22 and mode of the distribution is 26, then the mean of the distribution is

Options :

1. ✔ 20

2. ✘ 23

3. ✘ 24

4. ✘ 25

Question Number : 10 Question Id : 5113465650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

John and Jane took their driving tests today. The probability that John passes the test is $\frac{6}{10}$

and the probability that Jane passes the test is $\frac{7}{10}$. The probability that both pass their driving tests is ---

Options :

1. ✘ $\frac{19}{50}$ 2. ✘ $\frac{41}{50}$ 3. ✔ $\frac{21}{50}$

4. ✘ 1

Group All Questions:

No

Question Number : 11 Question Id : 5113465651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The velocity of propagation for the SA node action potential is about ----- in atrial tissues

Options :

1. ✘ 45 cm/s
2. ✘ 45 mm/s
3. ✔ 30cm/s
4. ✘ 30mm/s

Question Number : 12 Question Id : 5113465652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The sequential activation of the nodes of Ranvier is called ----- conduction

Options :

1. ✔ Saltatory
2. ✘ local circuit
3. ✘ Ranvier
4. ✘ self excitatory

Question Number : 13 Question Id : 5113465653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The ventricular cells are surrounded by a plasma membrane to make end to end contact known as -----

Options :

1. ✘ Anastamoses
2. ✘ Purkinje fiber

3. ✘ Cardiofibrils

4. ✔ Intercalated disk

Question Number : 14 Question Id : 5113465654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Prior to excitation, the typical ventricular cell has a resting potential of around ----

Options :

1. ✘ 90 μ V

2. ✔ -90 mV

3. ✘ -90 μ V

4. ✘ 90 mV

Question Number : 15 Question Id : 5113465655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The duration of action potential waveform is collectively referred as -----

Options :

1. ✔ electrical systole

2. ✘ Electrical diastole

3. ✘ Action systole

4. ✘ Action diastole

Question Number : 16 Question Id : 5113465656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The condition where high pressure within the eye injures the retina is called -----

Options :

1. ✔ Glaucoma

2. ✘ Retinitis Pigmentosa

3. ✘ Macular edema

4. ✘ Diabetic Retinopathy

Question Number : 17 Question Id : 5113465657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The mediator of color vision in brighter light in humans is -----

Options :

1. ✘ Rods
2. ✔ Cones
3. ✘ Rhodopsin
4. ✘ Photopsin

Question Number : 18 Question Id : 5113465658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is clinically recorded with the aid of an Ag/AgCl electrode embedded in Contact lens

Options :

1. ✘ Contact eye potential
2. ✘ Electrooculogram
3. ✘ The potential between the sclera and the retina
4. ✔ Electroretinogram

Question Number : 19 Question Id : 5113465659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is influenced by the metal involved, concentration of ions in solution and the temperature.

Options :

1. ✘ Action potential
2. ✘ resting potential
3. ✘ electrode potential

4. ✓ Half cell potential

Question Number : 20 Question Id : 5113465660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The difference between observed half cell potential and equilibrium zero current half cell potential is known as -----

Options :

1. ✗ Action potential
2. ✗ resting potential
3. ✓ Over potential
4. ✗ Ohmic potential

Question Number : 21 Question Id : 5113465661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- over potential is a direct result of the resistance of the electrolyte during polarization

Options :

1. ✓ Ohmic
2. ✗ Concentration
3. ✗ Activation
4. ✗ Equilibrium

Question Number : 22 Question Id : 5113465662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is defined as the availability of an ionic species in solution to enter into a reaction.

Options :

1. ✗ Half cell activity
2. ✓ Ionic activity

3. ✘ Electrolyte activity

4. ✘ Electrode activity

Question Number : 23 Question Id : 5113465663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Perfectly ----- electrodes are those in which no actual charge crosses the electrode-electrolyte interface when a current is applied.

Options :

1. ✘ Contacting

2. ✘ Non polarizable

3. ✔ Polarizable

4. ✘ Non-contacting

Question Number : 24 Question Id : 5113465664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Silver chloride's rate of precipitation and of returning to solution is known as ----

Options :

1. ✘ Polarizing product

2. ✘ Non Polarizing product

3. ✘ Insolubility product

4. ✔ Solubility product

Question Number : 25 Question Id : 5113465665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is used in coupling an electrode to the skin as the principal anion to maintain good contact

Options :

1. ✘ Teflon adhesive

2. ✓ Electrolyte gel
3. ✗ adhesive tape
4. ✗ epidermal glue

Question Number : 26 Question Id : 5113465666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When ECG is recorded for a short duration, ----- electrodes are frequently used as the precordial electrodes.

Options :

1. ✗ Floating
2. ✗ Metal plate
3. ✓ Suction
4. ✗ Flexible

Question Number : 27 Question Id : 5113465667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- electrodes are especially used for monitoring premature infants.

Options :

1. ✗ Metal plate
2. ✗ Floating
3. ✗ Suction
4. ✓ Flexible

Question Number : 28 Question Id : 5113465668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Adhesive tapes made of ----- materials are used in flexible electrodes to hold them in place .

Options :

1. ✘ Pellet gel
2. ✔ Hydrogel
3. ✘ Electrolyte gel
4. ✘ Teflon gel

Question Number : 29 Question Id : 5113465669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Fetal ECGs have peak amplitude of the order of -----

Options :

1. ✘ 500 to 7000 μV
2. ✘ -500 to 7000 μV
3. ✔ 50 to 700 μV
4. ✘ -50 to 700 μV

Question Number : 30 Question Id : 5113465670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In micropipette electrode ----- potential corresponds to micropipette electrolyte and intracellular fluid.

Options :

1. ✘ Liquid junction
2. ✔ Tip
3. ✘ electrode
4. ✘ Electrolyte

Question Number : 31 Question Id : 5113465671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- drift occurs when all output values increase or decrease by the same absolute amount.

Options :

1. ✓ Sensitivity
2. ✗ Static
3. ✗ Linear
4. ✗ Zero

Question Number : 32 Question Id : 5113465672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Typical operating ranges of blood pressure sensors have a positive bias such as

Options :

1. ✗ +200 mmHg to -60 mmHg
2. ✗ +20 mmHg to -600 mmHg
3. ✗ -200 mmHg to + 60 mmHg
4. ✓ - 20 mmHg to + 600mmHg

Question Number : 33 Question Id : 5113465673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- analyzer can be used in respiratory studies to follow CO₂ concentration in breath analysis

Options :

1. ✓ Polarographic
2. ✗ Thermal conductivity
3. ✗ Infra red
4. ✗ Polarographic

Question Number : 34 Question Id : 5113465674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is an instrument that isolates monochromatic radiation in a more efficient manner

Options :

1. ✘ Colorimeter
2. ✔ Flame photometer
3. ✘ Spectrophotometer
4. ✘ Fluorometer

Question Number : 35 Question Id : 5113465675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

-----is the depth of breathing or the volume of gas inspired during each respiratory cycle.

Options :

1. ✘ Minute Volume
2. ✘ Inspiratory capacity
3. ✔ Inspiratory volume
4. ✘ Tidal Volume

Question Number : 36 Question Id : 5113465676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- pacemakers are meant for patients having heart blocks with occasional sinus rhythm.

Options :

1. ✘ R wave triggered
2. ✘ Atrial triggered
3. ✘ Dual chamber
4. ✔ Normal Sinus

Question Number : 37 Question Id : 5113465677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is the commonly used material for the membrane in haemodialysis

Options :

1. ✓ Silicon
2. ✗ Acrylic
3. ✗ Cupraphan
4. ✗ PVC

Question Number : 38 Question Id : 5113465678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In medical diagnosis ----- have the property to penetrate the matter with differential absorption and to produce luminescence on photographic emulsions

Options :

1. ✗ X-rays
2. ✗ Gamma rays
3. ✓ Alpha rays
4. ✗ Beta rays

Question Number : 39 Question Id : 5113465679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The elasticity of bone is contributed chiefly by -----

Options :

1. ✓ Collagen
2. ✗ Trypsin
3. ✗ Cartilage
4. ✗ Myelin

Question Number : 40 Question Id : 5113465680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Surgical ----- are used to close large surgical incisions.

Options :

1. ✘ Tapes
2. ✔ Staples
3. ✘ Sutures
4. ✘ Adhesives

Question Number : 41 Question Id : 5113465681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The viscoelasticity of ----- can be mechanically modeled using springs and dashpots.

Options :

1. ✘ Hard tissue replacements
2. ✘ Artificial teeth
3. ✘ Bone plates and screws
4. ✔ Soft tissue replacements

Question Number : 42 Question Id : 5113465682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

As muscles contract, ----- transmit the forces to the relatively rigid bones and cause movement.

Options :

1. ✔ Tendons
2. ✘ Ligaments
3. ✘ Bursae

4. ✘ Cartilage

Question Number : 43 Question Id : 5113465683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hounsfield units are used to represent the ----- of the tissue.

Options :

1. ✘ Atomic absorption
2. ✘ Mass attenuation
3. ✘ Density
4. ✔ Linear attenuation coefficient

Question Number : 44 Question Id : 5113465684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Bone has a high compressive strength of about -----

Options :

1. ✔ 170 MPa
2. ✘ 200 GPa
3. ✘ 500 MPa
4. ✘ 300 GPa

Question Number : 45 Question Id : 5113465685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Mechanics of blood flow in cardiovascular system is diagnosed using -----

Options :

1. ✘ CT
2. ✘ MRI

3. ✓ PET

4. ✗ SPECT

Question Number : 46 Question Id : 5113465686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Typical value of Reynolds Number for blood flow in Aorta is -----

Options :

1. ✗ 1×10^4

2. ✗ 1×10^6

3. ✓ 1×10^3

4. ✗ 1×10^2

Question Number : 47 Question Id : 5113465687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The large number of medical applications of ----- is due to their biocompatibility.

Options :

1. ✗ Metals

2. ✗ Composites

3. ✗ Polymers

4. ✓ Ceramics

Question Number : 48 Question Id : 5113465688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- is the biocompatibility of blood interfacing implants.

Options :

1. ✓ Haemocompatibility
2. ✗ Tissue compatibility
3. ✗ Carcinogenicity
4. ✗ Immunogenicity

Question Number : 49 Question Id : 5113465689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- are widely used for the soft tissue replacement applications.

Options :

1. ✗ Composites
2. ✗ Metals
3. ✗ Ceramics
4. ✓ Polymers

Question Number : 50 Question Id : 5113465690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Ni-Ti alloys exhibit a specific property called ----- that is used in many cardiovascular applications.

Options :

1. ✓ Shape memory effect
2. ✗ Forging
3. ✗ Annealing
4. ✗ Quenching

Question Number : 51 Question Id : 5113465691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Polyacrylates are widely used in the fabrication of -----.

Options :

1. ✘ artificial bone
2. ✔ Bone cement
3. ✘ Bone plates
4. ✘ Surgical staples

Question Number : 52 Question Id : 5113465692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The transformation technique used for ECG data compression is -----

Options :

1. ✘ Laplace transforms
2. ✘ Wavelet transforms
3. ✔ K-L transforms
4. ✘ Discrete wavelet transforms

Question Number : 53 Question Id : 5113465693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Specific acoustic impedance of biological organs is -----

Options :

1. ✘ $2.3 \times 10^5 \text{ g/cm}^2 \text{ s}$
2. ✔ $1.6 \times 10^5 \text{ g/cm}^2 \text{ s}$

3. ✘ $3.9 \times 10^5 \text{ g/cm}^2 \text{ s}$

4. ✘ $4.9 \times 10^5 \text{ g/cm}^2 \text{ s}$

Question Number : 54 Question Id : 5113465694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Surgical resectability is best determined by ----- imaging.

Options :

1. ✘ X-ray

2. ✘ Ultrasonic

3. ✔ CT

4. ✘ SPECT

Question Number : 55 Question Id : 5113465695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Computed tomography image reconstruction is based on the -----

Options :

1. ✘ Rad

2. ✔ Hounsfield units

3. ✘ Rem

4. ✘ Tesla

Question Number : 56 Question Id : 5113465696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- cannot be performed on the patient with implantable pacemaker.

Options :

1. ✘ CT
2. ✘ PET
3. ✘ SPECT
4. ✔ MRI

Question Number : 57 Question Id : 5113465697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- determines the degree of reflection and refraction at the interface between the two media

Options :

1. ✘ Attenuation coefficient
2. ✘ Absorption coefficient
3. ✔ Characteristic impedance
4. ✘ Dispersion angle

Question Number : 58 Question Id : 5113465698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

----- imaging technique replaces many risky and traumatic clinical procedures.

Options :

1. ✘ CT
2. ✘ MRI
3. ✔ Ultrasonic
4. ✘ PET

Question Number : 59 Question Id : 5113465699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hounsfield units for water is -----

Options :

1. ✘ 1000
2. ✔ 0
3. ✘ 100
4. ✘ -1000

Question Number : 60 Question Id : 5113465700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hypothalamus is the neural center responsible for -----

Options :

1. ✘ Reflex arc
2. ✘ Pupillary reflex
3. ✘ Voluntary control
4. ✔ Body temperature regulation

Question Number : 61 Question Id : 5113465701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Sweat glands are activated when body temperature ----- for thermo regulation.

Options :

1. ✘ Varies continuously
2. ✘ Decreases
3. ✘ Remains constant

4. ✓ Increases

Question Number : 62 Question Id : 5113465702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Blood pressure regulation is achieved by controlling the release of -----

Options :

1. ✓ Antidiuretic hormone

2. ✗ Arginine

3. ✗ Vasopressin

4. ✗ Adrenalin

Question Number : 63 Question Id : 5113465703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Detectors used for PET are made of -----

Options :

1. ✗ Sodium fluoride

2. ✓ Bismuth germanate

3. ✗ Barium Titanate

4. ✗ Cesium Iodide

Question Number : 64 Question Id : 5113465704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Histogram manipulation is a useful technique applied in -----

Options :

1. ✗ Image segmentation

2. ✗ Image restoration

3. ✓ Image enhancement

4. ✗ Image duplication

Question Number : 65 Question Id : 5113465705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hypnogram is the graphical recording of the ----- as a function of time.

Options :

1. ✗ Spikes of EEG

2. ✓ Sleep stages

3. ✗ Spindles of EEG

4. ✗ Evoked potentials

Question Number : 66 Question Id : 5113465706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

ECG data reduction using K-L transformations involves -----

Options :

1. ✓ Linear orthogonal transformation

2. ✗ Nonlinear orthogonal transformation.

3. ✗ orthogonal transformation

4. ✗ Nonlinear transformation

Question Number : 67 Question Id : 5113465707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The time required for image reconstruction is the major drawback of -----
imaging.

Options :

1. ✘ CT
2. ✔ MR
3. ✘ SPECT
4. ✘ PET

Question Number : 68 Question Id : 5113465708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Scintillation detectors are used in the ----- imaging technique.

Options :

1. ✘ SPECT
2. ✘ MR
3. ✔ CT
4. ✘ PET

Question Number : 69 Question Id : 5113465709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Stress-strain curves of most soft tissues have a/an ----- characteristic.

Options :

1. ✘ Linear
2. ✘ Parabolic
3. ✘ Exponential
4. ✔ Non-linear

Question Number : 70 Question Id : 5113465710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A DC voltage source is connected across a series RLC circuit. Under steady state conditions, the applied DC voltage drops entirely across the

Options :

1. ✘ R only
2. ✘ L only
3. ✔ C only
4. ✘ R and L combination

Question Number : 71 Question Id : 5113465711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A certain series resonant circuit has a bandwidth of 1000Hz. If the existing coil is replaced by a coil with lower 'Q' what happens to the bandwidth?

Options :

1. ✔ It increases
2. ✘ It is zero
3. ✘ It decreases
4. ✘ It remains the same

Question Number : 72 Question Id : 5113465712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the characteristic equation of a closed loop system is $s^2+5s+6=0$, then the system is

Options :

1. ✘ Over damped
2. ✔ Critically damped
3. ✘ Under damped

Un-damped

4. ✘

Question Number : 73 Question Id : 5113465713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$Y(t) = t x(t)$ then the signal is

Options :

1. ✔ Unstable

2. ✘ Stable

3. ✘ Stable but non causal

4. ✘ Unstable but non causal

Question Number : 74 Question Id : 5113465714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The minimized form of the logic expression $(\bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}BC + AB\bar{C})$ is

Options :

1. ✘ $A\bar{C} + \bar{B}C + \bar{A}B$ 2. ✘ $\bar{A}C + \bar{B}C + \bar{A}B$ 3. ✔ $\bar{A}\bar{C} + B\bar{C} + \bar{A}B$ 4. ✘ $A\bar{C} + \bar{B}C + A\bar{B}$

Question Number : 75 Question Id : 5113465715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Any combinational circuit can be built using _____

Options :

1. ✘ NAND gates

- 2. ✘ OR gates
- 3. ✘ EX-OR gates
- 4. ✔ Multiplexers

Question Number : 76 Question Id : 5113465716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Assume that 4-bit counter is holding the count 0101. What will be the count after 27 clock pulses?

Options :

- 1. ✘ 0101
- 2. ✘ 0001
- 3. ✘ 1111
- 4. ✔ 0000

Question Number : 77 Question Id : 5113465717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A transformer has 600 primary turns and 120 secondary turns. If the load current is 10A, its primary load component of current is ---

Options :

- 1. ✘ 20A
- 2. ✘ 10A
- 3. ✔ 2A
- 4. ✘ 5A

Question Number : 78 Question Id : 5113465718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

DC motor gives maximum power when

Options :

1. ✓ $V=2E_b$
2. ✗ $V=E_b /2$
3. ✗ $V=E_b/\sqrt{2}$
4. ✗ $V=E_b$

Question Number : 79 Question Id : 5113465719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The rotor power output of 3-phase induction motor is 15kW and the corresponding slip is 4%. The rotor ohmic loss will be

Options :

1. ✗ 600W
2. ✓ 625W
3. ✗ 650W
4. ✗ 700W

Question Number : 80 Question Id : 5113465720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An integrating DVM measures

Options :

1. ✗ Peak to peak value
2. ✓ True average value
3. ✗ RMS value

4. ✖ Peak value

Question Number : 81 Question Id : 5113465721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a DVM, the number of pulses counted by the counter, when the ramp voltage falls down from 12V to 0V in 24ms and the oscillator frequency of 325KHZ is

Options :

1. ✔ 7800

2. ✖ 8000

3. ✖ 280

4. ✖ 3900

Question Number : 82 Question Id : 5113465722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is an indicating type of instrument?

Options :

1. ✔ Tachometer

2. ✖ CRO

3. ✖ Energy meter

4. ✖ ECG

Question Number : 83 Question Id : 5113465723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A moving coil milli-ammeter with a resistance of 1.6Ω is connected with a shunt resistance of 0.52Ω . What will be the current flowing through the instrument if it is connected in a circuit in which a current of 400mA is flowing?

Options :

1. ✘ 97.98mA
2. ✘ 97.02mA
3. ✔ 98.28mA
4. ✘ 99mA

Question Number : 84 Question Id : 5113465724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Commonly used detectors for ac bridges are

Options :

1. ✔ Head phones
2. ✘ Light dependent resistor
3. ✘ Pressure sensor
4. ✘ Strain gauge

Question Number : 85 Question Id : 5113465725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Slide wire in a potentiometer is made of

Options :

1. ✔ Platinum-silver alloy
2. ✘ Silver alloy
3. ✘ Chromium alloy
4. ✘ Lead alloy

Question Number : 86 Question Id : 5113465726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Accuracy of an instrument is

Options :

1. ✘ The measure of consistency and reproducibility of measurements
2. ✘ The smallest change in measurable input
3. ✘ The ratio of change in output signal to the change in the input signal
4. ✔ The closeness with which an instrument reading approaches the true value of the quantity being measured.

Question Number : 87 Question Id : 5113465727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Creep error is associated with which one of the following meters?

Options :

1. ✘ Moving iron instrument
2. ✔ Energy meter
3. ✘ Electro dynamometer
4. ✘ Wattmeter

Question Number : 88 Question Id : 5113465728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A single phase energy meter is operating on 200V, 50Hz supply with a load of 15A at U.P.F for 2hrs. The meter makes 960 revolutions during this period. The meter constant is

Options :

1. ✘ 0.16 rev/KWH
2. ✘ 1/160 rev/KWH
3. ✘ 256 rev/KWH
4. ✔ 160 rev/KWH

Question Number : 89 Question Id : 5113465729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If a single phase voltage converter feeds an induction motor and heater then

Options :

1. ✘ In both the loads, fundamental and harmonics are useful
2. ✘ In both the loads, only fundamental is useful
3. ✔ In induction motor only fundamental is used and in heater, fundamental and harmonics are useful
4. ✘ In induction motor both fundamental and harmonics are useful and in heater, only fundamental is useful

Question Number : 90 Question Id : 5113465730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The resistance of a strip of conductor is $R\Omega$. If the strip is elongated such that its length is doubled the resistance of the strip is given by

Options :

1. ✔ 4R
2. ✘ 2R

3. ✘ R/2

4. ✘ R

Question Number : 91 Question Id : 5113465731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When two inductances are connected in series aiding the equivalent inductance is 14H and in opposition is 6H. Find out coefficient of coupling 'k'.

Options :

1. ✘ 0.408

2. ✘ 0.534

3. ✘ 0.628

4. ✔ 0.707

Question Number : 92 Question Id : 5113465732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The purpose of transformer oil is

Options :

1. ✘ To provide lubrication

2. ✔ To provide insulation and cooling

3. ✘ To provide protection against short circuit

4. ✘ To provide protection against lightning

Question Number : 93 Question Id : 5113465733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which type of motor is most suitable for a computer printer drive?

Options :

1. ✘ Reluctance motor
2. ✘ Hysteresis motor
3. ✘ Shaded pole motor
4. ✔ Stepper motor

Question Number : 94 Question Id : 5113465734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Rectifier moving coil instruments respond to

Options :

1. ✔ Average value irrespective of nature of waveform
2. ✘ RMS value irrespective of nature of waveform
3. ✘ Peak value irrespective of nature of waveform
4. ✘ RMS value for symmetrical square waveform

Question Number : 95 Question Id : 5113465735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In moving coil meters, damping is provided by

Options :

1. ✘ Damping vane in the airtight chamber
2. ✘ Coil spring attached to the moving coil
3. ✔ Aluminium frame of the coil
4. ✘ Eddy current disc

Question Number : 96 Question Id : 5113465736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hysteresis in an instrument means

Options :

1. ✘ Sensitivity of the instrument
2. ✘ Reliability of the instrument
3. ✘ The inaccuracy due to the change in temperature
4. ✔ Change in same reading when input is first increased and then decreased

Question Number : 97 Question Id : 5113465737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The current in the primary winding of a current transformer depends upon

Options :

1. ✘ Working voltage of the system in which the CT is connected
2. ✔ Load connected to the system in which the CT is installed
3. ✘ Burden of the secondary winding of the transformer
4. ✘ Both burden of the transformers secondary winding and load connected to the system

Question Number : 98 Question Id : 5113465738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two coils having equal resistances but different inductances are connected in series. The time constant of the series combination is the

Options :

1. ✘ Sum of the time constants of the individual coils

2. ✓ Average of the time constants of the individual coils
3. ✗ Geometric mean of the time constants of the individual coils
4. ✗ Product of the time constants of the individual coils

Question Number : 99 Question Id : 5113465739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Microprocessor based systems which are increasingly being used for dedicated applications in process instrumentation are

Options :

1. ✗ Intelligent instrumentation systems
2. ✗ Dumb instrumentation systems
3. ✓ Control instrumentation systems
4. ✗ Analog control systems

Question Number : 100 Question Id : 5113465740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A resistance potentiometer is a zero order instrument. With increase of load to potentiometer resistance, its non-linearity

Options :

1. ✓ Decreases
2. ✗ Increases
3. ✗ Increases as square root of the resistance
4. ✗ Remains constant

Question Number : 101 Question Id : 5113465741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

CMRR of a differential amplifier is 10,000. If it has a difference mode gain of 100, then common mode gain will be

Options :

1. ✘ 0.001
2. ✔ 0.01
3. ✘ 0.1
4. ✘ 1

Question Number : 102 Question Id : 5113465742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Thermal runaway is not possible in FET because as the temperature of FET increases

Options :

1. ✔ Mobility decreases
2. ✘ Trans conductance increases
3. ✘ Drain current increases
4. ✘ Recombination increases

Question Number : 103 Question Id : 5113465743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The MOSFET switch in its ON-state may be considered as equivalent to

Options :

1. ✔ Resistor
2. ✘ Inductor
3. ✘ Capacitor

4. ✘ Battery

Question Number : 104 Question Id : 5113465744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The gain bandwidth product of a two stage CE amplifier is

Options :

1. ✘ Same as that of one stage
2. ✔ Greater than that of one stage
3. ✘ Less than that of one stage
4. ✘ Product of the two gain bandwidth products of each stage

Question Number : 105 Question Id : 5113465745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A two stage amplifier with negative feedback has an overshoot when damping factor K is

Options :

1. ✔ Less than unity
2. ✘ Greater than unity
3. ✘ Zero
4. ✘ Negative

Question Number : 106 Question Id : 5113465746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A signal may have frequency components which lie in the range of 0.001Hz to 10Hz. Which of the following types of coupling should be chosen in a multi-stage amplifier designed to amplify this signal?

Options :

1. ✘ RC Coupling
2. ✘ Transformer Coupling
3. ✔ Direct coupling
4. ✘ Double-tuned Coupling

Question Number : 107 Question Id : 5113465747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a common emitter amplifier, the un-bypassed emitter resistance provides

Options :

1. ✘ Voltage-shunt feedback
2. ✘ Current-series feedback
3. ✔ Negative-voltage feedback
4. ✘ Positive-current feedback

Question Number : 108 Question Id : 5113465748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A differential amplifier is invariably used in the input stage of all op-amps. This is done basically to provide op-amps with a very high

Options :

1. ✔ CMRR
2. ✘ Bandwidth
3. ✘ Slew rate
4. ✘ Open loop gain

Question Number : 109 Question Id : 5113465749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A carry look ahead adder is frequently used for addition because it

Options :

1. ✓ is faster
2. ✗ is more accurate
3. ✗ uses fewer gates
4. ✗ costs less

Question Number : 110 Question Id : 5113465750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The output Q_n of a J-K flip-flop is zero. It changes to 1 when a clock pulse is applied. The input J_n and K_n are respectively

Options :

1. ✓ 1 & X
2. ✗ 0 & X
3. ✗ X & 0
4. ✗ X & 1

Question Number : 111 Question Id : 5113465751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A pulse train can be delayed by a finite number of periods using

Options :

1. ✓ A serial-in-serial-out shift register
2. ✗ A serial-in-parallel-out shift register
3. ✗ A parallel-in-serial-out shift register

4. ✘ A parallel-in- parallel-out shift register

Question Number : 112 Question Id : 5113465752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Among the following, the slowest ADC is

Options :

1. ✘ Parallel comparator type
2. ✘ Successive approximation type
3. ✘ Integration type
4. ✔ Counting type

Question Number : 113 Question Id : 5113465753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a 4-bit weighted resistor D/A converter, the resistor value corresponding to LSB is $32\text{k}\Omega$. The resistor value corresponding to MSB will be

Options :

1. ✘ $32\text{k}\Omega$
2. ✘ $16\text{k}\Omega$
3. ✘ $8\text{k}\Omega$
4. ✔ $4\text{k}\Omega$

Question Number : 114 Question Id : 5113465754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a microprocessor, the register which holds address of the next instruction to be fetched is

Options :

1. ✘ Accumulator

2. ✓ Program Counter
3. ✗ Stack pointer
4. ✗ Instruction register

Question Number : 115 Question Id : 5113465755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following interrupts are non-maskable interrupts?

Options :

1. ✗ RST 5.5
2. ✗ RST 7.5
3. ✓ TRAP
4. ✗ INTR1

Question Number : 116 Question Id : 5113465756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

DMA transfer implies

Options :

1. ✗ Direct transfer of data between memory and accumulator
2. ✓ Direct transfer of data between memory and I/O devices without the use of micro-processor registers
3. ✗ Transfer of data exclusively with input registers

A fast transfer of data between micro processor and I/O devices

4. ✘

Question Number : 117 Question Id : 5113465757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A stack is a

Options :

1. ✘ 8-bit register in the microprocessor

2. ✘ 16-bit register in the microprocessor

3. ✔ Set of memory locations in R/W memory reserved for storing information temporarily during the execution of a program.

4. ✘ 16-bit memory address in the program counter

Question Number : 118 Question Id : 5113465758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The instruction DAA

Options :

1. ✔ Converts binary to BCD

2. ✘ Converts BCD to binary

3. ✘ Decrements accumulator

4. ✘ Add contents of accumulator to accumulator

Question Number : 119 Question Id : 5113465759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Pick the circuit which is not a signal conditioner

Options :

1. ✘ sample & hold circuit
2. ✘ filter circuit
3. ✔ firing circuit
4. ✘ isolation circuit

Question Number : 120 Question Id : 5113465760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The flux of 3-phase, 50 Hz, 6-pole induction operating with a slip of 5% rotates at a speed of

Options :

1. ✘ 950 rpm
2. ✘ 995 rpm
3. ✘ 1500 rpm
4. ✔ 1000 rpm