

The Graduate Aptitude Test in Engineering

GATE 2023 Question Paper

GATE is an entrance examination conducted in India that primarily tests the comprehensive understanding of undergraduate subjects in engineering and sciences for admission into technical postgraduate programs.

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General Aptitude (GA)

Q.1 – Q.5 Carry ONE mark Each

Q.1	"I cannot support this proposal. My _____ will not permit it."
(A)	conscious
(B)	consensus
(C)	conscience
(D)	consent

Q.2	Courts : _____ : : Parliament : Legislature (By word meaning)
(A)	Judiciary
(B)	Executive
(C)	Governmental
(D)	Legal

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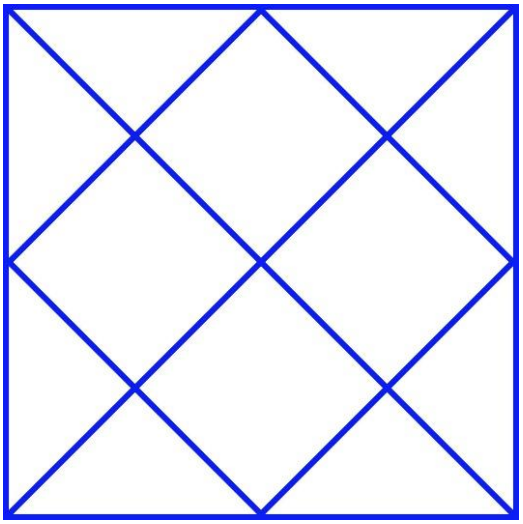
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Q.3	What is the smallest number with distinct digits whose digits add up to 45?
(A)	123555789
(B)	123457869
(C)	123456789
(D)	99999

Q.4	In a class of 100 students, (i) there are 30 students who neither like romantic movies nor comedy movies, (ii) the number of students who like romantic movies is twice the number of students who like comedy movies, and (iii) the number of students who like both romantic movies and comedy movies is 20. How many students in the class like romantic movies?
(A)	40
(B)	20
(C)	60
(D)	30

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Q.5	How many rectangles are present in the given figure?
	
(A)	8
(B)	9
(C)	10
(D)	12

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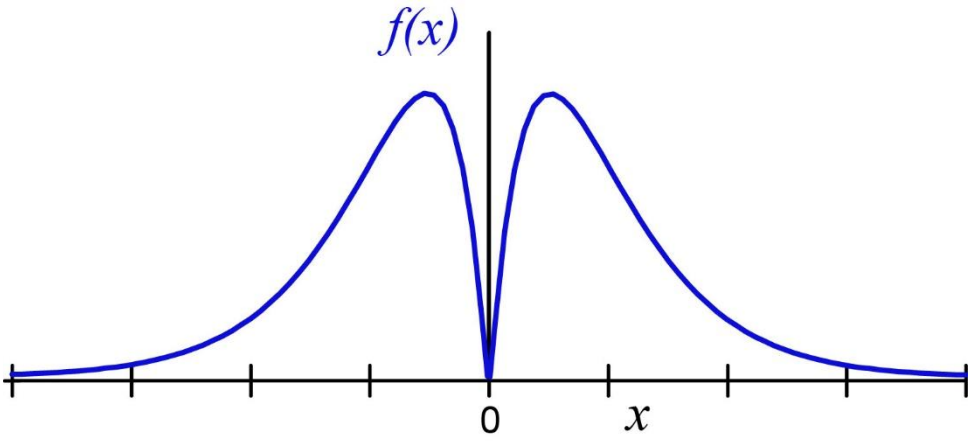
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Q.6 – Q.10 Carry TWO marks Each

Q.6	Forestland is a planet inhabited by different kinds of creatures. Among other creatures, it is populated by animals all of whom are ferocious. There are also creatures that have claws, and some that do not. All creatures that have claws are ferocious. Based only on the information provided above, which one of the following options can be logically inferred with *certainty*?
(A)	All creatures with claws are animals.
(B)	Some creatures with claws are non-ferocious.
(C)	Some non-ferocious creatures have claws.
(D)	Some ferocious creatures are creatures with claws.

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Q.7	Which one of the following options represents the given graph?
	
(A)	$f\left(x\right)=x^{2}2^{-\left\|x\right\|}$
(B)	$f\left(x\right)=x\,2^{-\left\|x\right\|}$
(C)	$f\left(x\right)=\left\|x\right\|2^{-x}$
(D)	$f\left(x\right)=x\,2^{-x}$

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Q.8	Which one of the following options can be inferred from the given passage alone? When I was a kid, I was partial to stories about other worlds and interplanetary travel. I used to imagine that I could just gaze off into space and be whisked to another planet. [Excerpt from *The Truth about Stories* by T. King]
(A)	It is a child's description of what he or she likes.
(B)	It is an adult's memory of what he or she liked as a child.
(C)	The child in the passage read stories about interplanetary travel only in parts.
(D)	It teaches us that stories are good for children.

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Q.9	Out of 1000 individuals in a town, 100 unidentified individuals are covid positive. Due to lack of adequate covid-testing kits, the health authorities of the town devised a strategy to identify these covid-positive individuals. The strategy is to: (i) Collect saliva samples from all 1000 individuals and randomly group them into sets of 5. (ii) Mix the samples within each set and test the mixed sample for covid. (iii) If the test done in (ii) gives a negative result, then declare all the 5 individuals to be covid negative. (iv) If the test done in (ii) gives a positive result, then all the 5 individuals are separately tested for covid. Given this strategy, no more than _____ testing kits will be required to identify all the 100 covid positive individuals irrespective of how they are grouped.
(A)	700
(B)	600
(C)	800
(D)	1000

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Q.10	A 100 cm × 32 cm rectangular sheet is folded 5 times. Each time the sheet is folded, the long edge aligns with its opposite side. Eventually, the folded sheet is a rectangle of dimensions 100 cm × 1 cm. The total number of creases visible when the sheet is unfolded is _____.
(A)	32
(B)	5
(C)	31
(D)	63

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Q.11 – Q.35 Carry ONE mark Each

Q.11	What is the magnitude of the difference between the mean and the median of the dataset {1, 2, 3, 4, 6, 8}?
(A)	0
(B)	1
(C)	0.5
(D)	0.25
Q.12	For a Binomial random variable X, E(X) and Var(X) are the expectation and variance, respectively. Which one of the following statements CANNOT be true?
(A)	E(X) = 20 and Var(X) = 16
(B)	E(X) = 6 and Var(X) = 5.4
(C)	E(X) = 10 and Var(X) = 15
(D)	E(X) = 64 and Var(X) = 12.8

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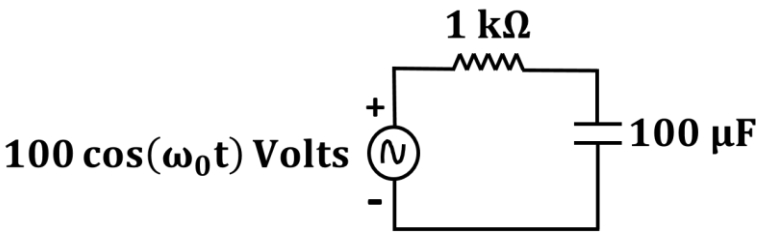
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Q.13	$Q = \begin{bmatrix} 1 & -2 \\ 2 & 1 \end{bmatrix}$ is a 2×2 matrix. Which one of the following statements is TRUE?
(A)	Q is equal to its transpose.
(B)	Q is equal to its inverse.
(C)	Q is of full rank.
(D)	Q has linearly dependent columns.
Q.14	Which one of the following vectors is an eigenvector corresponding to the eigenvalue = 1 for the matrix A? $A = \begin{bmatrix} 1 & 1 & 0 \\ 1 & -1 & 0 \\ 1 & -1 & 1 \end{bmatrix}$
(A)	$[1 \quad 0 \quad 1]^T$
(B)	$[1 \quad 1 \quad 0]^T$
(C)	$[0 \quad 1 \quad 0]^T$
(D)	$[0 \quad 0 \quad 1]^T$

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Q.15	For the function $f(x,y) = e^x \cos(y)$, what is the value of $\frac{\partial^2 f}{\partial x \partial y}$ at $(x = 0,\ y = \pi/2)$?
(A)	0
(B)	1
(C)	–1
(D)	$e^{\pi/2}$
Q.16	For the circuit given below, choose the angular frequency ω_0 (in rad/s) at which the voltage across the capacitor has maximum amplitude?
	
(A)	1000
(B)	100
(C)	1
(D)	0

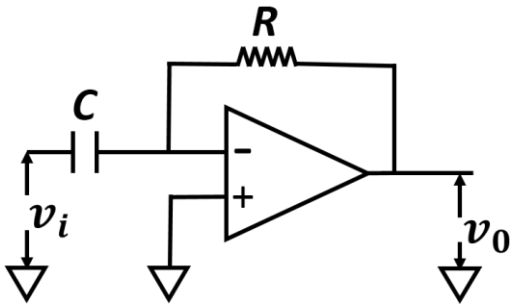
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Q.17	A finite impulse response (FIR) filter has only two non-zero samples in its impulse response $h[n]$, namely $h[0] = h[1] = 1$. The Discrete Time Fourier Transform (DTFT) of $h[n]$ equals $H(e^{j\omega})$, as a function of the normalized angular frequency ω. For the range $\lvert\omega\rvert \leq \pi$, $\lvert H(e^{j\omega})\rvert$ is equal to _____.
(A)	$2\,\lvert\cos(\omega)\rvert$
(B)	$2\,\lvert\sin(\omega)\rvert$
(C)	$2\,\lvert\cos(\omega/2)\rvert$
(D)	$2\,\lvert\sin(\omega/2)\rvert$
Q.18	An 8 bit successive approximation Analog to Digital Converter (ADC) has a clock frequency of 1 MHz. Assume that the start conversion and end conversion signals occupy one clock cycle each. Among the following options, what is the maximum frequency that this ADC can sample without aliasing?
(A)	0.9 kHz
(B)	9.9 kHz
(C)	49.9 kHz
(D)	99.9 kHz

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Q.19	In the following circuit with an ideal operational amplifier, the capacitance of the parallel plate capacitor C is given by the expression $C = \left(\frac{\epsilon A}{x}\right)$, where ϵ is the dielectric constant of the medium between the capacitor plates, and A is the cross-sectional area. In the above relation, x is the separation between the two parallel plates, given by $x = x_0 + kt$, where t is time; x_0 and k are positive non-zero constants. If the input voltage v_i is constant, then the output voltage v_0 is given by _____.
	
(A)	$\frac{Rv_iCk}{x}$
(B)	$\frac{Rv_iC}{kx}$
(C)	$\frac{v_ik}{RCx}$
(D)	0

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Q.20	Which one of the following techniques makes use of Korotkoff sounds?
(A)	Sphygmomanometry
(B)	Audiometry
(C)	Spirometry
(D)	Tonometry
Q.21	The pulmonary artery and pulmonary vein _____.
(A)	carry deoxygenated blood and oxygenated blood, respectively
(B)	carry oxygenated blood and deoxygenated blood, respectively
(C)	both carry oxygenated blood
(D)	both carry deoxygenated blood

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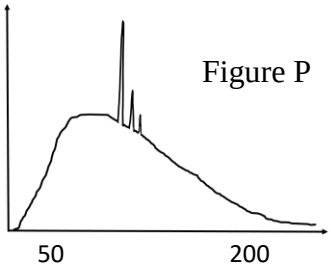
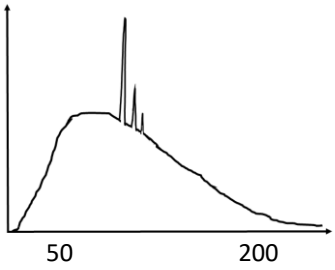
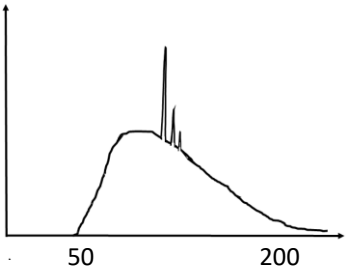
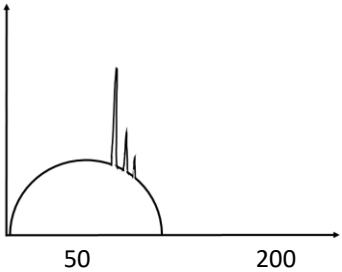
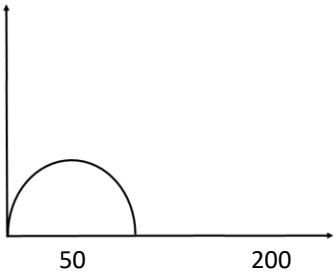
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Q.22	Which one of the following bridges CANNOT be used for measuring inductance?
(A)	Schering Bridge
(B)	Maxwell Wien Bridge
(C)	Hay Bridge
(D)	Series Owen Bridge

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Q.23	A polychromatic beam of X-Rays has an energy spectrum as shown in Figure P below. Which of the following graphs (in the options A to D) depicts the energy spectrum after passing through a human body? In each figure, the horizontal axis represents Energy in keV and the vertical axis represents Relative X-ray Intensity.
	 Figure P
(A)	
(B)	
(C)	
(D)	

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Q.24	*M*, *L* and *T* correspond to dimensions representing mass, length and time, respectively. What is the dimension of viscosity?
(A)	$M^1\ L^{-2}\ T^{-1}$
(B)	$M^1\ L^{-1}\ T^{-1}$
(C)	$M^1\ L^{-1}\ T^{1}$
(D)	$M^1\ L^{-2}\ T^{-2}$
Q.25	Choose the option that has the biomaterials arranged in order of decreasing tensile strength. (PMMA : poly-methyl-methacrylate)
(A)	Human compact bone > PMMA bone cement > Polymer foams > Graphite-epoxy
(B)	Human compact bone > Graphite-epoxy > PMMA bone cement > Polymer foams
(C)	Graphite-epoxy > Human compact bone > PMMA bone cement > Polymer foams
(D)	PMMA bone cement > Human compact bone > Polymer foams > Graphite-epoxy

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Q.26	A causal, discrete time system is described by the difference equation $$y[n] = 0.5\, y[n-1] + x[n], \text{ for all } n,$$ where $y[n]$ denotes the output sequence and $x[n]$ denotes the input sequence. Which of the following statements is/are TRUE?
(A)	The system has an impulse response described by $0.5^n\, u[-n]$ where $u[n]$ is the unit step sequence.
(B)	The system is stable in the bounded input, bounded output sense.
(C)	The system has an infinite number of non-zero samples in its impulse response.
(D)	The system has a finite number of non-zero samples in its impulse response.
Q.27	Which of the following constituents is/are NOT normally found in serum obtained from human blood?
(A)	Platelets
(B)	Albumin
(C)	Glucose
(D)	Fibrinogen

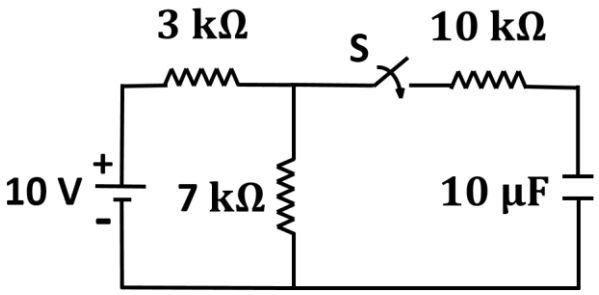
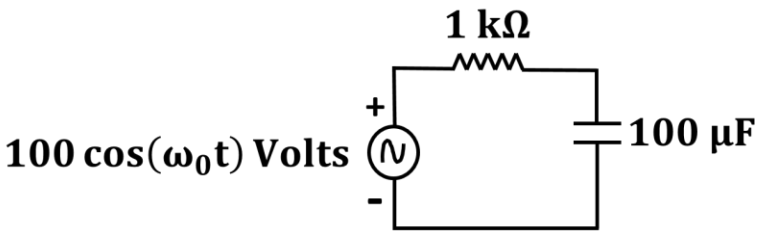
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Q.28	Q, R, S are Boolean variables and $\oplus$ is the XOR operator. Select the CORRECT option(s).
(A)	$(Q \oplus R) \oplus S = Q \oplus (R \oplus S)$
(B)	$(Q \oplus R) \oplus S = 0$ when any two of the Boolean variables (Q, R, S) are 0 and the third variable is 1
(C)	$(Q \oplus R) \oplus S = 1$ when $Q = R = S = 1$
(D)	$((Q \oplus R) \oplus (R \oplus S)) \oplus (Q \oplus S) = 1$
Q.29	In the human pancreas, which cell types secrete insulin and glucagon?
(A)	Alpha cells and delta cells, respectively
(B)	Beta cells and delta cells, respectively
(C)	Alpha cells and beta cells, respectively
(D)	Beta cells and alpha cells, respectively

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Q.30	In the following circuit, the switch **S** is open for $t < 0$ and closed for $t \geq 0$. What is the steady state voltage (in Volts) across the capacitor when the switch is closed? (Round off the answer to one decimal place.)
	
Q.31	For a tissue with Young's modulus of 3.6 kPa and Poisson's ratio of 0.2, what is the value of its shear modulus (in kPa)? (Round off the answer to one decimal place.)
Q.32	In the circuit shown below, the amplitudes of the voltage across the resistor and the capacitor are equal. What is the value of the angular frequency ω_0 (in rad/s)? (Round off the answer to one decimal place.)
	

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Q.33	A continuous time, band limited signal $x(t)$ has its Fourier transform described by: $$X(f) = \begin{cases} 1 - \frac{\lvert f \rvert}{200}, & \lvert f \rvert \leq 200 \text{ Hz} \\ 0, & \lvert f \rvert > 200 \text{ Hz} \end{cases}$$ The signal is uniformly sampled at a sampling rate of 600 Hz. The Fourier transform of the sampled signal is $X_s(f)$. What is the value of $\frac{X_s(600)}{X_s(500)}$? (Round off the the answer to one decimal place.)
Q.34	At time t, the cardiac dipole is oriented at – 45° (minus forty five degrees) to the horizontal axis. The magnitude of the dipole is 3 mV. Assuming Einthoven frontal plane configuration, what is the magnitude (in mV) of the electrical signal in lead II? (Round off the answer to two decimal places.)
Q.35	A 5 MHz ultrasound transducer is being used to measure the velocity of blood. When the transducer is placed at an angle of 45° to the direction of blood flow, a frequency shift of 200 Hz is observed in the echo. Assume that the velocity of sound is 1500 m/s. What is the velocity (in cm/s) of the blood flow? (Round off the answer to one decimal place.)

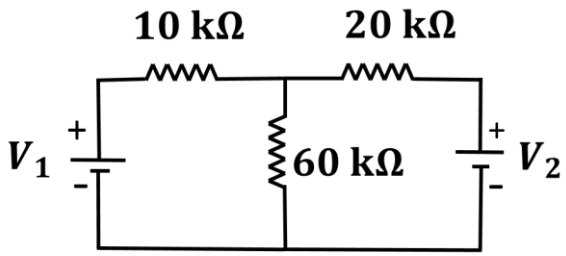
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Q.36 – Q.65 Carry TWO marks Each

Q.36	The time-dependent growth of a bacterial population is governed by the equation $$\frac{dx}{dt} = x\left(1 - \frac{x}{200}\right),$$ where x is the population size at time t. The initial population size is $x_0 = 100$ at $t = 0$. As $t \to \infty$, the population size of bacteria asymptotically approaches _____.
(A)	150
(B)	200
(C)	300
(D)	500
Q.37	A 20 mV DC signal has been superimposed with a 10 mV RMS band-limited Gaussian noise with a flat spectrum upto 5 kHz. If an integrating voltmeter is used to measure this DC signal, what is the minimum averaging time (in seconds) required to yield a 99 % accurate result with 95 % certainty?
(A)	0.1
(B)	1.0
(C)	5.0
(D)	10.0

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Q.38	In the circuit below, the two DC voltage sources have voltages of value V_1 and V_2. The expression for the power dissipated in the 60 kΩ resistor is proportional to _____.
	
(A)	$(V_1 + V_2)^2$
(B)	$(3V_1 + V_2)^2$
(C)	$(2V_1 + V_2)^2$
(D)	$(V_1 + 2V_2)^2$
Q.39	The Laplace transform of $x_1(t) = e^{-t}\,u(t)$ is $X_1(s)$, where $u(t)$ is the unit step function. The Laplace transform of $x_2(t) = e^{t}\,u(-t)$ is $X_2(s)$. Which one of the following statements is TRUE?
(A)	The region of convergence of $X_1(s)$ is $Re(s) > 0$.
(B)	The region of convergence of $X_2(s)$ is confined to the left half-plane of s.
(C)	The region of convergence of $X_1(s)$ is confined to the right half-plane of s.
(D)	The imaginary axis in the s-plane is included in both the region of convergence of $X_1(s)$ and the region of convergence of $X_2(s)$.

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Q.40	A circular disc of radius R (in cm) has a uniform absorption coefficient of 1 cm^{-1}. Consider a single ray passing through the disc in the plane of the disc. The shortest distance from the center of the disc to the ray is t (in cm). If I_i is the intensity of the incident ray and I_o is the intensity of the transmitted ray, then $\log\left(\frac{I_i}{I_o}\right)$ is given by _____.
(A)	$2\sqrt{R^2 - t^2}$
(B)	$2R$
(C)	1
(D)	$2\sqrt{R - t}$

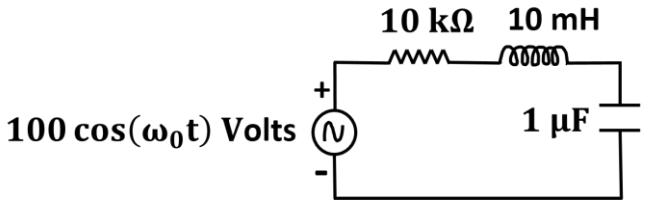
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Q.41	The free induction decay (FID) in the MRI of an object can be approximated as $$s(t) = \iint m(x,y)e^{-j2\pi(K_x(t)x+K_y(t)y)}\, dxdy,$$ where $K_x(t) = \int_0^t G_x(\tau)d\tau$ and $K_y(t) = \int_0^t G_y(\tau)d\tau$. Here G_x and G_y are pulses of identical period and are in-phase. By changing the amplitude of the pulses, one can obtain the two dimensional Fourier transform of the object _____.
(A)	over radial lines in (K_x, K_y) space
(B)	over a parabolic contour in (K_x, K_y) space
(C)	along K_y only
(D)	along K_x only

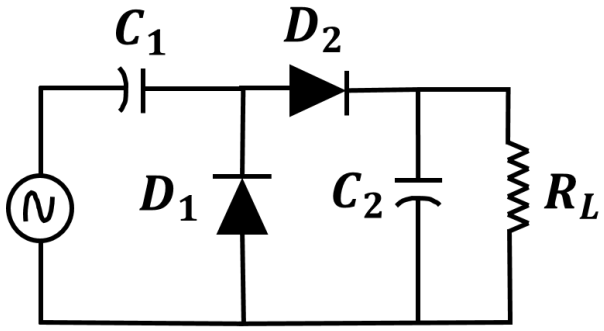
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Q.42	In the circuit shown below, it is observed that the amplitude of the voltage across the resistor is the same as the amplitude of the source voltage. What is the angular frequency ω_0 (in rad/s)?
	
(A)	10^4
(B)	10^3
(C)	$10^3\pi$
(D)	$10^4\pi$
Q.43	In a biomaterial, formation of hydrogen bonds on alcoholic groups will lead to a _____.
(A)	shift in the infra-red peak around 1700 cm^{-1}
(B)	shift in the infra-red peak around 2800 cm^{-1}
(C)	broadening of the infra-red peak around 3500 cm^{-1}
(D)	disappearance of the infra-red peak around 1700 cm^{-1}

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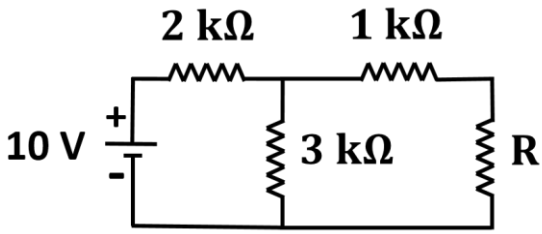
Q.44	In the circuit shown below, the input voltage is sinusoidal and 2.5 V peak to peak. The capacitors are 20 μF each. Assume that the knee voltage of the diodes is 0 V and R_L is very large (almost infinite). Which one of the following options is closest to the peak to peak voltage across R_L , after a large number of cycles?
	
(A)	1.25 V
(B)	2.50 V
(C)	5.00 V
(D)	10.0 V

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Q.45	An ultrasound plane wave of amplitude P_0 hits the semi-infinite boundary of two media having acoustic impedances Z_1 and Z_2. The sum of the amplitudes of the reflected and the incident waves at the boundary is equal to _____.
(A)	$\frac{2P_0Z_2}{(Z_1+Z_2)}$
(B)	$\frac{P_0(Z_2-Z_1)}{(Z_1+Z_2)}$
(C)	$\frac{P_0Z_2}{Z_1}$
(D)	$\frac{P_0Z_1}{(Z_1+Z_2)}$

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Q.46	In the circuit given below, what should be the value of the resistance R for maximum dissipation of power in R?
	
(A)	1.2 kΩ
(B)	2.2 kΩ
(C)	3.2 kΩ
(D)	4.2 kΩ

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Q.47	Two sequences $x_1[n]$ and $x_2[n]$ are described as follows: $$x_1[0] = x_2[0] = 1$$ $$x_1[1] = x_2[2] = 2$$ $$x_1[2] = x_2[1] = 1$$ $$x_1[n] = x_2[n] = 0 \text{ for all } n < 0 \text{ and } n > 2$$ If $x[n]$ is obtained by convolving $x_1[n]$ with $x_2[n]$, which of the following equations is/are TRUE?
(A)	$x[2] = x[3]$
(B)	$x[1] = 2$
(C)	$x[4] = 3$
(D)	$x[2] = 5$

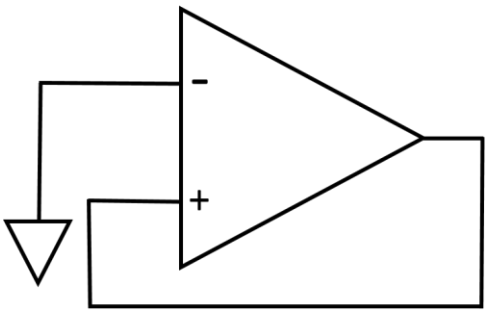
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Q.48	The function $f(Z) = \frac{1}{Z-1}$ of a complex variable Z is integrated on a closed contour in an anti-clockwise direction. For which of the following contours, does this integral have a non-zero value?
(A)	$\lvert Z - 2 \rvert = 0.01$
(B)	$\lvert Z - 1 \rvert = 0.1$
(C)	$\lvert Z - 3 \rvert = 5$
(D)	$\lvert Z \rvert = 2$
Q.49	The continuous time signal $x(t)$ is described by $x(t) = \begin{cases} 1, & 0 \leq t \leq 1 \\ 0, & \text{elsewhere} \end{cases}$ If $y(t)$ represents $x(t)$ convolved with itself, which of the following statements is/are TRUE?
(A)	$y(t) = 0$ for all $t < 0$
(B)	$y(t) = 0$ for all $t > 1$
(C)	$y(t) = 0$ for all $t > 3$
(D)	$\int_{0.1}^{0.75} \frac{dy(t)}{dt}\, dt \neq 0$

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Q.50	Which of the following relations is/are CORRECT in terms of various lung volume measurements?
(A)	Vital capacity minus expiratory reserve volume equals inspiratory capacity.
(B)	Vital capacity plus expiratory reserve volume equals inspiratory capacity.
(C)	Total lung capacity equals the sum of inspiratory capacity and functional residual capacity.
(D)	Functional residual capacity is the difference between expiratory reserve volume and residual volume.
Q.51	Assuming the operational amplifier in the circuit shown below to be ideal, which of the following properties hold(s) TRUE for the circuit?
	
(A)	It acts as a voltage follower.
(B)	It is bistable.
(C)	It is astable.
(D)	The output voltage is at saturation.

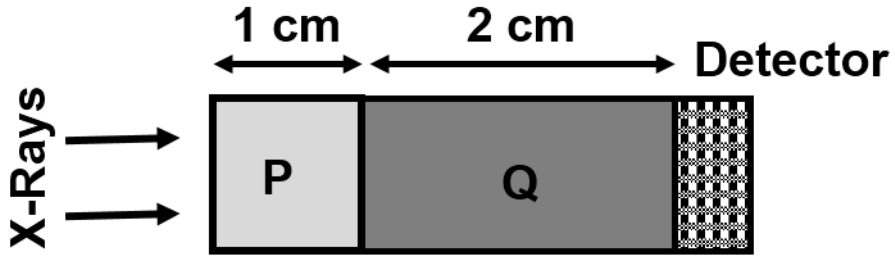
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Q.52	A water insoluble polymeric biomaterial can become water soluble *in vivo* by which of the following mechanisms?
(A)	Cleavage of crosslinks between water soluble polymer chains
(B)	Cleavage of side chains leading to formation of non-polar groups
(C)	Cleavage of backbone linkages between polymer repeat units leading to the formation of polar groups
(D)	Enzymatic degradation of crosslinks between water soluble polymer chains
Q.53	For the function $f(x) = x^4 - x^2$, which of the following statements is/are TRUE?
(A)	The function is symmetric about $x = 0$.
(B)	The minimum value of the function is -0.5.
(C)	The function has two minima.
(D)	The function is an odd function.

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Q.54	A system is described by the following differential equation $$0.01\frac{d^2y(t)}{dt^2} + 0.2\frac{dy(t)}{dt} + y(t) = 6x(t)\ ,$$ where time (t) is in seconds. If $x(t)$ is the unit step input applied at $t = 0$ s to this system, the magnitude of the output at $t = 1$ s is _____. (Round off the answer to two decimal places.)
Q.55	The resistance of a thermistor is 1 kΩ at 25 °C and 500 Ω at 50 °C. Find the temperature coefficient of resistance (in units of °C $^{-1}$) at 35 °C. (Round off the answer to three decimal places.)
Q.56	A normally incident X-ray of energy 140 keV passes through a tissue phantom and is detected by the detector as shown in the figure below. The phantom consists of tissue P with an absorption coefficient of 1 cm^{-1} and a thickness of 1 cm, and tissue Q with an absorption coefficient of 10 cm^{-1} and a thickness of 2 cm. Calculate the intensity (in μeV) detected by the detector. (Round off the answer to one decimal place.)
	
Q.57	A two-dimensional square plate (20 mm sides) contains a homogeneous circular inclusion of 5 mm diameter in it. A parallel beam of X-rays (beam width 30 mm) is used in a tomography system to determine the location of the inclusion. What is the minimum number of views required to approximately determine the location of the inclusion?

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Q.58	Calculate the reciprocal of the coefficient of z^3 in the Taylor series expansion of the function $f(z) = \sin(z)$ around $z = 0$. (Provide the answer as an integer.)
Q.59	In a cell viability experiment, 10,000 cells were cultured in the absence and presence of a compound Q for 24 h. The absorbance of a dye associated with cellular metabolic activity was measured at a wavelength of 570 nm at 24 h. The measured absorbances were 0.8 a.u. in the absence of the compound Q , and 0.5 a.u. in its presence. If the dye gives an absorbance (at 570 nm) of 0.1 a.u. in the absence of cells, what is the percentage cell growth inhibition caused by the compound Q? (Round off the answer to one decimal place.)
Q.60	The volume percentage of oxygen in inspired air is 20 % and that of expired air is 16 %. A person is breathing at a rate of 12 breaths per minute. Each breath is 500 ml in volume. The cardiac output is 5 liters per minute. Assuming ideal, healthy lung and cardiac conditions, what is the change in percentage of oxygen in blood over 1 minute? (Round off the answer to one decimal place.)

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Q.61

The intracellular and extracellular concentrations (in mM) of three important ions are given in the table below. The relative permeability of the cell membrane to each ion is provided. Universal gas constant is 8.31 J/(mol.K) and Faraday's constant is 96500 C/mol.

What is the absolute value of the resting membrane potential (in mV) across the cell membrane at 27 °C? (Round off the answer to one decimal place.)

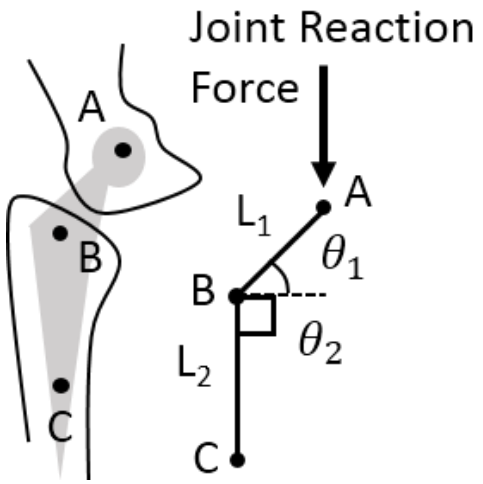
Ion	Extracellular concentration (mM)	Intracellular concentration (mM)	Relative permeability
Sodium	140	10	0.02
Potassium	3	140	1.00
Chloride	90	3	0.38

Q.62

A metallic strain gauge with negligible piezoresistive effect is subjected to a strain of 50×10^{-6}. For the metal, Young's Modulus = 80 GPa and Poisson's Ratio = 0.42. What is the change in resistance (in mΩ), if the unstrained resistance of the strain gauge is 200 Ω ? (Round off the answer to one decimal place.)

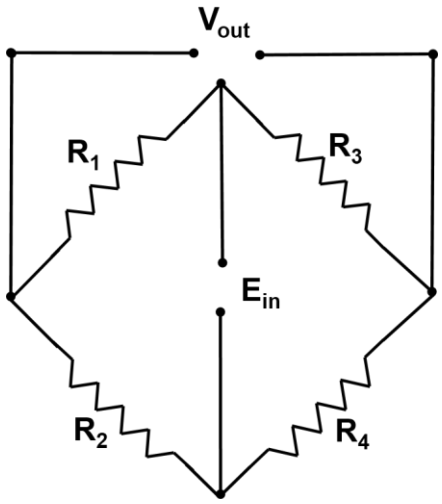
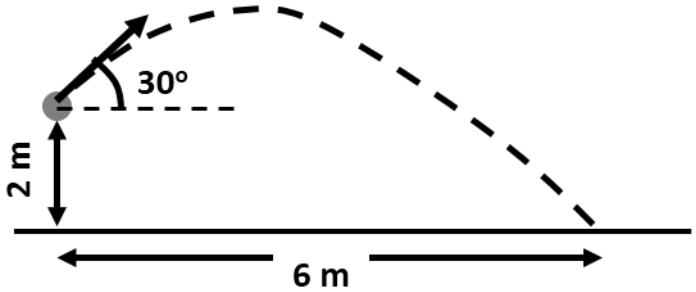
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Q.63	Consider the total hip joint prosthesis as shown in the figure. The geometric parameters of the prosthesis are such that L_1 = 40 mm, L_2 = 60 mm, $\theta_1 = 45^o$, $\theta_2 = 90^o$. Assume that, when standing symmetrically on both feet, a joint reaction force of 400 N is acting vertically at the femoral head (point A) due to the body weight of the subject. Calculate the magnitude of the moment (in Nm) about point C. (Round off the answer to one decimal place.)
	

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Q.64	A Wheatstone bridge strain gauge transducer is constructed on a diaphragm in such a way that when a force is applied on the diaphragm, the resistors R_1 and R_4 will be in compression, and the resistors R_2 and R_3 will be in tension. The bridge excitation voltage (E_{in}) is 10 Volts. If all the resistors have a resistance of 200 Ω in the absence of any force, and each resistance changes by 20 Ω upon application of a force, what is the output voltage V_{out} (in Volts) from the Wheatstone bridge? (Round off your answer to the nearest integer.)
	
Q.65	A stone is thrown from an elevation of 2 m above ground level, at an angle of 30° to the horizontal axis. If the stone hits the ground at a horizontal distance of 6 m from the point of release, at what speed (in m/s) was the stone thrown? Use g = 10 m/s^2 and assume that there is no air resistance. (Round off your answer to one decimal place.)
	

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