GREEN- NOT SURE

YELLOW- SURE

Comprehensive Question Preview

Questions	Choices
What is the first order predicate calculus statement equivalent to the following? Every teacher is liked by some student	1.∀(x) [teacher (x) → ∃ (y) [student (y) → likes (y, x)]] 2.∀ (x) [teacher (x) → ∃ (y) [student (y) ^ likes (y, x)]] 3.∃ (y) ∀ (x) [teacher (x) → [student (y) ^ likes (y, x)]] 4.∀ (x) [teacher (x) ^ ∃ (y) [student (y) → likes (y, x)]]
At what condition will a function f(x,y) will have minimum value at (a,b)	1. $rt - s^2 > 0$ and $r < 0$ 2. $rt - s^2 > 0$ and $r > 0$ 3. $rt - s^2 < 0$ and $r < 0$ 4. $rt - s^2 < 0$ and $r > 0$
Suppose p is the number of cars per minute passing through a certain road junction between 5 PM and 6 PM, and p has a poisson distribution with mean 3. What is the probability of observing fewer than 3 cars during any given minute in this interval?	1. $8 / (2e^3)$ 2. $9 / (2e^3)$ 3. $17 / (2e^3)$ 4. $26 / (2e^3)$
Two people, P and Q, decide to independently roll two identical dice, each with 6 faces, numbered 1 to 6. The person with the lower number wins, In case of a tie; they roll the dice repeatedly until there is no tie. Define a trial as a throw of the dice by P and Q. Assume that all 6 numbers on each dice are equi-probable and that all trials are independent. The probability (rounded to 3 decimal places) that one of them wins on the third trial is _____.	1. 0.6944 2. 0.1157 3. 0.023 4. 0.463
Two alternative packages A and B are available for processing a database	1.

having 10k records. Package A requires $0.0001n^2$ time units and package B requires $10n\log_{10}n$ time units to process n records. What is the smallest value of k for which package B will be preferred over A?	12 2. 10 3. 6 4. 5
Consider the series $X_{n+1} = X_n/2 + 9/ (8 X_n)$, $X_0 = 0.5$ obtained from the Newton-Raphson method. The series converges to	1. 1.5 2. $\sqrt{2}$ 3. 1.6 4. 1.4
Consider the problem of a chain $< A_1, A_2, A_3, A_4 >$ of four matrices. Suppose that the dimensions of the matrices A_1, A_2, A_3 and A_4 are 30 × 35, 35 × 15, 15 × 5 and 5 × 10 respectively. The minimum number of scalar multiplications needed to compute the product $A_1A_2A_3A_4$ is _____.	1. 14875 2. 21000 3. 9375 4. 11875
$F(z)$ is a function of the complex variable $z=x+iy$ given by $F(z)= i z+k\ Re(z) + i\ Im(z)$. For what value of k will $F(z)$ satisfy the Cauchy-Riemann equations?	1.0 2.1 3.-1 4.-2
In the Taylor series expansion of e^x about $x = 2$, the coefficient of $(x-2)^4$ is	1. 1/4! 2. $2^4/4!$ 3. $e^2/4!$ 4. $e^4/4!$
For existence of Laplace transform which is correct?	1.Sectionally continuous function 2. Function of exponential order 3. Function of class A 4. Function of inerrable
If the region of convergence of $x_1[n] + x_2[n]$ is $1/3 < \|z\| < 2/3$, then the region of convergences of $x_1[n]- x_2[n]$ includes	1. $1/3 < \|z\| < 3$ 2.

	2/3 < |z| < 3 3. 3/2 < |z| < 3 4. 1/3 < |z| < 2/3
In an analysis of variance problem involving 3 treatments and 10 observations per treatment, SSE = 399.6. The MSE for this situation is	1.133.2 2.13.32 3.14.8 4.30.0
Which of the following values cannot occur in a chi-square distribution?	1.100.0 2.38.4 3.0.61 4.-2.45
Consider an undirected random graph of eight vertices. The probability that there is an edge between a pair of vertices is 1/2. What is the expected number of unordered cycles of length three?	1.1/8 2.1 3.7 4.8
(G, $*$) is an abelian group. Then	1. $x = x^{-1}$, for any x belonging to G 2. $(x * y)^2 = x^2 * y^2$, for any x, y belonging to G 3. $x = x^2$, for any x belonging to G 4. G is of finite order
Which one of the following statements is FALSE?	1.Context-free grammar can be used to specify both lexical and syntax rules. 2.Type checking is done before parsing. 3.High-level language programs can be translated to different Intermediate Representations. 4.Arguments to a function can be passed using the program stack.
Which one of the following languages over the alphabet {0,1} is described by the regular expression: (0+1)*0(0+1)*0(0+1)*?	1. The set of all strings containing the substring 00 2. The set of all strings containing at most two 0's 3. The set of all strings containing at least two 0's 4. The set of all strings that begin and end with either 0 or 1
Consider two languages L1 and L2 each on the alphabet $\sum$. Let f: $\sum \rightarrow \sum$ be a polynomial time computable bijection such that ($\forall$ x) [x $\in$ L1 if f(x) $\in$ L2]. Further, let f1 is also polynomial time computable. Which of the following CANNOT be true?	1.L1 $\in$ P and L2 is finite 2.L1 $\in$ NP and L2 $\in$ P 3.L1 is undecidable and L2 is decidable 4.L1 is recursively enumerable and L2 is recursive

How many tokens will be generated by the scanner for the following statement? x = x * (a + b) - 5;	1.12 2.11 3.10 4.7
Incremental-Compiler is a compiler	1.which is written in a language that is different from the source language2.compiles the whole source code to generate object code afresh 3.compiles only those portion of source code that have been modified 4.that runs on one machine but produces object code for another machine
Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statements is true?	1.R is NP-complete 2.R is NP-hard 3.Q is NP-complete 4.Q is NP-hard
A 3-ary max heap is like a binary max heap, but instead of 2 children, nodes have 3 children. A 3-ary heap can be represented by an array as follows: The root is stored in the first location, a[0], nodes in the next level, from left to right, is stored from a[1] to a[3]. The nodes from the second level of the tree from left to right are stored from a[4] location onward. An item x can be inserted into a 3-ary heap containing n items by placing x in the location a[n] and pushing it up the tree to satisfy the heap property. Which one of the following is a valid sequence of elements in an array representing 3-ary max heap?	1.1,3,5,6,8,9 2.9,6,3,1,8,5 3.9,3,6,8,5,1 4.9,5,6,8,3,1
The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, and 42. Which one of the following is the postorder traversal sequence of the same tree?	1.10, 20, 15, 23, 25, 35, 42, 39, 30 2.15, 10, 25, 23, 20, 42, 35, 39, 30 3.15, 20, 10, 23, 25, 42, 35, 39, 30 4.15, 10, 23, 25, 20, 35, 42, 39, 30
Consider a hash table of size seven, with starting index zero, and a hash function (3x + 4) mod 7. Assuming the hash table is initially empty, which of the following is the contents of the table when the sequence 1, 3, 8, 10 is inserted into the table using closed hashing? Note that '_' denotes an empty location in the table.	1.8, _, _, _, _, _, 10 2.1, 8, 10, _, _, _, 3 3.1, _, _, _, _, _, 3 4.1, 10, 8, _, _, _, 3
Which of the following algorithms sort n integers, having the range 0 to ($n^2 - 1$), in ascending order in O (n) time?	1. Selection sort 2. Bubble sort 3. Radix sort 4. Insertion sort
How many times will the following loop be executed? LXI B, 0007 H LOOP : DCX B	1.5 2.7 3.9 4.4

MOV A, B ORA C JNZ LOOP	
Specify the contents of the accumulator and the status of the S, Z and CY flags when 8085 microprocessor performs addition of 87 H and 79 H.	1.11, 1, 1, 1 2.10, 0, 1, 0 3.1, 1, 0, 0 4.00, 0, 1, 1
A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller. Each cache tag directory entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit. The number of bits in the tag field of an address is	1.11 2.14 3.16 4.27
A computer uses ternary system instead of the traditional binary system. An n bit string in the binary system will occupy	1. 3 + n ternary digits 2. 2n / 3 ternary digits 3. $n(\log_2 3)$ ternary digits 4. $n(\log_3 2)$ ternary digits
For a multi-processor architecture, in which protocol a write transaction is forwarded to only those processors that are known to possess a copy of newly altered cache line?	1.Directory based protocol 2.Snoopy bus protocol 3.Cache coherency protocol4.Cache consistency protocol
Consider a process executing on an operating system that uses demand paging. The average time for a memory access in the system is M units if the corresponding memory page is available in memory and D units if the memory access causes a page fault. It has been experimentally measured that the average time taken for a memory access in the process is X units. Which one of the following is the correct expression for the page fault rate experienced by the process?	1.(D - M) / (X - M) 2.(X - M) / (D - M) 3.(D - X) / (D - M) 4.(X - M) / (D - X)
Consider three processes, all arriving at time zero, with total execution time of 10, 20 and 30 units, respectively. Each process spends the first 20% of execution time doing I/O, the next 70% of time doing computation, and the last 10% of time doing I/O again. The operating system uses a shortest remaining compute time first scheduling algorithm and schedules a new process either when the running process gets blocked on I/O	1.10.6% 2.29.1% 3.24.8% 4.89.4%

or when the running process finishes its compute burst. Assume that all I/O operations can be overlapped as much as possible. For what percentage of time does the CPU remain idle?	
A shared variable x, initialized to zero, is operated on by four concurrent processes W, X, Y, Z as follows. Each of the processes W and X reads x from memory, increments by one, stores it to memory, and then terminates. Each of the processes Y and Z reads x from memory, decrements by two, stores it to memory, and then terminates. Each process before reading x invokes the P operation (i.e., wait) on a counting semaphore S and invokes the V operation (i.e., signal) on the semaphore S after storing x to memory. Semaphore S is initialized to two. What is the maximum possible value of x after all processes complete execution?	1.-2 2.-1 3.1 4.2
The simplified SOP (Sum Of Product) form of the Boolean expression (P + Q' + R').(P + Q' + R).(P + Q + R') is	1.(P'.Q + R') 2.(P + Q'.R') 3.(P'.Q + R) 4.(P.Q + R)
The resistivity of a pure silicon is about _____	1.100 Ω cm 2.6000 Ω cm 3.3 x 105 Ω m 4.6 x 10-8 Ω cm
In a transistor, the base current is about ____ of emitter current	1.25% 2.5% 3.30% 4.10%
In RS flip-flop, the output of the flip-flop at time (t+1) is same as the output at time t, after the occurance of a clock pulse if:	1.S=R=1 2.S=0, R=1 3.S=1, R=0 4.S=R=0
The range of representable normalized numbers in the floating point binary fractional representation in a 32-bit word with 1-bit sign, 8-bit excess 128 biased exponent and 23-bit mantissa is	1. 2^{-128} to $(1 - 2^{-23}) \times 2^{127}$ 2. $(1 - 2^{-23}) \times 2^{-127}$ to 2^{128} 3. $(1 - 2^{-23}) \times 2^{-127}$ to 2^{23} 4. 2^{-129} to $(1 - 2^{-23}) \times 2^{127}$
A software system crashed 20 times in the year 2017 and for each crash, it took 2 minutes to restart. Approximately, what was the software availability in that year?	1.96.9924% 2.97.9924% 3.98.9924% 4.99.9924%
Statistical software quality assurance in software engineering involves _____	1.using sampling in place of exhaustive testing of software 2.Surveying customers to find out their opinions about product quality. 3.tracing each defect to its underlying cause, isolating the vital few causes, and

	moving to correct them 4.tracing each defect to its underlying causes, and using the Pareto principle to correct each problem found

Consider the following C code. Assume that unsigned long int type length is 64 bits.
 	
unsigned long int fun(unsigned long int n){
unsigned long int i, j = 0, sum = 0;
for (i = n; i > 1; i = i/2) j++;
for (j=n; j > 1; j = j/2) sum++;
return(sum);
}
 	
The value returned when we call fun with the input 2^{40} is
	1.
	4
	2. 5
	3.
	6
	4.
	40

How can we make a C++ class such that objects of it can only be created using new operator? If user tries to create an object directly, the program produces compiler error.	1.Not possible 2.By making destructor private 3.By making constructor private 4.By making both constructor and destructor private
Consider an IP packet with a length of 4,500 bytes that includes a 20-byte IPv4 header and a 40-byte TCP header. The packet is forwarded to an IPv4 router that supports a Maximum Transmission Unit (MTU) of 600 bytes. Assume that the length of the IPheader in all the outgoing fragments of this packet is 20 bytes. Assume that the fragmentation offset value stored in the first fragment is 0.The fragmentation offset value stored in the third fragment is _____	1.144 2.124 3.64 4.256
Consider a TCP client and a TCP server running on two different machines. After completing data transfer, the TCP client calls close to terminate the connection and a FIN segment is sent to the TCP server. Server-side TCP responds by sending an ACK, which is received by the client-side TCP. As per the TCP connection state diagram (RFC 793), in which state does the client-side TCP connection waits for the FIN from the server-side TCP?	1.LAST-ACK 2.TIME-WAIT 3.FIN-WAIT-1 4.FIN-WAIT-2
A sender S sends a message m to receiver R, which is digitally signed by S with its private key. In this scenario, one	1. 1 and 2 only 2. 1 only 3.

or more of the following security violations can take place. 1. S can launch a birthday attack to replace m with a fraudulent message 2. A third party attacker can launch a birthday attack to replace m with a fraudulent message 3. R can launch a birthday attack to replace m with a fraudulent message Which of the following are possible security violations?	2 only 4. 2 and 3 only
Suppose that everyone in a group of N people wants to communicate secretly with the N-1 others using symmetric key cryptographic system. The communication between any two persons should not be decodable by the others in the group. The number of keys required in the system as a whole to satisfy the confidentiality requirement is	1.2N 2.N(N-1) 3.N(N-1)/2 4.(N-1)^2
The connection between storage and Microsoft's Content Delivery Network is stated to be at least _____ percent uptime.	1.90.8 2.99.9 3.95.3 4.94.6
Predict the correct statement about symmetric multiprocessing.	1.A single copy of the operating system resides in each processor. 2.Useful for situations where data must remain in memory to process. 3.Bottlenecks increase with uniprocessor system because tasks are not shared. 4.The problems with memory contention are unlikely.
Speed of HPC systems has enhanced from Gflops to	1.Tflops 2.Pflops 3.Eflops 4.Mflops
Job throughput, data access and storage are elements of	1.Adaptation 2.Efficiency 3.Dependability 4.Flexibility
Given relations R(w,x) and S(y,z), the result of SELECT DISTINCT w, x FROM R, S Is guaranteed to be same as R, if	1. R has no duplicates and S is non-empty 2. R and S have no duplicates 3. S has no duplicates and R is non-empty 4. R and S have the same number of tuples
A FAT (file allocation table) based file system is being used and the total overhead of each entry in the FAT is 4 bytes in size. Given a 100 x 10^6 bytes disk on which the file system is stored and data block size is 10^3 bytes, the maximum size of a file that can be stored	1. 99.55 to 99.65 2. 100.5 to 101.4 3. 97.2 to 98.5 4.

on this disk in units of 10^6 bytes is _____.	89.1 to 91.2
Consider the following relational schema: Suppliers(sid: integer, sname: string, city: string, street: string) Parts(pid:integer, pname:string, color:string) Catalog(sid:integer, pid:integer, cost:real) Assume that, in the suppliers relation above, each supplier and each street within a city has a unique name, and (sname, city) forms a candidate key. No other functional dependencies are implied other than those implied by primary and candidate keys. Which one of the following is TRUE about the above schema?	1. The schema is in BCNF 2. The schema is in 3NF but not in BCNF 3. The schema is in 2NF but not in 3NF 4. The schema is not in 2NF
A many-to-one relationship exists between entity sets r1 and r2. How will it be represented using functional dependencies if Pk(r) denotes the primary key attribute of relation r?	1.Pk(r1) → Pk(r2) 2.Pk(r2) → Pk(r1) 3.Pk(r2) → Pk(r1) and Pk(r1) → Pk(r2) 4.Pk(r2) → Pk(r1) or Pk(r1) → Pk(r2)
A man travelling on f(x, y) = sin(xy). His shadow passing through the origin in a straightline (sun travels with him overhead). What is the slope of the line travelling on which would lead him to the lowest elevation?	1.There isn't such a line 2.1 3.-1 4.0
Let A be the 2 × 2 matrix with elements a11 = a12 = a21 = +1 and a22 = −1. Then the eigenvalues of the matrix A^{19} are	1. 1024 and -1024 2. $1024\sqrt{2}$ and $-1024\sqrt{2}$ 3. $4\sqrt{2}$ and $-4\sqrt{2}$ 4. $512\sqrt{2}$ and $-512\sqrt{2}$
The grammar whose productions are → *if id then* → *if id then else* → *id := id* is ambiguous because	1. The sentence if *a* then if *b* then *c:= d* has two parse trees 2. The left most and right most derivations of the sentence if *a* then if *b* then *c:= d* give rise to different parse trees 3. the sentence if *a* then if *b* then *c:= d* else *c:= f* has more than two parse trees 4. the sentence if *a* then if *b* then *c:= d* else *c:= f* has two parse trees

What is the time complexity of fun()? *int fun(int n)* *{* *int count = 0;* *for (int i = n; i > 0; i /= 2)* *for (int j = 0; j < i; j++)* *count += 1;* *return count;* *}*	1.O(n^2) 2.O(nLogn) 3.O(n) 4.O(n Log n Log n)
Consider the following three claims 1. $(n + k)^m = \Theta(n^m)$, where k and m are constants 2. $2^{n+1} = O(2^n)$ 3. $2^{2n+1} = O(2^n)$ Which of these claims are correct?	1. 1 and 2 2. 1 and 3 3. 2 and 3 4. 1, 2 and 3

Consider the following function that takes reference to head of a Doubly Linked List as parameter. Assume that a node of doubly linked list has previous pointer as prev and next pointer as next.
void fun(struct node **head_ref)
{
struct node *temp = NULL;
struct node *current = *head_ref;
 	
while (current != NULL)
{
temp = current->prev;
current->prev = current->next;
current->next = temp;
current = current->prev;
}
 	
if(temp != NULL)
*head_ref = temp->prev;
}
Assume that reference of head of following doubly linked list is passed to above function 1<---> 2
	1.
	2 <--->1 <--->4<---> 3<---> 6<---> 5
	2.
	5<---> 4<---> 3 <--->2 <--->1<---> 6
	3.
	6<---> 5 <--->4<---> 3<---> 2<---> 1
	4.
	6<---> 5<---> 4 <--->3<---> 1<---> 2

<---> 3<---> 4<---> 5<---> 6.What should be the modified linked list after the function call?	
Let G be a graph with 100! Vertices, with each vertex labeled by a distinct permutation of the numbers 1,2, … , 100. There is an edge between vertices u and v if and only if the label of u can be obtained by swapping two adjacent numbers in the label of v. Let y denote the degree of a vertex in G, and z denote the number of connected components in G. Then, y + 10z = _____	1.109 2.110 3.108 4.107
The instruction pipeline of a RISC processor has the following stages: Instruction Fetch (IF), Instruction Decode (ID), Operand Fetch (OF), Perform Operation (PO) and Writeback (WB). The IF, ID, OF and WB stages take 1 clock cycle each for every instruction. Consider a sequence of 100 instructions. In the PO stage, 40 instructions take 3 clock cycles each, 35 instructions take 2 clock cycles each, and the remaining 25 instructions take 1 clock cycle each. Assume that there are no data hazards and no control hazards. The number of clock cycles required for completion of execution of the sequence of instructions is _____.	1.218 2.219 3.215 4.210
What for the swap space in the disk is used ?	1.Saving temporary html pages 2.Saving process data 3.Storing the super-block 4.Storing device drivers
Consider the min-term list form of a Boolean function F given below. $(P,Q, R, S) = \sum(0, 2, 5, 7, 9, 11) + d(3, 8, 10, 12, 14)$ Here, m denotes a min-term and d denotes a don't care term. The number of essential prime implicants of the function F is _____.	1.2 2.4 3.3 4.6
Coupling is a measure of the strength of the interconnections between software modules.Which of the following are correct statements with respect to module coupling? P: Common coupling occurs when one module controls the flow of another module by passing it information on what to do. Q: In data coupling, the complete data structure is passed from one module to another through parameters. R: Stamp coupling occurs when modules share a composite data structure and use only parts of it.	1.P and Q only 2.P and R only 3.Q and R only 4.All of P, Q and R

Consider the following pseudo code
while (m < n)
if (x > y) and (a < b) then
a=a+1
y=y-1
end if
	1.5 2. 4 3.3 4.2

m=m+1 end while What is cyclomatic complexity of the above pseudo code?	

Consider the following C program.
#include
struct Ournode
{
char x,y,z;
};
int main()
{
struct Ournode p = {'1', '0', 'a'+2};
struct Ournode *q = &p;
printf ("%c, %c", *((char*)q+1), *((char*)q+2));
return 0;
}
The output of this program is:
	1. 0, c
	2.
	0, a+2
	3.
	'0', 'a+2'
	4.
	'0','c'

The principle of operation of LVDT is based on the variation of	1.Self inductance 2.Mutual inductance 3.Reluctance 4.Permanence
Which one of the following decides the time of response of an indicating instrument?	1.Deflecting system 2.Controlling system 3.Damping system 4.Pivot and jewel bearing
For a feedback control system of type 2, the steady state error for ramp input is,	1.Infinite 2.Constant 3.Zero 4.Indeterminate
When a potentiometer is used for measurement of voltage of an unknown source, the power consume in the circuit of the unknown source under null conditions is	1.high 2.Very high 3.ideally zero 4.small
Two incandescent light bulbs of 40 W and 60 W rating are connected in series across the mains. Then	1. Bulbs together consume 50W 2. 40W bulb grow brighter 3. 60W bulbs glow brighter 4. Bulbs together consume 100W
Fourier series of any periodic signal x(t) can only be obtained if	1. $\int_0^T \lvert x(t)\rvert dt < \infty$ 2. finite number of discontinuities within finite time interval t 3. both (a) and (b) are correct

	4. infinite number of discontinuities
Rectifier moving coil instruments respond to	1.rms value for symmetrical square wave form 2.rms value for all wave forms 3.Peak value, irrespective of the nature of the wave form 4.Average value for all wave forms
The transfer function of a MIMO system with the state space representation of , is given by ,	1.C(sI - A)^-1 2.C(sI - A)^-1 + D 3.(sI - A)^-1B + D 4.C(sI - A)^-1B + D
A d.c. voltmeter has a sensitivity of 1000 ohm/volt. When it measures half full scale in 100 V range, the current through the voltmeter will be	1.50 mA 2.100 mA 3.1 mA 4.0.5 mA
The sensitivity of an instrument is the	1.Closeness of the output values for repeated applications of a constant input. 2.Smallest increment in the input that can be detected certainly 3.Largest input change to which the instrument fails to respond 4.Ratio of the change in the magnitude of the output to the corresponding change in the magnitude of the input.
In an induction type of meter, maximum torque is produced when the phase angle between the two fluxes is	1.60° 2.45° 3.90° 4.0°
For a type one system, the steady - state error due to step input is equal to	1.infinite. 2.zero. 3.0.25. 4.0.5.
A lens is having a system constant k_1 = 0.8, radius of the object is 40 µm, distance of object from lens is 133.33 µm and wavelength of light as 350 nm. Its resolution is	1. 400nm 2. 466.66 nm 3. 566.66 nm 4. 460.66 nm
The input to a controller is	1.sensed signal. 2.desired variable value. 3.error signal. 4.servo-signal.
Peak overshoot of step-input response of an underdamped second-order system is explicitly indicative of	1.settling time. 2.rise time. 3.natural frequency. 4.damping ratio.
A unity feedback system with open-loop transfer function G(s) = 4/ [s(s + p)] is critically damped. The value of the parameter p is	1.4 2.3 3.2 4.1

The difference between true value and measured value is known as	1.Relative error 2.Absolute error 3.Gross error 4.Probable error
In the Bode-plot of a unity feedback control system, the value of phase of G(jw) at the gain cross over frequency is -125^o. The phase margin of the system is	1. -125^o 2.-55^o. 3.55^o 4.125^o.
The maximum current that a 2W, 80 kΩ resistor can safely conduct is:	1. 40KA 2. 5mA 3. 25 μA 4. 160KA
To prevent a DC return between source and load, it is necessary to use	1. inductor between source and load 2. resistor between source and load 3. either (a) or (b) 4. capacitor between source and load
Which of the following is the dynamic characteristics of an instrument ?	1. Fidelity 2. Reproducibility 3. Dead zone 4. Sensitivity
In measurement systems, which of the following static characteristics are desirable:	1. All the answers are correct 2. Reproducibility 3. Sensitivity 4. Accuracy
If the quantity is slowly varied from zero, output is not shown until some minimum value of input is exceeded. This minimum value of input is called_____	1. Sensitivity 2. Reproducibility 3. Threshold 4. Accuracy
Which of a following is not a basic element of a transformer?	1.primary winding 2.Core 3.Secondary winding 4.Mutual flux
An ideal voltage source should have	1. small value of emf 2. zero source resistance 3. large value of emf 4. infinite source resistance
A lossy capacitor Cx , rated for operation at 5 kV, 50 Hz is represented by an equivalent circuit with an ideal capacitor Cp in parallel with a resistor Rp . The value Cp is found to be 0.102 μF and value of Rp = 1.25MΩ. Then the power loss and tan δ of the lossy capacitor operating at the rated voltage, respectively, are	1. 20 W and 0.025 2. 10 W and 0.0002 3. 10 W and 0.0025 4. 20 W and 0.04
Consider a characteristic equation given by $s^2 + 3s^3 + 5s^2 + 6s + K + 10$ The condition for stability is	1. K > 5 2. - 10 < K 3. K > - 4 4. - 10 < K < - 4
Two resistors connected in series have an equivalent resistance of 18 ohms and when connected in parallel have an equivalent resistance of 4 ohms. Find the value of both the resistances.	1. **2 ohm ,2 ohm** 2. **14 ohm ,4 ohm** 3. **12 ohm ,6 ohm** 4. **9 ohm ,9 ohm**
The steady state error of a stable 'type 0' unity feedback system for a unit step function is	1. $1/1+K_p$ 2. $1/K_p$. 3. 0

	4. ∞
_____ Transform is often used in transient and stability analysis of	1. Laplace Transform 2. Fourier Transform 3. Z-Transform 4. DTFT
The switch board instruments	1.should be mounted in horizontal position 2.either mounted in vertical position or mounted in horizontal position 3.neither mounted in vertical position nor mounted in horizontal position 4.should be mounted in vertical position
In foil strain gauge the thickness of foil varies from	1. 2.5 micron to 6 micron 2. 25 micron (or) less 3. 25 micron to 60 micron 4. 2.5 micron to 5 micron
The unit impulse response of a linear variant system is the unit step function For t > 0, the response system to an excitation $e^{-}(t)$, a > 0 will	1. ae^{-at} 2. $1 - e^{-at}$ 3. $a(1 - e^{-at})$ 4. $(1/a)(1 - e^{-at})$
The characteristic polynomial of system is $q(s) = 2s^5 + s^4 + 4s^3 + 2s^2 + 2s + 1$. The system is	1. stable 2. unstable 3. marginally stable 4. oscillatory
In a LVDT, the two secondary voltages	1. Are independent of the core position 2. Vary unequally depending on the core position 3. Vary equally depending on the core position 4. Are always in phase quadrature
A piezoelectric crystal having dimensions of 5mmX5mmX1.5mm and a voltage sensitivity of 0.055 Vm/N is used for force measurement. The force applied if the voltage developed is 100V is ---------	1. 25 N 2.38N 3. 30.3 N 4. 21.8NN
Which one of the following is open loop?	1. A thermostatic control 2. Traffic Light Control 3. The respiratory system of man 4. A system for controlling the movement of the slide of a copying milling machine

The dead zone of a certain pyrometer is 0.125 % of the span. The calibration is 8000C to 18000C. What temperature change must occur before it is detected?	1. 2.25 degree C 2. 0.25 degree C 3. 12.25 degree C 4. 1.25 degree C
According to application, instruments are classified as	1.moving coil 2.both switch board and portable 3.portable 4.switch board
A half adder can be constructed using	1. One XOR gate and one AND gate 2. One XOR and one OR gates with their outputs connected in series 3. One XOR and one OR gates with their outputs connected in parallel 4. Two XNOR gates only
Which of the following essential features is possessed by an indicating instrument ?	1.Damping device 2.All of the options specified 3.Controlling device 4.Deflecting device
Consider a feedback control system with loop transfer function $(s)H(s) = K(1 + 0.5s)$ $/s(1 + s)(1 + 2s)$ The type of the closed loop system is	1. one 2. zero 3. two 4. three
A casual system having the transfer function $(s) = 1 /(s+2)$ is excited with $10u(t)$. The time at which the output reaches 99% of its steady state value is	1. 2.1sec 2. 2.5 sec 3. 2.7 sec 4. 2.3 sec
A _____ device prevents the oscillation of the moving system and enables the latter to reach its final position quickly	1.any of the options specified 2.damping 3.controlling 4.deflecting
The open loop transfer function of an unity feedback open loop system $(2s^2+6s+5)/ (s+1)^2 (s+2)$. The characteristic equation of the closed loop system is	1. $(s + 1)^2 (s + 2) = 0$ 2. $2s^2+ 6s + 5 - (s + 1)^2 (s + 2) = 0$ 3. $2s^2 + 6s + 5 + (s + 1)^2 (s + 2) = 0$ 4. $2s^2 + 6s + 5 = 0$
A pressure gauge is calibrated from 0-50kN/m^2 . It has a uniform scale with 100 scale divisions .one fourth of a scale division can be read with certainty. The gauge has ----	1. Resolution of 0.5 kN/m^2 2. dead zone of 0.125 kN/m^2 3. Threshold of 0.125 kN/m^2 4. Resolution of 0.125kN/m^2
A 0-10A ammeter has 100 divisions which can read to 1/4 division. The resolution of the meter is_____	1. 1.025A 2. 2.025A 3.

	0.025A 4. 0.125A
The phase margin (in degrees) of a system having the loop transfer function (s) $H(s)$ = 2√3/ $s(s$ + 1) is	1. 60^0 2. 30^0 3. -30^0 4. 45^0
A star connected system has three resistance of value R W .The resistance in one of the three arms of the equivalent delta system is	1. 2R 2. R/2 3. R/3 4. 3R
The spring material used in a spring control device should have the following property.	1.Most be of low temperature co-efficient 2.All of the options specified 3.Should have low specific resistance 4.Should be non-magnetic
In the Bode - plot of a unity feedback control system, the value of phase of $(j\omega)$ at the gain cross over frequency is - 125^0 . The phase margin of the system is	1. - 125^0 2. - 55^0 3. 55^0 4. 125^0
A control system having unit damping factor will give	1. Critically damped response 2. Oscillatory response 3. Undamped response 4. No response
The initial slope of the Bode plot for a transfer function having three poles at orgin is	1. 60 db/decade 2. -20db/decade 3. -60db/decade 4. 20db/decade
A 100 kilo ohm resistor with a 1 W power rating is likely to be a	1. Wire wound resistor 2. Carbon resistor 3. Neither carbon nor wire wound resistor 4. Either carbon or wire wound resistor
A phase lag compensation will	1. increase the speed of response 2. increase bandwidth 3. increase overshoot 4. improve relative stability
The polar plot of (s) = 10/ $(s$+1)^2 intercepts real axis at ω = ω_0. Then, the real part and ω_0 are respectively given by:	1. - 2.5, 1 2. - 5, 2 3. - 5, 1 4. - 5, 0.5
Introduction of integral action in the forward path of a unity feedback system results in a	1. Marginally stable system 2. System with no steady state error 3. System with increased stability margin 4. System with better speed of response
For the system 2 /(s +1) , the approximate time taken for a step response to reach 98% of the final value is	1. 1 s 2. 2 s 3. 4 s 4. 8 s
A given system is characterized by the differential equation: $[d^2y(t)/dt^2]$-[dy(t)/dt]-2y(t)= x(t) . The system is:	1. linear and unstable. 2. nonlinear and unstable. 3. linear and stable. 4. nonlinear and stable.

Gain cross over frequency is the frequency at which	1. Magnitude is 0 db 2. phase is 180^0 3. magnitudes is 1db 4. phase is -180^0
A 0-10 V voltmeter is showing null deflection when input is < 1V. This is characterized by .....static character.	1.Dead space 2.Sensitivity 3.Hysteresis 4.Nonlinearity
A dynamometer wattmeter can be used for	1.A.C. only 2.D.C. only 3.both D.C. and A.C. 4.any of the options specified
Which of the following devices may be used for extending the range of instruments ?	1.All are correct answer 2.Shunts 3.Multipliers 4.Current transformers
While forming the Routh Array, the situation of a row of zeros indicates that the system	1. unstable 2. is not sensitive to variations inn gain 3. is stable 4. has symmetrically located roots
Which of the following are integrating instruments ?	1.Ammeters 2.Voltmeters 3.Wattmeters 4.Ampere-hour and watt-hour meters
A moving-coil permanent-magnet instrument can be used as _____ by using a low resistance shunt.	1.ballistic galvanometer 2.flux-meter 3.ammeter 4.voltmeter
A moving-coil permanent-magnet instrument can be used as flux-meter	1.by using a low resistance shunt 2.by using a high series resistance 3.by eliminating the control springs 4.by making control springs of large moment of inertia
The unit step response of a first order system is 0.865 at 2 seconds. The 5% settling time [in seconds] of the system is	1. 3 2. 5 3. 4 4. 2
Which of the following is an essential part of a motor meter ?	1.An operating torque system 2.Revolution registering device 3.All of the options specified 4.A braking device
The impact of negative feedback on which of the following are disadvantageous? i) Gain ii) Stability iii) Bandwidth iv) Noise	1. i and iii 2. iii and iv 3. ii and iv 4. i and ii
An ammeter is a	1.recording instrument 2.integrating instrument 3.secondary instrument4.absolute instrument
For a type one system, the steady - state error due to step input is equal to	1.0.5 2.infinite 3.0.25 4.zero
In a portable instrument, the controlling torque is provided by	1.eddy currents 2.gravity 3.spring 4.all of the specified options
The pointer of an indicating instrument should be	1.very heavy 2.very light 3.either (very light) or (very heavy) 4.neither (very light) nor (very heavy)
In majority of instruments damping is provided by	1.fluid friction 2.all of the options specified 3.eddy currents 4.spring
Two resistors connected in series have an equivalent resistance of 18 ohms and when connected in parallel have an equivalent resistance of 4 ohms. Find the value of both the resistances.	1. **2 ohm ,2 ohm** 2. **14 ohm ,4 ohm** 3. **12 ohm ,6 ohm** 4. **9 ohm ,9 ohm**

Sensitivity of a potentiometer can be increased by	1. Decreasing the length of potentiometer wire 2. increasing the length of potentiometer wire 3. Decreasing the current in potentiometer wire 4. Decreasing the resistance in the rheostat in series with the battery
An ammeter has a current range of 0-5 A, and its internal resistance is 0.2 Ω. In order to change the range to 0-25 A, we need to add a resistance of	1. 0.8 Ω in series with the meter 2. 1.0 Ω in series with the meter 3. 0.04 Ω in parallel with the meter 4. 0.05 Ω in parallel with the meter
The two inputs of a CRO are fed with two stationary periodic signals. In the X-Y mode, the screen shows a figure which changes from ellipse to circle and back to ellipse with its major axis changing orientation slowly and repeatedly. The following inference can be made from this	1. The signals are not sinusoidal 2. The amplitudes of the signals are very close but not equal 3. There is a constant but small phase difference between the signals 4. The signals are sinusoidal with their frequencies very close but not equal
The power consumption in PMMC instruments is typically about	1. 0.25 W to 2 W 2. 0.25 mW to 2 mW 3. All the answers are wrong 4. 25 μW to 2 mW
The pressure coil of a dynamometer type wattmeter is	1. Highly inductive 2. Highly resistive 3. Purely resistive 4. Purely inductive
The potential transformers are used to measure large voltage using	1. Low range ammeter 2. Low range voltmeter 3. High range voltmeter 4. High range ammeter
No eddy current and hysteresis losses occur in	1. Electrodynamo meter instruments 2. Moving iron instruments 3. PMMC instruments 4. Electrostatic instruments
In moving coil meters, damping is provided by	1. The coil spring attached to the moving mechanism 2. damping vane in the air tight chamber 3. eddy current disc 4. the aluminium frame of the coil
The bridge method commonly used for finding mutual inductance is	1. Wien bridge 2. De Sauty bridge 3. Heaviside Campbell bridge 4. Schering bridge
A triangular waveshape is obtained	1. By differentiating a sine wave 2. By integrating a square wave 3. By differentiating a square wave 4. By integrating a sine wave
If a capacitor is connected across a portion of resistance of multiplier of the wattmeter then the pressure coil of the circuit becomes	1. Capacitive 2. Inductive 3. Non inductive 4. Non capacitive
Ballistic galvanometer are principally used for the measurement of	1. Power 2. Voltage 3. Electric charges

	4. Current
Two resistors 5 Ω and 3 Ω are connected in series with a voltage source of 20 V. What is the voltage drop across 3 Ω resistor?	1. 20V 2. 8V 3. 7.5V 4. 12.5V
Form factor for a sine wave is	1.0.637 2. 1.414 3.1.11 4. 0.707
The z-transform of x[n-k] is	1. $n^{-1}X(z)$ 2. $kX(z^{-1})$ 3. $z^{-k}X(z)$ 4. $X(k^{-1}z)$
A network has 12 branches and 8 independent loops. How many nodes are there in the network?	1. 4 2. 19 3. 5 4. 17
Which of the following is not the same as watt?	1. joule/sec 2. amperes/volt 3. $(Amperes)^2$ x ohm. 4. amperes x volts
The frequency errors in induction instruments can be compensated by the use of	1. Non inductive shunt in case of ammeters and are generally self compensated in case of voltmeters 2. Self compensated in case of ammeters and non inductive shunt in case of voltmeters 3. Self compensated in case of both ammeters and voltmeters 4. Non inductive shunt in both ammeters and voltmeters
In a moving coil of a meter swamping resistance is added to	1. Reduce the frequency error 2. Reduce the temperature error 3. Reduce the power consumption 4. . All of these
The statement 'In any circuit of linear impedances, the currents flowing towards a point is equal to the sum of the currents flowing away from the point and the voltage in the circuit is the algebraic sum of the voltages in the circuit' represents -	1.Kirchhoff's law 2.Norton's theorem 3.Superposition theorem 4.Thevenin's theorem
Power consumed by a balanced 3-phase, 3-wire load is measured by the two wattmeter method. The first wattmeter	1. $\pi/8$ 2. $\pi/4$ 3. $\pi/6$ 4. $\pi/2$

reads twice that of the second. Then the load impedance angle in radians is	
Three impedances are in series Z1= (2.12+j2).12 ; Z2= 10+j10 ; Z3=-j5 . Find applied voltage V if voltage across Z1 is 26.59-j4.69 V	1.112-j10 2.132 +j23 3.120-j10 4.119-j52.66
The gravity controlled instruments has to be kept	1. Vertical 2. Horizontal 3. Inclined at 45 degree 4. Inclined at 75 degree
A 10mH inductor has current i=5 cos2000t A. Obtain the voltage across the inductor.	1.1000 cos (2000t+90) 2.100cos 2000t V 3.100 cos (2000t+90) V 4.1000 Sin 2000t V
The z-transform of the signal nx[n] is	1. $(dX[z]/dz)$ 2. $z(dX[z]/dz)$ 3. $(d^2X[z]/dz^2)$ 4. $-z(dX[z]/dz)$
For the measurement of low resistances, Kelvin's double bridge has high accuracy because	1. It has two set of ratio arms which eliminates effect of resistance of connecting lead 2. It has two null indicator 3. It has a null indicating galvanometer 4. It has four sets of ratio arms which eliminates the effect of resistance of connecting lead
What is one disadvantage of an S-R flip-flop	1. It has no Enable input 2. It has no clock input 3. It has only a single output 4. It has a RACE condition
A network has 7 nodes and 5 independent loops. The number of branches in the network is:	1.11 2.12 3.13 4.10
When the current through the coil of an electromagnet reverses, the	1. direction of the magnetic field reverses 2. direction of the magnetic field remains unchanged 3. magnetic field expands 4. magnetic field collapses
Damping torque is the torque which acts on	1. Stationary system of the instrument 2. Moving system of the instrument only when it is stationary 3. Moving system of the instrument only when it is moving

	4. Stationary system of the instrument only when the moving system is moving
If x[n] is real and odd, then its discrete Fourier series coefficient c_k will be	1. real 2. odd 3. maginary 4. both real and imaginary
R1 and R4 are the opposite arms of a Wheatstone bridge as are R3 and R2. The source voltage is applied across R1 and R3. Under balanced conditions which one of the following is true	1. R1 = R2+ R3+ R4 2. R1 = R3R4 / R2 3. R1 = R2R4 / R3 4. R1 = R2R3 / R4
Discrete Fourier Series is dual if	1. $c[n] \overset{DFS}{\longleftrightarrow} \frac{1}{N_0} x[-k]$ 2. $c[n] \overset{DFS}{\longleftrightarrow} x[k]$ 3. $c[n] \overset{DFS}{\longleftrightarrow} x[-k]$ 4. $c[n] \overset{DFS}{\longleftrightarrow} N_0 x[k]$
For the measurement of unknown inductance in terms of known capacitance, the suitable ac bridges are	1. Maxwell and Hay's bridge 2. Maxwell and Schering bridge 3. Hay's and Wien's bridge 4. Maxwell and Wien's bridge
In a ballistic galvanometer, the deflecting torque is proportional to	1. the current through coil 2. square of current through coil 3. square-root of current through coil 4. sine of measured
The effect of stray magnetic field on the actuating torque of a portable instrument is maximum when the operating field of the instrument and the stray fields are	1. perpendicular 2. parallel 3. inclined at 60% 4. inclined at 30%
The power in a dc circuit is measured using ammeter and a voltmeter. The	1. the sum of power consumed by load and the voltmeter

voltmeter is connected on the load side. The power indicated is	2. power consumed by the voltmeter 3. the power consumed in the load 4. the sum of power consumed by load and the ammeter
A 0-300 V voltmeter has an error of ± 2% of full scale deflection. What would be the range of readings if true voltage is 30 V?	1. 24V - 36 V 2. 20V to 40 V 3. 29.4V - 30.6 V 4. 24.4 V - 36.6 V
Tick the correct relationship	1. $X^*(\Omega) \leftrightarrow x^*[n]$ 2. $X^*(\Omega) \leftrightarrow -x^*[n]$ 3. $X^*(-\Omega) \leftrightarrow x^*[n]$ 4. $X^*(-\Omega) \leftrightarrow -x^*[n]$
Sensitivity of a wheat-stone bridge is given by 0.429 mm/Ω. Find the require change of resistance in the unknown arm to produce a change in deflection of 3 mm of the galvanometer.	1. 7Ω 2. 14.3Ω 3. 0.143Ω 4. 0.007Ω
Fourier transform of unit step sequence is	1. $\pi\ \delta(\Omega)$ 2. $\frac{1}{1-e^{-j\Omega}}$ 3. $\pi\,\delta(\Omega) + \frac{1}{1-e^{-j\Omega}}$ 4. $1 - e^{-j\Omega}$
A moving iron instrument can be used for current and voltage measurements:	1. in dc circuits only 2. in magnetic circuits 3. in both ac and dc circuits 4. in ac circuits only
In an oscilloscope screen, linear sweep is applied at the	1. vertical axis 2. horizontal axis 3. origin

	4. both horizontal and vertical axis
If $x(\omega) = \delta(\omega - \omega_0)$, then x	1. $e^{-j\omega_0 t}$ 2. $\delta(t)$ 3. $\frac{1}{2\pi} e^{j\omega_0 t}$ 4. 1
Brook's deflection potentiometer is used when the unknown voltage	1. Constant 2. linear 3. Varying 4. All the answers are correct
The phase displacement of the rotor EMF in drysdale potentiometer being equal to	1. angle of the slide wire 2. angle of rotor 3. angle of rotor from zero position 4. angle of rotor with reference to stator coil
The dielectric loss of a capacitor can be measured by which one of the following ?	1. Schering bridge 2. Owen bridge 3. Wien bridge 4. Maxwell bridge
Schering bridge can be used to measure which one of the following ?	1. Q of a coil 2. Inductance and its Q-value 3. Very small resistance 4. Capacitance and its power factor
The advantages of Hay's bridge over maxwell's inductance -capacitance bridge is because	1. It can be used for measurement of inductance of low Q coils 2. It can be used for measurement of inductance of high Q coils 3. Its equation for balance do not contain any frequency term 4. All answers are wrong
Inductance is measured by which one of the following ?	1. Wien bridge 2. Schering bridge 3. Maxwell bridge 4. Owen bridge
An average-reading digital multimeter reads 10V when fed with a triangular wave, symmetric about the time-axis.For the same input an rms-reading meter will read	1. 20√3 2. 10/√3 3. 20/√3 4. 10√3
In a multimeter, internal battery is required to measure	1. Voltage 2. Resistance 3. frequency 4. current

A 10mH inductor has current i=5 cos2000t A. Obtain the voltage across the inductor.	1.100cos 2000t V 2.1000 Sin 2000t V 3.100 cos (2000t+90) V 4.1000 cos (2000t+90)
Modern electronic multimeters measure resistance by	1. applying a constant voltage across the unknown resistance and measuring the current 2. using a bridge circuit 3. forcing a constant current and measuring the voltage across unknown resistance 4. taking advantage of an electronic bridge compensator for nulling
A Hartley oscillator is used for	1. radio frequencies 2. audio frequency 3. micro wave frequencies 4. very low frequencies
In RC phase-shift oscillator circuits.	1. pure sine wave output is possible 2. transistor parameters determine oscillation frequency. 3. feedback factor is less than unity 4. there is no need for feedback
A Wheatstone bridge cannot be used for precision measurements because errors are introduced in to on account of	1. all the answers are right 2. contact resistance 3. thermo-electric EMF 4. Resistance of connecting leads
The input signal for an instrumentation amplifier usually comes from	1. An inverting amplifier 2. A resistor 3. A differential amplifier 4. A wheat- stone bridge
When a differential amplifier is not perfectly symmetrical	1. there will be no common mode amplification 2. there will be a small ac voltage 3. there will be 0 volt at the output 4. there will be no ac output voltage
Which of the following is not a property of ideal op-amps?	1. Output impedance is infinite. 2. Bandwidth is infinite. 3. Input impedance is infinite. 4. Gain is infinite
An op amp has a voltage gain of 200,000. If the output voltage is 1 V, the input voltage is	1. 2 µV 2. 10 V 3. 5 µV 4. 1 V
In a nonlinear op-amp circuit, the	1. Op amp never saturates 2. Feedback loop is never opened 3. Output shape is the same as the input shape 4. Op amp may saturate
In a differential amplifier, the CMRR is limited mostly by the	1. CMRR of the op amp 2. Gain-bandwidth product 3. Tolerance of the resistors 4. Supply voltages
An op-amp has an open-loop gain of 75,000 and a cutoff frequency of 100 Hz. At 1 kHz the open-loop gain is down by	1. 10 dB. 2. 3 dB. 3. 20 dB. 4. 6 dB.

The output of a logic gate is "1" when all its input are at logic "0". The gate is either	1. NAND/ EX-OR gate 2. NOT / EX-NOR gate 3. AND / EX-OR gate 4. OR / EX-NOR gate
Decimal 43 in Hexadecimal and BCD number system is respectively	1. 2B, 0011 0100 2. B2, 0100 0011 3. 2B, 0100 0011 4. B2, 0100 0100
Which of the following best describes a full adder:	1. It is made of 2 half adders and a NOT gate 2. It is made of 2 half adders and an AND gate. 3. It is made of 2 half adders and nothing else 4. It is made of 2 half adders and an OR gate
How many unique symbols are used in the decimal number system?	1. Nine 2. Ten 3. Unlimited 4. One
A basic S-R flip-flop can be constructed by cross-coupling which basic logic gates	1. AND or NOR gates 2. XOR or XNOR gates 3. NOR or NAND gates 4. AND or OR gates
Which of the following statements represent the two best methods of logic circuit simplification?	1. Karnaugh mapping and circuit waveform analysis 2. Boolean algebra and actual circuit trial and error evaluation 3. Actual circuit trial and error evaluation and waveform analysis 4. Boolean algebra and Karnaugh mapping
Why NAND gate implementation is preferred over NOR gate implementation?	1. Consume less power 2. Provide maximum density 3. Higher Mobility of NMOS 4. Can be used to make any gate
What is the radix for binary numbers?	1. 1 2. 8 3. 2 4. 4
Which of the following is minimum error code?	1. Grey code 2. Octal code 3. Excess 3 code 4. Binary code
The 2's complement of the number 1101101 is	1. 0111110 2. 0110010 3. 0101110 4. 0010011
The 2's complement of the number 1101110 is	1. 0010011 2. 0010001. 3. 0010001. 4. 0010010.
A sequence of equally spaced timing pulses may be easily generated by which type of counter circuit	1. binary 2. johnson 3. clock 4. shift register sequencer

Convert the following decimal number to $(237)_{10}$ to base 5	1. 1427 2. 1422 3. 1323 4. 1423
Mercury thermometer can be used to measure the temperature upto _____ °C.	1. 250 2. 750 3. 350 4. 100
When a load resistance is removed from the output of a voltage divider circuit, the current drawn from the source	1. decreases 2. Increases 3. is cut off 4. remains the same
A signal $x(t)$ = 100 cos (24p x $10^3 t$) is ideally sampled with a sampling period of 50 µ sec and then passed through an ideal low pass filter with cut off frequency of 15 kHz Which of the following frequencies are present at the filter output?	1. 12 kHz and 9 kHz 2. 12 kHz only 3. 12 kHz and 8 kHz 4. 8 kHz only
S-R type flip-flop can be converted into D type flip-flop if S is connected to R through	1. OR gate 2. Inverter 3. AND gate 4. Full Adder
The ratio of output signal or response of the instrument'" to a change in input or measured variable is called :	1. sensitivity 2. precision 3. resolution 4. threshold
One kilowatt hour of electrical energy is the same as	1. 36 x 10^5 watts 2. 36 x 10^5 joules 3. 36 x 10^5 ergs 4. 36 x 10^5 B.T.U.
An RLC resonant circuit has a resonance frequency of 1.5 MHz and a bandwidth of 10 kHz. If C = 150 pF, then the effective resistance of the circuit will be	1. 29.5Ω 2. 9.5Ω 3. 14.75Ω 4. 4.7Ω
How many different combinations may be obtained with three resistors, each having the resistance R?	1. 3 2. 5 3. 6 4. 4
If the open loop transfer function is a ratio of a numerator polynomial of degree "m" and a denominator polynomial of degree "n", then the integer (n-m) represents the number of	1.break way points 2.unstable poles 3.separate root loci 4.asymtotes
An opamp is	1.a high gain push pull amplifier 2.a low impedance amplifier. 3.a differential amplifier 4.a direct coupled amplifier
Slew rate is the	1.maximum rate of output voltage change 2.minimum rate of output voltage change 3.zero rate of output voltage change 4.average rate of output voltage change.
The numerical aperture (NA) of a lens is its ability to collect_____.	1. Reflected light 2.

	Refracted light 3. Deflected light 4. Diffracted light
Which interferometer is used for frequency domain to time domain coding?	1. Fabry perot 2. Michelson 3. Sagnac 4. Fizeau
The input noise power of an ADC due to rounding is_____ when quantization step size is 0.125.	1.0.0013 2.0.00013 3.130 4.0.0141
Ripples will be present in _____ band of the chebyshev type II analog filter	1.pass band 2.stop band 3.Transition band 4.in both stop band and pass band
Ripples will be present in _____ band of the chebyshev type II analog filter	1.pass band 2.stop band 3.in both stop band and pass band 4.Transition band
_____ is the example of photo emissive cell	1.Photo diode 2.Photo multiplier 3.Photo transistor 4.LDR
In a LVDT, the two secondary voltages	1.Are always in phase quadrature 2.Are independent of the core position 3.Vary unequally depending on the core position 4.Vary equally depending on the core position
A signal x(t) has a Fourier Transform X(w). If x(t) is a real and odd function of t, Then X(w) is	1.a real and even function of w 2.an imaginary and even function of w 3.an imaginary and odd function of w 4.a real and odd function of w
The Trigonometric Fourier Series of an even function of time does not have	1.odd harmonic terms 2.sine terms 3.d.c. terms 4.cosine terms
The transducers which requires an external power and their output is a measure of some variation such as resistance, inductance, capacitance etc., are called as	1.Passive transducer 2.Active transducer 3.Self generating transducer 4.Primary sensor
The input and output of a continuous time system are respectively denoted by x(t) and y(t). Which of the following descriptions is corresponds to a causal system?	1.y(t) = x(t-2) + x(t+4) 2.y(t) = (t+4) x(t-1) 3.y(t) = (t-4) x(t+1) 4.y(t) = (t+5) x(t+5)
Which of the following sensors is not a self-generating sensor?	1.Electrochemical sensor 2.Photo diode 3.Thermocouple 4.Photovoltaic cell
A Hall Effect sensor	1. produces very large voltages 2. can operate only a few times before failure 3. Exists only in theory 4. is a non-contacting magnetic sensor
Pressure transducer for measuring blood pressure is	1. Fiber optic transducer 2. Resistive transducer

	3. Strain gauge transducer only 4. Strain gauge or capacitive transducer
A thermo-couple ammeter gives full-scale deflection of 10 A. When it reads one fifth of the scale, the current will be	1.2 A 2.4 A 3.4.47 A 4.5.78 A
The main purpose of performing open-circuit test on a transformer is to measure its	1.Copper loss 2.Core loss 3.Total loss 4.Insulation resistance
For stimulated emissions to occur from a LASER source, the population of the excited level should be _____ than that at lower energy level and the radiation density in the medium should be_____.	1. Lesser, small 2. greater, very small 3. greater, very large 4. lesser, large
The phase lead compensation is used to	1. increase both rise time and overshoot 2. decrease rise time and increase overshoot 3. Increase rise time and decrease overshoot 4. decrease both rise time and overshoot
Gain cross over frequency of polar plot is the point where plot touches	1. unit circle 2. -180^0 3. 180^0 4. 0 db
Induction type single phase energy meters measure electric energy in	1.VAR 2.kWh 3.Wh 4.kW
An analog voltmeter uses external multiplier settings. With a multiplier setting of 20 kΩ, it reads 440 V and with a multiplier setting of 80 kΩ, it reads 352 V. For a multiplier setting of 40 kΩ, the voltmeter reads	1. 371V 2. 383 V 3. 394 V 4. 406 V
Which of the following instruments indicate the instantaneous value of the electrical quantity being measured at the time at which it is being measured?	1. Absolute instruments 2. Indicating instrument 3. Recording instruments 4. Integrating instruments
The error of an instrument is normally given as a percentage of	1. rms value 2. measured value 3. mean value 4. full-scale value
The bandwidth of a CRO is from 0 - 20 MHz. The fastest rise time a sine wave can have to be accurately reproduced by the instrument is	1. 35 ns 2. 0.175 μs 3. 35 μs 4. 17.5 ns
Fourier transform of a d.c. signal with unity strength is	1. zero 2. one 3.

	$2\pi\ \delta(\omega)$ 4. 2π
System function H(z) for the system described by difference equation y[n]+y[n-1] = x[n] is	1. $z/(z+1)$ 2. $1/(z+1)$ 3. $z(z+1)$ 4. zero
A 10mH inductor has current i=5 cos2000t A. Obtain the voltage across the inductor.	1.100cos 2000t V 2.1000 Sin 2000t V 3.100 cos (2000t+90) V 4.1000 cos (2000t+90)
If X(ω) is Fourier transform of a real signal x(t), then	1. $\lvert X(-\omega)\rvert = \lvert X(\omega)\rvert$ 2. $\varphi(-\omega) = -\varphi(\omega)$ 3. both (a) and (b) are correct 4. $\varphi(-\omega) = \varphi(\omega)$
Torque in the induction type energymeter due to current coil is produced by	1. interaction of eddycurrent due to current coil and flux due to pressure coil 2. interaction of eddycurrent due to pressure coil and flux due to pressure coil 3. interaction of eddycurrent due to current coil and flux due to current coil 4. interaction of eddycurrent due to pressure coil and flux due to current coil
Potentiometer method of dc voltage measurement is more accurate than direct measurement using a voltmeter because	1. It does not load the circuit at all 2. It uses center zero galvanometer instead of Voltmeters 3. It loads the circuit moderately 4. It loads the circuit to maximum extent
Lissajous pattern in CRO is used for	1. Amplitude measurement 2. Both frequency and phase measurement 3. Frequency measurement 4. Phase measurement

Cache memory is placed between the _____	1. CPU & Main memory 2. Main memory & Secondary memory 3. CPU & CD-ROM 4. CPU & Secondary memory
output resistance of ideal OP AMP is	1. Very high 2. Infinity 3. 1 4. 0
An op-amp has	1. low output impedance and high input impedance 2. low input impedance and high output impedance 3. low input and output impedance 4. high output impedance and high input impedance
For an op-amp having a slew rate SR = 5 V/ms, what is the maximum closed-loop voltage gain that can be used when the input signal varies by 0.2 V in 10 ms?	1. 300 2. 150 3. 200 4. 250
An op-amp has zero gain for common mode inputs. Then CMRR =	1. INFINITE 2. HIGH 3. LOW 4. ZERO
Which of the following is not a property of ideal op-amps?	1. Output impedance is infinite. 2. Bandwidth is infinite. 3. Input impedance is infinite. 4. Gain is infinite
What type(s) of circuit(s) use comparators?	1. summer 2. Zero-level detector 3. averaging amplifier 4. summer and Zero-level detector
What is a trigger pulse?	1. A pulse that ends the cycle of operation 2. A pulse that prevents a cycle of operation 3. A pulse that reverses the cycle of operation 4. A pulse that starts a cycle of operation
How is a *J-K* flip-flop made to toggle?	1. J=1, K=1 2. J=1, K=0 3. J=0, K=1 4. J=0, K=0
A resistor consumes 5 watts, and its current is 10 amps. What is its voltage?	1. **0.5 V** 2. **15 V** 3. **2 V** 4. **10 V**
The parallel combination of a 6.8 k resistor and a 10 k resistor is in series with the parallel combination of a 2.2 k resistor and a 1 k resistor. A 100 V source is connected across the circuit. The resistor(s) with the greatest voltage drop is (are)	1. 2.2 k and 1 k 2. 2.2 k 3. 6.8 k 4. 6.8 k and 10 k

A single-sensor, contact-type ultrasonic flaw detector uses a frequency of 330 kHz. When testing a specimen, an echo from a flaw is recorded 0.05 mass after the transmitted pulse. If the velocity of sound in the test object is 6.0 km/s then the flaw is at a depth of	1. 30cm 2. 60cm 3. 15cm 4. 120 cm

Predict the output
class Main {
public static void main(String args[])
{
System.out.println(fun());
}
static int fun(int x = 0)
{
return x;
}
}
	1.
	0
	2.
	Garbage value
	3.
	Compiler error
	4.
	Runtime error

A pressure gauge has a range of 0 to 80 bar and is guaranteed to be accurate to within ±4% f.s.d. calculate the possible pressure range when the gauge indicates 50 bar.	1. 40.5 to 83.7 bar 2. 46.8 to 53.2 bar 3. 23.2 to 45.6 bar 4. 56.7 to 90 bar
Which of the following is the dynamic characteristics of an instrument ?	1. Fidelity 2. Reproducibility 3. Dead zone 4. Sensitivity
Pressure transducer for measuring blood pressure is	1. Fiber optic transducer 2. Resistive transducer 3. Strain gauge transducer only 4. Strain gauge or capacitive transducer
The most commonly used system for representing signed binary numbers is the	1. 2's-complement system 2. 1's-complement system. 3. 10's-complement system. 4. 9's-complement system.
The resistance of LDR _____ when exposed to radiant energy.	1. Increases 2. Remains unaltered 3. Reaches maximum 4. Decreases
A lens is having a system constant k_1 = 0.8, radius of the object is 40 µm, distance of object from lens is 133.33 µm and wavelength of light as 350 nm. Its resolution is	1. 460.66 nm 2. 400nm 3. 566.66 nm 4. 466.66 nm

A turbine flow meter coupled to an electric voltage generator produces 4 mV for each litre/s flowing. Calculate the output when 1 V is produced.	1. 250 litres/s 2. 230 litres/s 3. 270 litres/s 4. 240 litres/s
Load cells are used for the measurement of	1. strain 2. velocity 3. weight 4. stress
Which of the following relates the absorption & evolution of heat at the junctions of a thermocouple to the current flow in the circuit?	1. Seebeck effect 2. Thomson effect 3. Joule heating effect 4. Peltier effect
Two bulbs marked 200 watt-250 volts and 100 watt-250 volts are joined in series to 250 volts supply. Power consumed in circuit is	1. 300 watt 2. 67 watt 3. 100 watt 4. 33 watt
Two resistors of 4 W and 6 W are connected series to a supply of 20 V. The load is in parallel with 6 W .Then the Thevenin's resistance is	1. 4.2 W 2. 2.4 W 3. 4W 4. 10 W
The output will be a LOW for any case when one or more inputs are zero in	1. NAND gate 2. AND gate 3. OR gate 4. NOR gate
When checked with an ohm meter an open resistor reads	1. Zero 2. Low but not zero 3. infinite 4. high but within tolerance
A load that has a resistance of 10Ω is to be connected to a supply that has a constant voltage of 120 volts. If it is desired that the current to the load be varied from 3 to 5 Amperes, what are the resistance and the current rating of the series rheostat that permit this variation?	1. 30 Ω, 15A 2. 10 Ω, 10A 3. 30 Ω, 5A 4. 20 Ω, 10A
Modern electronic multimeters measure resistance by	1. applying a constant voltage across the unknown resistance and measuring the current 2. using a bridge circuit 3. forcing a constant current and measuring the voltage across unknown resistance 4. taking advantage of an electronic bridge compensator for nulling
Conductance is expressed in terms of	1. m/ohm

	2. ohm/m 3. mho/m 4. mho
The difference between the half-power frequencies is called the:	1. quality factor 2. cutoff frequency 3. bandwidth 4. resonant frequency
Two resistances R_1 and R_2 give combined resistance of 4.5 ohms when in series and 1 ohm when in parallel. The resistances are	1.3 ohms and 6 ohms 2.3 ohms and 9 ohms 3.1.5 ohms and 3 ohms 4.1.5 ohms and 0.5 ohms
Fourier transform of *sgn (t)* is	1. $2/j\omega$ 2. .- $2/j\omega$ 3. 1 4. zero
System with memory can be characterized by a. Linear equation b. differential equation c. difference equation d. system of linear equations	1. (a) and (d) are correct 2. (b) and (c) are correct 3. Only (a) is correct 4. Only (d) is correct
Which one of the following options is CORRECT given three positive integers x, y and z, and a predicate? $P(x) = \neg(x = 1) \wedge \forall y(\exists z(x = y*z) \Rightarrow (y = x) \vee (y = 1))$	1.P(x) being true means that x is a prime number 2.P(x) being true means that x is a number other than 1 3.P(x) is always true irrespective of the value of x 4.P(x) being true means that x has exactly two factors other than 1 and x
Sana has a colouring book in which each English letter is drawn two times. She wants to paint each of these 52 prints with one of k colours, such that the colour-pairs used to colour any two letters are different. Both prints of a letter can also be coloured with the same colour. What is the minimum value of k that satisfies this requirement?	1.9 2.8 3.7 4.6
____ instruments are those which measure the total quantity of electrical power delivered in a particular time.	1. Absolute 2. Indicating 3. Recording 4. Integrating
Series type ohmmeter	1.Any of the two markings can be on left or right side of the scale 2.Zero marking is in the middle of the scale 3.Zero marking is on the right-hand side while infinite marking is on the left-hand side 4.zero marking is on the left-hand side

	while infinite marking is on the right-hand side
The wheatstone bridge method of resistance measurement is idealy suitable for the measurement of resistance values in the range of	1.0.001 ohm to 1 ohm 2.0.1 ohm to 100 ohm 3.100 ohm to 10 k- ohm 4.100 k- ohm to 10 M- ohm
A slide wire potentiometer has 10 wires at 1m each. With the help of a standard voltage source of 1.018 V it is standardized by keeping the jockey at 101.8 cm. if the resistance of the potentiometer wires is 1000 ohm, then the value of the working current will be	1.1 mA 2.0.5 mA 3.0.1 mA 4.10 mA
A Wheatstone bridge requires a change of 6 ohm in the unknown arm of the bridge to produce a change in deflection of 3 mm of the galvanometer. The sensitivity of the instrument is	1.2.0 ohm/mm 2.2% 3.0.5 mm/ohm 4.0.5 %
The transmitted signal in a GSM system is of 200 kHz bandwidth and 8 users share a common bandwidth using TDMA. If, at a given time, 12 users are talking in a cell, the total bandwidth of the signal received by the base station of the cell will be at least (in kHz)	1. 400 KHz 2. 800KHz 3. 1200KHz 4. 200 KHz
High performance optical fibre sources are _____ in nature and have _____spectral width	1. Linear, wide 2. non linear, narrow 3. non linear, wide 4. linear, narrow
To improve the resolution of an optical microscope,	1. Increase NA & increase wavelength 2. Increase NA & decrease wavelength 3. Decrease NA & increase wavelength 4. All answers are wrong

In Stimulated Emission incident and stimulated photons will have (i) Identical energy & wavelength (ii) identical direction & narrow beam width (iii) identical phase & coherence (iv) identical polarization & narrow line width	1. All the answers are correct 2. both (i) & (iv) are correct 3. both (ii) & (iv) are wrong 4. both (i) & (iii) are correct
In a photo detector, it is desirable that photon be absorbed in the _____so that it can contribute maximum in generation of photocurrent.	1. Valence band 2. conduction band 3. depletion layer 4. all answers are wrong
Light dependent resistors are made up of	1. BJT 2. low resistance materials 3. MOSFET 4. high resistance materials
In an LDR, free electrons the semiconductor crystal lattice conduct electricity and the resistance of the LDR is _____.	1. Lowered 2. increased 3. same as before 4. increases and then decreases

The use of _____ instruments is merely confined within laboratories as standardizing instruments.	1.integrating 2.recording 3.absolute 4.indicating
In a digital storage oscilloscope, the input signals are	1. Multiplexed, converted to digital form, stored, converted to analog form and applied to oscilloscope 2. Multiplexed, converted to digital form and stored and applied to oscilloscope 3. Applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier. 4. Directly applied to the oscilloscope
Electromagnetic (EM) radiation can be described as	1. Sine waves with amplitude, frequency and phase 2.cosine waves of any frequency and amplitude 3.any waves with a defined frequency and phase, but varying amplitude 4. any waves with a certain frequency and varying amplitude
Which of the following is best suited for biological sensing and interferometry?	1. Michaelson Interferometer 2. Fabry-Perot interferometer 3. Fizeau interferometer 4. Fiber optic interferometer
If the distance of screen from a CRT to centre of deflection plates is 15 cm, the length of deflection plates is 2 cm, the distance between plates is 1 cm and accelerating voltage is 500 V, the deflection sensitivity is:	1. 0.015 cm/V 2. 33.2 V/cm 3. 0.03 cm/V 4. 60.4 V/cm
In a Q meter, distributed capacitance of coil is measured by changing the capacitance of the tuning capacitor. The values of tuning capacitor are C1 and C2 for resonant frequencies f1 ad 2f1	1. (C1 - 4C2)/3 2. (C1 - 3C2)/2 3.

respectively. The value of distributed capacitance is:	(C1 - C2) /2 4. (C1 - 2C2)/3
In a synchro error detector, the output voltage is proportional to [w(t)]^n, where w(t) is the rotor velocity and n equals	1.-2 2.-1 3.1 4.2
Resistance R1 and R2 have, respectively, nominal values of 10 Ω and 5 Ω, and tolerance of ±5% and ±10%. The range of values for the parallel combination of R1 and R2 is	1. 3.077 Ω to 3.636 Ω 2. 2.805 Ω to 3.371 Ω 3. 3.237 Ω to 3.678 Ω 4. 3.192 Ω to 3.435 Ω
A lens with _____ can capture _____ of light to generate a sharper image	1. larger NA, higher order 2. larger NA, lesser order 3.smaller NA, lesser order 4. smaller NA, higher order
If the Numerical Aperture of a lens is 0.6 and the object is placed at a distance of 120µm, what is the radius of the lens?	1. 24µm 2. 72 µm 3. 36 µm 4. 42 µm
The wavelength of the emitted light from an LED depends on _____.	1. Amount of carriers 2. the type of carriers 3. energy bandgap 4. Mobility
In an LED, light is emitted from _____, which is close to the junction.	1. Site of carrier recombination 2. valence band 3. conduction band 4. All the answers are right

Photoconductivity is the process of _____electrical conductivity caused by the _____of light.	1. Increased, absence 2. increased, presence 3. decreased, presence 4. decreased, absence
Intensity based fiber optic sensors have I. a poor ability to screen noise II. lower precision III. simple and inexpensive systems IV. High precision, screen noise and expensive	1. All the answers are wrong 2. only (iv) is correct 3. only (iv) is wrong 4. only (iii) is correct
Fourier spectrum (Transform) of non-periodic signal will have	1. magnitude spectrum 2. Phase spectrum 3. both (a) and (b) are correct 4. constant
How many BCD code bits and how many straight binary bits would be required to represent the decimal number 643?	1. 12 BCD, 12 binary 2. 16 BCD, 9 binary 3. 12 BCD, 9 binary 4. 12 BCD, 10 binary
The logic circuits whose outputs at any instant of time depends only on the present input but also on the past outputs are called	1. Combinational circuits 2. Flip-flops 3. Sequential circuits 4. Latches
Ohm's law is not applicable to	1.DC circuits 2.high currents 3.Small resistors 4.semi-conductors

Analysis used for reducing the given circuit with variable load is	1. Superposition 2. Mesh 3. Nodal 4. Maximum power transfer
Exclusive-OR (XOR) logic gates can be constructed from what other logic gates	1. AND gates, OR gates, and NOT gates 2. AND gates and NOT gates 3. OR gates only 4. OR gates and NOT gates
The input to a peak detector is a triangular wave with a peak-to-peak value of 8 V and an average value of 0. The output is	1. 0 2. 4 V 3. 8 V 4. 16 V
In a two wattmeter method, the wattmeters are connected in the line 1 and 2. The load is star connected load. What is the angle between the line voltage V_1 and line current I_2?	1. 120º 2. 90º 3. 120º+Φ 4. 90º+Φ
The difference between true value and measured value is known as	1.Relative error 2.Absolute error 3.Gross error 4.Probable error
A thermocouple is	1.Two similar metals connected together 2.Two wire wound resistors connected together 3.Two inductive coils connected together 4.Two dissimilar metals connected together
A photo-electric transducer converts	1.Light intensity to voltage 2.Electric voltage to current 3.Kinetic energy of electrons into potential energy 4.Electric current to voltage
Fiber optic sensor can be used to sense _____	1. Current 2. Power 3. Displacement 4. Resistance
The resistance of LDR _____ when exposed to radiant energy.	1. Increases 2. Remains unaltered 3. Reaches maximum 4. Decreases
An AC bridge with $Z_1 = 200\angle 30°, Z_2 = 150\angle 0°, Z_3 = 2$, in order to balance the bridge the Z_4 should be	1. $187.5\angle -70°$ 2. $187.5\angle 70°$ 3.

	$187.5\angle -10°$ 4. $187.5\angle 10°$
In amplified DC voltmeter the FET will be used in the _____.	1. Attenuator stage 2. Input stage 3. output stage 4. meter stage
A phase shifting transformer is used in conjunction with	1. Drysdale potentiometer 2.Crompton's potentiometer 3. AC Polar type potentiometer 4. AC Coordinate type Potentiometer
In a photo detector, when a semiconductor is illuminated by light having an energy E=h γ _____than its band-gap energy E_g the light is _____in the semiconductor and electron-hole pairs are generated.	1. Greater, absorbed 2. lesser, radiated 3. greater, radiated 4. lesser, absorbed
A moving coil permanent magnet instrument can be used as a _____by using a low resistance shunt.	1.ammeter 2.voltmeter 3.flux-meter 4.galvanometer
Inductance changes in inductive sensors are caused by physical variable like a. pressure b. force c. displacement d. temperature	1.All the given options are correct 2.only (a) and (b) are correct 3.Only (c) is correct 4.Only (d) is correct
For the measurement of flow rate of liquid, the method used is	1. Conveyor-based methods 2. Bourdon tube 3. Coriolis method 4. Thermal mass flow measurement
When the total charge in a capacitor is doubled, the energy stored:	1. is halved 2. is quadrupled 3. is doubled 4. remains the same
The circuits of NOR based S-R latch is classified as asynchronous sequential circuits, why?	1. Because of inverted outputs 2. Because of triggering functionality 3.

	Because of cross-coupled connection 4.because of non inverted inputs
If open loop gain (AOL) = 200,000, the closed-loop knee voltage of a silicon diode is	1. 1 uV 2. 3.5 uV 3. 7 uV 4. 14 uV
Carson's Rule approximates the bandwidth for	1.Wideband FM 2. Narrowband FM 3. Wideband AM 4. PM
An ideal capacitor is charged to a voltage V_0 and connected at t = 0 across an ideal inductor L. (The circuit now consists of a capacitor and inductor alone). If we let $\omega 0 = 1/\sqrt{LC}$, the voltage across the capacitor at time t > 0 is given by	1. V_0 Sin ($\omega_0 t$) 2. V_0 3. V_0 $e^{-\omega 0t}$ Cos($\omega_0 t$) 4. V_0 Cos ($\omega_0 t$)
When superposition theorem is applied to any circuit, the voltage source in that circuit is always	1. Active 2.kept as it is 3. Shorted 4. Opened
In Superposition theorem, while considering a source, all other voltage sources are?	1. open circuited 2. short circuited 3. change its position 4. removed from the circuit
A capacitor is generally a	1. bilateral and active component 2. non-linear and active component 3. linear and bilateral component 4. active, passive and linear and nonlinear component
A CRT has an anode voltage of 2 kV and parallel deflecting plates 2 cm long and 5mm apart. The screen is at a distance of 30 cm from the centre of deflecting plates. Find the input voltage required to deflect the beam though 3 cm. The input voltage is applied to the deflecting plates through amplifiers having an overall gain of 100.	1.0.1 V 2.1 V 3.10 V 4.0.01 V
A wattmeter has a current coil of 0.1 ohm resistance and pressure coil of 6.5 kohm resistance. When the input to the meter is 12 A at 250 V with unity power factor	1.0.32 2.0.48 3.0.23 4.0.84

and the current coil is connected on load side calculate the percentage error due to the resistance only.	
Which of the following is not part of phototube?	1.Battery 2.Dynode 3.Anode 4.Cathode
If 1 A current is flowing through a series circuit having 100 resistors of each having resistance of 1 Ohm. What will be the current in the circuit where, these 100 resistors are connected in parallel?	1.10 A. 2.100 A. 3.1000 A. 4.10000 A.
In an opamp inverting amplifier, the input and feedback resis¬tances are 2kΩ and 100kΩ respectively. Assuming an open loop gain of 10,000, the gain will be	1.10,000 2.500 3.100 4.50.
Depending on the relative phase of the waves, interference is _____	1. Constructive 2. destructive 3. both Constructive & destructive 4. either Constructive or destructive
Which gate generates no output when two of its inputs are at the opposite logic level?	1. X-NOR 2. XOR 3.OR 4. NOR
To reduce the effect of fringing in a capacitive type transducer	1. the transducer is shielded and the shield is kept at ground potential 2. a guard ring is provided and it is kept at the same potential as the moving plate 3. the transducer is shielded and the shield is kept at the same potential as the moving plate 4. a guard ring is provided and it is kept at ground potential
---------- is measured above atmospheric pressure.	1. Gauge pressure 2. Vacuum 3. room pressure 4. Absolute pressure

In Star connected load line current will be equal to	1. Phase Voltage 2. Phase Current 3. Line Current 4.line voltage
By which phenomenon does the energy transmission take place between the walls of the tube in waveguides?	1.Reflection 2.Refraction 3.Dispersion 4.Absorption
Hay's Bridge is suitable for the measurement of:	1. Inductances with Q>10 2. Inductances with Q<10 3. Capacitors with high dissipation factor 4. Capacitors with low dissipation factor
Electricity may be generated by a wire:	1. wrapped as a coil 2.passing through a flux field 3. that has neutral domains 4. carrying current
The practical integrator performs like a_____ at very low frequencies.	1.Voltage Follower 2.both as voltage follower and high - pass filter 3.Low pass filter 4.high - pass filter
A virtual ground is a ground for	1.current but not for voltage 2.both current and voltage 3.voltage but not for current 4.neither current nor voltage.
---------- is measured below atmospheric pressure	1. Gauge pressure 2. Absolute pressure 3. Vacuum Pressure 4.room pressure
When an Op-Amp is used as a non-inverting amplifier, the input signal is fed into the _____ input and the _____ input is grounded through a resistor.	1.Inverting, non-inverting 2.inverting, inverting 3.Non-inverting, inverting 4.Feedback, slewrate
The common mode input voltage of a differential amplifier is _____.	1.Difference of 2-inputs 2.Summation of 2-inputs 3.Zero 4.Average of 2-inputs
Common Mode Rejection Ratio for an opamp should be	1.close to zero 2.as large as posible. 3.close to unity 4.as small as possible
What is the minimum number of op-amp required to implement the equation 2V1 + 3V2, V1 and V2 being positive.	1.1 2.3 3.4 4.2
If 10 V battery is connected across the parallel resistors of 3 Ω, 5 Ω, 10 Ω and 20 Ω, how much voltage is there across 5 Ω resistor.	1. 3V 2. 5V 3. 20V 4. 10V

A P-i-N diode is used as a photo diode in _____condition.	1. Forward bias 2. reverse bias 3. no bias 4. only ac
The electrodes used in pH measurement have which of the following internal resistances?	1. Very low resistance 2. Moderate resistance 3. Very high resistance 4. No resistance
Three equal resistors connected in series across a source of emf together dissipate 10 watts of power. What would be the power dissipated in the same resistors when they are connected in parallel across the same source of emf?	1. 10 watts 2. 30 watts 3. 90 watts 4.270 watts.
A function that repeats itself after fixed intervals is said to be:	1. reactive 2. periodic 3. a phasor 4. harmonic
The coefficient of coupling for two coils having L1 = 2 H, L2 = 8 H, M =3 H is	1. 5.333 2. 1.333 3. 0.75 4. 0.1875
The unit of electrical conductivity is	1. mho / metre 2. mho / sq. m 3. ohm / metre 4.ohm / sq. m.
A circuit contains two un-equal resistances in parallel	1. large current flows in larger resistor 2. smaller resistance has smaller conductance 3. current is same in both 4. potential difference across each is same
The element of electric heater is made of	1. copper 2.

	steel 3. carbon 4. nichrome.
Resistance of a wire is R ohms. The wire is stretched to double its length, then its resistance in ohms is	1.R/2 2. 2R 3.4R 4. R/4
When the resistances are connected in parallel circuit then	1. **Branch voltages are additive** 2. **Branch currents are additive** 3. **Resistance's are additive** 4. **frequencies are additive**
Ammeter should always have a	1. high resistance 2. low resistance 3. infinite resistance 4. **high voltage**
Current through each resistor when they are connected in series is	1. **different** 2. **same** 3. **increasing** 4. **decreasing**
The z-transform of x[n-k] is	1. $n^{-1}X(z)$ 2. $kX(z^{-1})$ 3. z^{-k} X(z) 4. $X(k^{-1}z)$
In bilinear transformation, the left-half s-plane is mapped to which of the following in the z-domain?	1. Entirely outside the unit circle |z|=1 2. Partially outside the unit circle |z|=1 3. Partially inside the unit circle |z|=1 4.

	Entirely inside the unit circle |z|=1
Which of the following rule is used in the bilinear transformation?	1. Simpson's rule 2. Backward difference 3. Forward difference 4. Trapezoidal rule
The sensitivity analysis made on the poles of a system results on which of the following of the IIR filters?	1.Poles 2.Zeros 3.either poles or zeros 4.Both poles and zeros
In recursive systems, which of the following is caused because of the nonlinearities due to the finite-precision arithmetic operations?	1. Periodic oscillations in the input 2. Non-Periodic oscillations in the input 3. Non-Periodic oscillations in the output 4. Periodic oscillations in the output
In Hardware Description Languages (HDL), LITERALS is/are:	1. a numbering system 2. scalars. 3. Vector. 4. binary coded decimals.
How much inductance is needed to resonate at 5 kHz with a capacitance of 12 nF?	1. 84.43 mH 2. 3.333 H 3. 11.844 H 4. 2.652 H
In a Q meter the value of shunt resistance connected across the oscillator is typically of the order of	1. 1kΩ 2. 0.02Ω 3. 10kΩ 4. 100Ω
The period of a wave is	1.the same as frequency 2.time required to complete one cycle 3.expressed in amperes 4.inverse of frequency
The slope overload error in Delta Modulation can be reduced by increasing	1.amplitude 2. sampling frequency 3. both amplitude and sampling frequency 4. Step size

which are the advantages of geosynchronous satellite? a. ideal for broadcasting and multi-point distribution services b. visible 24 hours c. almost no Doppler shift d. covers larger geographical area	1.Only (a) 2.Only (c) and (d) 3.Only (b) 4.all the above
A pure inductor is connected to 1-ϕ sinusoidal source through a diode. Conduction angle for diode is	1. 90° 2. 180° 3. 360° 4. 270°
A single-phase full wave rectifier is a	1. single pulse rectifier 2. multiple pulse rectifier 3. two pulse rectifier 4. three pulse rectifier
Which of the following can be measured with the help of piezo electric crystal?	1.Velocity and pressure 2.Force only 3.Sound and force 4.Force and Pressure
Which of the following device is used for calibration of potentiometer?	1. Electrochemical cell 2. Galvanometer 3. Variable dc source 4.Voltmeter
At null position, galvanometer reading will be _____	1.Maximum 2.Zero 3.Unchanged for further reading 4.Mid-point
To turn off sources, a ideal voltage source is replaced by a/an _____ and a ideal current source is replaced by a/an _____.	1.R=0 for both 2.R= infinity and R=0. 3.R=0 and R= infinity 4.R= infinity for both
One kilowatt hour of electrical energy is the same as	1. 36 x 10^5 watts 2. 36 x 10^5 joules 3. 36 x 10^5 ergs 4. 36 x 10^5 B.T.U.
Superposition theorem is NOT applicable to networks containing:	1.Independent current sources 2.Nonlinear elements 3.Independent voltage sources 4.Transformers
The disadvantages of using multipliers with voltmeters at high voltages are:	1.Only (a) is correct 2.Only (b) is correct 3.

a.The multipliers at high voltages have to be shielded in order to prevent capacitive currents b. The metering circuit is not electrically from the power circuit c. The power consumption of multipliers becomes large at large voltages	Only (c) is correct 4.All are correct
Correlation is a mathematical Tool for _____ signals	1. Comparison 2. Adding 3. Subtracting 4. Multiplying
Find y(0), when convoluting two sequence x(n) ={1,2,1,2} and h(n) ={1,-1,1,-1} linearly.	1.1 2.2 3.0 4.-1
Find y(0), when convoluting two sequence x(n) ==={1,2,1,2} and h(n) ={1,-1,1,-1} linearly.	1.0 2.-1 13. 4.2
Non- recursive structures are used for	1.both IIR and FIR filters 2.only FIR filters 3.only IIR filters 4.not for both the filters
Which of the following is not suitable either as low pass or a high pass filter?	1. h(n) symmetric and M odd 2. h(n) symmetric and M even 3. h(n) anti-symmetric and M odd 4. h(n) anti-symmetric and M even
Ripples will be present in _____ band of the chebyshev type II analog low pass filter	1.pass band 2.stop band 3.in both stop band and pass band 4.Transition band
If the order of the filter is increasing the transition band attenuation will	1.not change 2.increase 3.decrease 4.become zero
The armature of DC generator is laminated to	1. Reduce Hysteresis loss 2. Insulate the Core 3. Reduce eddy current loss 4. Provide air cooling passage

LVDT is an/a _____ transducer	1.Eddy current 2.Resistive 3.Magneto-strict ion 4.Inductive
Capacitive transducers are normally employed for_____ measurements	1.Static 2.Both static and dynamic 3.Transient 4.Dynamic
What is the sampling theorem?	1.fsamp > 2fmax 2.fsamp $\geq$ 2fmax 3.fsamp = fmax 4.fsamp < 2fmax
An AM signal and a narrowband FM signal with identical carriers, modulating signals and modulation index of 0.1 are added together. The resultant signal can be closely approximated by	1. Broadband FM 2. DSB-SC 3. SSB with carrier 4. SSB without carrier
The code which provides for parity checks is	1. Baudot 2. ASCII 3. EBCDIC 4. CCITT-2
The data transmission rate of a modem is measured in	1. bytes per second 2. baud rate 3. bits per second 4.megahertz
Number of bits needed to hold the product of two n-bit 2's complement integers.	1. n + 1 2. 2n 3. n 4. More than n
We have three resistances of values 2 Ω, 3 Ω and 6 Ω. Which of the following combination will give an effective resistance of 4 Ω?	1. 2 Ω resistance in series with parallel combination of 3 Ω and 6 Ω resistance 2. 3 Ω resistance in series with parallel combination of 2 Ω and 6 Ω resistance 3. All the three resistances in parallel 4. 6 Ω resistance in series with parallel combination of 2 Ω and 3 Ω resistance
Convert the following octal number to binary. $(76)_8$	1. 111110_2 2. 111100_2 3. 100111_2 4. 110111_2
Convert the following decimal number to $(237)_{10}$ to base 7	1.456 2. 1422

	3. 357 4.1423
How many 2 to 1 multiplexers are required to construct a 4 to 1 multiplexer	1. 1 2. 4 3. 2 4. 3
What is the function of an enable input on a multiplexer chip?	1. To apply Vcc 2. To connect ground 3. To active the entire chip 4. To active one half of the chip
Which of the following is an invalid output state for an 8421 BCD counter?	1. 1110 2. 1000 3. 0010 4. 0011
In a multiplexer, the selection of a particular input line is controlled by	1. Data controller 2. Selected lines 3. Logic gates 4. Both data controller and selected lines
A decoder converts n inputs to _____ outputs	1.n 2. n^2 3. 2^n 4. n^n
A 5-H inductor changes its current by 3 A in 0.2 s. The voltage produced at the terminals of the inductor is:	1. 8.888 V 2. 1.2 V 3. 75 V 4. 3 V
In a CRT the focusing anode is located	1. Between pre-accelerating and accelerating anodes 2.After accelerating anode 3. Before accelerating anode 4. Before pre-accelerating anode
Resistance R1 and R2 have, respectively, nominal values of 10 Ω and 5 Ω, and tolerance of ±5% and ±10%. The range	1.3.077 Ω to 3.636 Ω 2.805 Ω to 3.371 Ω 3.237 Ω to 3.678 Ω

of values for the parallelcombination of R1 and R2 is	4.192 Ω to 3.435 Ω
The average power delivered to an impedance (4 − j3)Ω by a current 5 cos (100πt + 100)A is	1. 50W 2. 125W 3. 44.2W 4. 62.5W
To measure the average temperature of the medium, thermocouples are connected usually in_____.	1.series-shunt 2. Parallel 3. Series 4. series-parallel
The final value theorem is used to find the	1. initial value of the system output 2.static sensitivity of the system 3. steady state value of the system output 4. transient behavior of the system output
The transfer function of a linear system is the	1. ratio of the Laplace transform of the output and that of the input with all initial conditions zeros. 2. ratio of the derivatives of the output and the input. 3.efficiency of the closed loop 4. ratio of the output, $V_o(t)$ and input $V_i(t)$.
In a closed loop systems with positive value of feedback gain the overall gain of the system will	1. decrease 2. increase 3. unaffected 4.non linearly varies
A 3 V DC supply with an internal resistance of 2 Ω supplies a passive non-linear resistance characterized by the relation VNL = I2NL. The power dissipated in the non linear resistance is	1. 2.5W 2. 1.0W 3. 3.0W 4. 1.5W
A turbine flow meter coupled to an electric voltage generator produces 4 mV for each litre/s flowing. Calculate the output when 1 V is produced.	1. 250 litres/s 2. 230 litres/s 3. 270 litres/s 4. 240 litres/s
Choose two appropriate auxiliary components of a HVDC transmission system from the following P. D.C line inductor Q. A.C line inductor R. Reactive power sources S. Distance relays on D.C line T. Series capacitance on A.C. line	1. P and Q 2. Q and S 3. P and R 4. S and T
A load is connected to a network. At the terminals to which the load is connected, R_{Th} = 10 Ω and V_{Th} = 40 V. The maximum power supplied to the load is:	1. 80W 2. 40W 3. 160W 4. 1W

If the roots of an equation are complex conjugate, then the response will be?	1. over damped 2. critically damped 3. damped 4. under damped
Which property of delta function indicates the equality between the area under the product of function with shifted impulse and the value of function located at unit impulse instant ?	1. Replication 2. Sampling 3. Scaling 4. Product
A system described by the differential equation $d^2y/dt^2 + 3dy/dt + 2y = x(t)$ is initially at rest. For input $x(t) = 2u(t)$, the output y(t) is	1. $(0.5 + e^{-t} + 1.5e^{-2t})u(t)$ 2. $(1 - 2e^{-t} + e^{-2t})u(t)$ 3. $(1+2e^{-t}-2e^{-2t})u(t)$ 4. $(0.5 + 2e^{-t} + 2e^{-2t})u(t)$
A potentiometer can be used for a. calibration of ammeter b. measurement of current c. measurement of resistance	1.all of the options specified 2.Only (a) is correct 3.(b) and (c) are correct 4.(c) is wrong
The P controller improves	1.frequency responce 2. transient and steady state response 3. Steady state response 4. Transient response
Most common form of A.C. meters used in every day domestic and industrial installations are	1.commutator motor meters 2.mercury motor meters 3.induction type single phase energy meters 4.GENSET meters
The systematic errors of an instrument can be reduced by making	1. Systematic errors mildly depend on the sensitivity of instrument 2. Systematic errors does not depend on the sensitivity of instrument 3. The sensitivity of instrument to environmental input as low as possible 4. The sensitivity of instrument to environmental input as high as possible
superposition theorem can be applied only to circuits having	1. linear bilateral elements 2. Active elements 3. passive elements 4. non-linear elements

An op-amp has an open-loop gain of 100,000 and a cutoff frequency of 40 Hz. Find the open-loop gain at a frequency of 30 Hz.	1. 80000 2. 8000 3. 800 4. 100000
The purpose of connecting a coupling capacitor in the output circuit of an amplifier is	1. to increase collector current 2. to increase voltage gain 3. to block dc collector voltage 4.to reduce noise levels
Frequency modulation is used mostly in	1. telephony 2. radio transmission 3. telegraphy 4. satellite communication
In transistor radio receivers the number of IF amplifier stages commonly used are	1. 6 2. 4 3. 2 4. 1
Radio broadcasts are generally_____	1. neither amplitude nor frequency modulation 2. frequency modulation 3. amplitude modulation 4. both amplitude and frequency modulation
If the oscillator output is modulated by audio frequencies upto 10 kHz, the frequency range occupied by the side bands in AM systems will be	1. 711.9 kHz to 712.1 kHz 2. 692 kHz to 732 kHz 3. 71.2 kHz to 71.20 kHz 4. 702 kHz to 722 kHz
In the output of a DM speech encoder, the consecutive pulses	1.

are of opposite polarity during time interval $t_1 < t < t_2$. This indicates that during this interval	the modulator is going through slope overload 2. the accumulator is in saturation 3. the speech signal is being sampled at the Nyquist rate 4. the input to the modulator is essentially constant
A ramp input applied to a unity feedback system results in 5% steady state error. The type number and zero frequency gain of the system are respectively	1. 1 and 20 2. 0 and 20 3. 0 and 1/20 4. 1 and 1/20
An induction wattmeter can be used for	1.A.C. to D.C. convertion 2.A.C. only 3.both D.C. and A.C. 4.D.C. only
If you put an infinite number of resistors R in parallel, what would the total resistance be?	1. $\mathbf{R_{Total}}$ would approach infinity as the no. of resistors in parallel approaches infinity 2. $\mathbf{R_{Total}}$ would approach zero as the no. of resistors in parallel approaches infinity 3. $\mathbf{R_{Total}}$ would approach 1 as the no. of resistors in parallel approaches infinity 4. R_{total} would be the value of the resistor R
Steady state refers to	1. Error at the steady state 2. Error at the transient state 3. Error at both state 4. Precision
A 240 V single-phase ac source is connected to a load with an impedance of $10\angle 60°\Omega$. A capacitor is connected in parallel with the load. If the capacitor supplies 1250 VAR, the real power supplied by the source is	1. 240W 2. 2880W 3. 1200W 4. 3600W
Zeroes are defined as:	1. Roots of the denominator of the closed loop transfer function

	2. Roots of the numerator of the closed loop transfer function 3. Parts of the numerator 4. Parts of the denominator
A Karnaugh map (K-map) is an abstract form of _____ diagram organized as a matrix of squares.	1. Venn Diagram 2. Cycle Diagram 3. Block diagram 4. Triangular Diagram
A 2A full-scale PMMC type dc ammeter has a voltage drop of 100 mV at 2A. The meter can be converted into a 10A full-scale dc ammeter by connecting a	1. 12.5 m resistor in parallel with the meter 2. 12.5 m resistor in series with the meter 3. 50.0 m resistor in parallel with the meter 4. 50.0 m resistor in series with the meter
What is the true power consumed in a 30 V series RLC circuit if Z = 20 ohms and R = 10 ohms?	1. 22.5Watts 2. 30.0Watts 3. 45.0Watts 4. 15.0Watts
The spring metal in a spring control device should have the following properties. a. should be non magnetic b. must have low temperature coefficient c. should have low specific resistance d. should not have subjected to fatigue	1. Only (a) and (c) are correct 2. All the answers are correct 3. Only (b) is correct 4. (d) is wrong
Two 2H inductance coils are connected in series and are also magnetically coupled to each other. The coefficient of coupling being 0.1. The total inductance of the combination	1. 3.6H 2. 3.2H 3. 0.4H 4. 4.4H
For handling greater currents, induction wattmeters are used in conjunction with	1.potential transformers 2.current transformers 3.power transformers 4.step up transformers

The voltage drop across a 1.5-kW toaster that draws 12 A of current is:	1. 125 V 2. 120 V 3. 10.42 V 4. 18 kV
Sinusoidal voltage is given by the expression v = 300 cos (120pt + 30°). What is the frequency?	1.600 KHz 2.600 Hz 3.60 Hz 4.60 KHz
The value of the time constant in the R-L circuit is?	1. L/R 2. R/L 3.R 4.L
The time constant of an R-C circuit is?	1.R/C 2.R 3.C 4.RC
The reactance offered by the capacitor to alternating current of frequency 50 Hz is 20 ohms. If frequency is increased to 100 Hz, reactance becomes _____ ohms	1. **10** 2. **5** 3. **15** 4. **2.5**
What are the two major categories for resistors?	1.low and high ohmic values 2.commercial and industrial 3.low and high power value 4.fixed and variable
In series resonant circuit, increasing inductance to its twice value and reducing capacitance to its half value	1. will change the resonance frequency 2. will increase the selectivity of the circuit 3. will change the impedance at resonance frequency 4. will change the maximum value of current at resonance
How many connections does a potentiometer have?	1.3 2.4 3.2 4.1
`	1. Zero 2. Low but not zero 3. infinite 4. high but within tolerance
Voltage dependent resistors are used	1. an heating elements 2. to suppress surges 3. for inductive circuits 4. an current stabilizers
The value of current at resonance in a series RLC circuit is affected by the value of	1.R and C 2. C 3. R 4. L
A network contains linear resistors and ideal voltage sources. If values of all the resistors are doubled, then the voltage across each resistor is	1. Halved 2. Doubled 3. Not changed 4. Increased by four times
A source of angular frequency 1 rad/sec has a source impedance consisting of 1Ω resistance in series with 1 H inductance.	1. 1 Ω resistance 2. 1 Ω resistance in series with 1F capacitor

The load that will obtain the maximum power transfer is	3. 1 Ω resistance in parallel with 1F capacitor 4. 1 Ω resistance in parallel with 1H inductance
Reciprocal of resistance is called	1. **Conductance** 2. **admittance** 3. **Resistivity** 4. **Impedance**
What is the most commonly used conductor in electronics?	1.Aluminum 2.Gold 3.Copper 4.Silver
How one can identify a series circuit	1. Voltage is same 2. Power is same 3. Current is same 4.resistance is same
In s --> z mapping if the s pole is -s+jw, the digital poles will fall	1.outside the unit circle 2.on the unit circle 3.inside the unit circle 4.towards infinity
Which one of the following statements regarding the stability of a feedback control system is correct?	1. Gain Margin (GM) gives complete information about the relative stability of the system 2. GM and PM together gives information about the relative stability of the system 3.A compound whose molecules contain just one bromine atom shows two molecular ion peaks of similar intensity at M+ and M+2 position 4. Cross over frequencies give information about the relative stability of the system
The controlling torque for single phase power factor meters is provided by	1.Spring control 2.Gravity control 3.Stiffness of suspension 4.no controlling factor
A meter has a full scale deflection of 90° at a current of 1 A. The response of the meter is square law. Assuming spring control, the current for a deflection at 45° will be	1.0.25 A 2.0.50 A 3.0.67 A 4.0.707 A
Two sinusoidal signals having the same amplitude and frequency are applied to the X and Y inputs of a CRO. The observed Lissajous figure is a straight line. The phase shift between the two signals would be	1.Either 90 deg. Or 270 deg. 2.Either zero or 180 deg. 3.90 deg. 4.Zero
A sinusoidal voltage of 1 V r.m.s. value at 10 Hz is applied across the two terminals of a PMMC type of voltmeter. What is the deflection of the pointer?	1.The pointer oscillates around zero volt 2. √2 volts 3.1 volt 4.Zero volt
The open loop transfer function of a unity feedback control system is given as G(s) = K/S(s+1). If the gain K is increased to infinity, then the damping ratio tend to become,	1.1/v2 2.1 3.0 4.8

The combined resistance of two equal resistors connected in parallel is equal to	1. One fourth the resistance of one resistor 2. Twice the resistance of one resistor 3. One half the resistance of one resistor 4. Four times the resistance of one resistor
Which of the following represents a stable system? 1. Impulse response of the system decreases exponentially. 2. Area with the impulse response is finite. 3. Eigen values of the system are positive and real. 4. Roots of Characteristic equations of the system are real and negative.	1.1 and 4 2.1 and 3 3.2, 3 and 4 4.1 and 2 and 4
Hysteresis of an instrument is_____	1. The inaccuracy due to change in temperature 2. The reliability of the instrument 3. The repeatability of the instrument 4. Taking different reading when input is first increased and then decreased
Hysteresis loss will be minimal for	1.soft iron 2.steel 3.cobalt steel 4.silicon steel
In the following, which is used as signal conditioning circuit for inductive sensor	1. Schering Bridge 2. Hay's Bridge 3. Desauty's Bridge 4. Wheatstone dc bridge
A piezoelectric sensor is modeled as a charge source with a _____	1. shunt resistor and series capacitor 2. Series capacitor and resistor 3. shunt capacitor and resistor 4. series resistor and shunt capacitor
The unit-step response of a system starting from rest is given by (t) = 1- e^{-2t}	1. $\frac{2}{2+s}$ 2. $\frac{1}{2+s}$

for $t \geq 0$ The transfer function of the system is	3. $\frac{2s}{1+2s}$ 4. $\frac{1}{1+2s}$
To determine the polarity of the voltage drop across a resistor, it is necessary to know	1. direction of current through the resistor 2. value of current through the resistor 3. e.m.fs. in the circuit 4. value of resistor
Key items to consider when designing the amplifier are: a. frequency of operation b. signal amplitude c. input impedance d. mode of operation	1.Only (a), (b) and (c) are correct 2.Only (d) is correct 3.Only (a) and (b) are correct 4.All are correct
Which of the following is referred to as the reverse transfer voltage ratio in a BJT?	1. hi 2.hr 3.hrf 4.hfe
PD controller improves	1. transient and steady state response 2. Transient response 3.frequency response 4. Steady state response
In opamp when the non-inverting input is grounded, the inverting input	1.looks like Vdd 2.reduces to zero 3.looks like a virtual ground 4.attains high values
The maximum range of a transmitter depends on	1. its power 2. its frequency 3. both its power and frequency 4. not on power and frequency
Response of a system to a sinusoidal input is called _____ response.	1.unit ramp 2. frequency 3. unit step 4. impluse
Find out the 10's Complement of 459.	1. 562 2. 541 3. 127 4.458
The function of shunt in an ammeter is to	1.increase the resistance of ammeter 2.bypass the current 3.increase the sensitivity of the ammeter 4.bypass the voltage

The resistance in the circuit of the moving coil of a dynamometer wattmeter should be	1.1 ohm 2.high 3.almost zero 4.low
The multiplier and the meter coil in a voltmeter are in	1.series 2.parallel 3.series-parallel 4.shunt-series
The pressure coil of a wattmeter should be connected on the supply side of the current coil when	1.supply voltage is low 2.load impedance is low 3.load impedance is high 4.supply voltage is high
Which of the following meters are not used on D.C. circuits	1.moving coil galvanometer 2.Commutator motor meters 3.Induction meters 4.Mercury motor meters
A series RC circuit has |VR| = 12 V and |VC| = 5 V. The magnitude of the supply voltage is:	1. 13 V 2. 7 V 3. - 7 V 4. 17 V
A parallel RLC circuit has L = 2 H and C = 0.25 F. The value of R that will produce unity damping factor is:	1. 4Ω 2. 2Ω 3. 1Ω 4. 0.5 Ω
F.T. of continuous non-periodic signal is	1. periodic 2. aperiodic 3. both periodic and aperiodic 4. continuous
_____is an instrument which measures the insulation resistance of an electric circuit relative to earth and one another,	1.Megger 2.Tangent galvanometer 3.Current transformer 4.voltage transformer
If the Nyquist plot of the loop transfer function G(s) H(s) of a closed-loop system encloses the (-1, jo) point in the G(s) H(s) plane, the gain margin of the system in dB is equal to	1.zero. 2.greater than zero. 3.less than zero. 4.infinity.
The output of latches will remain in set/reset untill	1. The trigger pulse is given to change the state 2. Any pulse given to go into previous state 3. They don't get any more pulse 4. enable is set to 0
A horizontal pipe line conveys a constant rate of flow which is measured by a Venturi meter located in it. When the pipe is inclined upward in the direction of flow, the deflection on a differential manometer will:	1. Provide erroneous result. 2. Remain same 3. Decrease 4.

	Increase
---------- is measured with respect to absolute zero pressure as the datum.	1. Gauge pressure 2. Vacuum Pressure 3.Room prressure 4. Absolute pressure
The Fourier Transform of Signum Function is	1. $2/j\omega$ 2. $2j\omega$ 3. $2\omega/j$ 4. $2\omega/j$
Two rectangular waveforms of duration t_1 and t_2 seconds are convolved. What is the shape of the resulting waveform?	1. Triangular 2. Rectangular 3. Trapezoidal 4. Semi-circular
If Energy is finite and Power is Zero , then it is a _____ signal	1. Power Signal 2. Energy Signal 3. Both power and energy signal 4. electric signal
If energy is infinite and power is finite , then it is a _____ signal	1. Energy signal 2. Power signal 3.

	Both power and energy signal 4. electric signal
_____ operation involves Time shifting , summation and multiplication.	1. Correlation 2. Convolution 3. Both convolution and correlation 4. summing
To measure a resistance with the help of potentiometer it is	1. use an ammeter 2. Necessary to use volt-ratio box 3. Not necessary to standardize the potentiometer 4. Necessary to standardize the potentiometer
A system is said to be shift invariant only if_____	1. a shift in the input signal also results in the corresponding shift in the output 2. a shift in the input signal does not exhibit the corresponding shift in the output 3. a shifting level does not vary in an input as well as output 4. a shifting at input does not affect the output
The _____ function is represented by Sint/t.	1. Sine function 2. Sinc function 3.Cosine function 4. ramp function
The RMS value of the voltage u(t)= 3 + 4 cos (3t) is	1. 7 V 2. $\sqrt{17}$ V 3. 5 V 4. 3 + 2 $\sqrt{2}$ V

Hysteresis errors in Bourdon tubes can be minimized by :	1. selecting proper material 2. avoiding direct entry of steam into it 3. using them well within the designed pressure range 4. proper design and fabrication
1. A TV receiver antenna should pick up the TV signal and develop maximum voltage from the available strength of signal 2. It should not suffer from co-channel interference 3. It should reject unwanted signals 4. It should have a very narrowband The correct statements are	1. 1, 2 and 3 only 2. all statements are correct 3. 2 and 3 only 4. 1 and 2 only
In an electrodynamometer type of wattmeter	1. the current coil is made fixed 2.pressure coil is made fixed 3. any of the two coils can be made fixed 4. both the coils should be movable
The input and output of the D.P. meter is Q (input flow rate) and Δp (output differential pressure) and C is the meter constant. Determine the flow rate when Δp = 250 Pa and C = 0.0004 m^3/s per Pa.	1. 0.00632 m^3/s 2. 0.0632 m^3/s 3. 0.0632 m^3/s 4. 0.0412 m^3/s
If the instrument is to have a wide range, the instrument should have	1. Exponential scale 2. Logarithmic scale 3. Linear scale 4. Square-law scale
For low resistance (from few micro ohms to one ohm) measurement, which bridge is used?	1. Guarded Wheatstone bridge 2. Maxwell bridge 3. Kelvin bridge 4. Wheatstone bridge
A vertical amplifier for a CRO can be designed for:	1. High Bandwidth 2. Less Bandwidth 3. Constant Band 4. Less Gain
The household energy meter is	1.three phase instrument 2.a recording instrument 3.an integrating instrument 4.an indicating instrument
A D flip-flop can be constructed from T flip-flop and _____ gate	1. Ex- OR 2.

	Ex-NOR 3. AND 4. OR
How many NAND gates are there in a 7400 NAND IC	1. 1 2. 8 3. 2 4. 4
To built mod-19 counter, number of flip-flop required is	1. 6 2. 3 3. 4 4. 5
Each "1" entry in a K-map square represents:	1. DON'T CARE condition for all possible input truth table combinations. 2. a LOW output for all possible HIGH input conditions. 3. a HIGH output on the truth table for all LOW input combinations. 4.A HIGH output on the truth table for the all HIGH input combinations.
Which of the following is an open loop control system	1. Field controlled D.C. motor 2. Ward leonard control 3. Metadyne 4. Stroboscope
In a JK Flip-Flop, toggle means	1. No change in output. 2. Set Q = 1 and Qbar = 0. 3. Change the output to the opposite state. 4. Set Q = 0 and Qbar = 1.
When a differential amplifier is operated single-ended, ...	1. the output is grounded 2. one-side output is taken 3. both inputs are connected together 4. the output is not inverted

The first generation of IC opamp was	1.Fair child µA 709 2.T.I. SN 72709 3.Motorola's MC 1709 4.National Semi-conductor's LM 709.
For spontaneous or stimulated emission to occur, energy must be supplied to boost the electron from its _____.	1. lower energy state to a higher energy state 2. higher energy state to a lower energy state 3. higher energy state 4. lower energy state
The disadvantages of the error constants are:	1. They do not give the information of the steady state error when the inputs are other than the three basic types 2. Error constant fail to indicate the exact manner in which the error function change with time. 3. They do not give information of the steady state error and fail to indicate the exact manner in which the error function change with time 4. They give information of the steady state error
A 10ohm resistor, a 1 H inductor and 1 µF capacitor are connected in parallel. The combination is driven by a unit step current. Under the steady state condition, the source current flows through	1.Capacitor only 2.Inductor 3.Resistor 4.Resister and inductor
The disadvantage of constant voltage transmission is a. large conductor area is required for same power transmission b. short circuit current of the system is increased c. load power factor in heavy loads	1.Only (a) is correct 2.Both (a) and (b) are correct 3.All are wrong 4.All are correct
Which of the following oscillators is suitable for frequencies in the range of mega hertz?	1. Hartley 2. Wien bridge 3.Hartley and Wien Bridge 4. RC phase shift

If two systems with h1(t) and h2(t) are connected in series, then overall impulse response is	1.h(t)=h1(t)h2(t) 2.h1(t)+h2(t) 3.d/dt[h1(t)h2(t)] 4.h1(t)∗h2(t)	
The closed loop transfer function of a control system is given by G(s) = 2(s-1)/[(s+1)(s+2)] For a unit step input the output is	1. $-3e^{-2t} + 4e^{-t-1}$ 2. $-3e^{-2t} - 4e^{-t+1}$ 3.Zero 4.Infinity	
Which of the following combinations can form a 3×8 decoder?	1. Four 1×2 decoders and one 2×4 decoder. 2. one 2×4 decoder 3. Two 2×4 decoders and one 1×2 decoder. 4. Two 2×4 decoders	
Two rectangular waveforms of duration t_1 and t_2 seconds are convolved. What is the shape of the resulting waveform?		
		1. Triangular 2. Rectangular 3. Trapezoidal 4. Semi-circular
The op-amp in open loop condition is basically an:	1.differential amplifier 2. Integrator 3. Differentiator 4. Log amplifier	
Which of the following is present in both TRF receiver and superheterodyne receiver? a. Detector b. Mixer c. IF amplifier d. Local oscillator	1. All (a) (b) (c) and (d) 2. Only (b) and (c) 3. Only (c) and (d) 4. Only (b) and (c)	

An amplifier has open loop gain of 100, input impedance 1 kΩ and output impedance 100 Ω. For series-series negative feedback with β = 0.99 is used, then the new input and output impedances are	1. 10 Ω and 10 kΩ 2. 10 Ω and 1 kΩ 3. 100 kΩ and 1k Ω 4. 100 kΩ and 10k Ω
Phase margin of a system is used to specify which of the following	1. Frequency response 2. Absolute stability 3. Relative stability 4. Time response
In an opamp by using binary weight resistors the summing circuit	1.can build a A/D converter 2.can be used as a integrator. 3.can build a D/A converter 4.can be used as a differentiator
An 741IC opamp is used as a differential amplifier. Its positive and negative inputs are at potentials of 2.1 and 1.9 mV respectively. If the gain is 100,000, the output will be.....	1.0.2 V 2.2 V 3.20 V 4.12 V.
Convolution of two sequences $x_1[n]$ and $x_2[n]$ is	1. $X_1(z)*X_2(z)$ 2. $X_1(z)X_2(z)$ 3. $X_1(z)+X_2(z)$ 4.X1(z) - X2(z)
Pick the odd one	1.variance 2. mean 3. standard deviation 4. Chebyshev inequality