1. The current allocation and maximum requirement of different types of resources for four processes are given below:

Process	Max			Allocation			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P_1	8	6	4	1	2	1	4	4	5
P_2	4	3	3	3	1	1			
P_3	10	1	3	4	1	3			
P_4	3	3	3	3	2	2			

Consider the following four statements

(A) P2-- >P4 -- >P1-- >P3 is a safe sequence

(B) P4-- >P2 -- >P1-- >P3 is a safe sequence.

(C) P4-- >P2 -- >P3-- >P1 is a safe sequence

(D) P1-- >P4 -- >P2-- >P3 is a safe sequence.

Identify correct statements from the given options.

(a) A, B and D only (b) A, B and C only

(c) B, C and D only (d) A, B, C & D

Operating System – Banker's Algorithm / Safe Sequence (Deadlock Avoidance)

2. An operating system contains 4 user processes each requiring 5 units of resource R. The minimum number of required units of R such that no deadlock will ever occur is

(a)20 (b) 4 (c) 17 (d) 15

Operating System – Deadlock (Minimum Resource Requirement)

3. If the roots of the equation $x^2 + 4x + \alpha^2 - 3\alpha = 0$ are real then the value of α is (/are)

(a) $\alpha \in (-\infty, -1) \cup (4, \infty)$ (b) $\alpha \in (-\infty, -1) \cup [4, \infty)$

(c) $\alpha \in [-2, 4]$ (d) $\alpha \in [-1, 4]$

Algebra – Quadratic Equation (Discriminant & Nature of Roots)

4. Each node is having a successor node in _____

(a)Singly linked list (b) Singly circular linked list

(c)Doubly linked list (d)Not possible in any linked list

Data Structures – Linked List (Circular Singly Linked List)

5. One day, Amit left home and cycled 15 km southwards, turned right and cycled 7 km and turned right and cycled 10 km and turned left and cycled 5 km. How many kilometres will he have to cycle to reach his home?

(a) 17 km (b) 12 km (c) 13 km (d) 37 km

Direction Sense Test

6. Match List-I with List-II

List-I (Function)		List-II (Range)	
A.	$y = \frac{1}{2-sin3x}$	I.	[1, 7/3]
B.	$y = \frac{x^2+x+2}{x^2+x+1}, x \epsilon R$	II.	$\left[\frac{\pi}{2}, \pi\right) \cup \left(\pi, \frac{3\pi}{2}\right]$
C.	y= sinx – cosx	III.	[1/3, 1]
D.	y= $\cot^{-1}$ (-x) – $\tan^{-1}$ x+$\sec^{-1}$ c	IV.	$[-\sqrt{2}, \sqrt{2}]$

Choose the correct answer from the options given below:

(a) A-III, B-I, C-IV, D-II (b) A-III, B-II, C-IV, D-I

(c) A-II, B-III, C-I, D-IV (d) A-II, B-III, C-IV, D-I

Functions – Range of Functions (Trigonometric + Algebraic)

7. In a computer if the page fault service time is 10 ms and average memory access time is 30 ns. If one page fault is generated for every 106 memory accesses. What is the effective access time for the memory?

(a) 21 ns approximate (b) 25 ns approximate

(c) 30 ns approximate (d) 40 ns approximate

Operating System – Paging (Effective Memory Access Time)

8. Which of the following are ture

(A) Ogive graph is used to measure the median of the collection of datas.

(B) Two events A and B are such that P(A) = ½ and P(B) =7/2 and P(not A or not B) = ¼ then A and B are independent events.

(C) Relation for mean, mode and median is given by Mode= 3 Median – 2 Mean

(D) The number of two-digits even number formed from digits 1, 2, 3, 4, 5 is 10

Choose the correct answer from the options given below

(a) A and B only (b) A, C and D only

(c) C and D only (d) B and C only

Statistics & Probability (Mean–Median–Mode, Events)

9. $\lim_{x \to 0} \frac{\sqrt{1-cos2x}}{x} =$

(a) 0 (b) 1 (c) $\sqrt{2}$ (d) 1/2

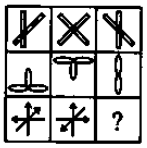
Limits – Trigonometric Limits

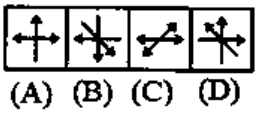
10. There are 200 students in a school out which 120 students play football, 50 students play cricket and 30 students play both football and cricket. The number of students who play one game only is:

(a) 110 (b) 140 (c) 200 (d) 170

Set Theory – Venn Diagram (Only One Game)

11. Select a suitable figure from the given options that would complete the figure matrix?





(a) A (b)B (c) C (d) D

Non-Verbal Reasoning – Figure Matrix Completion

12. If f (a + b - x) = f(x) then $\int_a^b xf(x)$ dx is equal to

(a) $\frac{b+a}{2} \int_a^b f(x)$ dx (b) $\frac{b-a}{2} \int_a^b f(x)$ dx

(c) $\frac{a+b}{2} \int_a^b f$ (a+x) dx (d) $\frac{a+b}{2} \int_a^b xf$ (x)dx

Definite Integration – Properties of Integrals

13. We can say that a schedule is conflict serializabale?

(a) If a schedule T can be transformed into a serial schedule U by a series of swaps of conflicting operations.

(b) If a schedule T can be transformed into a serial schedule U by a series of swaps of nonconflicting operations.

(c) If a schedule T can be transformed into a nonserial schedule U by a series of swaps of conflicting operations.

(d) If a schedule T can be transformed into a nonserial schedule U by a series of swaps of nonconflicting operations.

DBMS – Conflict Serializability

14. How does the number of page frames affect the number of page faults for a given memory access pattern in FIFO page replacement algorithm?
    (a) Increasing the number of page frames always decreases the number of page faults.
    (b) Increasing the number of page frames may increase or decrease the number of page faults depending on the memory access pattern.
    (c) Increasing the number of page frames always increases the number of page faults.
    (d) Increasing the number of page frames has no effect on the number of page faults.

Operating System – Page Replacement (FIFO & Belady's Anomaly)

15. If we want to find last node of a singly linked list then the correct coding is
    (a) If(temp→ link!=NULL) temp= temp→link
    (b) If (temp→data = = Num) temp = temp → link
    (c) While (temp → link ! = NULL) temp = temp → link
    (d) While (temp →link ! = data) temp = temp → link

Data Structures – Linked List Traversal (Finding Last Node)

16. On a system using simple segmentation, following is the segement table

Segment	Limit	Base
0	500	1000
1	200	2000
2	300	2500
3	100	1700

What is the physical address for the logical address 2, 212?
(a) 2712 (b) 512
(c) 2212 (d) 2800

Operating System – Segmentation (Logical → Physical Address)

17. Which of the following statement are TRUE?
    (A) A equation $ax^2 + bx + c = 0$ has real and distinct roots if $b^2-4ac \geq 0$ and $a \neq 0$
    (B) The unit digit in 49^{18} is 1
    (C) If two lines make complementary angles with the axis of x then the product of their slopes is 1.
    (D) The line bx – ay = 0 meet the hyperbola $\frac{x^2}{a^2}-\frac{y^2}{b^2}=1$

    Choose the correct answer from the options given below
    (a) A and D only (b) B and C only
    (c) A, B and C only (d) A, B and D only

Algebra + Coordinate Geometry (Mixed Concept MCQ)

18. If $x^2 + \frac{1}{x^2} = 2$ then the value of $x^{256} + \frac{1}{x^{256}}$ is
    (a) 1 (b) 0
    (c) –2 (d) 2

Algebra – Indices / Exponential Identity

19. What is the 10^{th} term of the following series?
    7, 14, 28, …….
    (a) 3076 (b) 3584
    (c) 56 (d) 6144

Sequence & Series – Geometric Progression

20. Decreasing the RAM of a computer typically leads to which of the following outcomes?
    (a) Virtual memory increases (b)Page faults increases
    (c) Page faults decreases (d)Segmentation faults occur

Operating System – Virtual Memory (Effect of RAM on Page Faults)

21. There is a certain relation between two given words on left side of :: and one word is given on the right side of :: while another word is missing. Select the missing word which have same relation as the word pairs on the left side of ::symbol.
    Current : Circuit :: Earth : ?
    (a) Solar system (b) Orbit
    (c) Planet (d) Moon

Analogy (Word Relationship)

22. Four students are sitting on a bench to be photographed. Kamal is to the left of Amrita. Dipak is to the right of Amrita. Ankit is between Amrita and Dipak. Identify students sitting in corner's of the bench?
    (a) Kamal, Ankit (b) Kamal, Dipak
    (c) Dipak, Amrita (d) Amrita, Ankit

Seating Arrangement (Linear)

23. Choose the odd one out.
    (a) August (b) October
    (c) November (d) March

Odd One Out (Month Classification)

24. The area of the region bounded by the curve $y^2 = 4x$ and $x^2 = 4y$ is:
    (a)16/3 sq. units (b)23/6 sq. units
    (c) 13/3 sq. units (d) 28/5 sq. units

Integral Calculus – Area Between Curves

25. The function represented by the k-map given below is

k-map				
C/AB	00	01	11	10
0	0	1	1	1
1	0	0	1	0

(a) BC + AB + AC' (b) BC' + AB + AC'
(c) $(B \oplus C)'$ (d) A.BC

Digital Logic – K-Map Simplification

26. Which of the following statements are TRUE?
    (A) If each element in a row is a constant multipilier of corresponding element of another row of a determinant, then the value of the determinant is always non-zero.
    (B) If each element on one side of the principal diagonal of a determinant is zero, than the value of the determinant is the product of the diagonal elements.
    (C) The value of determinant of skew symmetric matrix of odd order is always non-zero.
    (D) If A is a non-singular matrix of order three, the $|adj\ A| = |A|^2$

    Choose the correct answer from the options given below
    (a) B and D only (b) A and B only
    (c) A, B and C only (d) A, C and D only

Determinants & Matrices – Properties

27. Match List-I with List-II

List-I		List-II	
A.	Asynchronous	**I.**	A pulse that cause a logic device to be activated or change state.
B.	Trigger	**II.**	The operation is not executed in step with the clock.
C	J-K Flip-flop	**III.**	Flip Flop that atleast set, reset, toggle and hold modes of operation.
D.	D flip flop	**IV.**	Flip flop with atleast set and reset modes of operations.

Choose the correct answer from the options given below:

(a) A-I, B-II, C-III, D-IV (b) A, II, B-I, C-III, D-IV

(c) A-III, B-IV, C-II, D-I (d) A-I, B-II, C-IV, D-III

Digital Electronics – Flip-Flops

28. Let A′ represent complement of A. Which of the following Boolean expression is/are true?

(A) A + AB = A (B) (A + B)′ = A′B′

(C) (A′)′ = A (D) (AB)′ = A′ + B′

Choose the correct answer from the options given below:

(a) A, B and D only (b) A and D only

(c) A, B, C and D (d) B and D only

Boolean Algebra – Laws & Identities

29. Match List-I with List-II

List-I		List-II	
A.	Bellman-Ford algorithm (with adjacency list representation)	**I.**	$O(\|V\|^2)$
B.	Dijkstra Algorithm	**II.**	O((V+E)logV)
C	Prim's Algorithm	**III.**	O(nm)
D.	Topological sorting (with adjacency list representation)	**IV.**	O(n+m)

Choose the correct answer from the options given below

(a) A-III, B-I, C-II, D-IV (b) A-II, B-IV, C-III, D-I

(c) A-III, B-IV, C-I, D-II (d) A-II, B-I, C-III, D-IV

Algorithms – Time Complexity (Graph Algorithms)

30. K is the son of A's mother's sister. Q is daughter of D, who is the father of G and grandfather of A. P is the daughter of H who is grandmother of K. D is husband of H and G is husband of L. How is P related to Q?

(a) Sister (b) Mother (c) Daughter (d) Cousin

Blood Relation

31. Amit was counting down from 34, Punit was counting upwards the numbers starting from 2 and he was calling out only the even numbers. What common number will they call out at the same time if they were calling out at the same speed?

(a) 22 (b) 23 (c) 24

(d) they will not call out the same number.

Number Puzzle (Simultaneous Counting)

32. If x_1, x_2, x_3 as well as y_1, y_2, y_3 are in G.P. with the same common ratio, then the points (x_1, y_1), (x_2, y_2) and (x_3, y_3)

(a)Lie on a straight line. (b) Lie on an ellipse

(c)Lie on a circle (d) Are vertices of a triangle

Coordinate Geometry – Collinearity of Points (G.P.)

33. Let $\alpha > 2$ is an integer. If there are only 10 positive integers satisfying the inequality $(x-\alpha)(x-2\alpha)(x-\alpha^2) < 0$ then the value (/s) of α is:

(a) 3 and 4 (b) 3 (c) –3 (d) 4

Inequalities – Polynomial Inequality

34. The idea of cache memory is based on the which of the following?

(a) Principle of locality of reference.

(b) Based on the fact that large portion of a program is referenced relatively frequently.

(c) Principle of 10-90 rule

(d) Non volatile storage

Computer Organization – Cache Memory (Locality of Reference)

35. Match List-I with List-II

List-I		List-II	
A.	Flash memory	**I.**	Oldest and Slowest
B.	PMOS	**II.**	Used in large scale integration (LSI)
C	NMOS	**III.**	Least power consumption.
D.	CMOS	**IV.**	Non volatile RAM which is powered continuously.

Choose the correct answer from the options given below

(a) A-I, B-IV, C-III, D, II (b)A-I, B-IV, C-II, D-III

(c) A-IV, B-I, C-III, D-II (d) A-IV, B-I,C-II, D-III

Computer Organization – Memory Technologies (CMOS, Flash)

36. Arrange the following in the increasing order of their asymptotic complexities.

(A) Insertion sort (best case) (B) Bubble sort (worst case)

(C) Binary search (worst case) (D) Merge sort (worst case)

(a)(A), (C), (B), (D) (b)(D), (A), (C), (B)

(c)(A), (B), (C), (D) (d)(C), (A), (D), (B)

Algorithms – Asymptotic Time Complexity

37. If P means '+', A means 'x', B means '–' and J means '÷' then 14J2P3A6B7=?

(a) 28 (b) 18 (c) 4s (d) 35

Mathematical Operations (Symbol Replacement)

38. Consider the following statements

(A) RAM is a combinational circuit

(B) RAM is sequential circuit

(C) PLA is a combinational circuit

(D) PLA is a sequential circuit

(a) A and D only (b) B and C only

(c) B and D only (d) A and C only

Digital Logic – Combinational vs Sequential Circuits

39. Arrange the following in increasing order of their per unit cost.

(A) DRAM (B) Magnetic disk

(C) Optical disk (D) SRAM

(E) Magnetic tape

Choose the correct answer from the options given below

(a) E, C, B, A, D (b) E, C, B, D, A

(c) C, B, E, D, A (d) C, B, D, E, A

Computer Organization – Memory Cost Hierarchy

40. Consider implementation of a databse. Among the following options, choose the most appropriate data structure for this

(a) B+ tree (b) Linked list

(c) Queue (d) Stack

Data Structures – Indexing Structure (B+ Tree)

41. Which of the following statement are NOT TRUE?
(A) If A and B are symmetric matrics, then AB-BA is a skew symmetric matrix.
(B) Multiplying a determinant by k means multiply element of only one column by k.
(C) IF $A^2 - A + I = 0$, then A^{-1} is equal to A + I.
(D) If A and B are invertible matrices of same order,then $(A+B)^{-1} = B^{-1} + A^{-1}$.
Choose the correct answer from the options given below:
(a) A, B and D only (b) B, C and D only
(c) C and D only (d) A and C only

Matrices – Properties & Inverse

42. Consider a system with 1K pages and 512 frames and each page is of size 2KB. How many bits are required to represent the virtual address space memory.
(a) 20 bits (b) 21 bits (c) 11 bits (d) 16 bits

Operating System – Virtual Address Space

43. The function f(x) = $[x]^n$, integer n ≥ 2 (where [y] is the greatest integer less than or equal to y), is discontinuous at all points of
(a) real numbers (b) all non-integer real number
(c) only at zero (d) integers

Continuity – Greatest Integer Function

44. The following integers are needed to be sorted in ascending order using bubble sort.
5,8,22,18,1
Following are the results of various passes during the sorting process.
(A) 5,1,8,18,22 (B) 1,5,8,18,22 (C) 5,8,18,1,22 (D) 5,8,1,18,22
(a) C, D, B, A (b) C, D, A, B (c) D, C, A, B (d) D, C, B, A

Algorithms – Bubble Sort (Pass Analysis)

45. Match List-I with List-II

List-I		List-II	
A.	Eccentricity of the conic $X^2-4x+4y+4y^2=12$ is	I.	10/3
B.	Latus rectum of conic $5x^2+9y^2=45$ is	II.	1
C	The straight line x + y = a touches the curve $y = x - x^2$ then value of a is	III.	2
D.	Eccentricity of conic $3x^2-y^2=4$ is	IV.	$\sqrt{3/2}$

Choose the correct answer from the options given below
(a)A-I, B-II, C-IV, D, III (b) A-II, B-I, C-III, D-IV
(c) A-IV, B-I, C-II, D-III (d) A-IV, B-II, C-I, D-III

Conic Sections – Ellipse & Hyperbola Properties

46. A line passes through a point (2,3) such that sum of its intercepts on the axes is 12 then equation of line (/s) is (/are) given by
(A) 3x + y =9 (B) x + 3y = 9
(C) x+ 2y =8 (D) 5x + 7y = 35
Choose the correct answer from the options given below
(a) A only (b) A, B and C only
(c) A and C only (d) B, C and D only

Straight Lines – Intercept Form

47. There are 15 points in a plane such that 5 points are collinear and no three of the remaining points are collinear then total number of straight lines formed are:
(a) 105 (b) 95 (c) 96 (d) 106

Permutation & Combination – Lines from Points

48. The range of integers that can be represented by a 2's complement number system is _____. Where is n is number of bits in number
(a) -2^{n-1} to $2^{n-1}-1$ (b) $-(2^{n-1}-1)$ to $(2^{n-1}-1)$
(c) -2^{n-1} to 2^{n-1} (d) $-(2^{n-1}+1)$ to $(2^{n-1}-1)$

Computer Organization – Number System (2's Complement Range)

49. It has been established that
(A) Aryabhatta was (B) Although a great mathematician
(C) Weak in science (D) Right from his school days
What will be the sequene to make a correct statement from the above options
(a) A, B, C, D (b) B, A, C, D (c) B, A, D, C (d) C, B, D, A

Sentence Arrangement / Logical Sequencing

50. Given $\sqrt{(224)}_r = (13)_r$ where r is the radix. The value of r is____
(a) 10 (b) 8 (c) 5 (d) 6

Number System – Radix/Base System

51. The value of x satisfies the inequality $|x-1| + |x-2| \geq 4$ if
(a) $x \in \left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{7}{2}, \infty\right)$ (b) $x \in \left(-\infty, -\frac{1}{2}\right) \cup \left(\frac{7}{2}, \infty\right)$
(c) $x \in \left[-\frac{1}{2}, \frac{7}{2}\right]$ (d) $x \in \left(-\frac{1}{2}, \frac{7}{2}\right)$

Modulus Inequality

52. Consider a completely skewed (left/right) binary search tree with n elements. What is the worst case time complexity of searching an element in this tree?
(a) O(n) (b) O(1) (c) O(log n) (d)O (nlogn)

Data Structures – Binary Search Tree (Worst-Case Search)

53. The equation of a circle that passes through the points (3,0) and (0,–2) and its centre lies on a line 2x+3y = 3 then equation of the circle is given by
(a) $x^2 + y^2 + 2x + 16y + 72 = 0$
(b) $10x^2 + 10y^2 - 6x - 16y - 72 = 0$
(c) $5x^2 + 5y^2 + 6x + 16y + 72 = 0$
(d) $10x^2 + 10y^2 + 6x + 16y - 72 = 0$

Circle – Equation of Circle

54. What are the ways to implement a priority Queue?
(A) Arrays (B) Fibonacci tree
(C) Heap Data Structure (D) Linked list
Choose the correct answer from the options given below
(a) A, B and D only (b) B, C and D only
(c) A, B, C and D (d) A, C and D only

Data Structures – Priority Queue Implementation

55. Which of the following is not an application of Stack?
(a) Tower of Hanoi (b) Recursion
(c) Voter polling station (d) Parantheses Matching

Stack – Applications

56. In a certain code if SCOTLAND is written as 12345678, LOAN is written as 1435, LOTS is written as 8124, DAN is written as 537 and SON is written as 458, then what will be the code for 'C'?
(a) 4 (b) 5 (c) 6 (d) 8

Coding–Decoding (Letter–Number)

57. $\int \frac{(x^5-x)^{1/5}}{x^6}$ dx is equal to (where C is an arbitrary constant)

(a) $\left(1-\frac{1}{x^2}\right)^{4/5}+C$ (b) $\left(x^4-\frac{1}{x^4}\right)^{6/5}+C$

(c) $\frac{5}{24}\left(1-\frac{1}{x^4}\right)^{6/5}+C$ (d) $\frac{5}{24}\left(x^4-\frac{1}{x^4}\right)^{6/5}+C$

Integration – Substitution Method

58. If the vertices of a triangle are (1,2), (2,5) and (4,3) then the area of the triangle is

(a) 3 sq. units (b) 4 sq. units

(c) 6 sq. units (d) 8 sq. units

Coordinate Geometry – Area of Triangle

59. Choose the missing character?

4	5	6
4	?	15
4	13	28

(a)5 (b) 7 (c) 9 (d) 8

Number Pattern

60. An equilateral triangle is inscribed in a parabola $y^2 = 8x$ whose one vertex is at the vertex of the parabola then the length of the side of the triangle is:

(a) $8\sqrt{3}$ units (b) $16\sqrt{3}$ units (c) $4\sqrt{3}$ units (d) $\sqrt{3}/2$ units

Parabola – Geometry Application

61. A equation of a conic is $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$, where a, b, c, f, g and h are contants

Then which of the following statement are true

(A) The given conic is circle if a = 0 and b = 0

(B) The given conic is circle if $a = b \neq 0$ and h = 0

(C) The given conic is circle if $a = b \neq 0$ and $h \neq 0$

(D) The given conic represents a pair of real and distincts straight lines if $f = g = c = 0$ and $h^2 - ab > 0$

Choose the correct answer from the options given below

(a) B only (b) B and D only

(c) A, B C and D (d) D only

Conic Sections – General Second Degree Equation

62. A function f (x) is defined as f (x) = $\begin{cases} \frac{1-cos4x}{x^2}; x<0 \\ a; x=0 \\ \frac{\sqrt{x}}{\sqrt{(16+\sqrt{x})}-4}; x>0 \end{cases}$

If the function f(x) is continuous at x = 0, then the value of a is:

(a) 4 (b) 6 (c) 8 (d) 10

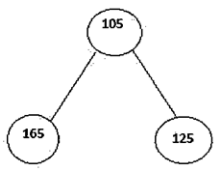
Continuity of Piecewise Function

63. If all permutation of the letters of the word 'AGAIN' are arranged in the order as in a dictionary then 49th word is:

(a) INGAA (b) INAAG (c) NAAGI (d) GNAAI

Permutation – Dictionary Order

64. Consider the following tree. This is a/an _____



(a)AVL Search Tree (b) Binary Tree

(c) Binary Search Tree (d) Fibonacci Tree

Trees – Binary Tree Identification

65. What is the missing term?

5, 17, 37, 65, ____, 145

(a) 100 (b) 101 (c) 102 (d) 99

Number Series

66. In a class, 4/5 of the students are boys and rest are girls. If 2/5 of the boys and ¼ of the girls are absent, what part of the total number of students is present?

(a) 37/100 (b) 63/100 (c) 53/100 (d) 47/100

Ratio & Fraction

67. Statement: Some pens are books.

All School are Books.

Some Colleges are Schools.

Consider the following conclusions based on above statements.

(a) Some colleges are pens. (b) Some Pens are Schools.

(b) Some Colleges are Books.

Choose the correct conclusions from the options given below:

(a) A and b (b) A, B, C

(c) C only (d) B and C only

Syllogism

68. Match List-I with List-II

List-I		List-II	
A.	Critical Region	I.	Circular wait
B.	Working Set	II.	Condition variable
C	Deadlock	III.	Principle of locality
D.	Wait/signal	IV.	Mutual exclusion

Choose the correct answer from the options given below

(a) A-IV, B-III, C-I, D-II (b) A-IV, B-III, C-II, D-I

(c) A-III, B-IV, C-II, D-I (d) A-III, B-IV, C-I, D-II

Operating System – Deadlock & Synchronization

69. A logic circuit, that can add two 1-bit numbers and produce output for sum and carry but cannot handle carry input, is called _____

(a) Half adder (b) Full adder (c) Multiplexer (d) Encoder

Digital Electronics – Adders (Half Adder)

70. How many child processes will be created by following fork ( ) system call?

```
fork();
fork();
fork();
fork();
```

(a) 4 (b) 16 (c) 15 (d) 3

Operating System – Process Creation (fork())

71. The mean of 5 data is 5.2 and their variance is 27.296. If three of the data are 1,3 and 6 then other two data are

(a) 12 and 4 (b) 9 and 7

(c) 10 and 6 (d) 11 and 5

Statistics – Mean & Variance

72. Consider the system of linear equations as $2x + 2y + z = 1$, $4x + ky + 2z = 2$ and $kx + 4y + z = 1$ then choose the correct statement(/s) from below

(A) The system of equations has a unique solution if $k \neq 4$ and $k \neq 2$

(B) The system of equations is inconsistent for every real number k

(C) The system of equations have infinite number of solution if k= 4

(D) The system of equations have infinite number of solution if k= 2

Choose the correct answer from the options given below

(a) A, B and D (b) A, B and C

(c) A, C and D (d) C and D

Linear Algebra – Consistency of Linear Equations

73. If the parametric equation of a curve is given by $x = e^t \cos t$ and $y = e^t \sin t$ then the tangent to the curve at the point $t = \frac{\pi}{4}$ makes the angle with the axis of x is

(a)0 (b) $\pi/4$ (c) $\pi/3$ (d) $\pi/2$

Differentiation – Parametric Curves (Angle of Tangent)

74. Match List-I with List-II

List-I		**List-II**	
A.	$\int_0^{\frac{\pi}{2}} \frac{sin^4x}{sin^4x+cos^4x}\, dx$	I.	0
B.	$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{1}{1+\sqrt{tanx}}\, dx$	II.	1
C	$\int_0^1 xe^x\, dx$	III.	$\frac{\pi}{12}$
D.	$\int_{-1}^1 x^{109}cos^{88}x\, dx$	IV.	$\frac{\pi}{4}$

Choose the correct answer from the options given below

(a) A-IV, B-III, C-I, D-II (b) A-IV, B-III, C-II, D-I

(c)A-III, B-IV, C-II, D-I (d) A-III, B-IV, C-I, D-II

Definite Integration – Standard Integrals

75. Match List-I with List-II

For f to be continuous , f(0) is given by

List-I Function f(x)		List-II f(0)	
A.	f(x)=$\frac{\log(1+4x)}{x}$	I.	¼
B.	f(x)= $\frac{\log(4+x)-log4}{x}$	II.	1
C	f(x) $\frac{x}{\sin x}$	III.	4
D.	f(x) $\frac{1-cos^3x}{x\text{Sin}\,2x}$	IV.	¾

Choose the correct answer from the options given below

(a) A-I, B-III, C-IV, D-II (b) A-I, B-III,C-II, D-IV

(c) A-III, B –I, C-II, D-IV (d) A-III, B-I, C-IV, D-II

Continuity – Standard Limit Results

1.	B	**2.**	C	**3.**	D	**4.**	B	**5.**	C
6.	A	**7.**	D	**8.**	B	**9.**	C	**10.**	A
11.	C	**12.**	A	**13.**	B	**14.**	B	**15.**	C
16.	A	**17.**	B	**18.**	D	**19.**	B	**20.**	B
21.	B	**22.**	B	**23.**	C	**24.**	A	**25.**	B
26.	A	**27.**	B	**28.**	C	**29.**	A	**30.**	A
31.	D	**32.**	A	**33.**	D	**34.**	A	**35.**	D
36.	D	**37.**	B	**38.**	B	**39.**	A	**40.**	A
41.	C	**42.**	B	**43.**	D	**44.**	B	**45.**	C
46.	C	**47.**	C	**48.**	A	**49.**	B	**50.**	C
51.	A	**52.**	A	**53.**	B	**54.**	D	**55.**	C
56.	C	**57.**	C	**58.**	B	**59.**	C	**60.**	B
61.	B	**62.**	C	**63.**	C	**64.**	B	**65.**	B
66.	B	**67.**	C	**68.**	A	**69.**	A	**70.**	C
71.	B	**72.**	C	**73.**	D	**74.**	B	**75.**	C