



No. Classes

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for PYQ

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Under the Guidance of
Amit Katiyar



Complete Notes



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- A box has 5 black and 3 green shirts. One shirt is picked randomly and put another box. The second box has 3 black and 5 green shirts. Now a shirt is picked from second box. What is the probability of it being a black shirt?
(a) $\frac{4}{9}$ (b) $\frac{29}{72}$ (c) $\frac{8}{72}$ (d) $\frac{3}{16}$
- What is the probability of getting a sum 9 from two throws of dice?
(a) $\frac{1}{3}$ (b) $\frac{1}{9}$ (c) $\frac{1}{12}$ (d) $\frac{2}{9}$
- The predicted rate of response of the dependent variable to change in the independent variable is called:
(a) Slope (b) Intercept
(c) Error (d) Regression equation
- If the value of any regression coefficient is zero., then two variables are:
(a) Qualitative (b) Correlation
(c) Dependent (d) Independent
- If the mean is 11 and median is 13, then value of mode is
(a) 15 (b) 13
(c) 11 (d) 17
- Which term of the AP 92,88,84,80, ... is 0 ?
(a) 22 (b) 23
(c) 24 (d) 32
- $(1) + (1 + 1) + (1 + 1 + 1) + (1 + 1 + 1 + \dots n - 1 \text{ times}) = ?$
(a) $\frac{n(n+1)}{2}$ (b) $\frac{n(n-1)}{2}$
(c) n^2 (d) n
- If roots of $x^2 - 5x + a = 0$ are equal, then $a = ?$
(a) $\frac{25}{5}$ (b) $\pm \frac{25}{4}$
(c) $\frac{25}{4}$ (d) None of above
- Given that limit exists find
$$\lim_{(x,y,z) \rightarrow (-2,-2,-2)} \frac{\sin((x+2)(y+5)(z+1))}{(x+2)(y+7)}$$

(a) 1 (b) $-3/5$
(c) $1/2$ (d) 0
- Two men on a 3 - D surface want to meet each other. The surface is given by $f(x, y) = \frac{x^{-6} \cdot y^7}{x+y}$. They make their move horizontally or vertically with the X - Y plane as their reference. It was observed that one man was initially at (200, 400) and the other at (100,100). Their meet point is decided as (0,0). Given that they travel in straight lines, will they meet?
(a) They will meet
(b) They will not meet
(c) They meet with probability 0.5
(d) None of these
- The graph of the function $y = f(x)$ is symmetrical about the line $x = 2$, then
(a) $f(x + 2) = f(x - 2)$
(b) $f(2 + x) = f(2 - x)$
(c) $f(x) = f(-x)$
(d) $f(x) = -f(-x)$
- $\cos^2 2\theta = ?$
(a) $1 - \sin^2 \theta$ (b) $1 + \sin^2 \theta$
(c) $1 - \sin^2 \theta$ (d) $1 - \sin \theta$
- Considering Cosine Rule of any triangle ABC, possible measures of angle A includes
(a) angle A is obtuse (b) angle A is acute
(c) angle A is right angle (d) all of above
- For a skew symmetric even ordered matrix A of integers, which of the following will not hold true?
(a) $\det(A) = 9$ (b) $\det(A) = 81$
(c) $\det(A) = 7$ (d) $\det(A) = 4$
- Which of the following property of matrix multiplication is correct?
(a) Multiplication is not commutative in general
(b) Multiplication is associative
(c) Multiplication is distributive over addition
(d) All of the mentioned
- The area enclosed by $3|x| + 4|y| \leq 12$ is
(a) 6 square units (b) 12 square units
(c) 24 square units (d) 36 square units
- Power set of empty set has exactly subset.
(a) one (b) two
(c) zero (d) three
- Transpose of a column matrix is
(a) zero matrix (b) diagonal matrix
(c) column matrix (d) row matrix
- Constant zero solution of linear ordinary differential equation is called
(a) Trivial equation (b) Bypass equation
(c) logical equation (d) Singular equation
- Dot product of two vectors \vec{a} and \vec{b} is termed as
(a) Outer product (b) Inner product
(c) Cartesian Product (d) Vector Product
- If $f(x) = \max\{x, x^3\}$, then the number of points where $f(x)$ is not differentiable, are
(a) 1 (b) 2
(c) 3 (d) 4
- If $y = a \log |x| + bx^2 + x$ has its extreme values at $x = -1$ and $x = 2$, then
(a) $a = 2, b = -1$ (b) $a = 2, b = -\frac{1}{2}$
(c) $a = -1, b = \frac{1}{2}$ (d) None of these



23. If A and B are coefficient of x^n in the expansion of $(1+x)^{2n}$ and $(1+x)^{2n-1}$ respectively, then A/B equals
 (a) 1 (b) 2
 (c) $1/2$ (d) $1/n$
24. What is the cardinality of the Power set of the set $\{0,1,2\}$
 (a) 8 (b) 6
 (c) 7 (d) 9
25. Consider a line passing through $(1,2)$ and $(4,8)$, gradient of this line is equal to:
 (a) $\frac{1}{2}$ (b) $-\frac{1}{2}$
 (c) 2 (d) -2
26. If ω is an imaginary cube root of unity, then $(1 + \omega - \omega^2)^7$ is equal to
 (a) 128ω (b) -128ω
 (c) $128\omega^2$ (d) $-128\omega^2$
27. The complex number $(\sin x + i \cos 2x)$ $(\cos x - i \sin 2x)$ are conjugate to each other, for
 (a) $x = n\pi$ (b) $x = 0$
 (c) $x = (n + \frac{1}{2})\pi$ (d) No value of x
28. The points z_1, z_2, z_3, z_4 in the complex plane are the vertices of a parallelogram taken in order, if and only if
 (a) $z_1 + z_4 = z_2 + z_3$
 (b) $z_1 + z_3 = z_2 + z_4$
 (c) $z_1 + z_2 = z_3 + z_4$
 (d) None of these
29. Linear programming model which involves fund allocation of limited investments is classified as
 (a) Ordination budgeting model
 (b) capital budgeting models
 (c) fund investments models
 (d) funds origin models
30. According to the system of constraints, solution set graphical representation is classified as
 (a) region of ordinate solutions
 (b) region of intercept solutions
 (c) region of vertex solutions
 (d) region of feasible solutions
31. Points within set are connected by line segment must follow condition that points must be
 (a) included in set
 (b) not included in set
 (c) included in function
 (d) included in objective
32. In mathematical-programming, goals represented by objective function include.
 (a) profit level
 (b) total cost and revenue
 (c) percent rate on investment
 (d) all of above
33. Coordinates of midpoint of line joining two points $(16,4)$ and $(36,6)$ are
 (a) $(26,5)$ (b) $(5,26)$
 (c) $(10,1)$ (d) $(1,10)$
34. In how many ways can a group of 5 men and 2 women be made out of a total 7 men and 3 women?
 (a) 63 (b) 90
 (c) 126 (d) None of these
35. For individual observations, reciprocal of arithmetic mean is called
 (a) geometric mean
 (b) harmonic mean
 (c) deviation square mean
 (d) paired mean
36. AP whose n^{th} term is $2n - 1$ is
 (a) 1,3,6, ... (b) 2,3,5, ...
 (c) 1,3,5, ... (d) 5,3,1 ...
37. The equation of the straight line passing through the point $(3,2)$ and perpendicular to the line $y = x$ is
 (a) $X - Y = 5$ (b) $X + Y = 5$
 (c) $X + Y = 1$ (d) $X - Y = 1$
38. Specifying a straight line, how many geometrical parameters should be known?
 (a) 1 (b) 2
 (c) 3 (d) 4
39. A point equidistant from the lines $4x + 3y + 10 = 0$, $5x - 12y + 26 = 0$ and $7x + 24y - 50 = 0$ is
 (a) $(1, -1)$ (b) $(1,1)$
 (c) $(0,0)$ (d) $(0,1)$
40. One vertex of the equilateral triangle with Centroid at origin and one side as $x + y - 2 = 0$ is
 (a) $(-1, -1)$ (b) $(2,2)$
 (c) $(-2, -2)$ (d) $(2, -2)$
41. Two bus tickets from city A to B and three tickets from city A to C cost Rs. 77 but three tickets from city A to B and 2 tickets from city A to C cost Rs. 73. What are the fares for cities B and C from A ?
 (a) Rs.17, Rs. 13 (b) Rs.4, Rs. 23
 (c) Rs. 13, Rs. 17 (d) Rs. 15, Rs. 14
42. In the group $G = \{2,4,6,8\}$ under multiplication modulo 10, the identity element is
 (a) 6 (b) 8
 (c) 4 (d) 2





43. A partition of $\{1, 2, 3, 4, 5\}$ in the family
 (a) $\{(1, 2), (3, 4), (3, 5)\}$
 (b) $\{\phi, (1, 2), (3, 4), (5)\}$
 (c) $\{(1, 2, 3), (5)\}$
 (d) $\{(1, 2), (3, 4, 5)\}$
44. Let $P(S)$ denote the power set of set S . Which of the following is always true?
 (a) $P(P(S)) = P(S)$
 (b) $P(S) \cap S = P(S)$
 (c) $P(S) \cap P(P(S)) = [\phi]$
 (d) $S \notin P(S)$
45. Find the remainder when 67^{99} is divided by 7 .
 (a) 4 (b) 6
 (c) 1 (d) 2
46. $G(e, a, b, c)$ is an abelian group with 'e' as identity element. The order of the other elements is
 (a) 2,2,3 (b) 3,3,3
 (c) 2,2,4 (d) 2,3,4
47. Period of $3\sec \frac{x}{3}$ is
 (a) π (b) 2π
 (c) 3π (d) 6π
48. The principal value of $\cos^{-1}(\cos 5)$ is
 (a) 5 (b) $\pi - 5$
 (c) $5 - \pi$ (d) $2\pi - 5$
49. If $\sin t = \frac{1}{5}$ and $0 < t < \frac{\pi}{2}$, then $\cos(4t) = ?$
 (a) 0.3464 (b) 0.8
 (c) 0.6928 (d) -0.6928
50. Find the value of $\int \frac{1}{4x^2 + 4x + 5} dx$ is
 (a) $\frac{1}{8} \sin^{-1}\left(x + \frac{1}{2}\right)$ (b) $\frac{1}{4} \tan^{-1}\left(x + \frac{1}{2}\right)$
 (c) $\frac{1}{8} \sec^{-1}\left(x + \frac{1}{2}\right)$ (d) $\frac{1}{4} \cos^{-1}\left(x + \frac{1}{2}\right)$
51. A computer controlled device for training exercises that duplicates the work environment is a
 (a) Simulator (b) Duplicator
 (c) Trainer (d) None
52. Multi user systems provided cost savings for small business because they use a single processing unit to link several
 (a) Personal Computers (b) Workstations
 (c) Dumb terminals (d) Mainframes
53. Which part of the computer is used for calculating and comparing?
 (a) Disk Unit (b) Control Unit
 (c) ALU (d) Modem
54. Which of the following memories need refresh?
 (a) SRAM (b) DRAM
 (c) ROM (d) All of the above
55. The ALU of a computer normally contains a number of high speed storage element classed
 (a) Semiconductor memory
 (b) Registers
 (c) Hard Disk
 (d) Magnetic Disk
56. The representation of decimal number 532.86 in the form of decimal is
 (a) 532.65 (b) 532.68
 (c) 531.67 (d) 531.68
57. The quantity of double word is
 (a) 8 bits (b) 16 bits
 (c) 32 bits (d) 64 bits
58. Which protocol provides e- mail facility among different hosts?
 (a) FTP (b) SMTP
 (c) TELNET (d) SNMP
59. COCOL is an acronym for
 (a) Common Basics Oriented Language
 (b) Common Oriented Business Language
 (c) Common Business Oriented Language
 (d) None
60. Which of the following are real time systems?
 (a) An on-line real reservation system
 (b) A process control system
 (c) Aircraft control System
 (d) Payroll processing system
61. Which one of the following input devices is user programmable?
 (a) Dumb terminal (b) Smart Terminal
 (c) VDT (d) Intelligent terminal
62. A name or number used to identify a storage location is called
 (a) A byte (b) A record
 (c) An address (d) All of above
63. Full form of URL is?
 (a) Uniform Resource Locator
 (b) Uniform Resource Link
 (c) Uniform Registered Link
 (d) Unified Resource Link
64. Second generation of computers consists of which of the following?
 (a) Vaccum Tubes
 (b) Diodes
 (c) VLSI Microprocessors
 (d) Transistors
65. MPG is an extension of which type of files?
 (a) Audio (b) Image
 (c) Video (d) Flash





66. Which is odd one?
 (a) Inkjet Printers (b) CRT
 (c) Laser Printers (d) Dot Matrix Printers
67. Which type of switching is used in Internet?
 (a) Packet (b) Telephone
 (c) Circuit (d) Telex
68. What is the meaning of OSI, in terms of computers?
 (a) Open Software Interrelation
 (b) Open System Interrelation
 (c) Open software Interconnection
 (d) Open System Interconnection
69. What is meaning of EEPROM?
 (a) Electronically Erasable Programmable Read Only memory
 (b) Electrically Erasable Programmable Read Only Memory
 (c) Electronically Erasable Programmable Reach Only Memory
 (d) Electrically Erasable Programmable Reach Only Memory
70. Which among following is responsible for finding and loading operating system into RAM?
 (a) Bootstrap Loader (b) CMOS
 (c) BIOS (d) DMOS
71. Three persons A, B and C are standing in a queue. There are five persons between A and B and eight persons between B and C. If there be three persons ahead of C and 21 persons behind A, what could be the minimum number of persons in the queue?
 (a) 40 (b) 27
 (c) 41 (d) 28
72. A class of boys stands in a single line; one boy is 19th in order from both the ends, How many boys are there in the class?
 (a) 39 (b) 37
 (c) 27 (d) 38
73. 517,235,639,841,792 What will be the first digit of the second highest number after the positions of only the 2nd, 3rd digits within each number are interchanged?
 (a) 7 (b) 8
 (c) 9 (d) 2
74. What should come next in the following number series?
 987654321876543217654321
 (a) 9 (b) 8
 (c) 6 (d) 5
75. P, Q, R, S, T, U, V and W are sitting round the circle and are facing the centre. P is second to the right of T who is neighbour of R and V. S is not the neighbour of P, V is neighbour of U. Q is not between S and W. W is not between U and S. Then who is sitting opposite to W?
 (a) S (b) Q
 (c) U (d) T
76. A shepherd had 27 sheep. All but 10 died. How many he left with?
 (a) 17 (b) 27
 (c) 10 (d) Zero
77. A is three times old as B. C was twice - as old as A four years ago. In four years time, A will be 31 . What are the present ages of B and C.
 (a) 9,50 (b) 9, 46
 (c) 10,46 (d) 10,50
78. In a group of 15 people, 7 read French, 8 Read English while 3 of them read none of these two. How many of them read French and English both?
 (a) 3 (b) 12
 (c) 18 (d) 20
79. Find the least number which leaves a remainder of 3 when divided by 5,6,7 and 8 , but leaves no remainder when divided by 9 ?
 (a) 1458 (b) 1683
 (c) 1692 (d) 1598
80. Find out the wrong number in the given sequence of numbers.
 22, 33, 66, 99, 121, 279, 594
 (a) 33 (b) 121
 (c) 279 (d) 594
81. Find out the wrong number in the given sequence of numbers.
 6,13,18,25,30,37,40
 (a) 37 (b) 30
 (c) 40 (d) 25
82. Insert the missing number
 8,7, 11, 12, 14, 17, 17, 22, (...)
 (a) 27 (b) 27
 (c) 20 (d) 22
83. Insert the missing number
 16,33,65,131,261, (...)
 (a) 523 (b) 613
 (c) 521 (d) 721
84. If COMPLETED is coded as MOCELPDET, then DIRECTION will be coded as:
 (a) RIDTCENOJ (b) SIDTCENOI
 (c) RIDTCENOI (d) RIETCENOI





85. In a code language COMPUTER is written as RETUPMOC. How is MACHINE written in the same code
 (a) DHFTCHS (b) HGTIRDM
 (c) ENIHCAM (d) HGRMSCH
86. If COOL is coded as DQRP, then write the code for HOT
 (a) JQW (b) IQW
 (c) IQX (d) IPW
87. Pointing to a girl in photograph. Amar said, "Her mother's brother is the only son of my mother's father." How the girl's mother related to Amar?
 (a) Mother (b) Sister
 (c) Aunt (d) Grandmother
88. A is the son of B. C, B's sister has a son D and a daughter E. F is the maternal uncle of D. How is E related to F ?
 (a) Sister (b) Mother
 (c) Cousin (d) Niece
89. The question given below has a set of three or four statements. Each set of statements is further divided into three segments. Choose the alternative where the third segment in the statement can be logically deduced using both the preceding two, but not just from one of them.
Statement :
 I. All papers are books.
 II. All bags are books.
 III. Some purses are bags.
Conclusions -
 I. Some papers are bags.
 II. Some books are papers.
 III. Some books are purses.
 (a) Only I follows.
 (b) Only II follows.
 (c) Only I and II follows.
 (d) Both II and III follows.
90. Study the information given below carefully, and answer the questions that follow?
 On a stage, D, N, A and P are standing as described below facing North.
 1. N is 2.5 m to the west of A.
 2. K is 4 m to the right of A.
 3. D is 6m to the south of K.
 4. P is 9m to the north of D.
 If a boy walks from N, meets A followed by K, D and then P, how many metres has he walked if he has travelled the straight distance all through?
 (a) 15 m (b) 18 m
 (c) 21.5 m (d) 22.5 m
91. Synonym of ACQUIANT
 (a) Withhold (b) Conceal
 (c) Familiarise (d) Risky
92. Synonym of AGGRAVATE
 (a) Decline (b) Acquire
 (c) Excited (d) Irritate
93. A remedy for all disease is
 (a) Medicine (b) Panacea
 (c) Medical (d) Medica
94. The mistake of placing something in the wrong period of time:
 (a) Misdate (b) Anachronism
 (c) Misplacement (d) Prolepsis
95. Find the most opposite meaning of SUBVERSION
 (a) Destabilization (b) Clarity
 (c) Compliance (d) Sanity
96. Find the word just opposite to PROVOKE
 (a) Insult
 (b) Anger
 (c) Encourage
 (d) Soothe
97. Choose the grammatically correct sentences out of the given options
 (a) He parked the car in the front of the bakery.
 (b) He parked an car in the front of the bakery.
 (c) He park the car in the front of the bakery.
 (d) He parked car in the front of the bakery.
98. Which word of the following means 'extremely or unusually small' ?
 (a) Webbed
 (c) Awkward
 (b) Diminutive
 (d) Farthest
99. What is the meaning of the word 'gait'?
 (a) Threshold
 (b) Entrance
 (c) Manner of Walking
 (d) Speed
100. Fill in the blanks with the correct prepositions.
 We will be staying Kolkata next Saturday.
 (a) on, from
 (b) for, from
 (c) by, by
 (d) in, till





ANSWER KEY

1.	b	2.	b	3.	a	4.	d	5.	d
6.	c	7.	b	8.	c	9.	b	10.	b
11.	b	12.	c	13.	d	14.	c	15.	d
16.	c	17.	a	18.	d	19.	a	20.	b
21.	c	22.	b	23.	b	24.	a	25.	c
26.	d	27.	d	28.	b	29.	b	30.	d
31.	a	32.	d	33.	a	34.	a	35.	b
36.	c	37.	b	38.	b	39.	c	40.	c
41.	c	42.	a	43.	d	44.	c	45.	c
46.	a	47.	d	48.	d	49.	c	50.	b
51.	a	52.	c	53.	c	54.	b	55.	b
56.	b	57.	c	58.	b	59.	c	60.	b,c
61.	d	62.	c	63.	a	64.	d	65.	c
66.	b	67.	a	68.	d	69.	b	70.	a
71.	d	72.	b	73.	a	74.	c	75.	a
76.	c	77.	a	78.	a	79.	b	80.	c
81.	c	82.	c	83.	a	84.	c	85.	c
86.	b	87.	b	88.	d	89.	d	90.	c
91.	c	92.	d	93.	b	94.	b	95.	c
96.	d	97.	a	98.	b	99.	c	100.	d

SOLUTION

1. $5 \rightarrow B$
 $3 \rightarrow G$
 Case 1 $\frac{5}{8} \times \frac{4}{9} = \frac{20}{72}$
 Case 2 $\frac{3}{8} \times \frac{3}{9} = \frac{9}{72}$
 Total = $\frac{20}{72} + \frac{9}{72} = \frac{29}{72}$

2. Total probability = 36

$a + b = 9$

$\left. \begin{matrix} 3 & 6 \\ 4 & 5 \\ 5 & 4 \\ 6 & 3 \end{matrix} \right\} 4 \text{ Case}$

$\frac{4}{36} = \frac{1}{9}$

3. (a) Slope

4. (d) Independent

5. Mean = 11

Median = 13

Mode = ?

Mode = 3 Median - 2 mean

= $3 \times 13 - 2 \times 11$

= $39 - 22$

17

6. 92, 88, 84, 80..... is

$T_n = a + (n-1)d$

$92 = 4(n-1)$

$23 = n-1$

$n = 24$

7. $(1) + (1+1) + (1+1+1) \dots \dots n-1$ times

$1 + 2 + 3 + 4 \dots \dots (n-1)$ time

Sum of natural no.

$\frac{n(n+1)}{2}$

$\frac{(n-1)(n)}{2}$

$\frac{(n-1)(n)}{2}$

8. $x^2 - 5x + a = 0$

$D = 0$

$b^2 - 4ac = 0$

$25 - 4a = 0$

$-4a = -25$

$A = 25/4$

9. (a)

10.

11. (b)

12. $\cos^2 2\theta =$

$1 - \sin^2 2\theta$

Option C

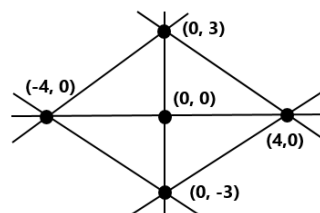
13. (d)

14. (c)

Because it is not a perfect square.

15. (d)

16. (C) $3|x| + 4|y| \leq 12$



Area = $\frac{1}{2} \times 4 \times 3 \times 4$

24 square unit. Ans.

17. (a)

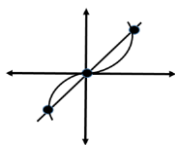
18. (d) row matrix.





19. (d)
20. (b) Inner product.

21.



$\{-1, 0, 1\}$

Discontinuous

22. $y = a \log x + bx^2 + x$

$$\frac{dy}{dx} = \frac{a}{x} + 2bx + 1$$

$$x = -1$$

$$\frac{a}{x} + 2bx + 1$$

$$-a - 2b + 1 = 0$$

$$-a - 2b = -1$$

$$a + 2b = 1$$

By option

(b) $a = 2 \quad b = -1/2$

$$2 - 2 \times \frac{1}{2} = 1$$

$$1 = 1$$

23. A is coefficient of x^n in $(1+x)^{2n}$
B is coefficient of x^n in $(1+x)^{2n-1}$

For $(1+x)^{2n}$

$$T_{r+1} = {}^{2n}C_r \cdot x^r$$

$$T_{n+1} = {}^{2n}C_n \cdot x^n$$

$$\text{coefficient of } x^n \text{ in } T_{n+1} = {}^{2n}C_n = A$$

for $(1+x)^{2n-1}$

$$T_{r+1} = {}^{2n-1}C_r (x)^r$$

$$T_{n+1} = {}^{2n-1}C_n (x)^n$$

$$\text{coefficient} = {}^{2n-1}C_n = B$$

$$\frac{A}{B} = \frac{{}^{2n}C_n}{{}^{2n-1}C_n} = \frac{\frac{(2n)!}{n!n!}}{\frac{(2n-1)!}{(n-1)!n!}} = \frac{2n}{n} = 2$$

24. $2^3 = 8$

25. Gradient = $\frac{y_2 - y_1}{x_2 - x_1}$

$$= \frac{8-2}{4-1} \Rightarrow \frac{6}{3}$$

$$\Rightarrow 2$$

26. (d)

$$w^3 = 1 \quad 1 + w + w^2 = 0$$

$$1 + w = -w^2$$

Now $(1 + w - w^2)^7$ can be written as $(-w^2 - w^2)^7$
 $= (-2w^2)^7$
 $= -128(w^{14})$
 $= -128(w^3)^4 \cdot (w^2)$
 $= -128 w^2$

27. (d) $\sin x + i \cos 2x$ and $\cos x - i \sin 2x$ are conjugate to each other if $\sin x = \cos x$ and $\cos 2x = \sin 2x$ or $\tan x = 1$

$$x = \frac{\pi}{4}, \frac{5\pi}{4}, \frac{9\pi}{4}, \dots \dots \dots (i) \quad 2x = \frac{\pi}{4}, \frac{5\pi}{4}, \frac{9\pi}{4}$$

And $\tan 2x = 1$

$$2x = \frac{\pi}{4}, \frac{5\pi}{4}, \frac{9\pi}{4}$$

or $x = \frac{\pi}{8}, \frac{5\pi}{8}, \frac{9\pi}{8}, \dots \dots \dots$

There exists no value of x common in (i) and (ii)

28. Z_1, Z_2, Z_3, Z_4 are parallelogram, Mid points of diagonal coincide.

diagonals are Z_1Z_3, Z_2Z_4

mid points $\rightarrow \frac{z_1+z_3}{2}, \frac{z_2+z_4}{2}$

$$\frac{z_1+z_2}{2}, = \frac{z_2+z_4}{2}$$

$$Z_1 + Z_3 = Z_2 + Z_4$$

29. (a)
30. (d)
31. Could not find answer.
32. (d)

33. _____

(16,4) (36,6)

$$\left(\frac{36+16}{2}, \frac{4+6}{2}\right)$$

$$\left(\frac{52}{2}, \frac{10}{2}\right)$$

(26, 5)

34. $7M \quad 3W$

$${}^7C_5 \times {}^3C_2 \Rightarrow \frac{7.6}{2} \times 3$$

$$21 \times 3 = 63$$

35. (b)
36. (c) odd no. of A.P.
1,3,5

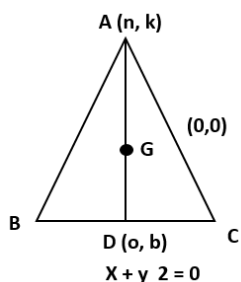
37. (b) by Satisfy option

$$x + y = 5$$

$$3 + 2 = 5$$



38. (b)
 39. (c) Satisfy
 40. Centroid $\rightarrow (0,0)$
 one side = $x + y - 2 = 0$



G divides AD in 2 : 1

D (a, b)

$$a + b - 2 = 0$$

$$a + b = 2$$

$$A \rightarrow (h, K) \quad \frac{2a+h}{3} = 0 \quad \text{and} \quad \frac{2b+K}{3} = 0$$

$$h = -2a$$

AD is perpendicular to BC

$$\text{slope of AD} \times \text{slope of BC} = -1$$

$$\frac{(k-b)}{(h-a)} \times (-1) = (-1)$$

$$K - b = h - a$$

$$-3b = -3a$$

$$b = a$$

$$2a = 2 \quad \text{and} \quad b = a$$

$$a = b = 1$$

$$h = -2 \quad \text{and} \quad K = -2$$

$$\text{vertex} \rightarrow (-2, -2)$$

41. (c)
 $3x(2x + 3y = 77) \Rightarrow (i)$
 $2(3x + 2y = 73) \Rightarrow (ii)$
 $5y = 85 \quad \text{or} \quad 4 = 17$
 $x = 13.$

42. (a)

43. (d)

44. (c)

45. (c) 67^{99}

$$\frac{(63+4)^{99}}{7}$$

$$96 + 3$$

$$\frac{4}{7} \Rightarrow \frac{63+1}{7}$$

Remainder = 1

46. (c)

47. (d)

48. $\cos^{-1}(\cos \theta) = \theta$

$$\cos(2\pi - \theta) = \cos \theta$$

$$\cos^{-1}(\cos 5) = \cos^{-1}\{\cos(2\pi - 5)\}$$

$$2\pi - 5$$

49. (d)

$$\sin t = \frac{1}{5}$$

$$\cot t = \frac{\sqrt{24}}{5}$$

$$\cos 4t = \cos^2 2t - \sin^2 2t$$

$$= \left(\frac{23}{25}\right)^2 - \frac{4 \times 24}{(25)^2}$$

$$= \frac{(23)^2 - 96}{(25)^2}$$

$$= \frac{529 - 96}{(25)^2}$$

$$= \frac{433}{625}$$

$$= 0.6928$$

50. $\int \frac{1}{4x^2 + 4x + 5} dx$

$$\int \frac{1}{4(x^2 + x + \frac{5}{4})} dx$$

$$\frac{1}{4} \int \frac{1}{x^2 + x + \frac{1}{4} + \frac{1}{4} + \frac{5}{4}}$$

$$\int \frac{1}{(x + \frac{1}{2})^2 - \frac{1}{4}}$$

$$\frac{1}{4} \tan^{-1}\left(x + \frac{1}{2}\right) + c$$

51.	(a)	52.	(c)	53.	(c)	54.	(b)
55.	(b)	56.	(b)	57.	(c)	58.	(b)
59.	(c)	60.	(a)	61.	(d)	62.	(c)
63.	(a)	64.	(d)	65.	(c)	66.	(b)
67.	(a)	68.	(d)	69.	(b)	70.	(a)
71.	(d)						

$$3 \quad 8 \quad 5 \quad 21$$

$$\leftarrow C \quad \leftrightarrow B \quad \leftrightarrow A \rightarrow$$

$$\text{Total} = 40$$

$$\text{Minimum} \quad 3 \quad 5$$

$$\leftarrow C \quad A \leftrightarrow B$$

$$28$$

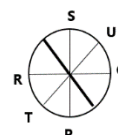
72. (b) 37

73. (a)

74. (c)

75. (b)

76. (c)





77. (a)

$$\begin{array}{ccc} A & B & C \\ 3x & x & 2(3x-4) \end{array}$$

After 4 year

$$A + 4 = 31$$

$$A = 27$$

$$B = 9$$

$$C = 50$$

78. (a) $7 \rightarrow F$

$$8 \rightarrow E$$

$$15 - 3 = 12 \Rightarrow F \cup E$$

$$12 = 7 + 8 - F \cap E$$

$$12 - 15 = F \cap E$$

$$-3 = -F \cap E$$

$$= 3$$

79. (b) 5, 6, 7, 8

$$\text{L.C.M.} = 840$$

$$840k + 3$$

↓

$$(840 \times 1) + 3$$

$$(840 \times 2) + 3 = 1683$$

80.	(c)	81.	(c)	82.	(c)
-----	-----	-----	-----	-----	-----

83.	(a)				
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84. (C)

CO M P L E T E D
MO _ C E L P D E T
DIR E C T I O N
RID _ T C E N O I

85. (c)

COMPUTER
RETUPMOC

MACHINE
ENIH CAM

86. (b)

C O O L H O T

+1↓ +2↓ +3 ↓

D Q R P I Q W

87. (b)

88. (d)

B - C - -F⁺

| |

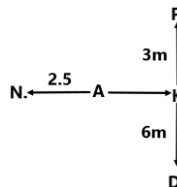
A⁺ D⁺ - E⁻

89.



Only I and II follows.

90. (c)



91.	(c)	92.	(d)	93.	(b)	94.	(b)
95.	(c)	96.	(d)	97.	(a)	98.	(b)
99.	(c)	100.	(d)				

