NIMCET – 2021
Mathematics

01. There are 50 questions in a paper. Find the number of ways in which a student can attempt one or more questions:

(a) $2^{50} - 1$ (b) $2^{50} - 2$ (c) $2^{50} + 2$ (d) $2^{50} + 1$

02. If a variable takes values 0, 1, 2, 3, ……, 50 with frequency $1, {}^{50}C_1, {}^{50}C_2........{}^{50}C_{50}$ then the A. M. is

(a) 50   (b) 25   (c) ${}^{50}C_2$ (d) 51

03. The area of the region bounded by the X–axis and the curves defined by $y = \tan x, -\dfrac{\pi}{3} \le x \le \dfrac{\pi}{3}$ and $y = \cot x,$

$\dfrac{\pi}{6} \le x \le \dfrac{3\pi}{2}$ is

(a) $-\dfrac{1}{2}\log 2$ (b) $\dfrac{1}{2}\log 2$ (c) $\log 2$ (d) None of these

04. If three throws of three dices, the probability of throwing triplets not more than twice is.

(a) $1 - \dfrac{1}{6^2}$ (b) $1 - \dfrac{1}{6^3}$ (c) $1 - \dfrac{1}{36^2}$ (d) $1 - \dfrac{1}{36^3}$

05. The general value of θ, satisfying the equation, $\sin\theta = -\dfrac{1}{2}, \tan\theta = \dfrac{1}{\sqrt{3}}$ is

(a) $n\pi + \dfrac{\pi}{6}, n \in I$ (b) $n\pi + (-1)^n\left(\dfrac{7\pi}{6}\right), n \in I$ (c) $2n\pi \pm \dfrac{7\pi}{6}, n \in I$ (d) $2n\pi + \dfrac{11\pi}{6}, n \in I$

06. If the position vector of A and B relative to O be $\hat{i} - 4\hat{j} + 3\hat{k}$ and $-\hat{i} + 2\hat{j} - \hat{k}$ respectively then the median through O of ΔABC is:

(a) $-2\hat{i} + 2\hat{k}$ (b) $-\hat{j} + \hat{k}$ (c) $-\hat{i} - \hat{j} + \hat{k}$ (d) $-\hat{i} - \hat{j} - \hat{k}$

07. A = {1, 2, 3, 4}, B = {3, 4, 5} then the number of elements in $(A \cup B) \times (A \cap B) \times (A \Delta B)$ is

(a) 18   (b) 20   (c) 24   (d) 30

08. If $|K| = 5$ and $0^\circ < \theta < 360^\circ$, then the number of different solution of $3\cos\theta + 4\sin\theta = k$ is

(a) 0   (b) 1   (c) 2   (d) Infinite

09. Let $\vec{a} = \hat{i} + \hat{j}$ and $\vec{b} = 2\hat{i} - \hat{k}$. Then, the point of intersection of the lines $\vec{r} \times \vec{a} = \vec{b} \times \vec{a}$ and $\vec{r} \times \vec{b} = \vec{a} \times \vec{b}$ is

(a) $-\hat{i} + \hat{j} + \hat{k}$ (b) $3\hat{i} - \hat{j} + \hat{k}$ (c) $\hat{i} - \hat{j} - \hat{k}$ (d) $3\hat{i} + \hat{j} - \hat{k}$

10. If $F(\theta) = \begin{bmatrix} \cos\theta & -\sin\theta & 0 \\ \sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then find $F(\theta)\, F(\alpha)$ is equal to

(a) $f(\theta\alpha)$ (b) $f(\theta/\alpha)$ (c) $f(\theta+\alpha)$ (d) $f(\theta-\alpha)$

11. If θ is the acute angle between the pair of lines $x^2 - 7xy + 12y^2 = 0$ then $\dfrac{2\cos\theta + 3\sin\theta}{4\sin\theta + 5\cos\theta} = ?$

(a) $\dfrac{29}{69}$ (b) $\dfrac{61}{39}$ (c) $\dfrac{39}{61}$ (d) $\dfrac{69}{29}$

12. In a triangle, if the sum of two sides is x and their product is y such that $(x + z)(x - z) = y$, where z is the third side of the triangle, then the triangle is

(a) Equilateral   (b) Right angle   (c) Isosceles   (d) Obtuse angled

13. Number of common tangent to the circles $x^2 + y^2 = 4$ & $x^2 + y^2 - 6x - 8y = 24$ is

(a) 0   (b) 1   (c) 3   (d) 4

14. The locus of the point of intersection of tangent to the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ which meet at right angle is

(a) a circle   (b) a arabola   (c) an ellipse   (d) a hyperbola

15. If the vectors $a\hat{i} + \hat{j} + \hat{k}, \hat{i} + b\hat{j} + \hat{k}, \hat{i} + \hat{j} + c\hat{k}\,(a, b, c \neq 1)$ are coplanar, then $\dfrac{1}{1-a} + \dfrac{1}{1-b} + \dfrac{1}{1-c} =$

(a) 0   (b) 1   (c) 2   (d) 3

16. $\lim\limits_{x \to \infty} \left(\dfrac{x+7}{x+2}\right)^{x+5}$ equal to

(a) e^5 (b) e^{-5} (c) e^2 (d) e^{-2}

17. The probability of occurrence of two events E and F are 0.25 and 0.50, respectively. The probability of their simultaneus occurrence is 0.14. The probability that neither E nor F occurs is

(a) 0.61   (b) 0.11   (c) 0.39   (d) 0.89

18. If $H_1, H_2, \ldots\ldots, H_n$ are n harmonic means between a and $b\,(\neq a)$, then $\dfrac{H_1 + a}{H_1 - a} + \dfrac{H_n + b}{H_n - b} = ?$

(a) 2n   (b) n + 1   (c) n – 1   (d) 2n + 1

19. If $y = \tan^{-1}\left(\dfrac{3x - x^3}{1 - 3x^3}\right)$, $-\dfrac{1}{\sqrt{3}} < x < \dfrac{-1}{\sqrt{3}}$ then $\dfrac{dy}{dx}$ is

(a) $-\dfrac{1}{1+x^2}$ (b) $\dfrac{3}{1+x^2}$ (c) $\dfrac{3}{\sqrt{1+x^2}}$ (d) $\dfrac{1}{\sqrt{1+x^2}}$

20. The ecentric angles of the extremities of latus–recta of the ellipse $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ are given by

   (a) $\tan^{-1}\left(\pm \dfrac{ae}{b}\right)$ (b) $\tan^{-1}\left(\pm \dfrac{be}{a}\right)$ (c) $\tan^{-1}\left(\pm \dfrac{b}{ae}\right)$ (d) $\tan^{-1}\left(\pm \dfrac{a}{be}\right)$

21. If P(1, 2), Q(4, 6), R(5, 7) and S(a, b) are the vertices of a parallelogram PQRS, then

   (a) a = 2, b = 3   (b) a = 3, b = 4   (c) a = 2, b = 4   (d) a = 3, b = 5

22. Angle between $\vec{a}$ and $\vec{b}$ is 120°. If $|\vec{b}| = 2|\vec{\alpha}|$ and the vectors $\vec{a} + x\vec{b}$, $\vec{a} - \vec{b}$ are at right angles, then x =

   (a) $\dfrac{1}{3}$ (b) $\dfrac{1}{5}$ (c) $\dfrac{2}{3}$ (d) $\dfrac{2}{5}$

23. The probability that a man who is x years old will die in a year is p. Then, amongst n persons $A_1, A_2, \ldots A_n$ each x years old now, the probability that A_1 will die in one year is

   (a) $\dfrac{1}{n^2}$ (b) $1 - (1 - P)^n$ (c) $\dfrac{1}{n^2}[1 - (1 - P)^n]$ (d) $\dfrac{1}{n}[1 - (1 - P)^n]$

24. If in a triangle ABC $a\cos^2 \dfrac{C}{2} + c\cos^2 \dfrac{A}{2} = \dfrac{3b}{2}$ then the sides of triangle are in

   (a) A. P.   (b) H. P.   (c) G. P.   (d) None of these

25. The area of the triangle formed by the vertices whose position vector are $3i + j, 5i + 2j + k, \hat{i} - 2j + 3\hat{k}$ is

   (a) $\sqrt{23}$ sq. units   (b) $\sqrt{21}$ sq. units   (c) $\sqrt{29}$ sq. units   (d) $\sqrt{31}$ sq. units

26. In a ΔABC, if $\tan^2 \dfrac{A}{2} + \tan^2 \dfrac{B}{2} + \tan^2 \dfrac{C}{2} = k$ then k is always

   (a) > 1 (b) ≥ 1 (c) $= 2$ (d) $= 1$

27. If a number x is selected from natural numbers 1, 2, ... 100, then the probability for $x + \dfrac{100}{x} \geq 29$ is

   (a) $\dfrac{39}{50}$ (b) $\dfrac{43}{50}$ (c) $\dfrac{41}{50}$ (d) $\dfrac{37}{50}$

28. The function $f(x) = \dfrac{x}{1 + x\tan x}$, $0 \leq x \leq \dfrac{\pi}{2}$ is maximum when

   (a) x = sec x   (b) x = tan x   (c) x = cos x   (d) None of these

29. The standard deviation of 20 numbers is 30. If each of the numbers is increased by 4, then the new standard deviation will be.

   (a) 24   (b) 34   (c) 30   (d) 20

30. Suppose $A_1, A_2, \ldots, A_{30}$ are 30 sets each having 5 elements and $B_1, B_2, \ldots, B_n$ are n sets such that $\bigcup_{i=1}^{30} A_i = \bigcup_{j=1}^{n} B_j = S$. If each element of S belong to exactly 10 of the A_i's and exactly 9 of the B_j's then n =

   (a) 15   (b) 45   (c) 75   (d) 90

31. If $y = \sin^{-1}\left(\dfrac{x^2+1}{\sqrt{1+3x^2+x^4}}\right)$ $(x>0)$, then $\dfrac{dy}{dx} =$

    (a) $\dfrac{x^2-1}{x^4+3x^2+1}$ (b) $\dfrac{x^2+1}{x^4+3x^2+1}$ (c) $\dfrac{x^2-1}{x^4-3x^2+1}$ (d) $\dfrac{x^2+1}{x^4-3x^2+1}$

32. For what value of p, the polynomial $x^4 - 3x^3 + 2px^2 - 6$ is exactly divisible by $x-1$

    (a) 2   (b) 4   (c) 6   (d) 8

33. Consider the following frequency distribution table.

Class interval	10-20	20-30	30-40	40-50	50-60	60-70	70-50
Frequency	180	F1	34	180	136	F2	50

    If the total frequency is 686 & median is 42.6 then the values of F1 and F2 are

    (a) 81, 25   (b) 82, 24   (c) 83, 23   (d) 84, 22

34. If $f : R \to R$ is defined by $f(x) = \begin{cases} \dfrac{x+2}{x^2+3x+2} & \text{If } x \in R - \{-1,-2\} \\ -1 & \text{If } x = -2 \\ 0 & \text{If } x = -1 \end{cases}$ then $f(x)$ is continuous on the set

    (a) R   (b) R$-\{-2\}$ (c) R$-\{-1\}$ (d) R$-\{-1, -2\}$

35. The lines $px + qy = 1$ and $qx + py = 1$ are respectively the sides AB, AC of the triangle ABC and the base BC is bisected at (p, q). Equation of median of the triangle through the vertex A is

    (a) $(2pq-1)(qx+py-1)+(p^2+q^2-1)(px+qy-1)=0$

    (b) $(2pq-1)(qx+py-1)-(p^2+q^2-1)(px+qy-1)=0$

    (c) $(2pq-1)(px+qy-1)+(p^2+q^2-1)(qx+py-1)=0$

    (d) $(2pq-1)(px+qy-1)-(p^2+q^2-1)(qx+py-1)=0$

36. If $a\cos\theta + b\sin\theta = 2$ & $a\sin\theta - b\cos\theta = 3$ then $a^2+b^2 = ?$

    (a) 13   (b) 5   (c) 10   (d) 12

37. A polygon has 44 diagonals, the number of sides are

    (a) 11   (b) 10   (c) 9   (d) 12

38. If the system of equations $3x - y + 4z = 3$, $x + 2y - 3z = -2$, $6x + 5y + \lambda z = -3$ has atleast one solution then $\lambda = ?$

    (a) -5 (b) 3   (c) 5   (d) 6

39. $\int 3^{3^{3^x}} 3^{3^x} 3^x \, dx$ is equal to

    (a) $\dfrac{3^x}{(\log 3)^3} + C$ (b) $\dfrac{3^{3^x}}{(\log 3)^3} + C$ (c) $\dfrac{3^{3^{3^x}}}{(\log 3)^3} + C$ (d) None of these

40. If $32\tan^8\theta = 2\cos^2\alpha - 3\cos\alpha$ and $3\cos 2\theta = 1$, then the general value of α for $n \in Z$ is

   (a) $n\pi \pm \dfrac{\pi}{3}$
   (b) $2n\pi \pm \dfrac{2\pi}{3}$
   (c) $2n\pi \pm \dfrac{\pi}{3}$
   (d) $n\pi \pm \dfrac{2\pi}{3}$

41. If $\log(1 - x + x^2) = a_1 x + a_2 x^2 + a_3 x^3 + \ldots$ Then $a_3 + a_6 + a_9 + \ldots$ is equal to

   (a) $\log 2$
   (b) $\dfrac{1}{3}\log 2$
   (c) $\dfrac{2}{3}\log 2$
   (d) $2\log 2$

42. If $\dfrac{n!}{2!(n-2)!}$ and $\dfrac{n!}{n!(n-4)!}$ are in ratio $2:1$, then the value of n is

   (a) 0
   (b) 2
   (c) 4
   (d) 5

43. If $\vec{e}_1 = (1,1,1)$ and $\vec{e}_2 = (1,1,-1)$ and $\vec{a}$ and $\vec{b}$ are two vectors such that $\vec{e}_1 = 2\vec{a} + \vec{b}$ and $\vec{e}_2 = \vec{a} + 2\vec{b}$, then the angle between $\vec{a}$ and $\vec{b}$ is

   (a) $\cos^{-1}\left(-\dfrac{7}{11}\right)$
   (b) $\cos^{-1}\left(\dfrac{7}{11}\right)$
   (c) $\cos^{-1}\left(\dfrac{7}{9}\right)$
   (d) $\cos^{-1}\left(\dfrac{6\sqrt{2}}{11}\right)$

44. $\displaystyle\int e^x(\sinh x + \cosh x)dx = ?$

   (a) $e^x \operatorname{sech} x + C$
   (b) $e^x \cosh x + C$
   (c) $\sinh 2x + C$
   (d) $\cosh 2x + C$

45. If X and Y are two sets, then $X \cap Y' \cap (X \cup Y)'$ is

   (a) X'
   (b) Y'
   (c) ϕ
   (d) None of these

46. If n is an integer between 0 to 21, then find a value of n for which the value of $n!(21-n)!$ is minimum.

   (a) 9
   (b) 10
   (c) 12
   (d) 21

47. The four geometric means between 2 and 64 are

   (a) $\dfrac{1}{4}, \dfrac{1}{8}, \dfrac{1}{16}, \dfrac{1}{32}$
   (b) 4, 8, 16, 32
   (c) $4\sqrt{2}, 8, 16\sqrt{2}, 32$
   (d) None of these

48. Let $\vec{a} = 2\hat{i} + \hat{j} + 2\hat{k}$, $\vec{b} = \hat{i} - \hat{j} + 2\hat{k}$ and $\vec{c} = \hat{i} + \hat{j} - 2\hat{k}$ are three vectors. Then, a vector in then plane of $\vec{a}$ and $\vec{c}$ whose projection on $\vec{b}$ is of magnitude $\dfrac{1}{\sqrt{6}}$ is

   (a) $3\hat{i} - 2\hat{j}$
   (b) $3\hat{i} + 2\hat{j}$
   (c) $2\hat{i} + 3\hat{j} - \hat{k}$
   (d) $3\hat{i} + 2\hat{j} + \hat{k}$

49. If $\alpha \neq \beta$ and $\alpha^2 = 5\alpha - 3$ and $\beta^2 = 5\beta - 3$, then the equation whose roots are $\dfrac{\alpha}{\beta}$ and $\dfrac{\beta}{\alpha}$ is

   (a) $3x^2 - 25x + 3 = 0$
   (b) $3x^2 + 5x + 3 = 0$
   (c) $3x^2 - 5x + 3 = 0$
   (d) $3x^2 - 19x + 3 = 0$

50. The value of $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ$ is equal to

   (a) 5
   (b) 3
   (c) 4
   (d) 6

Reasoning

51. Insert the missing number 8, 7, 11, 12, 14, 17, 17, 22, ?

(a) 27   (b) 20   (c) 22   (d) 24

52. In a class of 50 students, Raghu's rank is twice that of Paul. There are 10 students who have ranked worse then that of Raghu. Paul's rank in the class is

(a) 5th   (b) 10th   (c) 15th   (d) 20th

53. Read the following information carefully and then answer the following questions:

I. $P\Psi Q$ means P is mother of Q.   II. $P \in Q$ means P is sister of Q.

III.   P $ Q means P is father of Q.   IV.   P # Q means P is brother of Q.

Which of the following means R is brother of T?

(a) $R\Psi S \# U\$T$ (b) $U\Psi R \# S \# T$ (c) $U\Psi R \in S\Psi T$ (d) $T \# S \$ Q \in R$

54. Study the following table, carefully and answer the following questions

Subject (Full marks 50)	40 & above	30 & above	20 & above	10 & above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Aggregate Average	7	27	73	87	100

The number of students scoring less than 40% marks in aggregate is?

(a) 13   (b) 19   (c) 20   (d) 27

55. Choose the pair that best represents a similar relationship to the one expressed in the original pair of words :

WAITRESS : RESTAURANT

(a) Doctor : Diagnosis   (b) Actor : Role   (c) Driver : Truck   (d) Teacher : School

56. How many times in a day are the hands of a clock pointing opposite to each other?

(a) 4   (b) 20   (c) 22   (d) 24

57. In this series, looking at the letter pattern fill the blank in the middle of the series :

ELFA, GLHA, ILJA, _____, MLNA

(a) OLPA   (b) KLMA   (c) LLMA   (d) KLLA

58. If Z = 52 and ACT = 48, then BAT will be equal to

(a) 46   (b) 39   (c) 44   (d) 41

59. Which word does NOT belong with the others?

(a) wing   (b) fin   (c) Beak   (d) Rudder

60. Choose the pair of number that comes next :

1, 10, 7, 20, 13, 30, 19, ___,___?

(a) 25, 22   (b) 26, 24   (c) 26, 23   (d) 25, 23

61. Study the following table, carefully and answer the following questions

Subject (Full marks 50)	40 & above	30 & above	20 & above	10 & above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Aggregate Average	7	27	73	87	100

What is the difference between the number of students passed with 30 as cut-off marks in Chemistry and those passed with 30 as cut-off marks in aggregate?

(a) 3   (b) 4   (c) 5   (d) 6

62. There are six members in a family A is the father of D, E is the grandfather of D. B is the daughter-in-law of C. F is the uncle of D. What is the relationship of C with F?

(a) sister   (b) Mother-in-law   (c) Nephew   (d) Data inadequate

63. Study the following table, carefully and answer the following questions

Subject (Full marks 50)	40 & above	30 & above	20 & above	10 & above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Aggregate Average	7	27	73	87	100

If it is know that at least 23 students were eligible for a symposium on Chemistry, then the minimum qualifying marks in Chemistry for eligible to Symposium would lie in the range?

(a) 30 - 40   (b) 20 - 30   (c) Below 20   (d) Cannot be determined.

64. Choose the pair that best represents a similar relationship to the one expressed in the original pair of words

PULSATE : THROB : :

(a) WALK : RUN   (b) TIRED : SLEEP   (c) EXAMINE : SCRUTINIZE (d) BALLET : DANCER

65. Choose the word that is a necessary part of the underlined word : **HARVEST**

(a) autumn   (b) crop   (c) stockpile   (d) tractor

66. Choose the word which has the same relationship among the given three words **: Yellow, Blue, Red.**

(a) Black   (b) Orange   (c) White   (d) Paint

67. Find the missing term **7 : 56 : : 9 : ?**

(a) 63   (b) 81   (c) 90   (d) 99

68. Find the matching term for **Music : Guitar : Performer.**

(a) Dance : Tune : Instrument   (b) Food : Recipe : Cook

(c) Patient : Medicine : Doctor   (d) Trick : Rope : Acrobat

69. Read the information given below and answer the following question:

I. In a family of six persons A, B, C, D, E and F there are two married couples.

II. D is grandmother of A and mother of B.

III. C is wife of B and mother of F.

IV. F is the granddaughter of E.

Which of the following is true?

(a) A is brother of F.   (b) A is sister of F.   (c) D has two grandson (d) None of these

70. A company produces five different products. The sales of these five product (in lakh number of packs) during 2005 and 2010 are shown in the following bar-graph. Question is based on this graph.

Sales (in lakh number of packs) of five different products of a Company during 2005 - 2010.

During the period 2005 - 2010, the minimum rate of increase in sales is in the case of:

(a) Product A   (b) Product B   (c) Product D   (d) Product E

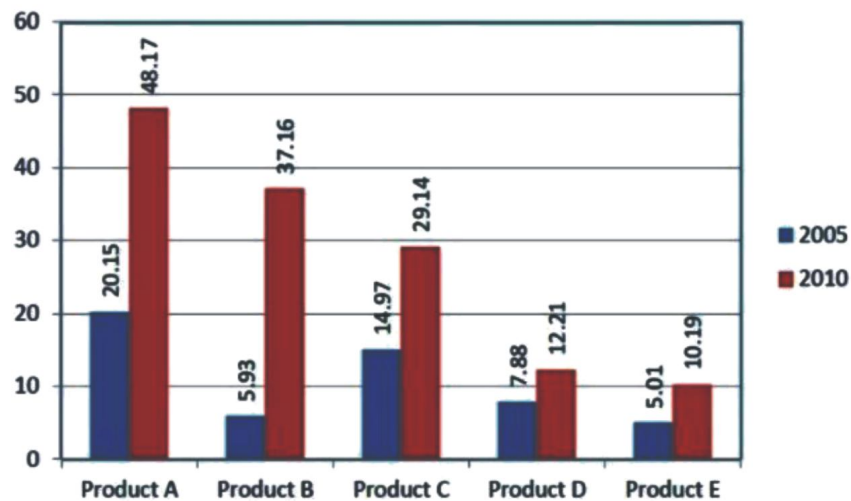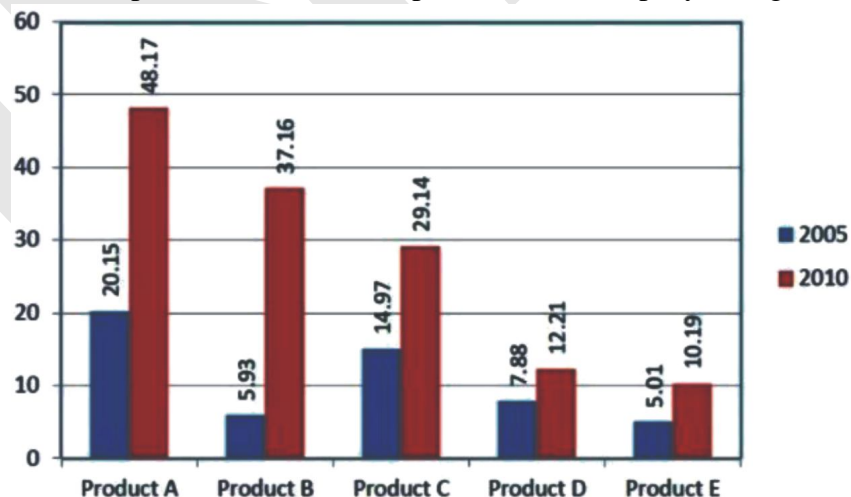**71.** Read the information given below and answer the following question:

I. In a family of six persons A, B, C, D, E and F there are two married couples.

II. D is grandmother of A and mother of B.

III. C is wife of B and mother of F.

IV. F is the granddaughter of E.

How many male members are there in the family?

(a) Three   (b) Two   (c) Cannot be determined   (d) None of these

72. A company produces five different products. The sales of these five product (in lakh number of packs) during 2005 and 2010 are shown in the following bar-graph. Question is based on this graph.

Sales (in lakh number of packs) of five different products of a Company during 2005 - 2010.

The sales of Product A in 2010 was by what percent more than the sales of Product B in 2010? (Rounded off to the nearest integer)

(a) 33%   (b) 31%   (c) 28%   (d) 22%
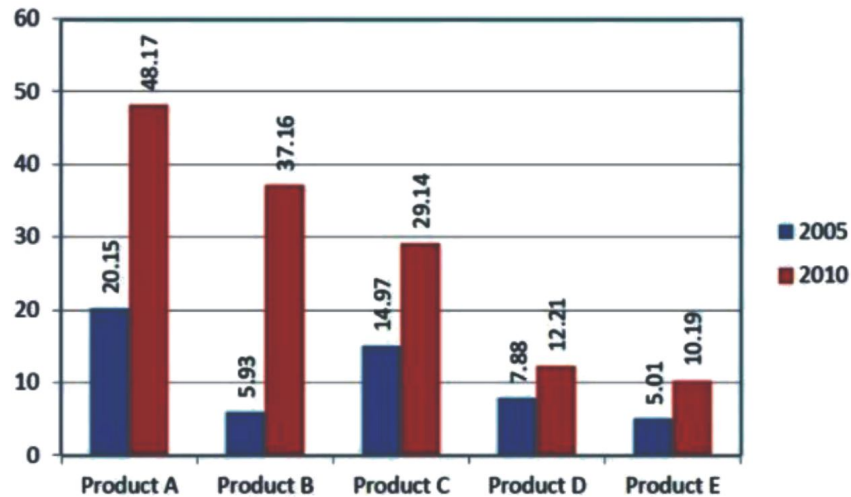
73. Insert the missing number : **16, 33, 65, 131, 261, ?**

(a) 523   (b) 521   (c) 615   (d) 721

74. A company produces five different products. The sales of these five product (in lakh number of packs) during 2005 and 2010 are shown in the following bar-graph. Question is based on this graph.

Sales (in lakh number of packs) of five different products of a Company during 2005 - 2010.

The sales have increased by nearly 55% from 2005 to 2010 in case of:

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

75. Study the following table, carefully and answer the following questions

Subject (Full marks 50)	40 & above	30 & above	20 & above	10 & above	0 and above
Physics	9	32	80	92	100
Chemistry	4	21	66	81	100
Aggregate Average	7	27	73	87	100

If at lest 60% marks in Physics are required for pursuing higher studies in Physics, how many students will be eligible to pursue higher studies in Physics?

(a) 27   (b) 32   (c) 34   (d) 41

76. Read the information given below and answer the following question:

I. In a family of six persons A, B, C, D, E and F there are two married couples.

II. D is grandmother of A and mother of B.

III. C is wife of B and mother of F.

IV. F is the granddaughter of E.

What is C to A

(a) Daughter   (b) Grandmother   (c) Mother   (d) Cannot be determined

77. If it is Saturday on January 1, 2000, then January 1, 2001 would have been

(a) Monday   (b) Sunday   (c) Saturday   (d) Friday

78. Choose the correct option for the remainder when X = 1! + 2! + 3! + _____ + 100! is divided by 24

(a) 9   (b) 11   (c) 152   (d) 13

79. Choose the missing term : **BYCX : DWEV : : FUGT : ?**

(a) EHIJ   (b) GHIJ   (c) HSIR   (d) SRHS

80. COUNSEL is to BITIRAK, so also GUIDANCE is to _____?

(a) EOHYZKBB   (b) FOHYZJBB   (c) FPHZZKAB   (d) HOHYBJBA

81. In a certain code language, 'do re me' means "he is late"; 'fa me la' means 'she is early' and 'so ti do' means 'he leaves soon'. Which word in the language means 'late'

(a) la   (b) do   (c) me   (d) re

82. Read the information given below and answer the following question:

I. In a family of six persons A, B, C, D, E and F there are two married couples.

II. D is grandmother of A and mother of B.

III. C is wife of B and mother of F.

IV. F is the granddaughter of E.

Who among the following is one of the couples?

(a) CD   (b) DE   (c) EB   (d) None of these

83. Choose the number pair or group that is different from other?

(a) 15 : 46   (b) 12 : 37   (c) 9 : 28   (d) 8 : 33

84. Read the following information carefully and then answer the following questions:

I. $P \Psi Q$ means P is mother of Q.   II. $P \in Q$ means P is sister of Q.

III. $P \$ Q$ means P is father of Q.   IV. $P \# Q$ means P is brother of Q.

Which of the following means N is definitely daughter of L?

(a) $K \$ L \# M \# N$ (b) $M \Psi K \$ N \in L$ (c) $K \Psi M \# L \in N$ (d) $L \Psi K \$ N \# M$

85. If 'A3T15R' stands for 'ACTOR' and 'D1T5' stands for DATE, how will you code 'ROTATE'

(a) R16T1T5   (b) R15T1T5   (c) R15T1T16   (d) R15C1&7

86. If $9 \times 3 + 8 = 24, 10 \times 2 + 7 = 35 \& 80 \times 40 + 3 = 6$, then find $12 \times 4 + 3 = ?$

(a) 7   (b) 9   (c) 12   (d) 16

87. Choose the odd one:

(a) Zebra   (b) Hyena   (c) Rhinoceros   (d) Giraffe

88. Choose the missing term out of the given alternatives : Q1F, S2E, U6D, W21C, ?

(a) Y66B   (b) Y44B   (c) Y88B   (d) Z88B

89. Read the following information carefully and then answer the following questions:

I. $P \Psi Q$ means P is mother of Q.   II. $P \in Q$ means P is sister of Q.

III. $P \$ Q$ means P is father of Q.   IV. $P \# Q$ means P is brother of Q.

If $K \Psi L \in M \# N$, then how K is related with N?

(a) Mother   (b) Aunt   (c) Great Aunt   (d) Grandmother

90. Radha is twice as old as Rita was 2 years ago. If difference between their ages is 2 years, how old is Radha Today?

(a) 6   (b) 8   (c) 10   (d) 12

English

91. Fill in the blank with the most appropriate word given:

The state Transportation Corporation has _____ a loss of 5 crore INR this year.

(a) derived   (b) Incurred   (c) performed   (d) formulated

92. Fill in the blank with the most appropriate word:

The _____ with which he is able to wield the paint-brush in really remarkable.

(a) ease   (b) Practice   (c) sweep   (d) gait

93. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

What is the object of education according to Goathe?

(a) It teaches social manners.   (b) It teaches courtesy.

(c) It communicate knowledge   (d) It forms taste

94. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at

his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

What is meant by "leaden weights"?

(a) Weights made of leaden

(b) Cold scientific knowledge

(c) Hindering factors, of pride and prejudice, passion and desire, in the liberation of the soul.

(d) Social and family resposibilities.

95. Choose the most suitable antonym of the given word :

ERUDITE

(a) scholarly   (b) unfamiliar   (c) illiterate   (d) arrogant

96. Fill in the blank with the most appropriate word given :
The car driver was arrested for rash driving and his license was _____ by the police.

(a) impounded   (b) flown   (c) penalized   (d) banned

97. Read the following passage carefully and answer the question that follows:
It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.
According to the passage, the function of the teacher is :
(a) To remove leaden weights of price and prejudice, passion, and desire to liberate the soul.
(b) To instill facts into the minds of the students.
(c) To teach humanity.
(d) To foster brotherhood.

98. Write one word for the following :

An uncivilized / primitive person.

(a) barbarian   (b) ascetic   (c) bourgeois   (d) altruist

99. Choose the most suitable synonym of the given word :
RECUPERATE

(a) recapture   (b) reclaim   (c) recover   (d) recur

100. Choose the most suitable synonym of given word :
SCINTILLATING

(a) touching   (b) nagging   (c) glittering   (d) warning

101. Choose the most suitable antonym of the given word : **NEGLIGENCE**

(a) diligence   (b) meticulousness   (c) integrity   (d) honesty

102. Write on word for the following :

One who does not save for future.

(a) incorporeal   (b) inedible   (c) improvident   (d) implacable

103. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

What is a man's culture judged by ?

(a) By the quality of mind which he brings to bear on the facts of life.

(b) By man's social skill.

(c) By the variety of books he reads.

(d) By money and influence.

104. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

What are the hindering factors in the libration and development of the soul?

(a) Power and wealth   (b) Passion and desire, pride and prejudice.

(c) Money and influence   (d) Greed and envy

105. Choose the most suitable synonym of the given word : **BLAND**

(a) pleasant   (b) harsh   (c) irritating   (d) tasteless

106. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

Mere knowledge and culture may be distinguished from each other in that:

(a) The former widens the mental horizon, the latter enlarges the heart.

(b) The former gratifies curiosity, the latter refines personality.

(c) The former is concerned with facts, the latter with fiction.

(d) The former adds to power, the latter adds to prestige.

107. Fill in the blank with the most appropriate word given :

I cannot _____ it to you right now; tomorrow we will discuss about it.

(a) demand   (b) disturb   (c) explain   (d) expect

108. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not merely an Indian idiosyncrasy. Plato said long ago that the culture of soul is "the first and fairest thing that the best of men can ever have. According to Goethe, the object of education is to form tastes and not simply to communicate knowledge. A man's culture is not judged by the amount of tabulated information which he has at his command, but by the quality of mind which he brings to bear on the facts of life. Eduction is not cramming the mind with a host of technical details, putting sight, as it were, into blind eyes. The eye of the soul is never blind, only its gaze may be turned to the false and the fleeting. Too often the vision may be dragged downwards by the "leaden weights" of pride and prejudice, of passion and desire. The function of the teacher is not to add to the "leaden weights" but remove them and liberate the soul from the encumbrance so that is may follow its native impulse to soar upwards. The student at a university does not merely learn something, but becomes something by being exposed, in the most elastic period of his life, to transforming influences, such as the constant clash of mind with mind, the interchange of ideas, the testing of opinions, and the growth of knowledge of human nature.

What is the function of education according to the ancient Indian philosophers?

(a) Education is the development of mind.

(b) Education brings about salvation and development of the soul.

(c) Education is the cultivation of culture.

(d) Education aims at the inculcation of generosity.

109. Read the following passage carefully and answer the question that follows:

It is said with truth that the function of a university is to prepare the young to take their place in human society. It must provide its members with the knowledge and skill necessary to make them efficient citizens. But is the whole duty of man exhausted by the acquisition of knowledge and professoional training? Is a university only an institution for higher learning, a factory which churns out clerks and technicians able to run the machinery of the State? Mere knowledge which gratifies curiousity is different from culture which refines personality. Culture is not remembering a mass of serious details about the dates of birth of the great heroes of the world or the interesting names of the fastest ships which cross the Altantic or entertaining odds and ends gathered from the latest who's who. A well-known institution of this country has for its motto **sa vidya yavimuchyate :** that is, knowledge which is designed for salvation, for the development of the soul, is the best. Such an idea is not

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The function of university is:
(a) To enable the young to gather facts about the world.
(b) To learn to do his job.
(c) To prepare the young to take their place in society.
(d) To enable them to learn to talk with others.

110. Fill in the blank with the most appropriate word given in the options :
The child prefers room with _____ ceilings.
(a) tall (b) long (c) higher (d) high

Computer

111. Which of the following is used by ALU to store the intermediate result?
(a) Stack (b) Heap (c) Register (d) Accumulator

112. To fetch data from the secondary memory which one of the following register is used
(a) MAR (b) PC (c) IR (d) MBR

113. The binary multiplication 00*11 will give
(a) 11 (b) 00 (c) 01 (d) 10

114. Consider a computer system with speed of 10^6 instructions per second. A program P, having $2n^2$ steps is run on this system, where n is the input size. If n = 10000, what is the execution time for P?
(a) 2 seconds (b) 20 seconds (c) 100 seconds (d) 200 seconds

115. One terabyte (1 TB) = _____ GB and one ExaByte (1 EB) = _____ GB.
(a) 2^{10} GB, 2^{16} GB (b) 2^{10} GB, 2^{20} GB (c) 2^{10} GB, 2^{24} GB (d) 2^{10} GB, 2^{30} GB

116. The Cache Momory is more effective because of
(a) Memory localization (b) Locality of reference (c) Memory size (d) None of the mentioned

117. Which of the following is the fastest means of momory access of CPU?
(a) Register (b) Cache (c) Main Memory (d) Stack

118. The process when processor fetch or decode another instruction during the execution of current instruction is called
(a) Supercomputing (b) Pipelining (c) Cloud Computing (d) Grid Computing

119. The number $(2217)_8$ is equivalent to
(a) $(608)_{16}$ (b) $(028F)_{16}$ (c) $(048F)_{16}$ (d) $(2297)_{10}$

120. To access the I/O device the status flags is continuously checked in
(a) Program controlled I/O (b) Memory mapped I/O
(c) I/O mapped (d) None of the above