NIMCET 2019 Question Paper

Mathematics

1. For two circles $x^2+y^2=16$ and $x^2+y^2-2y=0$, there is/are
   (a) One pair of common tangent
   (b) Two pair of common tangents
   (c) Three pair of common tangents
   (d) No common tangents
2. Let $f: R \to R$ be defined by $f(x)=\begin{cases} x\sin\left(\frac{1}{x}\right) & if\ x>0 \\ 0 & x\le 0 \end{cases}$. Then
   (a) f is neither continuous nor differentiable at $x=0$
   (b) f is continuous nor differentiable at $x=0$
   (c) f is continuous but not differentiable at $x=0$
   (d) f is not continuous but differentiable at $x=0$
3. A particle P starts from the point $z_0=1+2i$, where $i=\sqrt{-1}$. It moves first horizontally away from the origin by 5 units and then vertically away from origin by 3 units to reach a point z_1. From z_1 the particle moves $\sqrt{2}$ units in the direction of the vector $\hat{i}+\hat{j}$ and, then it moves through an angle $\pi/2$ in an anticlockwise direction on a circle with center at origin, to reach a point z_2. The point z_2 is given by
   (a) $6+7\hat{i}$ (b) $-7+6\hat{i}$
   (c) $7+6\hat{i}$ (d) $-6+7\hat{i}$
4. If $\Delta=a^2-(b-c)^2$, where Δ is the area of the ΔABC, then $\tan A$ equals
   (a) $\frac{15}{16}$ (b) $\frac{8}{15}$ (c) $\frac{8}{17}$ (d) $\frac{1}{2}$
5. Two numbers a and b are chosen ar random from a set of first 30 natural numbers, then the probability that a^2-b^2 is divisible by 3 is
   (a) $\frac{47}{87}$ (b) $\frac{15}{87}$ (c) $\frac{12}{87}$ (d) $\frac{9}{87}$
6. A man takes a step forward with probability 0.4 and backward with probability 0.6. The probability that at the end of eleven steps, he is one step away from the starting point is
   (a) $462(0.34)^2$ (b) $462(0.04)^2$
   (c) $462(0.14)^2$ (d) $462(0.24)^2$
7. Let $x_i, i=1,2,\dots,n$ be n observations and $w_i=px_i+k, i=1,2,\dots,n$ where p and k are constants. If the mean of $x_i's$ is 48 and standard deviation is 12, whereas the mean of $w_i's$ is 55 and standard deviation is 15, then the value of p and k should be
   (a) $p=1.25, k=-5$ (b) $p=-1.25, k=5$
   (c) $p=2.5, k=-5$ (d) $p=25, k=5$
8. If x, y, z are distinct real numbers and $\begin{vmatrix} x & x^2 & 2+x^3 \\ y & y^2 & 2+y^3 \\ z & z^2 & 2+z^3 \end{vmatrix}=0$, then $xyz=$
   (a) 1 (b) – 1 (c) 2 (d) – 2
9. Let $f(x)$ be a polynomial satisfying $f(0)=2, f'(0)=3$ and $f''(x)=f(x)$. Then $f(4)$ is equal to
   (a) $5\frac{(e^8-1)}{2e^4}$ (b) $\frac{(5e^8-1)}{2e^4}$
   (c) $\frac{2e^4}{5e^8-1}$ (d) $\frac{2e^4}{5(e^8+1)}$
10. If $a, a_1, a_2, a_3, \dots, a_{2n-1}, b$ are in AP, $a, b_1, b_2, \dots b_{2n-1}, b$ are in GP and $a, c_1, c_2, c_3, \dots, c_{2n-1}, b$ re in HP, where a, b are positive, then the equation $a_n x^2-b_n x+c_n=0$ has its roots
    (a) Real and equal
    (b) Real and unequal
    (c) Imaginary
    (d) One real and one imaginary
11. Solution set of inequality $\log_3(x+2)(x+4)+\log_{\frac{1}{3}}(x+2)<\frac{1}{2}\log_{\sqrt{3}}7$ is
    (a) $(-2,-1)$ (b) $(-2,3)$
    (c) $(-1,3)$ (d) $(3,\infty)$
12. If a, b, c are in GP and $\log a-\log 2b, \log 2b-\log 3c$ and $\log 3c-\log a$ are in AP, then a, b, c are the lengths of the sides of a triangle which is
    (a) Acute angle (b) Obtuse angled
    (c) Right angles (d) Equilateral
13. If $x, 2x+2, 3x+3$ are the first three terms of a geometric progression, then 4^{th} term in the geometric progression is
    (a) – 13.5 (b) 13.5 (c) – 27 (d) 27

14. If $(1+x-2x^2)^6 = 1+a_1x+a_2x^2+\cdots+a_{12}x^{12}$, then the value of $a_2+a_4+a_6+\cdots+a_{12}$ is
(a) 29 (b) 30 (c) 31 (d) 32

15. If a and b are greatest values of ${}^{2n}C_r$ and ${}^{2n-1}C_r$ respectively, then
(a) $a=2b$ (b) $b=2a$
(c) $a=b$ (d) $a^2=2b^2$

16. Let U and V be two events of a sample space S and P(A) denote the probability of an event A. Which of the following statements is true?
(a) If P(U)=P(V) the U=V
(b) if P(U)=0 then U^c = S
(c) If U ∩ V = ϕ then U and V are independent.
(d) If U and V are independent, then so are U^c and V^c

17. If a man purchases a raffle ticket, he can win a first prize of Rs.5,000 or a second prize of Rs.2,000 with probabilities 0.001 and 0.003respectively. What should be a fair price to pay for the ticket?
(a) Rs.11 (b) Rs.15
(c) Rs.2,000 (d) None of these

18. If the mean deviation 1, 1+d, 1+2d, … , 1+100d from their mean is 255, then d is equal to
(a) 10.1 (b) 10.2 (c) 10.3 (d) 10.4

19. If $\sum_{i=1}^{n} x_i = 80$ and $\sum_{i=1}^{n} x_i^2 = 400$, then a possible value of n among the following is
(a) 9 (b) 12 (c) 15 (d) 18

20. Let S be the set $\{a \in Z^+ : a \le 100\}$. If the equation $[\tan^2 x] - \tan x - a = 0$ has real roots (where [.] is the greatest integer function), then the number of elements is S is
(a) 10 (b) 8 (c) 9 (d) 0

21. If $\sin^2 x \tan x + \cos^2 x \cot x - 2\sin 2x = 1 + \tan x + \cot x$, $x \in (0,\pi)$, then x
(a) $\frac{3\pi}{12}, \frac{5\pi}{12}$ (b) $\frac{5\pi}{12}, \frac{7\pi}{12}$
(c) $\frac{7\pi}{12}, \frac{11\pi}{12}$ (d) $\frac{7\pi}{12}, \frac{9\pi}{12}$

22. $\vec{a}$ and $\vec{b}$ are non-zero non-collinear vectors such that $|\vec{a}| = 2, \vec{a}.\vec{b} = 1$ and the angle between $\vec{a}$ and $\vec{b}$ is $\frac{\pi}{3}$. If $\vec{r}$ is any vector satisfying $\vec{r}.\vec{a} = 2, \vec{r}.\vec{b} = 8, (\vec{r} + 2\vec{a} - 10\vec{b}).(\vec{a} \times \vec{b}) = 6$ and $\vec{r} + 2\vec{a} - 10\vec{b} = \lambda(\vec{a} \times \vec{b})$, then $\lambda =$
(a) $\frac{1}{2}$ (b) 2 (c) $\frac{4}{\sqrt{3}}$ (d) 3

23. In a chess tournament , n men and 2 women players participated. Each player plays 2 games against every other player. Also, the total number of games played by the men among themselves exceeded by 66 the number of games that the men played against the women. Then the total number of players in the tournament is
(a) 13 (b) 11 (c) 9 (d) 7

24. Suppose $A_1, A_2, A_3, \ldots, A_{30}$ are thirty sets each having 5 elements with no common elements across the sets and $B_1, B_2, \ldots, B_n$ are n sets each with 3 elements with no common elements across the sets. Let $\bigcup_{i=1}^{30} A_i = \bigcup_{j=1}^{n} B_j = S$ and each elements of S belongs to exactly 10 of the $A_i's$ and exactly 9 of the $B_j's$. Then n is equal to
(a) 15 (b) 30 (c) 40 (d) 45

25. Let $f(x) = \begin{cases} \cos[x], & x \ge 0 \\ |x| + a, & x < 0 \end{cases}$, where [x]denotes the greatest integer $\le x$. If f should be continuous at $x = 0$, then a must be
(a) 0 (b) 1 (c) 2 (d) – 1

26. If x is real, then the minimum value of $\frac{x^2-x+1}{x^2+x+1}$ is
(a) $\frac{1}{2}$ (b) 2 (c) 3 (d) $\frac{1}{3}$

27. If $\int \cos x \cos 2x \cos 5x \, dx = A_1 \sin 2x + A2\sin 4x + A3\sin 6x + A4\sin 8x + c$, then the values of A_1, A_2, A_3, A_4 are
(a) $A_1 = \frac{1}{2}, A_2 = \frac{1}{4}, A_3 = \frac{1}{6}, A_4 = \frac{1}{8}$
(b) $A_1 = \frac{1}{8}, A_2 = \frac{1}{16}, A_3 = \frac{1}{24}, A_4 = \frac{1}{32}$
(c) $A_1 = \frac{1}{6}, A_2 = \frac{1}{12}, A_3 = \frac{1}{18}, A_4 = \frac{1}{24}$
(d) $A_1 = \frac{1}{4}, A_2 = \frac{1}{8}, A_3 = \frac{1}{12}, A_4 = \frac{1}{16}$

28. If $\int_{\log 2}^{x} \frac{1}{\sqrt{e^x - 1}} dx = \frac{\pi}{6}$, then $x =$
(a) $\log 2$ (b) $2\log 2$
(c) $3\log 2$ (d) $4\log 2$

29. Equation of the tangent from the point $(3,-1)$ to the ellipse $2x^2 + 9y^2 = 3$ is
(a) $2x - 3y - 3 = 0$ (b) $2x + 3y - 3 = 0$
(c) $2x + y - 3 = 0$ (d) None of these

30. The position vectors of the vertices A, B, C of a tetrahedron ABCD are $\hat{\imath} + \hat{\jmath} + \hat{k}$, $\hat{\imath}$ and $3\hat{\imath}$ respectively and the altitude for the vertex D to the opposite face ABC meets the face at E. If the length of ED is 4 and the volume of tetrahedron is $\frac{2\sqrt{2}}{3}$, then the length of DE is
(a) 1 (b) 2 (c) 3 (d) 4

31. If S and S' are foci of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$, B is the end of the minor axis and BSS' is an equilateral triangle, then the eccentricity of the ellipse is
(a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{5}$

32. The equation of the circle passing through the point $(4,6)$ and whose diameters are along $x+2y-5=0$ and $3x-y-1=0$ is
(a) $x^2+y^2-2x-6y-20=0$
(b) $x^2+y^2-6x-2y-20=0$
(c) $x^2+y^2-2x-4y-20=0$
(d) $x^2+y^2-4x-2y-20=0$

33. In a parallelogram ABCD, P is the midpoint of AD. Also, BP and AC intersect at Q. Then AQ : QC =
(a) 1 : 3 (b) 3 : 1
(c) 2 : 1 (d) 1 : 2

34. The median AD of ΔABC is bisected at E and BE is extended to meet the side AC in F. The AF : FC =
(a) 1 : 3 (b) 2 : 1
(c) 1 : 2 (d) 3 : 1

35. Let $P(x)$ be a quadratic polynomial such that $p(0)=1$. If $p(x)$ leaves remainder 4 when divided by $x-1$ and it leaves remainder 6 when divided by $x+1$, then
(a) $p(-2)=11$ (b) $p(2)=11$
(c) $p(2)=19$ (d) $p(-2)=19$

36. The tangent at the point $(2,-2)$ to the curve $x^2y^2-2x=4(1-y)$ does not pass through the point ____
(a) $(-2,-7)$ (b) $(-4,-9)$
(c) $\left(4,\frac{1}{3}\right)$ (d) (8,5)

37. The integral $\int\sqrt{1+2\cot x(cosec\, x+\cot x)}\,dx$, $\left(0<x<\frac{\pi}{2}\right)$ (where C is a constant of integration) is equal to
(a) $2\log\left(\sin\frac{x}{2}\right)+C$ (b) $2\log\left(\cos\frac{x}{2}\right)+C$
(c) $4\log\left(\cos\frac{x}{2}\right)+C$ (d) $4\log\left(\sin\frac{x}{2}\right)+C$

38. If all the words, with or without meaning, are written using the letters of the word QUEEN add are arranged as in English Dictionary, then the position of the word QUEEN is
(a) 47^{th} (b) 44^{th} (c) 45^{th} (d) 46^{th}

39. The curve satisfying the differential equation $ydx-(x+3y^2)dy=0$ and passing through the point (1,1) also passes through the point _____
(a) $\left(\frac{1}{4},\frac{1}{2}\right)$ (b) $\left(\frac{1}{4},-\frac{1}{2}\right)$
(c) $\left(-\frac{1}{3},\frac{1}{3}\right)$ (d) $\left(\frac{1}{3},-\frac{1}{3}\right)$

40. $\lim_{x\to3}\frac{\sqrt{3x}-3}{\sqrt{2x-4}-\sqrt{2}}$ is equal to
(a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2\sqrt{2}}$ (d) $\frac{1}{\sqrt{2}}$

41. The sum of infinite terms of a decreasing GP is equal to the greatest value of the function $f(x)=x^3+3x-9$ in the interval $[-2,3]$ and the difference between the first two terms is $f'(0)$. Then the common ratio of GP is
(a) $-\frac{2}{3}$ (b) $\frac{4}{3}$ (c) $\frac{2}{3}$ (d) $-\frac{4}{3}$

42. Number of onto (surjective) functions from A to B if $n(A)=6$ and $n(B)=3$, is
(a) 2^6-2 (b) 3^6-3
(c) 340 (d) 540

43. If $|z|<\sqrt{3}-1$, then $|z^2+2z\cos\alpha|$ is
(a) less than 2 (b) $\sqrt{3}+1$
(c) $\sqrt{3}-1$ (d) None of these T_1 T_2

44. A computer producing factory has only two plants T_1 and T_2. Plant T_1 produces 20% and plant T_2 produces 80% of the total computers produced. 7% of the computers produced in the factory turn out to be defective. It is known that P (computer turns out to be defective given that it is produced in plant T_1) = 10P(computer turns out to be defective given that it is produced in plant T_2). A computer produced in the factory is randomly selected and it does not turn out to be defective. Then the probability that it is produced in plant T_2 is
(a) $\frac{36}{73}$ (b) $\frac{47}{79}$ (c) $\frac{78}{93}$ (d) $\frac{75}{83}$

45. If $A>0, B>0$ and $A+B>\frac{\pi}{6}$, then the minimum value of $\tan A+\tan B$ is
(a) $\sqrt{3}-\sqrt{2}$ (b) $4-2\sqrt{3}$
(c) $\frac{2}{\sqrt{3}}$ (d) $2-\sqrt{3}$

46. The mean of 5 observation is 5 and their variance is 124. If three of the observations are 1, 2, 6, then the mean deviation from the mean of the data is
(a) 2.5 (b) 2.6 (c) 2.8 (d) 2.4

47. In a beauty contest, half the number of experts voted for Mr. A and two third voted for Mr. B . 10 voted for both and 6 did not for either. How many experts were there in all?
(a) 18 (b) 36
(c) 24 (d) None of these

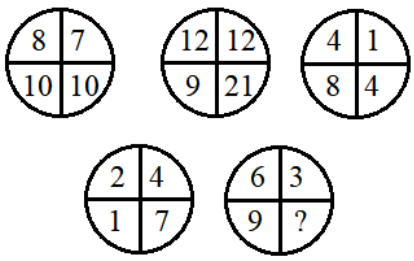
48. The value of non-zero scalars α and β such that for all vectors $\vec{a}$ and $\vec{b}$ such that $\alpha(\vec{a}+2\vec{b})-\beta\vec{a}(4\vec{b}-\vec{a})=0$ is
(a) $\alpha=2,\beta=1$ (b) $\alpha=-2,\beta=-3$
(c) $\alpha=1,\beta=3$ (d) $\alpha=-2,\beta=3$

49. A force of 78 grams acts at the point (2,3,5). The direction ratios of the line of action being 2,2,1. The magnitude of its moment about the line joining the origin to the point (12,3,4) is
(a) 24 (b) 136 (c) 36 (d) 0

50. Number of real solution of the equation $\sin(e^x)=5^x+5^{-x}$ is
(a) 0 (b) 1
(d) 2 (d) Infinitely many

Analytical Ability & Logical Reasoning

51. Which number replaces the question mark in the figure given below?



(a) 11 (b) 6 (c) 3 (d) 21

52. **Statement- I :** Out of total of 200 readers, 100 read Indian Express, 120 read Times of India and 50 read Hindu.
Statement – II : Out of a total of 200 readers, 100 read Indian Express, 120 reads Times of India and 50 read neither.
How many people (from the group surveyed) read both Indian Express and Times of India?
(a) The statement can be answered with the help of statement II, alone.
(b) Both, statement I and statement II are needed to answer the question.
(c) The question can be answered with the help of statement I alone.
(d) The question cannot be answered even with the help of both the statements.

53. If 137 + 276 = 435, how much is 731 + 672 = ?
(a) 534 (b) 1403
(c) 1623 (d) 1531

54. Study the information carefully and answer the questions given below:
If we arrange the alphabets in the word "RATE" in the English alphabetical order, word "AERT" is formed. Then the third alphabet from the left in this word is "R". similarly, from the word "OPEN" we get - "ENOP" and the third alphabet from the left is "O". From the word "CHEF" we get - "CEFH" the third alphabet from the left "F". From the word "TOY" we get - "OTY" and the third alphabet from the left is "Y". If we use all these letters, then a meaningful English word "FORTY" can be formed.
Now find which of the following word set DOES NOT give a meaningful word in the similar way.
(a) SAME, ROOM, BEST, AUTO
(b) GOAT, PEST, WATT, ARMY
(c) MALE, FIND, LOST, THAT
(d) JUMP, LIME, DUMB, SOME

55. Navjivan Express from Ahmedabad to Chennai leaves Ahmedabad at 6:30 am and travels at 50kmph towards Baroda situated 100 km away. At 7.00 am Howrah-Ahmedabad Express leaves Baroda towards Ahmedabad and travels at 40 kmph. At 7:30 am Mr. Shah, the traffic controller at Baroda realizes that both trains are running on the same track. How much time does he have to avert a head-on collision between the two trains?
(a) 15 min (b) 20 min
(c) 25 min (d) 30 min

56. If the points $P(a^2,a)$ lie in the region corresponding to the acute angle between the lines and then
(a) $a\in(2,6)$ (b) $a\in(4,6)$
(c) $a\in(2,4)$ (d) $a\in(10,14)$

57. Some friends planned to contribute equally to jointly buy a CD player. However, two of them decided to withdraw at the last minute. As a result, each of the others had to shell out one rupee more than what they had planned for. If the price (in Rs.) of the CD player is an integer between 1000 and 1100, find the number of friends who actually contributed?
(a) 44 (b) 23 (c) 21 (d) 46

58. Two liquids A and B are in the ratio 5:1 in container 1 and in the ratio 1:3 in container 2. In what ratio should the contents of the two containers be mixed so as to obtain a mixture of A and B in the ratio 1:1?
(a) 2:3 (b) 4:3 (c) 3:2 (d) 3:4

59. Each family in a locality has at most two adults, and no family has fewer than 3 children. Considering all the families together, there are more adults than boys,

more boys than girls, and more girls than families. Then the minimum possible number of families in the locality is

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

60. Fresh grapes contain 90% by weight while dried grapes contain 20% water by weight. What is the weight of dry grapes available from 20 kg of fresh grapes?

(a) 2.5 kg (b) 2.4 kg
(c) 2kg (d) 10 kg

Directions for questions 61 and 62 Answer the questions on the basis of the information given below:

A, B, C, D, E, and F are a group of friends. There are two housewives, one professor, one engineer, one accountant and one lawyer in the group. There are only two married couples in the group. The lawyer is married to D, who is a housewife. No woman in the group is either an engineer or an accountant. C, the accountant, is married to F, who is a professor. A is married to a housewife. E is not a housewife.

61. What is E's profession?

(a) Accountant (b) Lawyer
(c) Professor (d) Engineer

62. How many members of the group are males?

(a) 2 (b) 3
(c) 4 (d) Cant be determined

63. Wrong number in the series 7, 8, 18, 57, 228, 1165, 6996

(a) 288 (b) 18 (c) 57 (d) 28

Direction for the Questions 64 and 64

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is/are sufficient to answer the given question. Read both statements and

Give the answer (U) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

Give the answer (V) if the data in statement I| alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

Give the answer (W) if the data either in Statement I or in Statement II alone are sufficient to the answer of the question.

Give the answer (X) if the data in both statements I and II together are not sufficient to answer the question.

Give the answer (Y) if the data in both statements I and II together are are necessary to answer the question.

64. How much time will the leak take to empty the full cistern?

(i) The cistern is normally filled in 9 hours.
(ii) It takes one hour more than the usual time to fill the cistern because of a leak in the bottom.

(a) V (b) U (c) X (d) Y

65. How will long it take to empty the tank if both the inlet pipe P1 and the outlet pipe P2 are opened simultaneously?

(i) P_1 can fill the tank in 16 minutes.
(ii) P_2 can empty the full tank in 8 minutes.

(a) X (b) U (c) Y (d) V

66. How many positive numbers less than 10,000 are such that the product of their digits is 210?

(a) 36 (b) 42 (c) 48 (d) 54

67. Each of the five people K, L, M, P and Q is of a different weight. It is known that the number of people heavier than P is the same as the number of people lighter than Q. L is the heaviest and K is not the lightest. Who is the lightest?

(a) M (b) L (c) Q (d) P

68. John, Johny and Janardan participated in a race and each won a different medal among Gold, Silver and Bronze, not necessarily in that order. Each person among them gives two replies to any question, one of which is true and the other is false (in any order). When asked about the details of the medals obtained by them, the following were their replies:

John: I won the Gold medal. Johny won the Bronze medal.

Johny: John won the Silver medal. I won the Gold medal.

Janardan: Johny won the Silver medal. I won the Gold medal.

Which among the following is the correct order of the persons who won the Gold medal, the Silver medal and the Bronze medal respectively?
(a) John, Johny, Janardan
(b) Janardan, John, Johny
(c) Johny, Janardan, John
(d) Janardan, Johny, John

69. Each of A, B and C is a different digit among 1 to 9. How many different values of the sum of A, B and C are possible, if ABA **X** AA = ACCA ?
(a) 1 (b) 3 (c) 7 (d) 8

70. In a certain language , if the word 'BASKET' is coded as 'UFLTBC', then how is the word 'SIMPLE' coded in that language?
(a) FMQNJT (b) FMQGNJ
(c) FMQNJH (d) MFNQTJ

71. A dealer offers sells half of the eggs that he has and another half an egg to Anurag. Then he sells half of the balance eggs and another half an egg to Deepak. Then he sells half of the balance eggs and another half an egg to Sivani. In the end he is left with just 7 eggs and he claims that he never broke an egg. How many eggs did he start with?
(a) 65 (b) 63 (c) 67 (d) 69

72. There are eight poets, namely, A, B, C, D, E, F, G and H in respect of whom questions are being asked in the examination. The first four are ancient poets and the last four are modern poets. The question on ancient and modern poets is being asked in alternate years. Those who like W also like V, those who like S like R also. The examiner who sets question is not likely to ask question on S because he has written an article on him. But he likes S. Last year a question was asked on U. Considering these facts, on whom the question is most likely to be asked this year ?
(a) Q (b) R (c) S (d) V

73. A team must be selected from ten probable's – A, B, C, D, E, F, G, H, I and J. Of these, A, C, E and J are forwards, B, G and H are point guards and D, F and I are defenders. The team must have at least one forward, one point guard and one defender. If the team includes J, it must also include F. The team must include E or B, but not both. If the team includes G, it must also include F. The team must include exactly one among C, G and I. C and F cannot be members of the same team. D and H cannot be members of the same team. The team must include both A and D or neither of them. There is no restriction on the number of members in the team. What could be the maximum size of the team that includes G?
(a) 4 (b) 5
(c) 6 (d) More than 6

74. How many 4 - digit numbers that can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?
(a) 216 (b) 60 (c) 24 (d) 25

75. In a family of six persons, there are people from three generations. Each person has separate profession and also they like different colours. There are two couples in the family. Rohan is a CA and his wife neither is a doctor nor likes green colour. Engineer likes red colour and his wife is a teacher. Mohini is mother-in-law of Savita and she likes orange colour. Deepak is grandfather of Titu and Titu, who is a principal, likes black colour. Nerru is grand-daughter of Mohini and she likes blue colour. Nerru's mother likes white colour. Savita is a
(a) Doctor (b) Teacher
(c) Housewife (d) None of these

76. 1.All chickens are birds.
2. Some chickens are hens.
3. Female birds lay eggs.
If the above three statements are facts, which of the following statement must also be a fact?
I. All birds lay eggs.
II. Hens are birds.
III. Some chickens are not hens.
(a) II Only
(b) II and III only
(c) I, II and III
(d) None of the statements is known as fact.

77. The number that comes next in the series 1, 2, 3, 6, 11, 20, 37, 68,...
(a) 105 (b) 124 (c) 125 (d) 126

78. Using only 2, 5, 10, 25 and 50 paise coins, the smallest number of coins required to pay exactly 79 paise, 66 paise and Re 1.01 to three different persons is
(a) 17 (b) 20 (c) 19 (d) 18

79. What pair comes next in the following sequence 99, 90, 83, 78, ...
(a) 71,69 (b) 69,57
(c) 67,59 (d) 69,63

80. A dealer offers a cash discount of 20% and still makes a profit of 20%, when he further allows 16

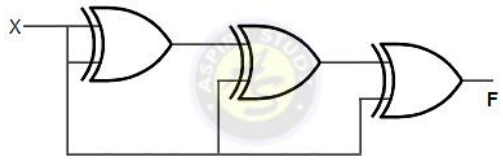
articles to a dozen to a particularly sticky bargainer. How much percent above the actual price price were his was the listed price of the article?
(a) 100% (b) 80%
(c) 75% (d) 66%

Question 81, 82 and 83 are based on the following instructions
Twelve classmates A, B, C, D, E, F, G, H I, J, K and L are sitting on a square table with 3 persons on each side. ABC and GJK are sitting on opposite sides. A and L are adjacent to each other. K is sitting diagonally to C.

81. If F is sitting between D and E, who is sitting to the left of K?
(a) H (b) I
(c) H or I (d) None of these
82. If H is sitting between L and F, then he will be facing
(a) D (b) E (c) G (d) I
83. If G and E are facing C and H respectively, the neighbours of K are
(a) J and H (b) J and E
(c) H and J (d) H and E
84. The integers 34041 and 32506, when divided by a 3 - digit integer n, leave the same remainder. What can be the value of n?
(a) 289 (b) 307 (c) 367 (d) 493
85. The number of solid spheres ,each of diameter 3 cm that could be moulded to form a solid metal cylinder of height 54cm and diameter 4 cm is?
(a) 16 (b) 24 (c) 36 (d) 48
86. A clock is set right at 5 AM. The clock loses 16 minutes in 24 hours. What will be the true time when the clock indicates 10 p.m. on 4th day?
(a) 11:15 PM (b) 11:00 PM
(c) 12:00 PM (d) 12:30 PM
87. A train overtakes two persons who are walking in the same direction in which the train is going, at the rate of 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. The length of the train is:
(a) 72m (b) 54m
(c) 50 m (d) 45m
88. Decide which of the give conclusions logically follow from the given students(s) :
Statements:
All suns are moons.
Some moons are planets.
Conclusions :
I. All moons are suns.
II. At least some moons are planets.
(a) Either conclusion I or II is true
(b) Neither conclusion I nor II is true
(c) Both conclusion I or II is true
(d) Only conclusion II is true
89. Ten points are marked on a straight line and eleven points are marked on another straight line. How many triangles can be constructed with vertices from among the above points?
(a) 495 (b) 550
(c) 1045 (d) 2475
90. The greatest number which on dividing 1657 and 2037 leaves remainders 6 and 5 respectively, is:
(a) 123 (b) 127 (c) 235 (d) 305

Computer Awareness

91. In IEEE single precision floating point representation, exponent is represented in _____
(a) 8 bit Sign – magnitude representation
(b) 8 bit 2's complement representation
(c) Biases exponent representation with a bias value 127
(d) Biases exponent representation with a bias value 128
92. With 4-bit 2's complement arithmetic, which of the following addition will result in overflow?
(a) 1111+1101 (b) 0110+0110
(c) 1101+0101 (d) 0101+1011
93. If we can generate a maximum of 4 Boolean functions using n Boolean variables, what will be minimum value of n?
(a) 65536 (b) 16 (c) 1 (d) 4
94. If the 2's complement representation of a number is (011010)2 , what is its equivalent hexadecimal representation?
(a) $(110)_{16}$ (b) $(1A)_{16}$
(c) $(16)_{16}$ (d) $(26)_{16}$
95. For the circuit shown below, the complement of the output



(a) 0 (b) X (c) X' (d) 1
96. If N is a 16-bit signed integer, then 2's complement

representation of N is (F87B)16. The 2's complement representation of 8*N is
(a) $(C3D8)_{16}$ (b) $(187B)_{16}$
(c) $(F878)_{16}$ (d) $(987B)_{16}$

97. The base (or radix) of the number system such that the following equation holds 312/20 = 131.1 is
(a) 3 (b) 4 (c) 5 (d) 6

98. Which of the following represents $(D4)_{16}$?
(a) $(4E)_{16} - (5B)_{16}$ (b) $(14E)_{16} - (7A)_{16}$
(c) $(15C)_{16} - (6D)_{16}$ (d) $(1E4)_{16} - (A7)_{16}$

99. How many Boolean expressions can be be formed with 3 Boolean variables?
(a) 16 (b) 1024 (c) 32 (d) 256

100. In an 8 bit representation of computer system the decimal number 47 has to be subtracted from 38 and the result in binary 2's complement is _____
(a) 11110111 (b) 10001001
(c) 11111001 (d) 11110001

General English

101. Choose the phrasal verb to replace the explanation in brackets.
"We must (be quick) _____ or we'll be late for school".
(a) Act up (b) Hurry up
(c) Fasten on (d) speed in

102. Anne had to pay everything because as usual, Peter _____ his wallet at home.
(a) had left (b) was leaving
(c) left (d) leave

103. Extreme old age when a man behaves like a child.
(a) Imbecility (b) senility
(c) dotage (d) superannuation

104. Identify the word that means "To try to achieve something is difficult circumstances despite a setbacks".
(a) Persuade (b) Persevere
(c) Picturesque (d) Perspective

105. In the following a part of the sentence is underlined. Four different ways of phrasing the underlined part are indicated below. Chose the best alternative among the four choices given.
When he entered the house, it was in sixes and sevens.
(a) It was six O'clock when he entered the house
(b) Inmates were eulogized when he entered
(c) House was in pandemonium
(d) House wad blissful

106. Fill in the blanks choosing the correct adjective : The phoenix is a _____Bird.
(a) Mythical (b) Ethical
(c) Natural (d) Carnivorous

107. Which of the following is the correct passive of the sentence, "JOHN HAS EATEN THE APPLES??"
(a) The apples are being eaten by John.
(b) The apples are eaten by John.
(c) The apples have been eaten by John.
(d) The apples will be eaten by John.

108. Choose one of the words that is most nearly same as meaning of the given word **Indemnify.**
(a) Insure (b) Compensate for loss
(c) Assure (d) Sue for damages

109. Select a word from the given alternatives which has the same meaning as the underlined word:
He has a propensity for getting into debt.
(a) Tendency (b) Aptitude
(c) Characteristics (d) Quality

110. Select the most suitable synonym from the given choices for the word : "ANTEDILUVIAN".
(a) Recluse (b) Maverick
(c) Archaic (d) Bellicose

111. Select the most suitable antonym from the given choices for the word : "SANGFROID".
(a) Equanimity (b) Steadiness
(c) Aplomb (d) Turbulence

112. The word **PIN** is used in four different ways. Choose the option in which the usage of the word is incorrect or inappropriate?
(a) She combed her heir backward and secured it with a pin.
(b) Jack managed to grab the thief and pin him against the wall until the police arrived on the scene.
(c) It is imprudent to pin your hopes on someone to help you out of his situation.
(d) You can't pin the blame at anyone without verifying facts.

113. Pick the most appropriate substitute to the capitalized word in the following sequence.
The weapon inspector's report was not expected to provide INCONTROVERTIBLE evidence of weapons of mass destruction.
(a) Conclusive (b) Disputable
(c) Inconvenient (d) Indecisive

114. In the sentence given below, a part of sentence is underlined. Four different ways of phrasing the underlined part are indicated as four choices. Choose

the best alternative and mark its corresponding letter as your answer.

A nation is built not be legislation but by the stirrings in the heart of the people.

(a) By legislation and by inspiration
(b) Not by laws but by the excitement of the people
(c) By law and by inciting the people
(d) More by the passions in the hearts of the people than by laws

115. Select the most suitable synonym for the underlined word in the sentence.

All the members of organization expressed implacable opposition to the move.

(a) Indignant (b) Adamant
(c) Unified (d) Quixotic

116. There are two blanks in the sentences given below. From the pairs of word given below the sentences, choose the pair that fills the blank most appropriately.

Private companies supplying 'breakfast cereals' have started _____ in agriculture in poorer countries. This has _____ the spectre of land grabs and political conflicts.

(a) Spending ... intensified
(b) Dealing ... inflated
(c) Ploughing ... increased
(d) Investing ... raised

117. Use the appropriate phrasal verb and complete the sentence given below.

The new system in education is aimed at _____ the differences between rich and poor.

(a) Goof around (b) Evening Out
(c) Glossing Over (d) Give Over

Read the following passage and answer questions.

I have, myself, full confidence that if all do their duty, if nothing is neglected, and if the best arrangements are made, as they are being made, we shall prove ourselves once again able to defend our Island home, to ride out the storm of war, and to outlive the menace of tyranny, if necessary for years, if necessary alone. At any rate, that is what we are going to try to do. That is the resolve of His Majesty's Government-every man of them.

That is the will of the parliament of our nation. The British Empire and the French Republic, linked together in their cause and in their need, will defend to the death their native soil, aiding each other like good comrades to the utmost of their strength. Even though large tracts of Europe and many old and famous States have fallen or may fall into the grip of the Gestapo and all the odious apparatus of Nazi rule, we shall not flag or fail.

We shall go on to the end, we shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air, we shall defend our Island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender, and even if, which I do not for a moment believe, this island or a large part of it were subjugated and starving, then our Empire beyond the seas, armed and guarded by the British Fleet, would carry on the struggle, until, in God's good time, the New World, with all its power and might, steps forth to the rescue and the liberation of the old."

118. What does the term *ride out the storm mean*?

(a) Handle a crisis successfully
(b) Hide from storm
(c) Hide in some place where one cannot be found.
(d) Ride on a boat at the time of storm

119. What does subjugate mean?

(a) surrender (b) compare
(c) Control (d) abandon

120. "That is the resolve of His Majesty's Government." What is their resolve?

(a) Surrender to the Nazis.
(b) Negotiate with the Nazis.
(c) Run away from the Nazis.
(d) Fight the Nazis.

NIMCET 2019 Answer Key

1. D	2.C	3.D	4.B	5.A	6.D	7.A	8.D	9.B	10.C
11.B	12.B	13.A	14.C	15.A	16.D	17.A	18.A	19.D	20.C
21.C	22.B	23.A	24.D	25.B	26.D	27.B	28.B	29.B	30.D
31.A	32.C	33.D	34.C	35.D	36.A	37.A	38.D	39.C	40.D
41.C	42.D	43.A	44.C	45.B	46.C	47.C	48.*	49.B	50.A
51.C	52.A	53.C	54.D	55.B	56.*	57.A	58.D	59.B	60.A
61.D	62.B	63.A	64.D	65.C	66.D	67.A	68.B	69.C	70.A
71.B	72.B	73.C	74.B	75.D	76.A	77.C	78.*	79.A	80.A
81.C	82.D	83.*	84.B	85.D	86.B	87.C	88.D	89.C	90.B
91.C	92.B	93.C	94.B	95.D	96.A	97.C	98.B	99.D	100.A
101.B	102.A	103.C	104.B	105.C	106.A	107.C	108.B	109.A	110.C
111.D	112.D	113.A	114.D	115.B	116.D	117.B	118.A	119.C	120.D