NIMCET (ACTUAL - 2015)

SECTION-A (MATHS)

1. The number of bit strings of lenght 10 that contain either five consecutive 0's or five consiocutive 1's is

(a) 64 (b) 112 (c) 220 (d) 222

2. If $0 < x < \pi$ and $\cos x + \sin x = 1/2$ then the value of $\tan x$ is?

(a) $\frac{4-\sqrt{7}}{3}$ (b) $\frac{4+\sqrt{7}}{3}$ (c) $\frac{1+\sqrt{7}}{4}$ (d) $\frac{1-\sqrt{7}}{4}$

3. If $\vec{a}, \vec{b}$ and $\vec{c}$ are the position vectors of the vertices A,B,C of a traingle ABC ,then the area of the triangle ABC is

(a) $\frac{1}{2}\left|\vec{a}\times\vec{b}+\vec{b}\times\vec{c}+\vec{c}\times\vec{a}\right|$ (b) $\left|\vec{a}\times\vec{b}\right|$

(c) $\frac{1}{2}\left|\vec{a}\times\vec{b}-\vec{b}\times\vec{c}-\vec{c}\times\vec{a}\right|$ (d) $\left|\vec{a}\times\left(\vec{b}\times\vec{c}\right)\right|$

4. If $\int e^x(f(x)-f'(x))dx = \phi(x)$, then the value of $\int e^x f(x)dx$ is

(a) $\phi(x)+e^x f(x)$ (b) $\phi(x)-e^x f(x)$

(c) $\frac{1}{2}\left[\phi(x)+e^x f(x)\right]$ (d) $\frac{1}{2}\left[\phi(x)+e^x f'(x)\right]$

5. If $3x+4y+k=0$ is a tangent to the hyperbola $9x^2-16y^2=144$,then the value of k is:

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

6. The foot of the perpendicular from the point (2,4) upon $x+y=1$ is:

(a) $\left(\frac{1}{2},\frac{3}{2}\right)$ (b) $\left(-\frac{1}{2},\frac{3}{2}\right)$ (c) $\left(\frac{4}{3},\frac{1}{2}\right)$ (d) $\left(\frac{4}{3},-\frac{1}{2}\right)$

7. The value of k for which the equation $(k-2)x^2+8x+k+4=0$ has both real , distinct and negative roots is :

(a) 0 (b) 2 (c) 3 (d) -4

8. Is (2,1) ,(-1,-2), (3,3) are the midpoints of the sides BC,CA,AB of a triangle ABC , then equation of the line BC is

(a) $5x+4y+6=0$ (b) $5x-4y-6=0$

(c) $5x+4y-6=0$ (d) $5x-4y+6=0$

9. If fair dice is rolled successively , then the probability that 1 appears in an even numbered throw is

(a) 5/36 (b) 6/11 (c) 1/6 (d) 5/11

10. Let $\vec{a}=\hat{i}+\hat{j}+\hat{k}, \vec{b}=\hat{i}-\hat{j}+\hat{k}$ and $\vec{c}=\hat{i}-\hat{j}-\hat{k}$ be three vector , A vector $\vec{V}$ in the plane of $\vec{a}$ and $\vec{b}$ whose projection on $\frac{\vec{c}}{|c|}$ is $\frac{1}{\sqrt{3}}$, is

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

(c) $5\hat{i}-2\hat{j}+5\hat{k}$ (d) $2\hat{i}-\hat{j}+3\hat{k}$

11. The value of $\int_{-\pi/3}^{\pi/3}\frac{x\sin x}{\cos^2 x}dx$ is

(a) $\frac{1}{3}(4\pi+1)$ (b) $\frac{4\pi}{3}-2\log\tan\frac{5\pi}{12}$

(c) $\frac{4\pi}{3}+\log\tan\frac{5\pi}{12}$ (d) $\frac{4\pi}{3}-\log\tan\frac{5\pi}{3}$

12. The foci of the ellipse $\frac{x^2}{16}+\frac{y^2}{b^2}=1$ and the hyperbola $\frac{x^2}{144}-\frac{y^2}{81}=\frac{1}{25}$ coincide, then the value of b^2 is

(a) 1 (b) 5 (c) 7 (d) 9

13. If $A+B+C=\pi$? then ,the value of

$$\begin{vmatrix}\sin(A+B+C) & \sin B & \cos C\\ -\sin B & 0 & \tan A\\ \cos(A+B) & -\tan A & 0\end{vmatrix}$$ is

(a) 0 (b) 1 (c) $2\sin A\sin B$ (d) 2

14. If the mean deviation of the number 1, 1+d, 1+2d,...,1+100d from their mean is 255, then the value of d is :

(a) 20.0 (b) 10.1 (c) 20.2 (d) 10.0

15. If $P = \sin^{20}\theta + \cos^{48}\theta$ then the inequality that holds for all values of θ is :

(a) $P \geq 1$ (b) $0 < P \leq 1$

(c) $1 < P < 3$ (d) $0 \leq P \leq 1$

16. Let $\vec{a}$ and $\vec{b}$ be two vector . Which of the following vector are not perpendicular to each other ?

(a) $(\vec{a} \times \vec{b})$ and $\vec{a}$ (b) $(\vec{a} + \vec{b})$ and $\vec{a} \times \vec{b}$

(c) $\vec{a} + \vec{b}$ and $\vec{a} - \vec{b}$ (d) $\vec{a} - \vec{b}$ and $\vec{a} \times \vec{b}$

17. If $A = \begin{bmatrix} a & b & c \\ b & c & a \\ c & a & b \end{bmatrix}$,where a, b, c are real positive number such that $abc = 1$ and $A^T A = I$ then the equation that holds true among the following is

(a) $a + b + c = 1$ (b) $a^2 + b^2 + c^2 = 1$

(c) $ab + bc + ca = 0$ (d) $a^3 + b^3 + c^3 = 4$

18. The equation of the tangent at any point of the curve $x = a\cos 2t, y = 2\sqrt{2}\ a\sin t$,with m as its slope ,is

(a) $y = mx + a\left(m - \frac{1}{m}\right)$ (b) $y = mx - a\left(m + \frac{1}{m}\right)$

(c) $y = mx + m\left(a + \frac{1}{a}\right)$ (d) $y = amx + a\left(m - \frac{1}{m}\right)$

19. The locus of the mid points of all chords of the parabola $y^2 = 4x$,which are drawn through its vertex ,is?

(a) $y^2 = 8x$ (b) $y^2 = 2x$

(c) $x^2 + 4y^2 = 16$ (d) $x^2 = 2y$

20. The value of $\lim_{x \to a} \frac{\sqrt{a+2x} - \sqrt{3x}}{\sqrt{3a+x} - 2\sqrt{x}}$ is

(a) 2/3 (b) $2/\sqrt{3}$ (c) $3\sqrt{3}/2$ (d) $2/3\sqrt{3}$

21. If a,b,c are in geometric progression ,then $\log_{ax} x, \log_{bx} x$ and $\log_{cx} x$ are in

(a) Arithmetic progression

(b) Geometric progression

(c) Harmonic progression

(d) Arithmetic-geometric progression

22. If $\vec{a}$ and $\vec{b}$ are vector in space given by $\vec{a} = \frac{\hat{i} - 2\hat{j}}{\sqrt{5}}$ and $\vec{b} = \frac{2\hat{i} + \hat{j} + 3\hat{k}}{\sqrt{14}}$ then the value of $(2\vec{a} + \vec{b}).\left[(\vec{a} \times \vec{b}) \times (\vec{a} - 2\vec{b})\right]$ is

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

23. The value of the sum $\frac{1}{2\sqrt{1} + 1\sqrt{2}} + \frac{1}{3\sqrt{2} + 2\sqrt{3}} + \frac{1}{4\sqrt{3} + 3\sqrt{4}} + \ldots + \frac{1}{25\sqrt{24} + 24\sqrt{25}}$

(a) 9/10 (b) 4/5 (c) 14/15 (d) 7/15

24. If $\vec{a} = \hat{i} - \hat{k}, \vec{b} = x\hat{i} + \hat{j} + (1-x)\hat{k}$ and $\vec{c} = y\hat{i} + x\hat{j} + (1 + x - y)\hat{k}$,then $\left[\vec{a}\ \vec{b}\ \vec{c}\right]$ depends on

(a) Neither x and y (b) Only x

(c) Only y (d) Both x and y

25. If $42\,({}^{n}p_2) = {}^{n}p_4$ then the value of n is

(a) 2 (b) 4 (c) 9 (d) 42

26. If the angles of a triangle are in the ratio 2:3:7, then the ratio of the sides opposite to these angles is?

(a) $\sqrt{2} : 2 : \sqrt{3} + 1$

(b) $2 : \sqrt{2} : \sqrt{3} + 1$

(c) $2 : \sqrt{2} : \frac{\sqrt{2}}{\sqrt{3} - 1}$

(d) $\frac{1}{\sqrt{2}} : 2 : \frac{\sqrt{3} + 1}{2}$

27. Supoose that A and B are two events with probabilites $P(A)=\frac{1}{2}$, $P(B)=\frac{1}{3}$,Then which of the following is true? ?

(a) $\frac{1}{3}\le P(A\cap B)\le\frac{1}{2}$ (b) $\frac{1}{4}\le P(A\cap B)\le\frac{1}{3}$

(c) $\frac{1}{6}\le P(A\cap B)\le\frac{1}{3}$ (d) $\frac{1}{4}\le P(A\cap B)\le\frac{1}{2}$

28. The number of one -to-one functions from {1,2,3} to {1,2,3,4,5} is

(a) 125 (b) 243 (c) 10 (d) 60

29. A harbour lies in a direction 60° South of West from a fort and at a distance 30 km from it, a ship sets out from the harbour at noon and sails due East at 10 km an hour. The time at which the ship will be 70 km from the fort is.

(a) 7 PM (b) 8PM (c) 5PM (d) 10PM

30. If x,y,z are three consecutive positive integer ,Then $\log(1+xz)$ is :

(a) $\log y$ (b) $\log\frac{y}{2}$ (c) $\log(2y)$ (d) $2\log(y)$

31. The value of $\sin^{-1}\frac{1}{\sqrt{2}}+\sin^{-1}\frac{\sqrt{2}-\sqrt{1}}{\sqrt{6}}+\sin^{-1}\frac{\sqrt{3}-\sqrt{2}}{\sqrt{12}}+\ldots$.to infinity is equal to ?

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

32. If two circles $x^2+y^2+2gx+2fy=0$ and $x^2+y^2+2g'x+2f'y=0$ touch each other then which of the following is true ?

(a) $gf=g'f'$

(b) $gf'=g'f$

(c) $gg'=ff'$

(d) none

33. $\int_0^{\pi}[\cot x]dx$,where $[\cdot]$ denotes the greatest integer function ,is equal to ?

(a) $\pi/2$ (b) 1 (c) -1 (d) $-\pi/2$

34. In a right angled triangle ,the hypotenuse is four times the perpendicular drawn to it from the opposite vertex .The value of one of the acute angles is .

(a) 45° (b) 30° (c) 15° (d) none

35. A is targeting B,B and C are targeting A. Probability of targetting the target by A, B and C are 2/3, 1/2, 1/3 respectively .If A is hit then the probability that B hits the target and C does not ,is ?

(a) 1/2 (b) 1/3 (c) 2/3 (d) 3/4

36. A professor has 24 text books on computer science and is concerned about their coverage of the topics (P) compilers, (Q) data structures (R) operating systems. The following data gives the number of books thet contain material on these topic : $n(P)=8, n(Q)=13, n(R)=13$ $n(P\cap Q)=5, n(P\cap R)=3, n(Q\cap R)=6,$ $n(P\cap Q\cap R)=2$, Where $n(x)$ is the cardinlity of the set x. Then the number of text books thet have no material on compiler is ?

(a) 4 (b) 8 (c) 12 (d) 16

37. The value of $\tan\left(\frac{7\pi}{8}\right)$ is

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

38. If $\vec{a}$ and $\vec{b}$ vectors such that $|\vec{a}|=13, |\vec{b}|=5$ and $\vec{a}.\vec{b}=60$ then the value of $|\vec{a}\times\vec{b}|$ is

(a) 625 (b) 225 (c) 45 (d) 25

39. Two towers face each other separated by a distance of 25 meters .As seen from the top of the first tower ,the angle of depression of the second tower's based is 60° and that of the top is 30° The height (in meters) of the second tower is

(a) $\frac{50}{\sqrt{3}}$ (b) $\frac{25}{\sqrt{3}}$ (c) 50 (d) $25\sqrt{3}$

40. If $\vec{a} = 4\hat{i} + 6\hat{j}$ and $\vec{b} = 3\hat{j} + 4\hat{k}$, then the vector from of the component of $\vec{a}$ along $\vec{b}$ is

(a) $\frac{18}{10\sqrt{13}}\left(3\hat{j} + 4\hat{k}\right)$ (b) $\frac{18}{25}\left(3\hat{j} + 4\hat{k}\right)$

(c) $\frac{18}{\sqrt{13}}\left(3\hat{j} + 4\hat{k}\right)$ (d) $\left(3\hat{j} + 4\hat{k}\right)$

41. With the usual notation, $\frac{d^2x}{dy^2}$ is

(a) $\left(\frac{d^2x}{dy^2}\right)^{-1}$ (b) $\frac{d^2y}{dx^2}\left(\frac{dy}{dx}\right)^{-2}$

(c) $-\left(\frac{d^2y}{dx^2}\right)^{-1}\left(\frac{dy}{dx}\right)^{-3}$ (d) $-\left(\frac{d^2y}{dx^2}\right)\left(\frac{dy}{dx}\right)^{-3}$

42. The radius of the circle passing through the foci of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$ and having its centre at (0,3) is

(a) 4 units (b) 3 units (c) $\sqrt{12}$ units (d) 7/2 units

43. A function $f : (0, \pi) \to R$ defined by

$f(x) = 2\sin x + \cos 2x$

(a) A local minimum but no local maximum
(b) A local maximum but no local minimum
(c) Both local minimum and local maximum
(d) Neither a local minimum nor a local maximum

44. A matrix M_r is defined as $M_r = \begin{bmatrix} r & r-1 \\ r-1 & r \end{bmatrix}$ $r \in N$, then the value of

$\det(M_1) + \det(M_2) + \ldots + \det(M_{2015})$ is

(a) 2014^2 (b) 2013^2 (c) 2015 (d) 2015^2

45. If $\vec{AC} = 2\hat{i} + \hat{j} + \hat{k}$ and $\vec{BD} = -\hat{i} + 3\hat{j} + 2\hat{k}$ then the area of the quadrilateral $ABCD$ is

(a) $\frac{5}{2}\sqrt{3}$ (b) $5\sqrt{3}$ (c) $\frac{15}{2}\sqrt{3}$ (d) $10\sqrt{3}$

46. a, b, c are positive integer such that $a^2 + 2b^2 - 2bc = 100$ and $2ab - c^2 = 100$, Then the value of $\frac{a+b}{c}$ is

(a) 10 (b) 100 (c) 2 (d) 20

47. If (-4,5) is one vertex and $7x - y + 8 = 0$ is one diagonal of a square, Then the equation of the other diagonal is

(a) $x + 7y = 21$ (b) $x + 7y = 31$

(c) $x + 7y = 28$ (d) $x + 7y = 35$

48. Out of $2n+1$ tickets, Which are consecutively numbered, three are drawn at random. Then the probability that the numbers on them are in arithmetic progression is

(a) $\frac{n^2}{4n^2 - 1}$ (b) $\frac{n}{4n^2 - 1}$

(c) $\frac{3n^3}{4n^2 - 1}$ (d) $\frac{3n}{4n^2 - 1}$

49. A circle touches the X -axis and also touches another circle with centre at (0,3) and radius. Then the locus of the centre of the first circle is

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

50. Let $\overline{P}$ and $\overline{Q}$ denote the complements P and Q. then the set $(P - Q) \cup (Q - P) \cup (P \cap Q)$ is

(a) $P \cup Q$ (b) $\overline{P} \cup \overline{Q}$

(c) $P \cap Q$ (d) $\overline{P} \cap \overline{Q}$

SECTION-B (Analytical Ability & Reasoning)

51. How many 3-digit numbers divisible by 5, can be formed using the digit 2,3,5,6,7 and 9, without repetition of digits?

(a) 216 (b) 20 (c) 120 (d) 24

52. Using only 2,5,10,25 and 50 paise coins, what is thw smallest number of coins required to pay exactly 78 paise, 69 paise and 1.01 to three different persons?

(a) 19 (b) 20 (c) 17 (d) 18

53. Which of the following two patterns will fit in the blanks of the series ZA_5, Y_4B, XC_6, W_3D __, __?

(a) VE_7 and U_2E (b) V_2E and $U7F$

(c) VE_7 and U_2F (d) VF_7 and U_2E

54. Which of the following numbers comes next in the two - digit decimal number sequence 61,52,63,94,____ ?

(a) 65 (b) 64 (c) 56 (d) 46

55. Three ladies X,Y and Z marry three men A,B and C .X is married to A, Y is not mrried to an engineer, Z is not married to a doctor ,C is not a doctor and A is a lawyer .Then which one of following statements is correct?

(a) X is married to a doctor

(b) Y is married to C ,Who is a doctor

(c) Z is married to B, who is an engineer

(d) None

Direction (Q.56 to 57):are based on following The letter of English alphabet from A to M were Written,leaving space for one letter between every two letters and then the remaining letters were inserted beginning with N and ending the series with Z after M.

56. Which letter would be 3rd to the right of the 7th letter from the left ?

(a) C (b) O (c) R (d) S

57. Which letter would be exactly in the middle of eighteenth letter from the begining and fifteenth from the end ?

(a) G (b) H (c) J (d)L

58. In an examination there are 100 questions divided into 3 parts A,B,C and each part should contain at least one question in part A,B and C carry 1,2 and 3 marks respectively. Part A is for at least 60% of the total marks and part B should contain 23 questions. How many questions must be set in part C?

(a) 1 (b) 2 (c) 3 (d) no determined

59. If $\div$ means addition , $-$ means division, $\times$ means subtraction and $+$ means multiplication, then the value of

$$\frac{(36\times 4)-8\times 4}{4+8\times 2+16\div 1}$$

(a) 0 (b) 8 (c) 12 (d) 16

60. Which letter in the word CYBERNETICS occupies the same position as it does in the English alphabet?

(a) C (b) E (c) I (d) T

61. The remainder when 2^{31} is divided by 5 is

(a) 1 (b) 2 (c) 3 (d) 4and

62. If the English word "EXAMINATION" is coded as 56149512965 ,then the word "GOVERNMENT" is coded as

(a) 7645954552 (b) 7654694562

(c) 7645955423 (d) 7654964526

63. Gopal starts from his house towards West. After walking a distance of 30 meters, he turned towards right and walked 20 meters. He turned left and after moving a distance of 10 meters,turned to his left again and walked 40 meters .He then turned left and walked 5 meters .Finally ,he turns to his left. In which direction is he walking now?

(a) North (b) South (c) East (d) South West

64. Read the conclusion and then decide which of the given conclusions logically follows from the two given statements (i) and (ii) disregarding commonly known facts.

Statements: (i) No woman teacher can play
(ii) some woman teachers are athletes ?

Conclusions:(i) Male athletes can play .
(ii) Some athletes can play

(a) Only conclusion (i) follows

(b) Only conclusion (ii) follows

(c) Either (i) or (ii) follows

(d) Neither (i) or (ii) follows

65. Which of the following numbers come next in the series 8, 6, 9, 23, 87,____ ?

(a) 128 (b) 226 (c) 324 (d) 429

Direction (Q.66 to 69): Question are based on the following

There is a family of six members A, B, C, D, E and F.

There are two married couples in the family and the family and the family members represents three generations. Each member has a distinct choice of a colour,amongst Green, Yellow, Black, Red, White and Pink. No lady member likes Black colour ,Is the daughter- in -law of E.C,who likes Black colur,is the daughter-in-law of E.B is the brother of F and son of D and like pink.A is the grandmother of F and F does not like Red .Wife of the husband having a choice for Green colour, likes Yellow.

66. Which of the following is the colour preference of A?

(a) Red (b) Yellow

(c) Either Red or Yellow (d) Not determined

67. Which of the following could be the colour combination of one of the couples ?

(a) Yellow-Red (b) Green-Black

(c) Red-Yelow (d) Yelow-Green

68. Which of the following is one of the married couples ?

(a) CD (b) AC (c) AD (d) not determied

69. Which of the following is true about F?

(a) Brother of B (b) Sister of B

(c) Daughter of C (d) not determined

70. If Tuesday falls on the fourth of a month then which day will fall three days after 24th of the same month?

(a) Monday (b) Tuesday

(c) Thrusday (d) Friday

71. If the statements "All chickens are birds","Some chickens are hens" and "Female birds lay eggs", are all facts, then which of the following must also be a facts?
(i) All birds lay eggs
(ii) Some hens are birds
(iii) Some chickens are not hens
(a) (i) and (ii) (b) (ii) nd (iii)
(c) (i) and (iii) (d) Neither (i) nor (ii) nor (iii)

Direction (Q.72 to 75): Question are based on the following
A circular field with inner radius of 10 meters and outer radius of 20 meters ia divided into 5 successive stage for ploughing at each stage ,with starting points P1,P2,P3,P4 and P5, was alloted to one of the five farmers f1,f2,f3,f4, and f5 not necessarily in that order.F5 was alloted the stage starting at point p4.The stage from P5 to P3 was not the first stage.F4 was alloted the work of the fourth stage. Finishing point of stage 3 was P1 and the work was not alloted to F1.F3 was alloted the work of stage ending at P5.

72. Which of the following is the finish point for farmer F2?
(a) P1 (b) P2 (c) P3 (d) P4

73. Which stage was ploughed by F5?
(a) 2 (b) 3 (c) 4 (d) 5

74. What are the starting and ending points of the field ploughed by F4?
(a) P1 and P2 (b) P1 and P4
(c) P4 and P2 (d) P2 and P4

75. What is the starting point for stage 3?
(a) P2 (b)P3 (c) P4 (d) not determined

76. How many times do the hour and the minute hands of a clock overlap in 24 hours?
(a) 24 (b) 22 (c) 26 (d) 20

77. In certain code , TOGETHER is coded as RQEGRJCT .In the same code, PAROLE will be written as:
(a) NCPQJG (b) NCQPJG (c) RCPQJK (d) RCTQNG

78. A drawer contains 10 black and 10 brown socks which are all mixed up. What is the smallest number of socks to be taken from the drawer to decided without seeing them ,to be sure that there is atleast one pair of socks of the same colour?
(a) 11 (b) 10 (c) 3 (d)cannot be determined

79. Find the missing number in the series: 4, 7, 25, 10, ___, 20, 16, 19
(a) 13 (b) 15 (c) 20 (d) 28

Direction (Q.80 to 84): Question are based on the following
A,B,C,D,E,F and G are seven girls having different amount of money from among rs 10,20,40,60,80,120 and 200 with them ,They had 3 chocolates, 2 toffees and 2 lollipops together ,each one having one of these seven items.
B and F do not have chocolates and they have rs 200 and rs 80 respectively.C has rs 60 with her and G has an amount which is neither rs 40 nor 120. A has rs 10 and does not have a toffee.The girl having rs 40 with her is the only one other than A to have the same type of item. E and the girl having rs 20 with her have the same kind of item.

80. How much amount does G have with her ?
(a) 20 (b) 10
(c) 60 (d) None of these

81. Which of the following girls have chocolates with them?
(a) F,C,G (b) C,G,E (c) C,G,D (d) G,D,E

82. Which of the following combination is definitely correct?
(a) C-chocolate-rs 60 (b) G-toffee-rs 20
(c) D-chocolate- rs 40 (d) none

83. Which girl has rs 40 with her ?
(a) E (b) A (c) D (d) none

84. P,Q,R,S,T,U and V are sitting in arow facing North. In order to determine ,Who is sitting exactly in the middle of the row ,Which of the following information is needed?
(i) T and U are sitting at extreme end of row
(ii) S is third to the right of T
(iii) Q is four places to the left of R and P is two places to the left of V
(a) (i) and (ii) only are sufficient
(b) (i) and (iii) only are sufficient
(c) (i) and either (ii) or (iii) are surfficient
(d) (i),(ii) and (iii)

Direction (Q.85 to 88): Question are based on the following :
In a family of six person A,B,C,D,E and F there are two married couples.
D is grandmother of A and mother of B
C is wife of B and mother of F
F is the grand daughter of E

85. What is C to A ?
(a) Daughter (b) Grandmother
(c) Mother (d) Cannot be determine

86. How many male members are there in the family ?
(a) Two (b) Three (c) Four (d) Cannot be determine

87. Who among the following is one of the couples?
(a) DC (b) DE (c) EB (d) cannot be determined

88. Which of the following is true?
(a) A is brother of F (b) A is sister of F
(c) B has two daughters (d) none

89. There are five books A,B,C,D and E placed on a table .If A is placed below E,C is placed above D,B is placed below A and D is placed between A and E , then which of thefollowing books can be no the top?
(a) D or E (b) C or E (c) A or E (d) none

90. Among five children A,B,C,D and E , B is taller than E but shorter than D. A is shorter than C but taller than D. If all the children stand in a line according to their heights, then who would be the fourth if counted from the tallest one?
(a) D (b) C (c) B (d) A

SECTION-C (ENGLISH)

Direction (Q.91 to 93): are based on the following:

The proud warrior class of the samurai (meaning 'those who serve') grew from a band of mercenaries hired by feudal landowners in the 11th century to win them the control of Honshu japan's main island .These mercenaries lived by the cult of the sword, worshipping athletic prowess and martial skills . They developed a fierce loyalty to their masters and a fearlessness that made them formidable adversaries. They fought in elaborate armour, wielding their most prized possession , a double -edged sabre with which they could cut a man in half.

Later the spartan principles of Zen Buddhism, with its love of nature softened their fighting zeal, It become fash ionable for them to live sparce and frugal lives during the kamakuraera(1192-1333), when the ruling warrior family Minamato moved their seat of power to the eastern city of kamakura.

91. Who are usually refered to as mercenaries ?
(a) Soldiers with martial skill (b) Proud warriors
(c) Soldiers who fight for money (d) loyal warriors

92. Which of the following best discribes the warriors ?
(a) Proud, greedy (b) Fearless, worshipful
(c) Loyal, fearless (d) Possessive, soft

93. In the Kamakura period it become fashionable for these warriors to live
(a) Zealous lives (b) Austere lives
(c) Powerful lives (d) Natural lives

94. Choose the one which best expresses the following sentence in passive /active voice:
"You can play with these kittens quite safely"
(a) These kittens can be played with quite safely
(b) These kittens can play with you quite safely
(c) These kittens can be played with you quite safely
(d) These kittens can played with quite safely

95. Which of the following terms refers to the orignal inhabitants of a place?
(a) Originals (b) Aborigines (c) Abominables (d)Cannibals

96. Replace the underline words with one of the choices given without changing the meaning of the sentence : "The news of our success was met with exuberant cries".
(a) Excited (b) Pathetic (c) Exclusive (d) Poignant

97. Select the word thet is furthest in meaning to the word AFFLUENCE
(a) Stangnation (b) Misery (c) Neglect (d) Poverty

98. Rearrange the parts of a sentence referred to by P,Q,R and S to from a complete and meaningful sentence : "I enclose_____"
P: and the postage
Q:a postal order
R: the price of books
S : Which will cover
(a) R P S Q (b) Q S P R (c) Q S R P (d) Q P S R

99. Which of the following is the antonym of the word "Exigency" ?
(a) Penchant (b) Emergency
(c) Earnestness (d) Indifference

100. Which of the following propositions fills up the blanks in the sentence ?
"Quinine is an effective antidote ___ malaria".
(a) to (b) against (c) for (d) none

101. In the sentence "The defence labs have showcased many new innovations this year", there is an error of
(a) redundancy (b) word order
(c) collocation (d) omission

102. Find the most suitable phrasal verb to be filled in the blank in the following sentence :
"Left too long in the sun , the leaves had all_____"
(a) shrugged off (b) shared out
(c) shrivelled up (d) skived off

103. fill in the blank from among the choices in the sentence : A 'Couch potato' is a person who ____
(a) spends a lot of time watching television
(b) spends money on potatoes
(c) likes potatoes
(d) is lazy, but intelligent

104. Which of the following sentencens is grammatically incorrect ?
(a) She never travelled abroad for fear of becoming ill through eating foreign food.
(b) She avoids foreign travels as she fears she will become ill through eating foreign food .
(c) She never travelled abroad due to her fear of becoming ill through eating foreign food.
(d) She never travelled abroad in fear for becoming ill with eating foregin food.

105. Match the most suitable pharsal verb from Group L to each word in Group M.

Group L	Group M
1) Call out	(P) A Foot Baller
2) Stand in For	(Q) A Criminal
3) Send down	(R) A colleague
4)Send off	(S) A Doctor

(a) 3-R, 2-S, 1-P, 4-Q (b) 1-S, 2-R, 3-Q, 4-P
(c) 1-P, 2-Q, 3-R, 4-S (d) 2-P, 3-S, 4-R, 1-Q

106. Identify the type of error in the sentence : "The cost of this project will be much lesser than 5% more than that predicted earlier".
(a) syntactical error (b) punctuation
(c) grammatical error (d) conflicting words

107. Insert appropriate prepositions in the blanks to complete the sentence "This property has been ___ the possession ___ the royal family ___ generations".
(a) with,of ,of (b) in, of, for
(c) in, with, by (d) of, by, since

108. Choose the right word to fill in the blanks in the sentence "The mermaid legend ___ have originated with a group of mammals collectively known to science as Srinians"
(a) should (b) may (c) need (d) can

109. Identify approriate word to fill the blanks in the sentence "The feeling of guilt left a ___ impression in the life".
(a) perennial (b) parennial (c) perannial (d) perinial

110. Which of the following sentences is grammatically incorrect?
(a) He is smiling (b) He smiles
(c) He always smiles (d) He is always smiling.

SECTION-D (COMPUTER)

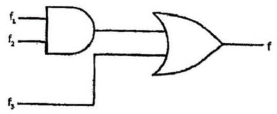
111. $\{p \to q \vee r,\ q \to s, r \to s\}$ is logically equivalent to
(a) $q \to r$ (b) $r \to q$ (c) $p \to s$ (d) $s \to p$

112. The minimum number of MOS transistors required to make a dynamic RAM cell is .
(a) 1 (b) 2 (c) 3 (d) 4

113. When the value 37H is divided by 17H , the remainder is .
(a) C0H (b) 03H (c) 07H (d) 09H

114. The number of Boolean functions possible with n binary variable is equal to
(a) 2^{2^n} (b) 2^n (c) $2^{2^{n-1}}$ (d) 2^{n-1}

115. Given f_1, f_3 and f in canonical sum of products from (in decimal) for the circuit



$f_1 = \sum m(4,5,6,7,8)$, $f_3 = \sum m(1,6,15)$ and $f = \sum m(1,6,8,15)$ then f_2 is
(a) $\sum(4,6)$ (b) $\sum(4,8)$ (c) $\sum(6,8)$ (d) $\sum(4,6,8)$

116. Which of the following is equivalent to the expression $\overline{\overline{(X+Y+\overline{Z})}}$?
(a) $(\overline{X}+\overline{Y})Z$ (b) $(X+Y)\overline{Z}$
(c) $(\overline{X}+\overline{Y})\overline{Z}$ (d) $(X+Y)Z$

117. Which optical phenomenon is utlized in the operation of the latest write -once optical storage medium called digital paper?
(a) Polarisation (b) Interference
(c) Internal reflection (d) Diffraction

118. P is a 16-bit signed integer .The 2's complement representation of P is $(F87B)_{16}$ .the 2's complement representation of $8 * P$ is.
(a) $(C3D8)_{16}$ (b) $(187B)_{16}$ (c) $(F878)_{16}$ (d) $(F878)_{16}$

119. Consider 4-bit gray code representation of numbers Let $h_3h_2h_1h_0$ be the gray code representation of a number n and $g_3g_2g_1g_0$ be the gray code representation of the number $(n+1)$ modulo 16 .Which one of the following functions is correct ?
(a) $g_0(h_3h_2h_1h_0) = \sum(1,2,3,6,10,13,14,15)$
(b) $g_1(h_3h_2h_1h_0) = \sum(4,9,10,11,12,13,14,15)$
(c) $g_2(h_3h_2h_1h_0) = \sum(2,4,5,6,7,12,13,15)$
(d) $g_3(h_3h_2h_1h_0) = \sum(0,1,6,7,10,11,12,13)$

120. The minimum number of NAND gates required to realize $AB + AB'C + AB'C'$ is?
(a) 3 (b) 2 (c) 1 (d) 0

ANSWER KEY (NIMCET - Actual 2015)

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