NIMCET 2010

MATHEMATICS

1. How many proper subsets of {1, 2, 3, 4, 5, 6, 7} contain the numbers 1 and 7?
(1) 7 (2) 31 (3) 32 (4) 62

2. Identify the wrong statement from the following:
(1) If A and B are two sets, then $A - B = A \cap \overline{B}$
(2) If A, B and C are sets, then $(A - B) - C = (A - C) - (B - C)$
(3) If A and B are two sets, then $\overline{A} \cup \overline{B} = \overline{A} \cap \overline{B}$
(4) If A, B and C are sets, then $A \cap B \cap \overline{C} \subseteq A \cap B$

3. A survey shows that 63% of the Americans like cheese where as 76% like apples. If x% of the Americans lie both cheese and apples, then we have
(1) $x \geq 39$ (2) $x \leq 63$ (3) $39 \leq x \leq 63$ (4) None of these

4. Set A has 3 elements and set B has 4 elements. The number of injection that can be defined from A to B is
(1) 144 (2) 12 (3) 24 (4) 64

5. If $(1 + x)^n = a_0 + a_1x + a_2 x^2 + \ldots a_n x^n$, then $\left(1+\frac{a_1}{a_0}\right)\left(1+\frac{a_2}{a_1}\right)\left(1+\frac{a_3}{a_2}\right)\ldots\ldots\left(1+\frac{a_n}{a_{n-1}}\right)$
(1) $\frac{n^n}{n!}$ (2) $\frac{(n+1)^n}{n!}$ (3) $\frac{n^{n+1}}{(n+1)!}$ (4) $\frac{(n-1)^n}{n!}$

6. India plays two matches each with West Indies and Australia. In any match the probabilities of India getting points 0, 1 and 2 are 0.45, 0.05 and 0.50 respectively. Assuming that the outcomes are independent, the probability of india getting at least 7 points is
(1) 0.8750 (2) 0.0875 (3) 0.0625 (4) 0.0250

7. A coin is tossed three times. The probabilities of getting head and tail alternatively is
(1) $\frac{1}{11}$ (2) $\frac{2}{3}$ (3) $\frac{3}{4}$ (4) $\frac{1}{4}$

8. One hundred identical coins, each with probability p of showing up a head, are tossed. If $0 < p < 1$ and if the probability of heads on exactly 50 coins is equal to that of heads on exactly 51 coins then the value of p, is
(1) $\frac{1}{2}$ (2) $\frac{49}{101}$ (3) $\frac{50}{101}$ (4) $\frac{51}{101}$

9. In a Poisson distribution if $P[X = 3] = \frac{1}{4} P[X = 4]$ then $P[X = 5] = kP[X = 7]$ where k equals to
(1) $\frac{1}{7}$ (2) $\frac{21}{128}$ (3) $\frac{128}{21}$ (4) $\frac{21}{256}$

10. The average marks per student in a class of 30 students were 45. On rechecking it was found that marks had been entered wrongly in two cases. After correction these marks were increased by 24 and 34 in the two cases. The correct average marks per student are
(1) 75 (2) 60 (3) 56 (4) 47

11. The value of 'a' for which the system of equations
$a^3 x + (a + 1)^3 y + (a + 2)^3 z = 0$
$ax + (a + 1) y + (a + 2) z = 0$
$x + y + z = 0$
has a non zero solution, is
(1) 1 (2) 0 (3) –1 (4) none of these

12. The value of $X^4 + 9X^3 + 35X^2 - X + 4$ for $X = -5 + 2\sqrt{-4}$ is
(1) 0 (2) –160 (3) 160 (4) –164

13. If $y = a \log x + bx^2 + x$ has its extremum value at $x = -1$ and $x = 2$, then
(1) $a = 2, b = -1$ (2) $a = -2, b = \frac{1}{2}$ (3) $a = 2, b = -\frac{1}{2}$ (4) $a = 1, b = -\frac{1}{2}$

14. If a, b, c are in A.P., p, q, r are in H.P. and ap, bq, cr in G.P., then $\frac{p}{r} + \frac{r}{p}$ is equal to
(1) $\frac{a}{c} - \frac{c}{a}$ (2) $\frac{a}{c} + \frac{c}{a}$ (3) $\frac{b}{q} - \frac{a}{p}$ (4) $\frac{b}{q} + \frac{a}{p}$

15. If $a \neq p$, $b \neq q$, $c \neq r$ and $\begin{bmatrix} p & b & c \\ a & q & c \\ a & b & r \end{bmatrix} = 0$, then the value of $\frac{p}{p-a} + \frac{q}{q-b} + \frac{r}{r-c}$ is
(1) 0 (2) 1 (3) –1 (4) 2

16. Let $\omega \neq 1$ be a cube root of unity and $i = \sqrt{-1}$. The value of the determinant
$\begin{vmatrix} 1 & 1+i+\omega^2 & \omega \\ 1-i & -1 & \omega^2 - 1 \\ -i & -i+\omega-1 & -\omega^3 \end{vmatrix}$ is
(1) 0 (2) ω (3) ω^2 (4) $1 + \omega^2$

17. The point (4, 1) undergoes the following three transformation successively:
(i) Reflection about the line $y = x$
(ii) Transformation through a distance 2 unit along the positive direction of x-axis
(iii) Rotation through an angle of $\frac{\pi}{4}$ about the origin in the anticlockwise direction. The final position of the point is given by the coordinates.
(1) $\left(\frac{-1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$ (2) $\left(\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}}\right)$ (3) $(-2, 7\sqrt{2})$ (4) $(\sqrt{2}, 7\sqrt{2})$

18. If the two pair of lines $X^2 - 2mxy - Y^2 = 0$ and $X^2 - 2nxy - Y^2 = 0$ are such that one of them represent the bisecter of the angles between the other, then
(1) mn+1=0 (2)mn-1=0 (3) $\frac{1}{m} + \frac{1}{n} = 0$ (4) $\frac{1}{m} - \frac{1}{n} = 0$

19. The circle $x^2 + y^2 = 9$ is contained in the circle $x^2 + y^2 - 6x - 8y + 25 = c^2$ if
(1) c = 2 (2) c = 3 (3) c = 5 (4) c = 10

20. If any tangent to the ellipse $\frac{X^2}{a^2} + \frac{Y^2}{b^2} = 1$ intercepts equal length l on the axes, then $l =$
(1) $a^2 + b^2$ (2) $\sqrt{a^2 + b^2}$ (3) $(a^2 + b^2)^2$ (4) None of these

21. The angle between the asymptotes of the hyperbola $27x^2 - 9y^2 = 24$ is
(1) 60° (2)120° (3) 30° (4) 150°

22. The angle of intersection of the cardioids $r = a(1 + \cos\theta)$, $r = a(1 - \cos\theta)$ is
(1) $\frac{\pi}{2}$ (2) 0 (3) $\frac{\pi}{4}$ (4) π

23. If $f(x) = \begin{cases} x\sin\left(\frac{1}{x}\right) & \text{for } x \neq 0 \\ 0 & \text{for } x = 0 \end{cases}$ then

(1) f is a continuous function
(2) f'(0+) exits but f'(0 –) does not exist
(3) f'(0+) ≠ f'(0 –)
(4) f'(0 +) and f'(0 –) do not exist

24. If the tangents at the extremities of a focal chord of the parabola $x^2 = 4ay$ meet the tangent at the vertex at points whose abscissa are x_1 and x_2 then x_1x_2 =

(1) a^2 (2) $a^2 - 1$ (3) $a^2 + 1$ (4) $-a^2$

25. The value of the integral $\int_3^6 \frac{\sqrt{x}}{\sqrt{9-x}+\sqrt{x}}\,dx$ is

(1) 1 (2) $\frac{1}{2}$ (3) $\frac{3}{2}$ (4) 2

26. The value of the integral $\int_0^{\frac{\pi}{4}} \frac{\sin x + \cos x}{3 + \sin 2x}\,dx$ is

(1) log 2 (2) log 3 (3) $\frac{1}{4}\log 3$ (4) $\frac{1}{8}\log 3$

27. $\int \log_{10} x\,dx$ is

(1) $(x - 1)\log_e x + c$ (2) $\log_e 10.x \log_e\left(\frac{x}{e}\right) + c$

(3) $\log_{10} e.\ x \log_e\left(\frac{x}{e}\right) + c$ (4) $\frac{1}{x} + c$

28. If $I_1 = \int_0^1 2^{x^2}\,dx$, $I_2 = \int_0^1 2x^3\,dx$, $I_3 = \int_1^2 2^{x^2}\,dx$ and $I_4 = \int_1^2 2^{x^3}\,dx$ then

(1) $I_3 = I_4$ (2) $I_3 > I_4$ (3) $I_2 > I_1$ (4) $I_1 > I_2$

29. The area between the curves $y = 2 - x^2$ and $y = x^2$ is

(1) $\frac{8}{3}$ (2) $\frac{4}{3}$ (3) $\frac{2}{3}$ (4) $\frac{5}{3}$

30. A vector $\vec{a}$ has components 2p and 1 with respect to a rectangular Cartesian system. This system is rotated through a certain angle about the origin in the counterclockwise sense. If, with respect to the new system, $\vec{a}$ has components p + 1 and 1, then

(1) p = 0 (2) p = 1 or p = $\frac{1}{3}$ (3) p = –1 or p = $\frac{1}{3}$ (4) p = 1 or p = –1

31. The vectors $\vec{a}, \vec{b}$ and $\vec{c}$ are equal in length and taken pairwise make equal angles. If $\vec{a} = \hat{i} + \hat{j}$, $\vec{b} = \hat{j} + \hat{k}$ and $\vec{c}$ make an obtuse angle with the base vector i, then $\vec{c}$ is equal to

(1) $\hat{i} + \hat{k}$ (2) $-\hat{i} + 4\hat{j} - \hat{k}$ (3) $-\frac{1}{3}\hat{i} + \frac{4}{3}\hat{j} - \frac{1}{3}\hat{k}$ (4) $\frac{1}{3}\hat{i} + \frac{4}{3}\hat{j} - \frac{1}{3}\hat{k}$

32. The position vector of A, B, C and D are $\hat{i} + \hat{j} + \hat{k}$, $2\hat{i} + 5\hat{j}$, $3\hat{i} + 2\hat{j} - 3\hat{k}$, and $\hat{i} - 6\hat{j} - \hat{k}$ then the angle between $\overrightarrow{AB}$ and $\overrightarrow{CD}$ is

(1) 0 (2) $\frac{\pi}{4}$ (3) $\frac{\pi}{2}$ (4) π

33. Let $\vec{a}, \vec{b}$ and $\vec{c}$ be three non zero vectors, no two of which are collinear and the vector $\vec{a}+\vec{b}$ is collinear with $\vec{c}$, while $\vec{b}+\vec{c}$ is collinear with $\vec{a}$ then $\vec{a}+\vec{b}+\vec{c}$, is equal to

(1) $\vec{a}$ (2) $\vec{b}$ (3) $\vec{c}$ (4) none of these

34. If C is the middle point of AB and P is any point outside AB, then

(1) $\vec{PA}+\vec{PB}=\vec{PC}$ (2) $\vec{PA}+\vec{PB}=2\vec{PC}$

(3) $\vec{PA}+\vec{PB}+\vec{PC}=\vec{O}$ (4) $\vec{PA}+\vec{PB}+2\vec{PC}=\vec{O}$

35. The value of $\sqrt{3}\cot 20° - 4\cos 20°$ is

(1)1 (2) –1 (3) 0 (4) none of these

36. If $\sin^{-1}\frac{2a}{1+a^2} - \cos^{-1}\frac{1-b^2}{1+b^2} = \tan^{-1}\frac{2x}{1-x^2}$ then x is equal to

(1) a (2) b (3) $\frac{a+b}{1-ab}$ (4) $\frac{a-b}{1+ab}$

37. In a triangle ABC, R is circumradius and $8R^2 = a^2 + b^2 + c^2$. The triangle ABC is

(1) Acute angled (2) Obtuse angled (3) Right angled (4) none of these

38. The rate of increase of length of the shadow of a man 2 meters height, due to a lamp at 10 meters height, when he is moving away from it at the rate of 2m/sec is

(1) $\frac{1}{2}$ m / sec (2) $\frac{2}{5}$ m / sec (3) $\frac{1}{3}$ m / sec (4) 5m / sec

39. A person stands at a point A due south of a tower and observes that its elevation is 60°. He then walks westwards towards B, where the elevation is 45°. At a point C on AB produced, he finds it to be 30°. Then AB/BC is equal to

(1) $\frac{1}{2}$ (2) 1 (3) 2 (4) $\frac{5}{2}$

40. The distance between the parallel lines y = 2x + 4 and 6x = 3y + 5

(1) $\frac{17}{\sqrt{3}}$ (2) 1 (3) $\frac{3}{\sqrt{5}}$ (4) $\frac{17\sqrt{5}}{15}$

COMPUTER AWARENESS

41. Which of the following is NOT one of the four major data processing functions of a computer?

(1) Gathering data (2)Processing data into information.
(3) Analyzing the data or information (4) Storing the data or information

42. Simplified form of a Boolean function F(X,Y,Z) = $\sum$ (0, 2, 4, 5, 6) is

(1) $\overline{Z}X + X\overline{Y}$ (2) $\overline{Z} + X\overline{Y}$ (3) $\overline{YZ} + X\overline{Y}$ (4) None of these

43. Which gate is equivalent to (NOR) OR (XOR) ?

(1) NAND gate (2) OR gate (3) AND gate (4) XOR gate

44. Which of the following places the common data elements in order from smallest to largest?

(1) Field, Record, Character, Database
(2) Character, Record Field, Database
(3) Character, Field, Record, Database
(4) Bit, Byte, Character, Record, Field, Database

45. Which one of the following is a stored program machine?

(1) Micro-processor (2) Calculator
(3) Analog-computer (4) Micro-computer :

46. A main memory has an access time of 45ns. A 5ns time gap is necessary for the completion of one access to beginning of next access. The bandwidth of the memory
(1) 25 MHz (2) 20 MHz (3) 40 MHz (4) 50 MHz

47. A CPU has a 12 bit address for memory addressing. If the memory has a total capacity of 16 KB, what is the word length of the memory ?
(1) 2 bytes (2) 4 bytes (3) 8 bytes (4) 16 bytes

48. For a microprocessor using I/O mapped I/O
(1) Memory and I/O addresses are distinct
(2) Not all data transfer instructions are available for I/O
(3) Both (1) and (2)
(4) None of above

49. Execution of an operating system is initiated by a program called the
(1) Window manager (2) Scheduler
(3) Bootstrap (4) None of the above

50. If $(12x)_3 = (123)_x$ then the value of x is
(1) 1 (2) 2
(3) Both (1) and (2) (4) None of above

ENGLISH

Directions: Questions 51 and 52.

Read the passage and select the most suitable answer to questions from the given choices.

Observe the dilemma of the fungus: It is a plant, but it possesses no chlorophyll. While all other plants put the sun's energy to work for them combining the nutrients of ground and air into the body structure, the chlorophylless must look elsewhere for energy supply. It finds it in those other plants which, having received their energy free from the sun, relinquish it at some point in their cycle either to animals (like us humans) or to the fungi.

In this search for energy the fungus has become the earth's major source of rot and decay. Whereever you see mold forming on a piece of bread, or a pile of leaves turning to compost, or a blown-down tree becoming pulp on the ground, you are watching a fungus eating. Without fungus action the earth would be piled high with the dead plant life of past centuries. In fact, certain plants which contain resins that are toxic to fungi will last indefinitely; specimens of the redwood, for instance, can still be found resting on the forest floor centuries after having been blown down.

51. The passage states all the following about fungi EXCEPT;
(1) They are responsible for the decomposition of much plant life
(2) They cannot live completely apart from other plants
(3) They are vastly different from other plants
(4) They are poisonous to resin - producing plants

52. The passage is primarily concerned with
(1) Warning people of the dangers of fungi
(2) Rot and decay of plants in nature
(3) Describing the action of fungi
(4) Relating how most plants use solar energy

53. Fill in the blank:
The sugar dissolved in water_____; finally all that remained was an almost_____ residue on the bottom of the glass.
(1) Quickly. ……..lumpy (2) Immediately……. fragrant
(3) Gradually……..imperceptible (4) Subsequently ……..glassy

54. Find the synonym that is most nearly similar in meaning to the word CLANDESTINE
(1) abortive (2) secret (3) tangible (4) doomed

55. Choose the word that is opposite in meaning to the word COMPOSE
(1) disturb (2) reveal (3) strengthen (4) isolate

Directions: Questions 56 and 57.

In each of the following sentences, a part of the sentence is underlined. Beneath each sentence, four different ways of phrasing the underlined part are indicated. Choose the best alternative from among the four.

56. It was us who had left before he arrived.
(1) We who had left before time he had arrived
(2) Us who has went before he arrived
(3) Us who had went before he had arrived
(4) We who had left before he arrived

57. Many of these environmentalists proclaim to save nothing less than the planet itself.
(1) to save nothing lesser than
(2) that they are saving nothing less than
(3) that they save nothing less than
(4) to have saved nothing less than '

Direction: Questions 58 and 59.

Select the pair of words which are related in the some way as the capitalized words are related to each then ?

58. MOTH : CLOTHING
(1) egg : larva (2) hole : repair
(3) suit : dress (4) stigma : reputation

59. ASCETIC : LUXURY ::
(1) philosopher : knowledge (2) general : victory
(3) misogynist : women (4) teacher : blackboard

60. There are four statements, of which one is incorrect. Choose the incorrect one
(1) A hater of the institution of marriage is misogamist.
(2) The violation of sacred things is sacrilege,
(3) To prevaricate is to make evasive or misleading statements.
(4) A torpid person is generally hyperactive.

61. Following sentence has one or two banks, each blank indicating that something has been omitted. Beneath the sentence are given four words or sets of words. Choose the word or set of words for each blank that best fits meaning of the sentence as a whole.

His presentation was so lengthy and_____ that it was difficult for us to find out the real _____in it;

(1) verbose, content (2) tedious, skill
(3) laborious, coverage (4) simple, meaning

62. Choose the word opposite in meaning to the given word : FLAMBOYANT
(1) Quiet (2) Excited (3) Disturbed (4) Distressed

63. Out of four alternatives, choose the one which best expresses the meaning of the given word: CLEMENCY

(1) Empathy (2) Kindness (3) Sympathy (4) Forgiveness

64. The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph,

P. Surrendered, or captured, combatants cannot be incarcerated in razor wire cages; this 'war' has dubious legality.

Q. How can then one characterize a conflict to be waged against a phenomenon as war?

R. The phrase 'war against terror' which has passed into the common lexicon, is a huge misnomer.

S. Besides, war has a juridical meaning in international law, which has confided the laws of war, imbuing them with a humanitarian content

T. Terror is a phenomenon, not an entity – either State or non – State.

(1) TRSQP (2) QTRSP (3) TQRPS (4) RTQSP

65. In the question, the word "BUNDLE" is used in four different ways, numbered 1 to 4. Choose the option in which the usage of the: word is INAPPROPRIATE. .

(1) The newborn baby was a bundle of joy for the family,

(2) Mobile operators are offering a bundle of additional benefits.

(3) He made a bundle in the share market.

(4) It was sheer luck that brought a bundle of boy-scouts-to where I was lying wounded.

ANALYTICAL ABILITY AND LOGICAL REASONING

66. Steel Express runs between Tatanagar and Howrah and has five stoppages in between. Find the number of different kinds of one-way second class ticket that Indian Railways will have to print to service all types of passengers who might travel by Steel Express? .

(1) 49 (2) 42 (3) 21 (4)7

67. There are 6561 balls out of them 1 is heavy. Find the minimum number of times the balls have to be weighed for finding out the heavy ball.

(1) 12 (2) 9 (3) 8 (4) 15

68. Find the word that names a necessary part of the underlined word.

Gala

(1) Celebration (2) Tuxedo (3) Appetizer (4) Orator

69. How many numbers between 1 to 1000 (both excluded) are both squares and cubes?

(1) none (2) l (3) 2 (4) 3

70 Rita, an accomplished pastry chef who is well known for her artistic and exquisite wedding cakes, opened a bakery one year ago and is surprised that business has been so slow. A consultant she hired to conduct market research has reported that the local population doesn't think of her shop as one they would visit on a daily basis but rather a place they'd visit if they were celebrating a special occasion. Which of the following strategies should Rita employ to increase her daily business?

(1) Making coupons available that entitle the coupon holder to receive a25% discount on wedding, anniversary, or birthday cakes.

(2) Exhibiting at the next Bridal Expo and having pieces of one of her wedding cake? Available for tasting.

(3) Placing a series of ads in the local newspaper that advertise the wide array of breads, muffins, and cookies offered at her shop.

(4) Moving me bakery to the other side of town.

71. There are 6 tasks and 6 persons. Task 1 cannot be assigned either to person 1 or to person 2, task 2 must be assigned to either person 3 or person 4, Every person is to be assigned one task. In how many ways can the assignment be done?

(1) 144 (2) 180 (3) 192 (4) 360

72. What are X and Y?

S	8	W	16	A	5	C	X	A	4
20	J	25	T	4	K	7	L	Y	N

(1) X is 6, Y is 7 (2) X is 5, Y is 15 (3) X is 4, Y is 6 (4) X is 16, Y is 23

73. Which should be the next two numbers in the series 28 25 5 21 18 5 14
(1) 11, 5 (2) 10, 7 (3) 11, 8 (4) 5, 10

74. A, B, C, D and E are five integers. When written in the ascending order of values* the difference between any two adjacent integers is 4. D is the greatest arid A is the least B is greater than E but less than C, The sum of the integers is equal to E, What is the product of integers ?
(1) – 945 (2) 945 (3) 315 (4) 0

75. Persons X, Y, Z and Q live in red, green, yellow or blue colored houses placed in a sequence on a street. Z lives in a yellow house. The green house is adjacent to the blue house. X does not live adjacent to Z, The yellow house is in between the green and red house. The color of the house X lives in is
(1) Green (2) Blue (3) Red (4) Cannot be determined

Directions: Questions 76 to 78.

220 guests are to be transported from A to B. Any number of buses of the following passenger carrying capacities are available.

Type P: 60, Type Q : 50, Type R : 40, Type S : 30
The cost per trip for a bus of each of these types is given as follows:
Type P: Rs 200, Type Q: Rs 140, Type Rt Rs :125, Type S: Rs 95
No buses can be overloaded and, prefer no vacant seats in each trips.

76. What is the minimum possible cost for the trip?
(1) Rs 690 (2) Rs 615 (3) Rs 640 (4)Rs 695

77. How many buses are needed for the above (Minimum cost trip)
(1) 5 (2) 4 (3) 7 (4) 6

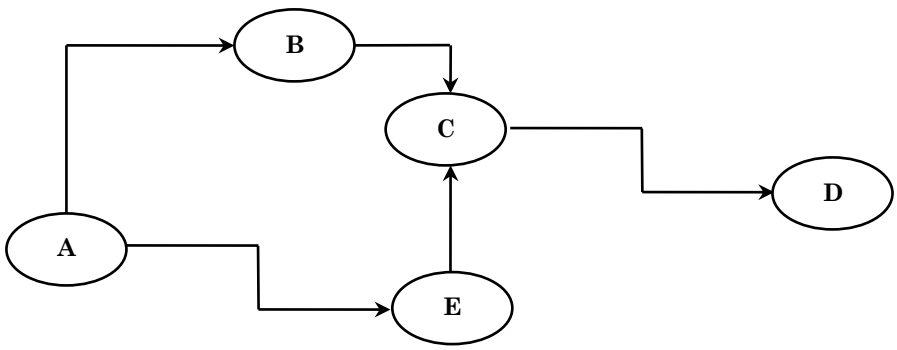
78. The second cheapest trip arrangement would involve
(1) Rs. 630 (2) Rs. 680 (3) Rs. 710 (4) Rs. 655

79. A child can do a piece of work 15 hours slower than woman. The child works, for 18 hours on the job and then the women takes charge for 6 hours. In this manner, 3/5 of the work can be completed. To complete the job now, how much time the women take?
(1) 24 hours (2) 18 hours (3) 12 hours (4) 30 hours

80. A culprit was spotted by the police from a distance of 250 m. When the police men started . Running towards the culprit at a speed of 10 km/h, the culprit also fled. If his speed was 8 km/h, find out how far the culprit had run before he was overpowered.
(1) 2 km (2) 1 km (3) 1.5 km (4) 0.8 km

Directions: Questions 81 to 83.

The following sketch shows the pipeline carrying material from one location to another. The capacity of each pipeline is 2000. The demand for the material at B is 800, at C is 800, at D is 1400 and at E is 400. The arrow indicates the direction of material flow through pipeline. The flow through pipelines meets exactly the demand at each location, flow from B to C is 600.



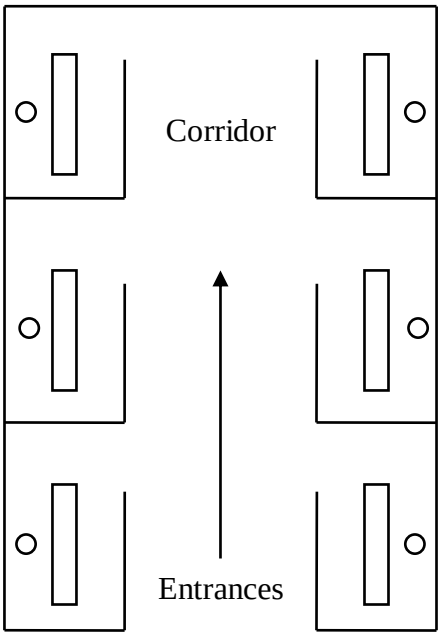
`81. The quantity moved from A to E is
(1) 400 (2)1600 (3)1400 (4)2000

82. The free capacity available in the A-B pipeline is
(1) 0 (2) 200 (3) 400 (4) 600

83. What is the free capacity available in the E-C pipelines ?
(1) 600 (2)400 (3)200 (4) 0

Directions: Questions 84 to 87.

The plan given below, shows office for six officers namely A, B, C, D, E and F. Both B and C occupy offices to the right of the corridor (as one enters the office block) and A occupies the office to the left of the corridor. E and F occupy offices on opposite sides of the corridor but their offices do not face each other. The offices of C and D face each other. E does not have a corner office. F's office is further down the corridor than A's, but on the same side.



84. If E sits in his office and faces the corridor, whose office is to his left?
(1) A (2)B (3) C (4)D

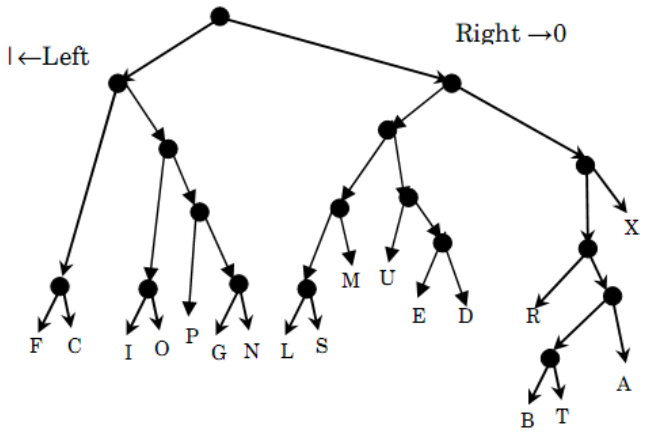
85 Whose office faces A's office?
(1) B (2) C (3) D (4) E

86. Who is/are F's neighbour(s)?
(1) A only (2) A and D (3) C only (4) B and C

87. D was heard telling someone to go further down die corridor to the last office on fee right. To whose room was he trying to direct that person?
(1) A (2) B (3) C (4) F

Direction : Questions 88 to 91.

Given below is a binary tree, where every letter has been coded with a string of digits 0 and 1. At any node going left is denoted by 1; at any node going right is denoted by 0. Thus N is denoted as: 10000. All the codes are in Binary notation.



88. What will be the code for S:
(1)01011 (2)01110 (3) 01111 (4) None of these

89. Which letter is represented by 11001?
(1)G (2) L (3) U (4) None of these

90. What is the value of C + R in binary notation?
(1) 11101 (2) 1101 (3) 1001 (4) none of these

91. If all the codes are converted into decimal notation, then how many letters have their values greater than L?
(1) 1 (2) 2 (3) 3 (4) None of these

Directions: Questions 92 to 94.: Read the following information carefully and answer the questions that follow

(1) There is group of five persons - P, Q, R, S and T.
(2) One of them is a horticulturist, one is a physicist, one is a journalist, one is an industrialist and one is an advocate.
(3) Three of them - P, R and advocate prefer tea to coffee and two of them –Q and the journalist prefer coffee to tea.
(4) The industrialist, S and P are friends to one another but two of these prefer coffee to tea.
(5) The horticulturist is R's brother.

92. Who is a horticulturist?
(1) P (2) Q (C) R (4) S

93. Who is an industrialist?
(1) T (2) R (3) Q (4) S

94. Which of the following groups include a person who likes tea but is not an advocate?
(1) PRT (2) ST (3) QRT (4) None of these

95. If REASON is coded as 5 and-BELIEVED as 7, what is the code number for GOVERNMENT?
(1) 6 (2) 8 (3) 9 (4) 10

Directions: Questions 96 and 97: In the following questions, select one alternative in which the third statement is implied by the first two statements.

96. (1) All elephants are wild. All lions are wild. So all lions are elephants.
(2) All mangoes are red. Some apples are mangoes. So all apples are red.
(3) All roads are boxes. All foxes are roads, So all boxes are foxes.
(4) All XYZ can run. All ABC are XYZ. So all ABC can run.

97. (1) All dogs are mad. All sick persons are mad. So all sick persons are dogs.
(2) All oranges are black. All figs are oranges. So all figs are black.
(3) All windows are dogs. Some doors are dogs. So all windows are doors.
(4 No man can fly. No kite can fly. So all men are kites.

Directions; Questions 98 to 100.

In each of the following three questions, four numbers are given. Out of these, three are alike in a certain way but the rest one is different. Choose the one which is different from the rest three.

98. (1) 2384 (2)3629 (3)3756 (4)4298

99. (1) 325 (2)236 (3)178 (4) 639

100. (1) 5698 (2)4321 (3)7963 (4) 4232

101. If finger is called toe, toe is called foot, foot is called thumb, thumb is called ankle, ankle is called palm and palm is called knee, which one finger has a different name?
(1) Thumb (2) Ankle (3) Knee (4) Palm

102. In a certain code language, '617' means 'sweet' and 'hot' '735' means 'coffee is sweet' and '263' means 'tea is hot'. Which of the following would mean 'coffee is hot'?
(1) 731 (2) 536 (3) 367 (4) 753

103. If the direction North-East becomes South-East how will other directions change?
(1) West to North (2) South to South-West
(3) North-West to East (4) East to South-West

Directions: Questions 104 and 105.

In each of the following questions, a number series is given with one term missing. Choose the Correct alternative that will continue the same pattern and fill in the blank spaces.

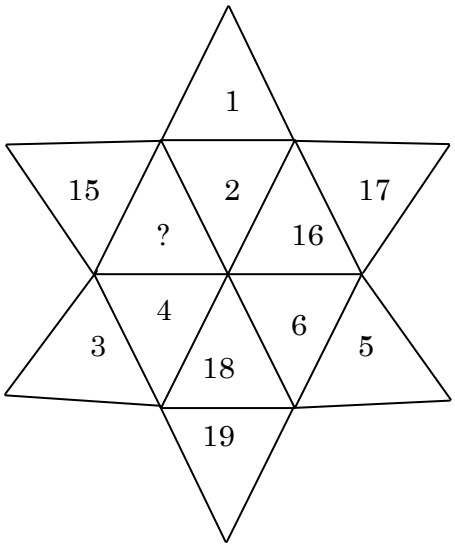
104. 3, 8, 13, 24, 41, (....)
(1)70 (2) 75 (3) 80 (4) 85

105. 4, 23, 60, 111, (....)
(1) 212 (2)221 (3) 241 (4) 242

Directions: Questions 106 and 107.

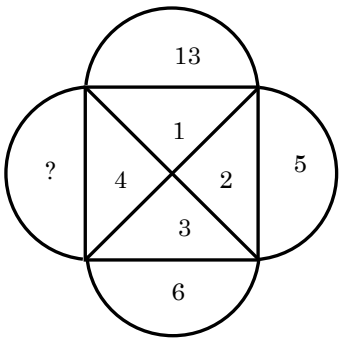
Find the missing number in each of the following questions;

106.



(1) 13 (2)14 (3)20 (4)21

107.



(1) 10 (2) 11 (3) 12 (4) 13

108. If $\frac{3}{4}$ of a number is equal to $\frac{2}{3}$ of another number, what is the ratio between these two numbers
(1) 3 : 4 (2) 5 : 6 (3) 8 : 9 (4) 9 : 10

109. Q is shorter than P, but taller than R, R is shorter than P but taller than A. If they stand in. ascending order of their height the sequence is
(1) ARQP (2) AQPR (3) QPAR (4) RPQA

110. A man starts walking towards south. After walking 5 km he again turns left at right angles in what direction is he finally walking in?
(1) North (2) South (3) East (4) West

111. Find the missing number in the following series: 4, 6, 3, 5, 2 ?
(1) 8 (2) 4 (3) 3 (4) 6

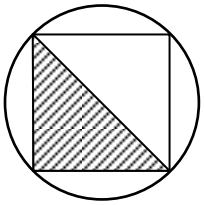
112. If UNDERSTAND is coded as 1234567823 how will START be coded?
(1) 56781 (2) 83243 (3) 73652 (4)67857

113. A cyclist goes 30 km to North and then turning of East he goes 40 km, Again he turns to his right and goes 20 km. After this he turns to his right and goes 40 km. How far is he from his straight point?
(1) 0 km (2)10 km (3) 25 km (4) 40km

114. A one rupee coin is placed on a plain paper. How many coins of the same size can be placed round it so that each one touches the central and adjacent coins?
(1) 9 (2) 8 (3) 4 (4) 6

115. A, B, C, D and E distribute some cards among themselves in a manner that A gets one less than B; C gets 5 more than D; E gets 3 more than B while D gets as many as B. Who gets the least cards?
(1) A (2) C (3) D (4) E

116. If r is the radius of the circle given below, what is the area of the shaded region?



(1) $4r^2$ (2) r^2 (3) $\frac{4}{3}r^2$ (4) 4r

117. An elevator has a capacity of 12 adults or 20 children. How many adults can board the elevator with 15 children?
(1) 4 (2) 5 (3) 3 (4) 6

118. Which two months in a year have the same calendar?
(1) June – October (2) April – November
(3) April – July (4) October – December

119. Flow many numbers from 1 to 100 are such each of which is divisible by 8 and whose at least one digit is 8?
(1) Four (2) Zero (3) Eight (4) Six

120. In the following square, numbers have been filled according to some rule. One space has been left blank, Find the correct number out of those given below for the blank, space.

56	65	78
12		30
44	14	48

(1) 14 (2) 44 (3) 62 (4) 51

Answer Key

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

Note: In question 2, all the statements are correct.

In Question 30, p should be $-\frac{1}{3}$ and 1.