MATHEMATICS

1. If $A=\begin{bmatrix}1 & 0 & 0\\ 0 & 1 & 1\\ 0 & -2 & 4\end{bmatrix}$ and $6A^{-1} = A^2 + cA + dI$, where A^{-1} is A- inverse, I is the identify matrix, then (c, d) is

(1) (–6, 11) (2) (6, –11) (3) (11, –6) (4) (6, 11)

2. Let $\vec{a}=\vec{j}-\vec{k}$ and $\vec{c}=\vec{i}-\vec{j}-\vec{k}$. Then the vector $\vec{b}$ satisfying $(\vec{a}\times\vec{b})+\vec{c}=0$ and $\vec{a}.\vec{b}=3$ is

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

3. Find the number of elements in the union of 4 sets A, B, C and D having 150, 180, 210 and 240 elements respectively, given that each pair of sets has 15 elements in common. Each triple of sets has 3 elements in common and $A\cap B\cap C\cap D=\phi$

(1) 616 (2) 512 (3) 111 (4) 702

4. If the straight line $ax + by + c = 0$ always passes through (1, –2), then a, b, c are in

(1) A.P. (2) H.P. (3) G.P. (4) None of these

5. A six faced die is a biased one. It is thrice more likely to show an odd number than to show an even number. It is thrown twice. The probability that the sum of the numbers in the two throws is even is

(1) $4/8$ (2) $5/8$ (3) $6/8$ (4) $7/8$

6. If $I_n=\int_0^{\pi/4}\tan^n\theta d\theta$, then I_8+I_6 equals

(1) $1/4$ (2) $1/5$ (3) $1/6$ (4) $1/7$

7. Let Δ ABC be a triangle whose area is $10\sqrt{3}$ units with side lengths $|AB|=8$ units and $|AC|=5$ units. Find possible values of the angle A.

(1) 60° or 120° (2) 45° or 135° (3) 30° only (4) 90° only

8. Person A can hit a target 4 times in 5 attempts. Person B – 3 times in four attempts. Person C – 2 times in 3 attempts. They fire a volley. The probability that the target is hit at least two times. Is

(1) $3/4$ (2) $1/2$ (3) $5/6$ (4) 1

9. The value of the integral $\int_0^{\pi/2}\frac{\sqrt{\sin x}\,dx}{\sqrt{\sin x}+\sqrt{\cos x}}$ is

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

10. If ω is a cube root of unity, then find the value of determinant $\begin{vmatrix}1+\omega & \omega^2 & -\omega\\ 1+\omega^2 & \omega & -\omega^2\\ \omega^2+\omega & \omega & -\omega^2\end{vmatrix}$

(1) 3 ω (2) –3ω (3) 3 ω² (4) –3 ω²

11. If the vector $2\vec{i}-3\vec{j}, \vec{i}+\vec{j}-\vec{k}$ and $3\vec{i}-\vec{k}$ form three conterminous edges of a parallelepiped, then the volume of parallelepiped is

(1) 8 (2) 10 (3) 4 (4) 14

12. In a G.P. consisting of positive terms, each term equals the sum of the next two terms. Then the common ratio of the G.P. is

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

13. If $f(x)=\tan^{-1}\left[\frac{\sin x}{1+\cos x}\right]$, then what is the first derivative of $f(x)$?

(1) $1/2$ (2) $-1/2$ (3) 2 (4) –2

14. The solution of $\sin x + 1 = \cos x$ such that $0 \le x \le 2\pi$ is

(1) $0, \pi$ (2) $0, \pi/2$ (3) $\pi/2, 3\pi/2$ (4) $0, 3\pi/2$

15. Let T_n denote the number of triangles which can be formed by using the vertices of a regular polygon of n sides. If $T_{n+1} - T_n = 21$ then n equals.

(1) 5 (2) 7 (3) 6 (4) 4

16. If $\overline{X}_1$ and $\overline{X}_2$ are the means of two distributions such that $\overline{X}_1 < \overline{X}_2$ and $\overline{X}$ is the mean of the combined distribution, then

(1) $\overline{X} < \overline{X}_1$ (2) $X > \overline{X}_2$ (3) $\overline{X} = \frac{\overline{X}_1 + \overline{X}_2}{2}$ (4) $\overline{X}_1 < \overline{X} < \overline{X}_2$

17. The area enclosed within the curve $|X| + |Y| = 1$ (in square units) is

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

18. Let $f(x)$ be a polynomial function of second degree and $f(1) = f(-1)$. If a, b, c are in A.P. then $f'(a)$, $f'(b)$, $f'(c)$ are in.

(1) G.P. (2) H.P. (3) A.G.P. (4) A.P.

19. Find the point at which, the tangent to the curve $y = \sqrt{4x-3} - 1$ has its slope $2/3$

(1) (3, 3) (2) (3, 2) (3) (2, 3) (4) (2, 2)

20. Atal Speaks truth in 70% and George speaks the truth in 60% cases. In what percentage of cases they are likely to contradict each other in stating the same fact?

(1) 13/50 (2) 11/50 (3) 23/50 (4) 33/50

21. A man observes the angle of elevation of the top of mountain to be 30°. He walks 1000 feet nearer and finds the angle of elevation to be 45°. What is the distance of the first point of observation from the foot of the mountain?

(1) $500\sqrt{3}\left(\sqrt{3}+1\right)ft$ (2) $500\left(\sqrt{3}+1\right)ft$ (3) $500\left(\sqrt{3}-1\right)ft$ (4) $500\sqrt{3}\left(\sqrt{3}-1\right)ft$

22. The sum of n terms of an arithmetic series is 216. The value of the first term is n and the value of the n^{th} term is $2n$. The common difference, d is.

(1) 1 (2) $2/3$ (3) $3/2$ (4) $12/11$

23. Force $3\vec{i}+2\vec{j}+5k$ and $2\vec{i}+\vec{j}-3\vec{k}$ are acting on a particle and displace it from the point $2\vec{i}-\vec{j}-3\vec{k}$ to the point $4\vec{i}-3\vec{j}+7\vec{k}$, then the work done by the force is.

(1) 18 units (2) 30 units (3) 24 units (4) 36 units

24. The value of $9^{\frac{1}{3}}\ 9^{\frac{1}{9}}\ 9^{\frac{1}{27}}.....\infty$ is.
(1) 3 (2) 6 (3) 9 (4) None of these

25. The minimum value of the function $y = 2x^3 + 36x - 20$ is.
(1) –120 (2) –126 (3) –128 (4) None of these

26. In how many different ways can the letters of the word "CORPORATION" be arranged so that all the vowels is always come together?
(1) 810 (2) 1440 (3) 2880 (4) 50400

27. If $\log_x y = 100$ and $\log_2 x = 10$, then the value of y is.
(1) 2^{10} (2) 2^{100} (3) 2^{1000} (4) 2^{10000}

28. The equations of the line parallel to the line $2x - 3y = 7$ and passing through the middle point of the line segment joining the points (1, 3) and (1, –7) is.
(1) $2x - 3y - 4 = 0$ (2) $2x - 3y + 4 = 0$ (3) $2x - 3y - 8 = 0$ (4) $2x - 3y + 8 = 0$

29. In a ΔABC, $(c + a + b)(a + b - c) = ab$. The measure of the angle C is.
(1) $\pi/3$ (2) $\pi/6$ (3) $2\pi/3$ (4) None of these

30. The number if non –negative integers less than 1000 that contain the digit 1 are.
(1) 9^2 (2) 9^3 (3) $10^2 - 9^2$ (4) $10^3 - 9^3$

31. The lines $3x - 4y + 4 = 0$ and $6x - 8y - 7 = 0$ are tangent to the same circle. The radius of the this circle is.
(1) 3/2 (3) 3/4 (3) 4/5 (4) 7/10

32. The area of the parallelogram whose diagonals are $\bar{a} = 3\vec{i} + \vec{j} - 2\vec{k}$ and $b = \vec{i} - 3\vec{j} + 4\vec{k}$ is.
(1) $10\sqrt{3}$ (2) $5\sqrt{3}$ (3) $10\sqrt{2}$ (4) $5\sqrt{2}$

33. If $\sin x + a \cos x = b$, then what is the expression for $|a \sin x - \cos x|$ in terms of a and b?
(1) $\sqrt{a^2 - b^2 - 1}$ (2) $\sqrt{a^2 + b^2 - 1}$ (3) $\sqrt{a^2 + b^2 + 1}$ (4) $\sqrt{a^2 - b^2 + 1}$

34. If A and B are two events such that $P(A \cup B) = 5/6$ and $P(\overline{B}) = 1/2$, then the events A and B are
(1) Dependent (2) Independent (3) Mutually exclusive (4) None of these

35. If there vectors $2\vec{i} - \vec{j} + \vec{k}, \vec{i} + 2\vec{j} - 3\vec{k}$ and $3\vec{i} + \lambda\vec{j} + 5\vec{k}$ are coplanar, then λ is.
(1) –1 (2) –2 (3) –3 (4) –4

36. The equation of the base of an equilateral triangle is $x + y = 2$ and the vertex is (2, –1). The length of the side of the triangle is.
(1) $\sqrt{\frac{3}{2}}$ (2) $\sqrt{2}$ (3) $\sqrt{\frac{2}{3}}$ (4) $\sqrt{\frac{20}{3}}$

37. The total number of numbers that can be formed using the digits 3,5 and 7 only if no repetitions are allowed, is.
(1) 39 (2) 105 (3) 15 (4) 27

38. If $x = a \cos t$, $y = b \sin t$, then $\frac{d^2y}{dx^2}$ is.
(1) $-\frac{b^4}{a^2y^3}$ (2) $-\frac{b^4}{a^2x^3}$ (3) $\frac{b}{ay^4}$ (3) $\frac{a^4}{bx^3}$

39. A random variable X has the distribution law as given below:

X	1	2	3
P(X = x)	0.3	0.4	0.3

The variance of the distribution is

(1) 0.4 (2) 0.6 (3) 2 (4) None of these

40. The value of $\tan\theta + 2\tan 2\theta + 4\tan 4\theta + 8\cot 8\theta$ is.

(1) cot θ (2) tan θ (3) sin θ (4) cos θ

41. The sum of integers between 200 and 400, that are multiples of 7 is.,

(1) 8729 (2) 8700 (3) 8972 (4) 8279

42. $\lim_{x\to 0}\left[\frac{\tan x - x}{x^2 \tan x}\right]$ is equal to.

(1) 0 (2) 1 (3) $1/2$ (4) $1/3$

43. Two fair dice are tossed. What is the probability that the total score is a prime number?

(1) 1/6 (2) 5/12 (3) 1/2 (4) 7/9

44. Find the equation of the circle which passes through (–1, 1) and (2, 1), and having centre on the line $x + 2y + 3 = 0$.

(1) $2x^2 + 2y^2 - 2x + 7y - 13 = 0$ (2) $x^2 + y^2 - 2x + 7y - 13 = 0$

(3) $2x^2 + 2y^2 + 2x + 7y - 13 = 0$ (4) $x^2 + y^2 + 2x + 7y - 13 = 0$

45. Let $\vec{a}, \vec{b}, \vec{c}$ be the position vectors of three vertices *A*, *B*, *C* of a triangle respectively then the area of this triangle is given by.

(1) $\frac{1}{2}(\vec{a}\times\vec{b})\vec{c}$ (2) $\frac{1}{2}\left|\vec{a}\times\vec{b} + \vec{b}\times\vec{c} + \vec{c}\times\vec{a}\right|$ (3) $\vec{a}\times\vec{b} + \vec{b}\times\vec{c} + \vec{c}\times\vec{a}$ (4) None of these

46. The sum of the focal distances of any point on the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ with eccentricity e is given by.

(1) $2ae$ (2) $2b$ (3) $2a$ (4) $2be$

47. If $\sin x + \sin^2 x = 1$, then $\cos^2 + \cos^4 x$ is equal to.

(1) 0 (2) 1 (3) –1 (4) 2

48. An experiment succeeds twice often as it fails. The probability that in the next six trials there will be at least four successes is.

(1) 240/729 (2) 496/729 (3) 220/729 (4) 233/729

49. Sum of 20 terms of the series $-1^2 + 2^2 - 3^2 + 4^2 - \ldots$ is.

(1) 180 (2) 200 (3) 210 (4) 220

50. If $\tan\alpha = \frac{m}{m+1}$ and $\tan\beta = \frac{1}{2m+1}$ then $\alpha + \beta$ is equal to

(1) $\pi/3$ (2) $\pi/4$ (3) $\pi/6$ (4) π

51. A train takes 18 seconds to pass completely through a station 162 m long and 15 seconds through another station 120 m long, at the same speed. What is the length of the train, in meters?
(1) 70 (2) 80 (3) 90 (4) 100

52. In a row of children facing North, Shamika is third to the right of Nikhil, who is 17th from the right end of the row. Ravi is 5th to the left of Shamika and is 20th from the left end. Totally how many children are there in the row?
(1) 37 (2) 38 (3) 39 (4) None of these

53. Given that
i) Some apples are blackberries.
ii) Some doughnuts are apples.
iii) No coconut is a doughnut.
iv) All blackberries are coconuts.

Which of the following statements is false?
(1) Some blackberries are doughnuts (2) Some coconuts are apples
(3) All coconuts are not apples (4) All doughnuts are not coconuts

Questions 54 to 56 are based on the following:

- In a family of 6 persons, there are two couples.
- The lawyer is the head of the family and has two sons-Mukesh and Rakesh-both teachers.
- Mrs. Reena and her mother-in-law both are lawyers.
- Mukesh's wife is a doctor and they have a son, Ajay.

54. Which of the following is definitely a couple?
(1) Lawyer-Teacher (2) Doctor-Lawyer (3) Teacher-Teacher (4) None of these

55. What is the profession of Rakesh's wife?
(1) Teacher (2) Doctor (3) Lawyer (4) Can not be determined

56. What is/was Ajay's grandfather's occupation?
(1) Teacher (2) Lawyer (3) Doctor (4) Can not be determined

57. Find the missing element in the series
A, CD, GHI, – – – –, UVWXY
(1) LMNO (2) MNOP (3) NOPQ (4) OPQR

58. In a code language, FRIEND is coded as GTLISJ. Which of the following is coded as HWDVI in that language?
(1) HAPPY (2) GUARD (3) BEADS (4) SPEED

59. There are four brothers Alan, Bob, Carl and Dave. Dave is two years older than Bob. Bob is one year younger than Carl. Alan, who is 34, is two years younger than Carl. Who is the oldest?
(1) Alan (2) Bob (3) Carl (4) Dave

Questions 60 to 62 are based on the following:

An employee has been assigned the task of allotting offices to six of the staff members. The offices are numbered 1 - 6. The offices are arranged in a row and they are separated from each other by six foot high dividers. Hence voices, sounds and cigarette smoke flow easily from one office to another.

Miss Robert needs to use the telephone quite often throughout the day. Mr. Mike and Mr. Brown need adjacent offices as they need to consult each other often while working. Miss. Hardy, is a senior employee and has to be allotted the office number 5, having the biggest window. Mr. Donald requires silence in the offices next to his and Mr. Tim prefers to be as away as possible from Miss Robert. Mr. Mike and Mr.

Donald are all smokers. Miss Hardy finds tobacco smoke allergic and consecutively the offices next to hers to be occupied by non-smokers. Unless specifically stated all the employees maintain an atmosphere of silence during office hours.

60. The ideal candidate to occupy the office farthest from Mr. Brown would be
(1) Miss Hardy (2) Mr. Mike (3) Mr. Tim (4) Mr. Donald

61. The three employees who are smokers should be seated in the offices.
(1) 1, 2 and 4 (2) 2, 3 and 6 (3) 1, 2 and 6 (4) 1, 2 and 3

62. The ideal office for Mr. Mike would be
(1) 2 (2) 6 (3) 1 (4) 3

63. A doctor said to his compounder "I go to see the patients at their residence after every 3 hours 30 minutes. I have already gone to the patient 1 hour 20 minutes ago and next time I shall go at 1:40 P.M." At what time this information was given to the compounder by the doctor?
(1) 11.30 A.M. (2) 11.20 A.M. (3) 10.10 A.M. (4) None of these

64. Which pair of numbers comes next in the following series?
42 40 38 35 33 31 28
(1) 25 22 (2) 26 23 (3) 26 24 (4) 25 23

Questions 65 and 66 are based on the following:

i) All G's are H's
ii) All G's are J's or K's
iii) All J's and K's are G's
iv) All L's are K's
v) All N's are M's
vi) No M's are G's

65. If no P's are K's, which of the following must be true?
(1) All P's are J's (2) If any P is a G, it is a J
(3) No P is an H (4) If any P is an H, it is a G

66. Which of the following is inconsistent with one or more of the conditions?
(1) All H's are G's (2) All H's that are not G's are M's
(3) Some H's are both M's and G's (4) No M's are H's

67. Shyam is taller than Pradeep and Pradeep is as tall as Anurag. But Anand is shorter than Suresh, who is as tall as Anurag. If Pradeep is taller than Praveen, who is the tallest of all?
(1) Pradeep (2) Praveen (3) Suresh (4) Shyam

68. When Rajeev was born his father was 32 years older than his brother and his mother was 25 years older than his.sister. If Rajeev's brother is 6 years older than Rajeev and his mother is 3 years younger than his father, how old was Rajeev's sister when he was born?
(1) 15 years (2) 14 years (3) 7 years (4) 10 years

69. Dhoni starts from his office at 8 A.M. on a Sunday morning, travels 10 km towards West and then turns to his left and walks 8 km. Then he again turns to his left and walks 4 km and then stops. What is the shortest distance to his office from the point where he stopped?
(1) 18 km (2) 8km (3) 10km (4) None of these

70. A treasure chest has less than 100 gold coins. The number of coins is

i) One more than a multiple of 3

ii) Two more than a multiple of 4

iii) Three more than a multiple of 5 and

iv) Four more than a multiple of 6

How many coins are there in the chest?
(1) 58 (2) 88 (3) 98 (4) 38

71. Read the statements and then decide which of the conclusions logically follow.

Statements:

i) All mangoes are golden in colour.
ii) No golden coloured things are cheap.

Conclusions:

i) All mangoes are cheap.
ii) Golden coloured mangoes are not cheap.

(1) Only conclusion i) follows (2) Only conclusion ii) follows
(3) Either i) or ii) follows (4) neither i) nor ii) follows

Questions 72 and 73 are based on the following:

- A blacksmith has five iron articles A, B, C, D and E, each having a different weight.
- A weighs twice as much as B
- B weighs four and half times as much as C
- C weighs half as much as D
- D weighs half as much as E
- E weighs less than A but more than C

72. Which of the following article is heaviest in weight?
(1) A (2) B (3) C (4) D

73. Which of the following represents the descending order of weights of the articles?
(1) A, B, E, D, C (2) B, D, E, A, C (3) A, B, C, D, E (4) C, D, E, B, A

Questions 74 to 76 are based on the following:

There are three switches A, B and C which can be in ON/OFF position. Their settings change as per the following rules:

i) If A is the only switch as ON, change B to ON.

ii) If A and B are only switches as ON, change C to ON.

iii) If all three switches are ON, change C to OFF.

iv) For all other situations, all switches in ON are changed to OFF and all switches in OFF are changed to ON

74. If switches A and B are ON and C is OFF, their changed settings will be:
(1) AON, B OFF, C OFF (2) A ON, B ON, C ON
(3) A ON, B OFF, C ON (4) A OFF, B ON, C OFF

75. If only B is ON, the changed setting will be:
(1) AON, BON, C ON (2) A ON, B ON, C OFF
(3) A ON, B OFF, C ON (4) A OFF, B OFF, C ON

76. If only B is ON in the changed setting, which of the following could have been the original setting?
(1) AON, BON, C ON (2) A ON, B OFF, C ON
(3) A OFF, B ON, C OFF (4) A OFF, B OFF, C ON

77. If the third day of a month falls on Friday, what day will be on the fourth day after twenty first of the month?
(1) Monday (2) Tuesday (3) Saturday (4) Thursday

78. Ana is a girl and has the same number of brothers as sisters. Andrew is a boy and has twice as many sisters as brothers. Ana and Andrew are the children of Emma. How many children does Emma have?
(1) 2 (2) 3 (3) 5 (4) 7

Questions 79 to 81 are based on the following:

- Anu is taller than Cini
- Eenu is shorter than Binu
- Anu is shorter than Dany
- Eenu is taller than Anu

79. The best answer to "Who is the tallest?" is
(1) Dany (2) Binu (3) Dany or Binu (4) Both Dany and Binu

80. Who is the shortest?
(1) Cini (2) Anu or Cini
(3) Eenu (4) Insufficient data to conclude

81. Which of the following statements would help to logically order the persons according to their heights?
(1) Binu is 7 feet tall (2) Dany and Binu do not have equal height
(3) Eenu is the tallest in the group (4) Dany is the tallest in the group

82. Karan and Arjun run a 100 metres race, where Karan beats Arjun by 10 metres. To do a favour to Arjun, Karan starts 10 metres behind the starting line in a second 100 metre race. They both run at their earlier speeds. Which of the following is true in connection with the second race?

- Karan and Arjun reach the finishing line simultaneously
- Arjun beats Karan by 1 metre
- Arjun beats Karan by 11 metres
- Karan beats Arjun by 1 metre

83. In a cricket season, India defeated Australia twice. West Indies defeated India twice. Australia defeated West Indies twice. India defeated New Zealand twice and West Indies defeated New Zealand twice. Which country has lost most number of times?
(1) India (2) Australia (3) New Zealand (4) West Indies

84. Pointing to a woman, Nirmal said "She is the daughter of my wife's grandfather's only child". How is the woman related to Nirmal?
(1) Wife (2) Sister-in-law (3) Sister (4) None of these

Questions 85 to 87 are based on the following:

There are five persons A, B, C, D, E standing on six steps numbered 1, 2, 3, 4, 5 and 6 from the bottom. At most one person is standing on each step. The step number, on which A is standing, is two less than that of C. Step number on which B is standing is one more than that of D.

85. If A is standing on Step 1, which of the following is true?

(1) B is standing on step 2 (2) C is standing on step 4
(3) E is standing on step 3 (4) D is standing one step higher than C

86. If D is standing on step 1, on which step A could be standing?
(1) 2 or 4 only (2) 3 or 5 only (3) 3 or 4 only (4) 4 or 5 only

87. If there are two steps in between the steps on which A and D are standing, A must be standing on which of the following steps?
(1) 3 (2) 4 (3) 5 (4) 6

88. From the information given below: A * B means A and B are of the same age, A – B means B is younger than A. A + B means A is younger than B. What does Sachin * Mohan – Ravi mean?
(1) Sachin is youngest (2) Ravi is youngest (3) Sachin is oldest (4) Mohan is oldest

89. Jimmy saw the time while going to the tennis court. He saw the hour hand is 20° away from 4. After he returned from tennis court, he noticed that the hour hand is 20° away from 4. If he took ten minutes to go to tennis court and he walked at the same speed while going to the tennis court and while returning, how much time did he spent at the tennis court?
(1) 60 minutes (2) 80 minutes (3) 70 minutes (4) 50 minutes

90. There are 8 balls looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weighings required to identify the heavier ball is:
(1) 1 (2) 2 (3) 3 (4) 4

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91. Out of the alternatives, choose the appropriate phrase to make the sentence meaningful. If you had joint accounts with who died, then you will be responsible for the bills.
(1) Everybody (2) anyone (3) everyone (4) someone

92. Choose the analogy that is closest in meaning to the pair - Diamond: Necklace
(1) Cars: Roads (2) Flowers : Bouquet (3) Gold: Bangle (4) Books : Shop

93. Choose the suitable proposition for the blank to make a meaningful sentence.

Suresh is angry _____ his servant.
(1) about . (2) on (3) by (4) with

94. Choose the correct alternative for the sentence below:
The earth is always revolving round the sun
(1) The earth revolves round the sun (2) The earth is revolving round the sun
(3) The earth revolving round the sun (4) None of these

95. Choose the word that best expresses the meaning of the given idiom: "A close shave"
(1) A clean shave (2) A narrow escape (3) A guarded secret (4) A sudden fall

96. Pick the part of the sentence that has an error: My elder brother is a MA whereas I am only a BA
(1) My elder brother (2) is a MA (3) whereas I am (4) only a BA

97. Choose the suitable phrasal verb for the blank in the sentence below
I _____ my hopes when untimely rain threatened my crops.
(1) gave in (2) gave out (3) gave up (4) gave off

98. Out of the given alternatives, choose the word that is opposite in meaning to the word AFFLUENT
(1) Reluctant (2) Poor (3) Clear (4) Enthusiastic

99. Fill in the blank with appropriate form of noun:
Don't blame yourself, it's not your _____
1) misunderstanding (2) error (3) Slip (4) fault

100. Fill in the blank:
The instructor, along with the class, _____ angry about the room change
(1) are (2) have (3) has (4) is

COMPUTERS

101. Choose the suitable word for the blank to make it a meaningful statement.
What you say is _____ my comprehension.
(1) Before (2) beside (3) behind (4) beyond

102. Fill in the blank with a suitable preposition:

If you want to avoid traffic, you need to leave _____ 7.30 A.M.
(1) until (2) by (3) during (4) at

103. Choose the word that best expresses the meaning of the given idiom:
"ta smell a rat"
(1) To suspect something bad (2) To misunderstand
(3) To detect bad smell (4) To forsake

104. Out of the given alternatives, choose the word that best expresses the meaning of the word ABRIDGE.
(1) Judge • (2) Release G) Shorten (4) Dissolve

105. 'A dog's breakfast means
(1) Breakfast cooked for a dog (2). Breakfast cooked by a dog
(3) Something that has been done very badly (4). None of these

106. Change the speech: She says, "I like going to the seaside".
(1)'She says she likes going to the seaside. (2) She says I like going to the seaside
(3) She says that she liked going to the seaside (4) She says she like going to the seaside

107. Arrange the following to form a correct sentence
P: will normally be granted
Q: candidates should note R: that no request for S: change of centre
(1) SRQP (2) PROS (3) QSPR (4). QRSP

108. Rewrite the sentence after correcting the error:
She was one of the -average student of the class.
(1) She was one of the average students of the class
(2) She is one of the average student of the class
(3) She was one among the average student of the class
(4) She is an average students of the class

109. Choose appropriate words to form a grammatically correct sentence:
The decoration of the new house, including-the furniture and curtains _____
(1) is more pleasing (2) are more pleasing (3) is most pleasing (4) are pleasing

110. Fill in the blank:
The President of the United States, accompanied by his advisors, _____ enroute to Europe.
(1) were (2) are (3) was (4) both (1) and (3)

111. All digital circuits can be realized by using only
(1) Exclusive OR gates (2) Half adders (3) Multiplexers (4) OR gate

112. The Boolean function $a + (\bar{a}.b)$ is equivalent to
(1) $a.b$ (2) $a + b$ (3) $a.\bar{b}$ (4) $\bar{a} + b$

113. Which of the following circuit is used as a memory device in computers?
(1) Flip-Flop (2) Rectifier (3) Comparator (4) All of these

114. Convert the Hexadecimal number 4DF to its octal equivalent
(1) 2333 (2) 2337 (3) 2773 (4) 2373

115. A tautology is a Boolean formula that is always true. Which of the following is a tautology?
(1) x (2) $(x+\bar{x})y$ (3) $x+\bar{y}+\bar{x}$ (4) $(xy)+\bar{x}$

116. Acronym of EEPROM is
(1) Extended Erasable Programmable Memory
(2) Electrically Erasable Read Only Memory
(3) Electrically Erasable Programmable Read Only Memory
(4) Extended Erasable Page-Oriented Memory

117. For reproducing sound, a CD audio player uses a
(1) Quartz crystal (2) Titanium needle (3) Barium ceramic (4) Laser beam

118. When we open an internet site, we see www. What does www stand for?
(1) World Wide Word (2) World Wide Web (3) World Wide Webinar (4) Word Widing Works

119. The answer of the operation $(10111)_2 \times (1110)_2$ in hex equivalent is
(1) 150 (2) 14C (3) 142 (4) 13E

120. The minimum number of bits to represent a character from ASCII code set is
(1) 2 (2) 8 (3) 5 (4) 7

ANSWER KEY

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