18048 **B**

120 MINUTES

1. The first computer virus is --------
   A) Sasser B) Creeper C) Blaster D) Trojan

2. VIRUS stands for:
   A) Very Intelligent Result Until Source
   B) Vital Information Resource Under Seize
   C) Viral Important Record User Searched
   D) Very Interchanged Resource Under Search

3. Firewalls are used to protect against --------
   A) virus attacks B) fire attacks
   C) unauthorised access D) data driven attacks

4. Intellectual Property Rights (IPR) protect the use of information and ideas that are of:
   A) Ethical value B) Moral value
   C) Social value D) Commercial value

5. What is plagiarism?
   A) Describing a work
   B) Using someone's ideas or writing them as your own
   C) A bibliography
   D) Citing someone's work

6. -------- is a prototype portal site for biological information, initiated by Japan Science and Technology Corporation.
   A) Bio-Resource Network
   B) Botanical Research Network
   C) Bio-inspired Research Internetwork
   D) Biological Reference Network

7. ------- is a joint initiative of the IITs and IISC to offer online courses and certification in various topics.
   A) National Programme on Technology Enhanced Learning
   B) National Coral Reef Research Institute
   C) National Research Foundation
   D) National Knowledge Network

8. The Internet was originally a project of which agency?
   A) ARPA B) NSF C) NSA D) None of these

9. Which one of the following is not a search engine?
   A) Bing B) Google C) Yahoo D) Windows

10. Verification of a login name and password is known as:
    A) configuration B) accessibility
    C) authentication D) logging in

11. Full form of HTML is:
A) Hyper Text Markup Language
B) Hyper Text Manipulation Language
C) Hyper Text Managing Links
D) Hyper Text Manipulating Links

12. The basic architecture of computer was developed by:
A) John Von Neumann B) Charles Babbage
C) Blaise Pascal D) Garden Moore

13. In how many generations a computer can be classified?
A) 3 B) 4 C) 5 D) 2

14. Arithmetic logic unit:
I. perform arithmetic operations II. store data
III. perform comparison IV. communicate with input devices
From above the correct one is:
A) I only B) II only C) I and II only D) I and III only

15. Which of the following has highest speed?
A) CPU B) Main memory
C) Input/output devices D) All have same speed

16. A sequence of instructions given to a computer to perform a particular task is called:
A) ROM B) RAM C) Program D) Operating system

17. SDRAM stands for:
A) Synchronous dynamic random access memory
B) Standard dynamic random access memory
C) Synchronous digital random access memory
D) Synchronous dynamic random approach memory

18. Hard disk is used as:
A) Primary memory B) Cache memory
C) Secondary memory D) All of the above

19. A computer port is used to:
A) Communicate with hard disks
B) Download files
C) Communicate with other computer peripherals
D) None of the above

20. Physical distances and the lack of resources make us unable to perform experiments, especially when they involve sophisticated instruments. With the present day internet and computer technologies the above limitations can no more hamper students and researchers in enhancing their skills and knowledge. The initiative of MHRD under the National Mission on Education through ICT to overcome such limitations is called ---------
A) Virtual Labs B) Secure Labs
C) Research Labs D) Remote Lab

21. The sum of n terms of the series $(p-1)(p+1)+(p-2)(p+2)+(p-3)(p+3)+\ldots$ is given by:

A) $np^2-\frac{1}{6}n(n+1)(2n+1)$ B) $p^2-\frac{1}{6}n(n+1)(n+2)$

C) p^2-n^2 D) $(p-n)^2$

22. The sum of all numbers between 100 and 400 divisible by 6 is:

A) 10450 B) 10550 C) 11450 D) 12450

23. The fourth and tenth terms of a geometric progression are respectively $\frac{1}{3}$ and 243. What is the second term?

A) $\frac{1}{27}$ B) $\frac{1}{9}$ C) 1 D) 3

24. If α and β are the roots of the equation $5x^2-7x+1=0$, then $\frac{1}{\alpha}+\frac{1}{\beta}$ equals:

A) -7 B) 7 C) $\frac{7}{25}$ D) $-\frac{7}{25}$

25. The graph of the function $y^2=x^{4/3}$ lies in:

A) the first quadrant B) the first and second quadrants

C) the first and third quadrants D) all the four quadrants

26. Let $A=\{0,1,2,3\}$. Define a relation R on A by :

$R=\{(0,1),(0,3),(1,0),(1,1),(2,2),(3,3)\}$

Then R is:

A) reflexive B) symmetric C) transitive D) None of these

27. The locus represented by $|z+4|=3|z|$ in the Argand plane is:

A) the right bisector of the segment joining (-4, 0) and (0, 0)

B) the circle $x^2+y^2-x=2$

C) the line $y=2x+3$

D) the parabola $y^2=4x$

28. If 1, ω, ω^2 are the cube roots of unity, then which of the following statement is true?

A) They form the vertices of an equilateral triangle

B) They lie on the unit circle $|z|=1$

C) $1+\omega+\omega^2=0$

D) All the above statements are true

29. Let A be a 3x3 matrix. If $|A|=6$, what is the value of $3|A|$?

A) 6 B) 18 C) 54 D) 162

30. The value of $\begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ x^3 & y^3 & z^3 \end{vmatrix}$ is given by:

A) xyz B) $xyz(x-y)(y-z)(z-x)$

C) $(x+y+z)(x-y)(y-z)(z-x)$ D) $(x+y+z)^2$

31. The number of ways in a team of 11 players may be chosen from among 15 players if one player is to be always included is:
A) 364 B) 1001 C) 1365 D) 3003

32. The area of the triangle with vertices (3, 0), (3 ,3) and (0, 3) is given by:
A) $\frac{1}{2}$ sq.units B) $\frac{9}{2}$ sq.units C) 3 sq.units D) $\frac{3}{2}$ sq.units

33. The point of intersection of the lines $\frac{x}{a}+\frac{y}{b}=1$ and $\frac{x}{b}+\frac{y}{a}=1$ lies on:
A) $x-y=0$ B) $x+y=0$ C) $x-y=1$ D) $x+y=1$

34. The equation of the plane cutting intercepts a, b and c on the x, y and z axes respectively is:
A) $ax+by+cz=0$ B) $ax+by+cz=1$
C) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=1$ D) $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=0$

35. The angle between the vectors $\vec{i}-2\vec{j}+3\vec{k}$ and $3\vec{i}-2\vec{j}+\vec{k}$ is given by:
A) $\cos^{-1}(\frac{5}{7})$ B) $\sin^{-1}(\frac{5}{7})$ C) $\frac{\pi}{2}$ D) $\frac{\pi}{4}$

36. A card is drawn from a well-shuffled pack of cards. What is the probability that it is neither a king nor a queen?
A) $\frac{2}{13}$ B) $\frac{5}{13}$ C) $\frac{7}{13}$ D) $\frac{11}{13}$

37. The value of k for which the function $f(x)=\begin{cases} kx+5, & x\le 2 \\ x-1, & x>2 \end{cases}$ *is continuous at x =2 is:*
A) -1 B) 1 C) -2 D) 2

38. The point of local minima of the function $f(x)=\sin x-\cos x$, $0<x<2\pi$ is:
A) $\frac{7\pi}{4}$ B) $\frac{3\pi}{4}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{2}$

39. $\int \sec^4 x\,dx$ *equals:*
A) $\tan^2 x+C$ B) $\frac{1}{5}\sec^5 x+C$
C) $\tan x+\frac{1}{3}\tan^3 x+C$ D) $\tan^2 x-\tan x+C$

40. The integrating factor of the differential equation
$$\frac{dy}{dx}\cos x+y\sin x=\tan x$$
is given by:
A) $\sec x$ B) $\tan x$ C) $\sin x$ D) $\cos x$

41. The average age of A, B and C is 7 years. If the average age of A *and* B is 6 years and that of B and C is 8years, what is the age of B?
A) 5 years B) 6 years C) 7 years D) 8 years

42. A and B together get a salary of Rupees 20,000. When A spends 95% of his salary and B spends 85% of his salary their savings become equal. What is A's salary?
A) Rupees 5,000 B) Rupees10, 000
C) Rupees12,000 D) Rupees 15, 000

43. If the cost price of 25 articles equals the selling price of 20 articles, then the gain percent is:
A) 15 B) 20 C) 25 D) 30

44. A merchant marks his goods 50% above the cost price. If he allows a discount of 20%, what is his gain percent?
A) 10 B) 20 C) 25 D) 30

45. A can do a piece of work in 10 days and B can do it by himself in 15 days. How many days will they together to complete the work?
A) 5 B) 6 C) 7 D) 8

46. The ratio of milk to water in a 30 litre mixture is 7: 3. How many litres of water should be added to the mixture to make ratio 3: 7?
A) 10 B) 20 C) 40 D) 50

47. A train running at a speed of 36 km per hour crosses a telephone post in 25seconds. What is the length of the train?
A) 200 metres B) 225 metres C) 250 metres D) 320 metres

48. The simple interest on Rupees 2000 for a certain period is less than the simple interest on Rupees 2500 by Rupees 50 at the rate of 5 percent per annum. Find the period.
A) 1 year B) 2 years C) 3 years D) 4 years

49. What is the radius of a circle whose area is equal to the sum of the areas of two circles of radii 3 centimetres and 4 centimetres?
A) 5 cm. B) 6 cm. C) 7 cm. D) 8 cm.

50. Between4'Oclockand5'Oclock,the hour and minute hands of a clock coincide after:
A) $21\frac{3}{11}$ minutes B) $21\frac{5}{11}$ minutes
C) $21\frac{7}{11}$ minutes D) $21\frac{9}{11}$ minutes

51. The first of January of 2016 fell on a Friday. Then the31st of December 2016 will fell on a:
A) Friday B) Saturday C) Sunday D) Monday

52. A man walks 8 km due south. Then he returns right and walks 3 km. He further turns right and walks 12 km. How far and in which direction is he from the starting point?
A) 5km.north-west B) 4km.north-west
C) 5km.north-east D) 4 km. north-east

53. The sum of the ages of a father and son is 45 years. 5 years ago, the product of their ages was four times the father's ages at that time. What is the present age of the father?
A) 36 B) 37 C) 38 D) 39

54. A cube is painted red on two adjacent faces and painted blue on the faces opposite them. The remaining faces are painted yellow. The cube is then cut into 64 small cubes of equal size. How many small cubes have no face painted?
A) 4 B) 8 C) 16 D) 24

55. 15 children are standing in a row. The children at the two ends are girls. If every alternate child is also a girl, how many girls are there in the row?
A) 5 B) 6 C) 7 D) 8

56. Ram is taller than Syam but Ram is not as tall as Gopu. Gopu is shorter than Deepu but Deepu is not as tall as Babu. Who is the tallest among them?
A) Ram B) Gopu C) Babu D) Deepu

57. Which of the following pairs has the same relationship as in the pair *AZ : FU*?
A) *IR : NM* B) *BY : GU* C) *HR : MI* D) *GL : LM*

58. The two words in the question bear are relationship to each other. Select the pair from among the choice that have the same relationship as the pair in the question.
Evaporation : Cloud

A) Pressure : Atmosphere B) Book : Pages
C) Mountain : River D) Tension : Breakdown

59. Find the odd one out
A) Rose B) Marigold C) Lotus D) Tulip

60. Which number comes next in the series 0, 6, 24, 60, 120, ...?
A) 210 B) 220 C) 230 D) 240

61. With the ------ of monsoon in Kerala there would be an improvement in power supply.
A) outburst B) outbreak C) onset D) spreading

62. Some politicians make <u>sweeping statements</u> about the future of our country. The substitute for the word underlined is:
A) baseless statements B) biased statements
C) senseless statements D) generalised statements

63. Find out the word incorrectly spelt.
A) Guarantie B) Accommodation
C) Equipment D) Cautious

64. Thomas is good -------- problems
A) at solving B) to solve C) for solving D) on solving

65. Complete the following sentence with a suitable question tag.
None of the participants arrived in time -----?

A) didn't they B) did they C) don't they D) do they

66. Which is the word nearest to the opposite in meaning to 'judicious'?
A) Discreet B) Shrewd C) Fatuous D) Cautious

67. He complained that his request was turned ------
A) away B) down C) up D) out

68. Which is the word nearest in meaning to the 'integrate'?
A) Segregate B) Separate C) Demarcate D) Merge

69. Which of the given options arranges the following words as a correct sentence?

1	2	3	4	5	6	7	8
meeting	forward	you	to	we	soon	look	very

A) 5, 7, 2, 4, 1, 3, 8, 6 B) 3, 1, 2, 6, 5, 7, 4, 8
C) 3, 7, 8, 6, 2, 1, 5, 4 D) 5, 1, 3, 8, 6, 7, 2, 4

70. The court asked the pleader -------- all the time.
A) what the authorities had been doing
B) what had the authorities been doing
C) what the authorities have been doing
D) what have the authorities been doing

71. If you had informed me earlier, I-----
A) would help you. B) will have helped.
C) would have helped you. D) will help you.

72. The study includes, inter alia, computers, aircraft and pharmaceuticals. Here inter alia means:
A) moreover B) in addition
C) above all D) among other things

73. Choose the odd pair from the following:
A) Bacterium - Bacteria B) Syllabus - Syllabi
C) Maidservant – Maidservants D) Crisis – Crisises

74. The sentence 'The Department has already issued the orders of transfer', can be rewritten as:
A) The orders of transfer had already been issued by the Department.
B) The orders of transfer has already been issued by the Department.
C) The orders of transfer have already been issued by the Department.
D) The orders of transfer already had been issued by the Department.

75. The Private Secretary ------ the Minister of the situation.
A) warned B) appraised C) apprised D) explained

76. Which among the following is acceptable?
A) I had written to my friend yesterday.
B) I wrote to my friend yesterday.
C) I was writing to my friend yesterday.
D) I have written to my friend yesterday

77. The idiom 'at arm's length' means:
A) pay attention to
B) be sympathetic to
C) take care of
D) at a distance

78. Spot the error in the following sentence.
1 2 3
Neither the student nor his parents/ was present at the meeting/ convened by the PTA.
A) 1 B) 2 C) 3 D) No Error

79. This is my umbrella. Where is ---------?
A) Yours B) Your's C) Your D) You

80. Which among the following is the correct sentence?
A) It was raining since 10 o'clock this morning.
B) It has been raining since 10 o'clock this morning.
C) It is being rained since 10 o'clock this morning.
D) It is raining since 10 o'clock this morning.

81. 'Beat Plastic Pollution' is the theme of:
A) World Maritime Day B) World Environment Day
C) World Habitat Day D) International Day for Disaster Reduction

82. Which of the following languages is not mentioned in the eighth schedule of the constitution?
A) Nepali B) Urdu C) Sanskrit D) English

83. Where is the location of the International Court of Justice?
A) Hague B) London C) New York D) Geneva

84. The percentage of seats reserved for women in Panchayati Raj institutions in Kerala:
A) 20 B) 33.3 C) 40.3 D) 50

85. Which is the largest part of the human brain?
A) Cerebellum B) Cerebrum
C) Midbrain D) Medulla Oblongata

86. The venue of 2023 Cricket World Cup:
A) Pakistan B) England C) India D) Bangladesh

87. In which of the Five Year Plans was the People's Plan campaign started?
A) 8th Five Year Plan B) 9th Five Year Plan
C) 10th Five Year Plan D) 11th Five Year Plan

88. Choose the odd pair from the following.
A) Sunderlal Bahuguna – Chipko Movement
B) Medha Padkar – Narmada Bachao Andolan
C) Vangari Mathai – Green Belt Movement
D) Pandurang Hegde – Navadanya

89. Who was the winner of the Nobel Prize for Literature 2017?
A) Kazuo Ishiguro B) Alice Munro
C) Bob Dylan D) Philip Larkin

90. Which of the following works is not written by Stephen Hawking?
A) A Briefer History of Time B) The Theory of Everything
C) The World as I See It D) The Universe in a Nutshell

91. Which is the layer of atmosphere where the ozone depletion is found?
A) Stratosphere B) Troposphere C) Mesosphere D) Thermosphere

92. Which of the following country is not a member of the BRICS?
A) Brazil B) Sri Lanka C) Russia D) India

93. Khel Retna Award is given for:
A) Sporting Excellence B) Musical Excellence
C) Best Director D) Medical Excellence

94. The term 'Fourth Estate' refers to:
A) Judiciary B) Parliament C) Press D) Bureaucrats

95. Which is the first digital state in India?
A) Jharkhand B) Kerala C) Karnataka D) Gujarat

96. The charter of the Sarkaria Commission was to examine:
A) the problems of education B) reforms in Private sector
C) the centre state relations D) decentralisation of power

97. The river that is called the 'sorrow of Bihar':
A) Mahanadi B) Damodar C) Kaveri D) Koshi

98. Sunderbans National Park is situated in:
A) New Delhi B) West Bengal C) Rajasthan D) Odisha

99. What is the mission of the spacecraft Aditya?
A) studying Moon B) forecasting weather
C) studying Sun D) studying Mars

100. Gerontology is the study of:
A) Process of ageing B) Growth of plant cells
C) Insects D) Birds

101. AM for two numbers is 10 and GM is 8. Then the numbers are:
A) 16, 4 B) 18, 2 C) 14, 6 D) None of these

102. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected is:
A) 25/56 B) 25/117 C) 21/46 D) 3/25

103. The probability that a student is not a swimmer is 1/5. Then the probability that out of 5 students, four are swimmers is:

A) $5C_4\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$ B) $\left(\frac{4}{5}\right)^4\left(\frac{1}{5}\right)$ C) $5C_1\left(\frac{1}{5}\right)^4\left(\frac{4}{5}\right)$ D) None of these

104. For a moderate asymmetrical distribution the mode and mean are 32.1 and 35.4 respectively. Then the median is:

A) 34.8 B) 33.1
C) 33.4 D) None of these

105. If 25% of the items are less than 10 and 25% of the items are more than 40, then the coefficient of quartile deviation is

A) 3/2 B) 3/5 C) 0 D) -1/2

106. If n people are seated around a round table at random, the probability that 2 particular individuals are seated next to each other is

A) 2/(n-1) B) 1/(n-1) C) 2/(n-2) D) 1/(n-2)

107. Suppose that the random variable X has density function $f(x)=\frac{1}{\pi(1+x^2)}, x\in R$. Then the distribution of X^{-1} is:

A) normal B) gamma
C) same as that of X D) does not exist

108. Let p be the probability that a coin will fall head in a single toss in order to test $H_0: p=1/2$ against $H_1: p=3/4$. The coin is tossed 5 times and we reject the null hypothesis if more than 3 heads are obtained. Then the power of the test is given by:

A) 81/128 B) 23/121 C) 9/17 D) None of these

109. If X and Y are two correlated variables with same standard deviations and correlation coefficient r, then the correlation between X and X+Y is:

A) $\sqrt{\frac{1+r}{2}}$ B) $\sqrt{\frac{1-r^2}{2}}$ C) 0 D) None of these

110. If the mean of a set of observations $x_1, x_2, ..., x_n$ is $\bar{x}$, then the mean of observations $x_i + 2i^2, i = 1,2,...,n$ is:

A) $\bar{x}+(n+1)(2n+1)/3$ B) $\bar{x}$

C) $\bar{x}+(n^2+3)$ D) None of these

111. A distribution for which first, second, and third quartiles are 25.8, 49, and 64.2 respectively is:

A) symmetric B) positively skewed
C) negatively skewed D) bell shaped

112. The radius say X of ball bearings (in inches) is assumed to follow uniform distribution over the interval (0, 1.5). A ball bearing is randomly selected from this population and found to have radius more than 0.5 inches. Then what is the probability that its radius is more than 1.2 inches?

A) 0.5 B) 0.3 C) 0 D) None of these

113. The probability mass function (pmf) of a random variable has value zero except at points x = 0, 1 and 2. At these points the pmf values are given by $p(0) = 3c^3, p(1) = 4c - 10c^2, p(2) = 5c - 1$, where c >0. Then the largest x such that $F(x) < \frac{1}{2}$ is:

A) 1 B) 0 C) -1 D) 2

114. If the lines of regression of Y on X and X on Y are respectively Y = kX+4 and X = 4Y+5, where k is a real constant, then the value of k is:

A) k = 0 B) 0 < k < 1 C) k > 0.25 D) None of these

115. For a frequency distribution, the coefficient of skewness based upon the quartiles is 0.6. If the sum of upper and lower quartiles is 100 and median is 38, then the upper and lower quartiles are respectively:

A) 30; 70 B) 70; 15 C) 70; 30 D) 15; 60

116. A frequency distribution gives the following results. Coefficient of variation =5, Karl Pearson's coefficient of skewness = 0.5, standard deviation = 2. Then its mean and mode are respectively:

A) 40; 20 B) 39; 41 C) 50; 28 D) None of these

117. The mean age of combined group of men and women is 25. If the mean age of men is 26, and that of group of women is 21, then the percentage of men in the group is:

A) 80 B) 20 C) 60 D) None of these

118. 20 people sit around a round table randomly. Then the probability that two people A and B sit with 4 people between them is

A) 6/17 B) 1/19 C) 2/19 D) 5/19

119. Find the standard deviation of the set of data $y+1, y+2, y+5, y+9, y+8$

A) 3.16 B) 3.53 C) y+3.16 D) y+3.53

120. From an urn containing 3 white and 5 black balls two balls are drawn at random. What is the probability that one from each color?

A) 15/56 B) 5/54 C) 15/64 D) None of these