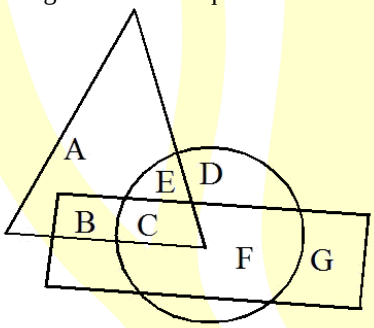
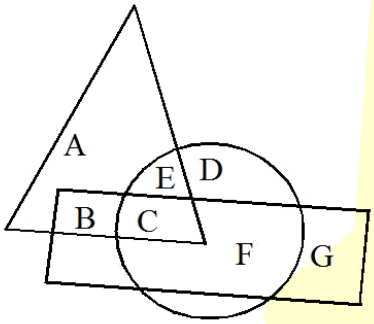
MANTAL ABILITY TEST

1. Twenty five buses are plying from Delhi to Agra and back. In how many ways a passenger can travel from Delhi in any one bus to Agra but returns to Delhi by a different bus.
   (A) 50z (B) 49
   (C) 625 (D) 600
2. A bird shooter was asked how many birds he had in the bag. He replied that there were all sparrows but eight, all pigeons but eight, and all ducks but eight. How many birds had he all?
   (A) 24 (B) 18
   (C) 12 (D) 48
3. Kishenkant walks 10 km towards North. From there, he walks 6 km towards South. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point?
   (A) 5 km West (B) 5 km North-East
   (C) 7 km East (D) 7 km West
4. In the following diagram the circle represents Doctors, The triangle stands for Artists and Singers are represented by the rectangle answer the questions based on diagram.



Doctors who are also artists and singers are represented by
   (A) B (B) C
   (C) D (D) E
5. In the following diagram the circle represents Doctors, The triangle stands for Artists and Singers are represented by the rectangle answer the questions based on diagram.



Artists who are alos singers but Doctors, are represented by
   (A) A (B) B
   (C) C (D) D
6. Pointing to a lady on the platform, Manju said, "She is the sister of the father of my mother's son." Who is the lady to Manju?
   (A) Mother (B) Sister
   (C) Aunt (D) Niece
7. How many pair of letters are there in the word BUCKET which have as many letters between them in the word as in the alphabet?
   (A) One (B) Two
   (C) Three (D) Four
8. What will come in place of question mark (?)
   DMU EOT FQS ?
   (A) GRT (B) GSQ
   (C) GSR (D) HSR
9. Find the missing number:
   3, 35, 99, 195, ?
   (A) 323 (B) 317
   (C) 387 (D) 377
10. 6, 13, 51, 101,?
    (A) 201 (B) 202
    (C) 203 (D) 205
11. In the following questions, numbers given in four out of the five alternatives have some relationship. You have to choose the one which does not belong to the group.
    (A) 16 : 2 (B) 36 : 49
    (C) 64 : 81 (D) 4 : 9
12. In the following questions, numbers given in four out of the five alternatives have some relationship. You have to choose the one which does not belong to the group.
    (A) 21 : 24 (B) 28 : 32
    (C) 14 : 16 (D) 54 : 62
13. If 100 cats kill 100 mice in 100 days, then 10 cats would kill 10 mice in how many days?
    (A) 10 (B) 100
    (C) 50 (D) 20
14. Some of the letters in the question are missing choose the correct alternative to form the series.
    a_ba_b_b_a_b
    (A) abaab (B) abbab
    (C) aabba (D) bbabb
15. I have a few sweets to be distributed. If I keep 2,3 or 4 in a pack. I am left with one sweet. If I keep 5 in a pack. I am left with none. What is the minimum number of sweets I can have to pack and distribute?
    (A) 37 (B) 25
    (C) 55 (D) 65
16. If summer is coded as RUNNER the code of WINTER will be
    (A) SUITER (B) VIOUER
    (C) WALKER (D) SUFFER
17. Complete the series
    2,5,10,17,26,37, ___
    (A) 65 (B) 50
    (C) 50 (D) 65

18. In a class, Shailesh is 7th from the top and Anupama is 18th from the bottom. If Suresh, who is two ranks ahead of Anupama, is 15 ranks below Shailesh, how many students are there in the class?
(A) Data inadequate (B) 38
(C) 40 (D) 41

19. Each of the following questions has four terms. Three terms are a like in someway. One terms is different from others. Find out the correct term and write its alternative number on your answer Sheet against the proper question number.
(A) Ancient History (B) Modern History
(C) History (D) Medivial History

20. Tree is related to sapling in the same way as Horse is related to _____?
(A) Pony (B) Mule
(C) Cub (D) Foal

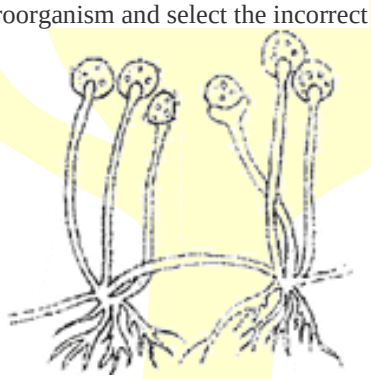
SCIENCE

21. Which one of the following is commonly known a 'Malarial Parasite'?
(A) Entamoeba (B) Paramecium
(C) Plasmodium (D) Algae

22. Which leaves are used to protect stored grains from insects and microorganisms?
(A) Mango leaves (B) Peepal leaves
(C) Banana leaves (D) Neem leaves

Science/Microorganisms - Friend and Foe/4 Year Program/OBJ-One Correct

23. Identify the given microorganism and select the incorrect



statement regarding it
(A) It is a saprophyte commonly called as black bread mould.
(B) It reproduces by means of spores.
(C) It results in the spoilage of food materials.
(D) It is a parasitic fungus that causes various diseases in plants, animals and humans.

24. How many among the following are fungal diseases in plants?

Citrus canker, Late blight of potato, Mosaic disease of mustard, Downy mildew of grapes, Leaf curl of cotton, Rust of wheat, Tobacco mosaic disease, Loose smut of wheat, Leaf curl of tomato
(A) 6 (B) 7
(C) 4 (D) 5

25. Which one of the following devices is used for detecting electric charge on an object?
(A) Telescope (B) Ammeter
(C) Electroscope (D) Coulomb

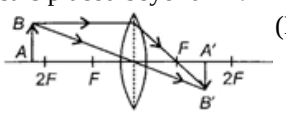
26. The nearest star to the earth after the sun is:
(A) Leo Major (B) Ursa Major
(C) Proxima Centauri (D) Moon

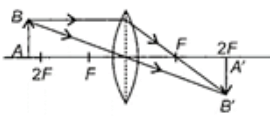
27. What is the nature of the force which is experienced between an electron and a proton?
(A) Force of attraction (B) Force of repulsion
(C) No force is experienced (D) All the above

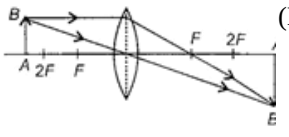
28. _____ protects the buildings from the effects of lightning.
(A) Electroscope (B) Seismograph
(C) Lightning conductor (D) Lightning insulator

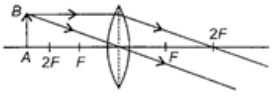
29. A parallel beam of light is incident on a converging lens parallel to its principal axis. As one moves the source of light away from the lens on its principal axis, the intensity of light
(A) Remains constant (B) Continuously increases
(C) Continuously decreases (D) First increases than decreases.

30. For the myopic eye, the defect is cured by
(A) Convex lens (B) Concave lens
(C) Cylindrical lens (D) None of these.

31. Which of the following ray diagrams shown below represents the image formed by the convex lens when the object is placed beyond 2F?
(A) 

(B) 

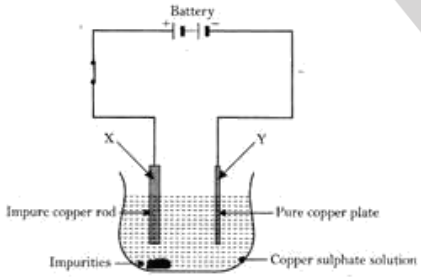
(C) 

(D) 

32. United Football Club are playing an evening match. The team's jersey has blue and white stripes. What colour would the stripes appear under floodlights which produce a yellow light?
(A) Black and yellow (B) Blue and white
(C) Blue and yellow (D) Black and white

33. On which of the following surfaces diffused reflection will not take place
(A) Paper (B) Plane mirror
(C) Cardboard (D) Unpolished metal object

34. Look at the following figure and choose the correct option



(A) X represents anode, Y represents cathode (B) X represents cathode, Y represents anode
(C) Both represent anode (D) Both represent cathode

35. Galvanization involves the coating of which metal over steel or iron?
(A) Chromium (B) Copper
(C) Zinc (D) Brick

36. Which one of the following is an effect produced by electric current?
(A) Heating effect (B) Chemical effect
(C) Magnetic effect (D) All the above

37. Which of the following is correct for electroplating a metal X with copper through electrolyses?
(A) Metal X-Anode (B) Copper-Cathode
(C) Copper sulphate solution ? Electrolyte (D) All the above

38. In electrolysis, salt solution breaks up into positively and negatively ? charged particles are called:
(A) Electrodes (B) Electrons
(C) Ions (D) Insulators

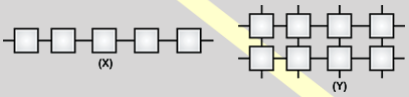
39. Which one of the following is correct pair?
(A) Cathode - Positive electrode (B) Anode - Negative electrode
(C) Cation - Negative ion (D) None of these

40. When a ray of light falls normally on a plane mirror, then the angle of incidence is:
(A) 30° (B) 0°
(C) 180° (D) 60°

41. Which of the following statements is/are correct?
(I) Most synthetic fibres are obtained from coal, petroleum and natural gas.
(II) Acrylic fibres closely resemble wool.
(Ill) Most synthetic fibres have very high moisture absorbing capacity.
(IV) Polyester is prepared from cellulose.
(A) I and II only (B) II and III only
(C) IV only (D) All of these

42. Which of the following statements about plastics are true?
(i) All plastics do not have same arrangement of monomer units.
(ii) Melamine resists fire and can tolerate heat better than other plastics.
(iii) Plastics with cross-linked monomers are also known.
(iv) Plastics have limited applications.
(A) (i) and (iii) only (B) (iii) and (iv) only
(C) (i), (ii) and (iii) only (D) (i), (iii) and (iv) only

43. See the figure given below and select the correct statements regarding polymers.



1. Figure (X) shows structure of a monomer while figure (Y) shows structure of a polymer.
2. Small boxes in the structure represent monomers which are joined to give a polymer.
3. Figure (X) shows structure of a linear polymer while (Y) shows structure of a cross-linked polymer.
(A) 1 and 2 only (B) 1 and 3 only
(C) 2 and 3 only (D) All are correct.

44. Why is it not advisable to wear clothes made up of synthetic fibres in hot and humid weather?
(A) Synthetic fibres catch fire very easily. (B) Synthetic fibres do not absorb sweat.
(C) Synthetic fibres stick to the body. (D) Both (b) and (c).

45. Read the following statements carefully.
P. I am extensively used in the healthcare industry but my one disadvantage is that I am non-biodegradable.
Q. I am very familiar form of polyester and used for making bottles, utensils, films, wires, etc.
R. I am artificial silk and mixed with wool to make carpets.
P, Q and R are respectively
(A) PET, Rayon and Plastic (B) Rayon, Plastic and PET
(C) Plastic, Rayon and PET (D) Plastic, PET and Rayon.

46. Which of the following plays an important role in the early-warning systems for cyclones?
(A) Helicopters (B) Submarines
(C) Satellites (D) Stars

47. When we remove polyester or woollen cloth in dark, we can see spark and hear a cracking sound. These are due to
(A) Static electricity (B) Current electricity
(C) Reflection of light (D) Refraction of light.

48. Read the given statements and select the correct option.
Statement 1: It is easier to generate static electricity on cold, dry winter days than on warm, humid days.
Statement 2: Moisture present in the air carries away charges from the charged surface.
(A) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
(B) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
(C) Statement 1 is true but statement 2 is false.
(D) Both statements 1 and 2 are false.

49. Which of the following scales is/are not linear in nature?
(i) Decibel
(ii) Richter
(iii) Meter
(A) (i) only
(B) (ii) and (iii)
(C) (ii) only
(D) (i) and (ii)

50. Electroscope is used
(A) To detect and test small electric charges
(B) To calculate the amount of electric charge flowing through the conductor in the given interval of time
(C) To find out the presence of antimatter
(D) To test the presence of magnetic field.

MATHEMATICS

51. The circumference of a circle is equal to the sum of the perimeters of an equilateral triangle of side 12 cm and a square of diagonal $2\sqrt{2}$ cm. Find the area of the circle in cm^2.
(A) 44
(B) 144
(C) 154
(D) 156

52. If the ordered pair satisfying the equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ has s 1 as its first coordinate, then which of the following is correct?
(A) $\frac{a_1+b_1}{a_2+b_2} = \frac{c_1}{c_2}$
(B) $\frac{b_1+c_1}{b_2+c_2} = \frac{a_1}{b_2}$
(C) $\frac{c_1+a_1}{c_2+a_2} = \frac{a_1}{b_2}$
(D) $\frac{c_1+a_1}{c_2+a_2} = \frac{b_2}{b_1}$

53. In the previous problem, what is the salary of the clerk?
(A) 5600
(B) 5625
(C) 5650
(D) 5675

54. Find the smallest number by which 180 must be multiplied so that the product is a perfect square
(A) 4
(B) 2
(C) 3
(D) 5

55. Find the divisor, given that the dividend is 2200, remainder is 13, and the divisor is one-third of the quotient.
(A) 25
(B) 27
(C) 24
(D) None of these

56. A hollow sphere which has internal and external diameters as 14 cm and 16 cm, respectively, is melted and recast into a cone with a height of 16 cm. Find the diameter of the base
(A) 6.5 cm
(B) 13 cm
(C) 26 cm
(D) 10 cm

57. If $1 \le k \le 25$, then how many prime numbers are there which are of the form 6k + 1?
(A) 15
(B) 16
(C) 17
(D) 18

58. Find the unit's digit in the product of the first 50 odd natural numbers.
(A) 0
(B) 5
(C) 7
(D) 3

59. The smallest number with which 120 should be multiplied, so that the product is a perfect square is _____.
(A) 120
(B) 60
(C) 30
(D) 15

60. Find the value of x: $\frac{x}{2} + \frac{x}{3} - \frac{x}{4} = 7$
(A) 11
(B) 12
(C) 13
(D) 14

61. In a class, there are 72 boys and 64 girls. If the class is to be divided into least number of groups such that each group contains either only boys or only girls, then how many groups will be formed?
(A) 17
(B) 34
(C) 24
(D) 18

62. Find the number whose cube is 512
(A) 2
(B) 3
(C) 4
(D) None of these

63. The square root of 102 up to three places of decimal is _____.
(A) 10.098
(B) 10.099
(C) 10.097
(D) 10.096

64. If $\frac{a}{b-a} = \frac{7}{8}$, find the value of $\frac{a}{b}$.
(A) 7
(B) $\frac{15}{7}$
(C) $\frac{7}{15}$
(D) $\frac{-15}{7}$

65. The monthly earnings and expenditures of A and B are in the ratio 5 : 7 and 2 : 1, respectively. Find A's earning per month if the monthly savings of B is twice that of A. Also given that, A saves Rs 570 every month.
(A) 900
(B) 950
(C) 1000
(D) 1050

66. The cost of painting the total outside surface of a closed cylinder at Rs 3 per cm2 is Rs 2772. If the height of the cylinder is 2 times the radius, then find its volume.
(A) 34,312 cm^3
(B) 3342cm^3
(C) 2154cm^3
(D) 2156cm^3

67. If x, y, and z are three non-zero numbers such that $x + y \le z - x$, $y + z \le x - y$, and $z + x \le y - z$, then the maximum value of x + y + z is _____.
(A) 0
(B) −1
(C) 1
(D) 2

68. What is the measure of each angle of regular hexagon?
(A) 100
(B) 120°
(C) 110°
(D) 108°

69. The least positive integer with which 661.25 should be multiplied so that the product is a perfect square is _____.
(A) 4 (B) 5
(C) 6 (D) 2

70. Which pair of numbers below are twin primes?
(A) 8 and 9 (B) 2 and 3
(C) 3 and 7 (D) 41 and 43

71. The value of x which satisfies the equation $\frac{5}{x+6} = \frac{2}{3-2x}$ is _____.
(A) 1/2 (B) 1/4
(C) 1/6 (D) 1/8

72. If the units digit of a perfect square is 4, then the units digit of its square root can be _____.
(A) 2 (B) 8
(A) Only (A) (B) Only (B)
(C) Either (A) or (B) (D) Neither (A) nor (B)

73. The least 4 digit number which is a perfect square is _____.
(A) 1024 (B) 1016
(C) 1036 (D) 1044

74. What will be the units digit of the squares of the following numbers?
(A) 71
(B) 669
(C) 2533
(D) 30,827
(A) 1 (B) 9
(C) Both (a) and (b) (D) 8

75. In a school, maximum strength of each class is 60. In class VIII, the total number of students is a multiple of 5. On a certain day, four boys were absent and the ratio of the numbers of the remaining boys to that of girls was 5 : 4. Find the ratio of the total boys to that of girls.
(A) 3 : 2 (B) 4 : 3
(C) 2 : 1 (D) 5 : 4

76. If $9 : 12\frac{2}{3} = 81 : (x + 2)$, then what is the value of x?
(A) 112 (B) 102
(C) 108 (D) 120

77. A sum of Rs 4680 was divided among Parthu, Kunti, and Arjun in the ratio of $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ Find the share of Parthu (in Rs).
(A) 1440 (B) 1080
(C) 2160 (D) 720

78. If $x^2 = 4224$, then
(A) $64 < x < 65$ (B) $210 < x < 215$
(C) $24 < x < 25$ (D) $21 < x < 22$

79. If the base radius of a cone is doubled and its height is halved, then which of the following is true regarding its volume?
(A) Increases by 200% (B) Decreases by 200%
(C) Increases by 100% (D) Decreases by 100%

80. Sixteen years hence a man's age will be 9 times his age 16 years ago. Find his age 5 years hence.
(A) 12 years (B) 20 years
(C) 17 years (D) 25 years