Note: Each correct answer carries 4 Marks and wrong answer carries negative marks of 1.
Kindly attempt carefully.

1. In one hour, a boat goes 11 km/hr along the stream and 5km/hr against the stream. The speed of the boat in still water (in km/hr) is _____.
   a) 3k/hr   b) 5km/hr   c) 8 km/hr   d) 9 km/hr

2. A boat can travel with a speed of 13km/hr in still water. If the speed of the stream is 4km/hr, find the time taken by the boat to go 68 km downwards.
   a) 2 hours   b) 3 hours   c) 4 hours   d) 5 hours

3. A man can row his boat with the stream at 6 km/hr and against the stream in 4 Km/hr. The man's rate is _____. a) 1 Kmph   b) 5 kmph   c) 8 kmph   d) 3 kmph

4. If the speed of the boat is 'U' kmph and the speed of the stream is 'V' kmph, than the speed of the boat upstream is _____
   a) $(u-v)^2$ kmph   b) $(u+v)^2$ kmph   c) $(u-v)$ kmph   d) none of these

5. The speed of the boat in still water is 12 kmph. It can travel downstream through 45kms in 3 hours. In what time would it cover the same distance upstream?
   a) 3hrs   b) 6hrs   c) 5hrs   d) 3.5hrs

6. _____is the time taken to fill the cistern.   a) $t_2^2 - t_1^2$ b) $\frac{t_1\,t_2}{t_1+t_2}$ c) $\frac{t_1-t_2}{t_1+t_2}$ b) $t_2^2 + t_1^2$

7. Two pipes A and B can fill a tank in 10 hours and 40 hours respectively. If both the pipes are opened simultaneously, how much time will be taken to fill the tank?
   a) 8 hours   b) 5 hours   c) 2 hours   d) 12 hours

8. If a man's rate with the current is 20 kmph the rate of the current is 5 kmph. Then the man's rate against the current is _____. a) 40 kmph   b) 30 kmph   c) 20 kmph   d) 10 kmph

9. A man can row 21 kmph in still water. It takes him twice as long to row up down the river. Find the rate of stream. a) 15 kmph   b) 10 kmph   c) 8 kmph   d) 7 kmph

10. The speed of a boat downstream is 40 kmph whereas it is 20 kmph upstream. What is the speed of the current?   a) 2   b) 7   c) 10   d) 15

11. If 100% of a number is 400. What will be 10% of that number?
    a) 30   b) 40   c) 50   d) 100

12. If 20% of a=b, then b% of 20 is the same as _____.
    a) 6% of a   b) 4% of a   c) 8% of a   d) 10% of a

13. If the price of a book is first decreased by 25% and then increased by 20%, then the net change in the price will be _____.   a) 10   b) 20   c) 30   d) 40

14. What percentage of numbers from 1 to 30 has 1 or 9 in the unit's digit?
    a) 12%   b) 15%   c) 20%   d) 22%

15. A student erroneously multiplied a number by 2/5 instead of 5/2. What is the percentage error in the calculation?   a) 24%   b) 54%   c) 74%   d) 84%

16. The total population of a village increased from 1,80,000 to 22,500 in a decade. The average percentage increase of population per year of that village is _____.
    a) 2.37%   b) 2.5%   c) 3.6%   d) 6.75%

17. If 75% of a number is added to 75, then the result is the number itself. The number is _____.
    a) 100   b) 200   c) 300   d) 400

18. What percent of 7.2kg is 18 gms?   a) 0.25%   b) 0.5%   c) 0.75%   d) 1%

19. The ratio 5:4 expressed as percent equals_____.
    a) 12.5%   b) 40%   c) 80%   d) 125%

20. If x is 80% of y, then what percent of $2x$ is y?
    a) 65.5%   b) 64.5%   c) 63.5%   d) 62.5%

21. Mr. Kumar saves 50% of his income though he spends Rs.5000 per month. What is his annual income?   a) ₹1,20,000   b) ₹1,00,000   c) ₹50,000   d) ₹25, 000

22. A student has to secure 40% marks to pass. He gets 184 marks and fall by 16 marks. Thus maximum marks are _____.   a) 250   b) 200   c) 500 d) 250

23. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is _____.
    a) 3:1   b) 1:3   c) 1:2   d) 2:1

24. A cistern is filled by pipe A in 8hrs and the full cistern can be leaked out by an exhaust pipe B in 12 hours. If both the pipes are opened in what time the cistern is full?
    a) 12 hours   b) 24 hours   c) 16 hours   d) 32 hours
25. A boat moves upstream at the rate of 1 km in 12 mins and downstream at the rate of 1 km in 5 mins. The speed of the current is _____.   a) 1.5 km/min   b) 2.5 km/min
                                                                               c) 3 km/min   d) 3.5 km/min
26. _____ is the centre of the lens.   a) origin   b) optical centre   c) pole   d) focus
27. Lens formula is _____.   a) $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ b) $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ c) $\frac{1}{f} = \frac{-1}{v} - \frac{1}{u}$ d) $\frac{1}{f} = \frac{-1}{v} + \frac{1}{u}$
28. Concave lens is used in _____.
    a) Torches   b) Telescope   c) Camera lens   d) Search light
29. When the object is placed at a distance of 15cm and it forms an image of 8cm on other side of concave lens, find its magnification.
    a) 1.66   b) 2.66   c) 1.88   d) 2.88
30. The distances measured in the same direction as that of incident light are taken as _____.
    a) Either positive or Negative   b) Zero   c) Negative   d) Positive
31. Calculate the focal length of a convex mirror when the object is placed at 8cm and image is formed at a distance of 12cm from the mirror.
    a) +30cm   b) -30cm   c) +24cm   d) -24cm
32. Symbol 'u' in optics stands for _____.
    a) initial velocity b) final velocity   c) object distance   d) image distance
33. All the distances are measured from the _____ of the mirror.
    a) Principal focus   b) Pole   c) Origin   d) Optical centre
34. A convex lens has focal length of 10cm, calculate the distance at which the object from the lens be placed, so that it forms an image at 6cm from the lens.
    a) -14cm   b) -15cm   c) -16cm   d) -17cm
35. An object distance is always measured in terms of _____.
    a) Positive   b) Negative   c) Zero   d) None
36. If the magnification is greater than one, then the image formed is _____.
    a) enlarged   b) diminished   c) same size   d) None of the above
37. In vehicles, rear view mirrors are made of _____.
    a) Concave mirror   b) Plane mirror   c) Convex mirror   d) Parabolic mirror
38. Calculate the distance of the image (v), when the magnification produced is 5 and the distance of the object from the convex lens is 8cm.
    a) 40cm   b) -40cm   c) 50cm   d) -50cm
39. Concave lens produces _____ image.   a) Real   b) inverted c) virtual   d) Real of inverted
40. _____ is used for measuring distances in spherical lenses.
    a) Magnification b) Focal length   c) Lens formula   d) Cartesian sign convention
41. Distances measured perpendicular to and above the principal axis of the mirror is taken as _____.   a) Positive   b) Negative   c) Zero   d) One
42. _____ is used in magnifying lens.
    a) Concave lens b) Convex lens   c) Plane lens   d) Hyperbolic lens
43. Calculate the focal length of concave lens when the object is placed at 10cm and forms an image at a distance of 15cm on the other side of the lens.
    a) +20cm   b) -20cm   c) +30cm   d) -30cm
44. _____ is the line passing through the optical centre of the lens.
    a) Origin   b) Aperture   c) Principal axis   d) Principal focus
45. The object is always placed to the _____ of the lens.
    a) right   b) upward   c) left   d) downward
46. Calculate the image distance in a convex mirror, when the object is placed at 15cm and focal length is 20cm.   a) 8.57cm   b) -8.57cm   c) 9.57cm   d) -9.57cm
47. _____ is the S.I unit for magnification.
    a) Newton   b) dioptre   c) metre   d) none
48. Bifocal lens consists of _____.   a) one lens   b) two lens   c) three lens   d) four lens
49. Human eye contains _____ lens. a) concave   b) convex c) parabolic   d) plane
50. Principal focus is the point where the light rays will _____.
    a) converge   b) diverge   c) either converge or diverge   d) None
51. The first element of rare-earth metals is _____.
    a) Cerium   b) Actinium   c) Uranium   d) Lanthanum
52. Of the following pairs, the one containing example of metalloid elements in the periodic table is _____.   a) Sodium and Potassium   b) Fluorine and Chlorine
                        c) Calcium and Magnesium   d) Boron and Silicon

53. Hydrogen by donating one electron forms H$^+$. In this property, it resembles with _____.
   a) Transitional metals b) Alkaline earth metals   c) Alkali metals   d) Halogens
54. The long form of periodic table has _____.
   a) Eight horizontal rows and seven vertical columns
   b) Seven horizontal rows and eighteen vertical columns
   c) Seven horizontal rows and seven vertical columns
   d) Eight horizontal rows and eighteen vertical columns
55. The elements with atomic number 10,18,36,54 and 86 are all _____.
   a) Light metals   b) Inert gases   c) Halogens   d) Rare-earths
56. Which of the following pairs has both members from the same group of the periodic table
   _____.   a) Mg-Ba b) Mg-Na   c) Mg-Cu   d) Mg-K
57. All the elements in a group in the periodic table generally have the same_____.
   a) Atomic weight   b) Atomic number
   c) No. of electrons participate in bonding   d) No. of valence electrons
58. If an element X is place in group-17, what will be the valency of the element X ?
   a) 1   b) 2   c) 3   d) 4
59. Lanthanides and actinides belong to _____.
   a) s-block   b) p-block   c) d-block   d) f-block
60. The element, which has the highest electronegativity is _____.
   a) I   b) Br   c) Cl   d) F
61. Which of the following has zero valency _____.
   a) Oxygen   b) Neon   c) Fluorine   d) Nitrogen
62. The number of Inner transition elements present in the periodic table is _____.
   a) 30   b) 20   c) 28   d) 32
63. Identify the reasons for rejection of classification of elements into metals and non-metals.
   a) Some of the elements behave both as metals and non-metals
   b) The elements were divided only into two broad categories which does not help much in the
      study of elements
   c) Both 1 & 2   d) None
64. The element with atomic number 16 belongs to _____ family in the periodic table.
   a) Boron family   b) Nitrogen family   c) Chalcogen family d) Halogen family
65. The last member in each period of the periodic table is _____.
   a) An inert gas element   b) A transition element
   c) A halogen   d) An alkali metal
66. Which one of the following combination represents a metallic element _____.
   a) 2,8,7   b) 2,8,8   c) 2,8,4   d) 2,8,2
67. The fundamental basis of the present -day periodic table in that elements are _____.
   a) Arranged in the order of increasing atomic weights
   b) Grouped according to chemical properties
   c) Arranged in the order of increasing number of neutrons in the atomic nucleus
   d) Arranged in the order of increasing number of protons in the nucleus.
68. The elements on the right side of the periodic table are _____.
   a) Metals   b) Metalloids   c) Non-metals   d) Transition elements
69. The lightest metal is _____.   a) Li   b) Mg   c) Ca   d) Na
70. Match the following:
      Column-I   Column - II
   a) Representative   -   1) Atomic numbers 90 to 103
   b) Transition elements   -   2) Atomic numbers 58 to 71
   c) Lanthanide series   -   3) Atomic numbers 21 to 30
   d) Actinide series   -   4) Group 1,2 and 13 to 17

	A	B	C	D
a)	3	1	2	4
b)	2	4	3	1
c)	4	3	2	1
d)	2	3	4	1

71. Non - metals belong to _____.
   a) s-block elements   b) p-block elements   c) d-block elements   d) f-block elements
72. Which element was not known when Mendeleev proposed his classification?
   a) Hydrogen   b) Sodium   c) Copper   d) Germanium
73. Many properties of an element and its compounds can be predicted from the position of the
   element in the periodic table. What property could not be predicted in this way?
   a) The nature of its oxides   b) The charge on its ions
   c) The formula of its oxide   d) Its number of isotopes

74. Which of the following element(s) is/are new in the periodic table?
    a) Nihonium (Nh, 113) and Moscovium (Mc,115)
    b) Tennessine (Ts,117) and Oganesson (Og, 118)
    c) Both (A) and (B)
    d) None of the above
75. Electronic configuration of Al^{+3} is _____.   a) 2,8,3   b) 2,8,8   c) 2,8   d) 2,8,8,3
76. In Tapeworm, excretion takes place through _____.
    a) flame cells   b) malphigian tubules   c) Green glands   d) Nephridia
77. Which among the organisms possess closed circulatory system?
    a) Man   b) Earthworm   c) Tapeworm   d) Amoeba
78. Which among the following salivary gland is the largest, and located next to ear?
    a) Parotid   b) Sub-lingual   c) Sub-mandibular   d) None of these
79. _____ acts on milk protein caesinogen and convert them into casein.
    a) Pepsin   b) Rennin   c) Amylase   d) Trypsin
80. _____ enzyme converts inactive precursor Trypoinogen to Trypsin.
    a) Amylase   b) Pepsin   c) Rennin   d) Maltase
81. Veena's diet includes large amount of sweet potatoes, barley, apple and wheat. Name the disaccharide found in such foods.
    a) Maltose   b) lactose   c) Galactose   d) Sucrose
82. During absorption, carbohydrates are absorbed in the form of _____ by villi.
    a) Glucose   b) Maltose   c) Lipids   d) Amino acids
83. During inspiration, the volume of the lungs _____ and the pressure _____.
    a) increases, decreases   b) decreases, increases
    c) increases, increases   d) decreases, decreases
84. Name the plasma protein that is responsible for antibody formation.
    a) Albumin   b) Globulin   c) fibrinogen   d) all of these
85. Name the cell that lacks nucleus.
    a) Erythrocytes   b) Leucocytes   c) Thrombocytes   d) all of these
86. Teena gets tired easily, and her skin remains pale. On medical examination, it is found that her RBC count is less. Name the abnormality associated with this symptom.
    a) Anaemia   b) Leucocytosis   c) Leucopenia   d) Thrombocytopenia
87. _____ valve is found between left atrium and left ventricle.
    a) Bicuspid   b) Mitral   c) Tricuspid   d) Both a and b
88. Overproduction of RBC causes fatigue associated with high risk of Thrombus, is known as _____.   a) Anaemia   b) Polycythemia   c) Leucopenia   d) Leucocytosis
89. Succus entericus is also known as _____.   a) Intestinal juice   b) Pancreatic juice
                                                    c) Bile   d) Gastric Juice
90. During inspiration, Diaphragm _____.   a) contracts   b) relaxes   c) oscillates   d) swings
91. Lungs are covered by double layer membrane called _____.
    a) Pleura   b) Pericardium   c) Mediastinum   d) Meninges
92. WBC shows _____ movement.
    a) amoeboid   b) creeping   c) looping   d) none of these
93. Enzymes like Trypsin and chymotrypsin acts on _____.
    a) carbohydrates   b) fats   c) proteins   d) vitamins
94. _____ glands regulates body temperature.
    a) Sweat   b) Sebaceous   c) Oil   d) None of these
95. In Brain, respiratory centre is located in _____.
    a) Medulla Oblongata   b) Cerebrum   c) Midbrain   d) None of these
96. Among the following, which is the lowest group in animal kingdom?
    a) Pisces   b) Amphibian   c) Reptilia   d) Mammalia
97. Sebaceous gland function is to _____.
    a) lubricate the skin   b) Keeps our skin moist
    c) Prevents infection   d) all of these
98. _____converts starch into Amylase.
    a) Pancreatic amylase   b) Amylase   c) Trypsin   d) Chymotrypsin
99. In chordates, respiration takes place by _____.
    a) gills   b) book lungs   c) skin   d) lungs
100.   ptyalin
    Starch ⟶ _____
    (Polysaccharide)   (Disaccharide)
    a) Glucose   b) Fructose   c) Maltose   d) Sucrose