PHYSICS

01. A cube of side 1cm is placed on a table top of length 2m and breadth 1.5m if weight of the cube is 8N then the pressure due to cube is –
(A) $8N/m^2$ (B) $80000N/m^2$
(C) $2.66N/m^2$ (D) none of above

02. When we press the bulb of a dropper & dip the nozzle in water container (bulb still pressed), and then remove the pressure on the bulb
(A) level of water rises up in the container
(B) Water rises in the dropper
(C) Water level remains same in the container
(D) can't be said

03. Two bar magnets were placed close to each other. Which of the sets given below will attract each other.
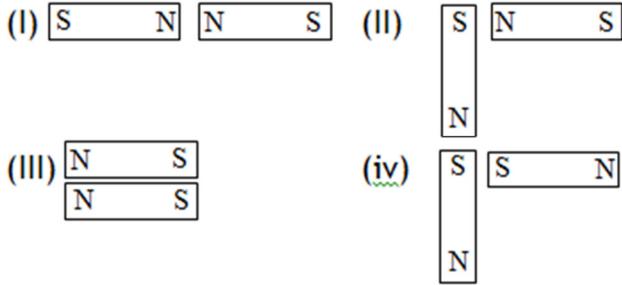

(A) Only I (B) Only II
(C) Only III (D) Only II & III

04. Which of the following can't happen, irrespective of whether the given iron bar B is a bar magnet or not
(A) Both ends of B are attracted to the north pole of a magnet.
(B) Both ends of B are attracted to the south pole of a magnet.
(C) One end of B is attracted & other end is repelled by the north pole of a magnet.
(D) Both ends of B are repelled by the south pole of magnet.

05. Non-magnetic materials are
(A) Plastic, wood, nickel, copper
(B) Iron, nickel, cobalt, copper
(C) Plastic, paper, copper, leather
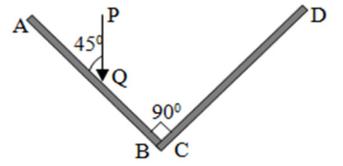(D) Cobalt, copper, paper, leather

06. Which of the following demonstrate law of reflection
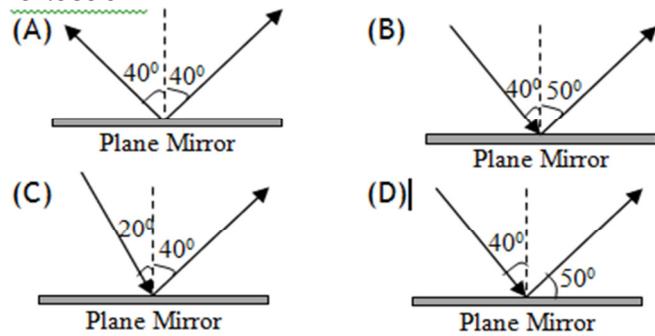
07. A person is standing in front of the plane mirror at a distance of 10 m then the distance between the person and its image will be. (in m)
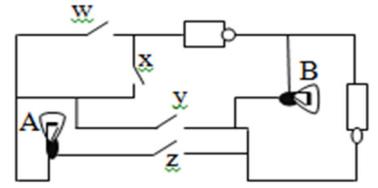(A) 5 (B) 10 (C) 15 (D) 20

08. Two plane mirrors AB & CD are placed at right angles to one another. A ray of light PQ hits AB at Q making an angle of 45^0 as shown. This ray will be reflected from CD at an angle of
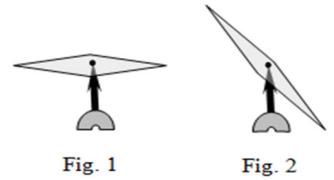(A) 20^0 (B) 35^0 (C) 45^0 (D) 60^0

09. Study the circuit diagram given here carefully. Bulb A would light up only when two switches are closed. Which of the following are two switches.
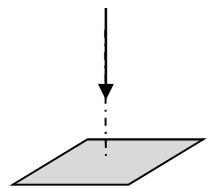(A) w & x (B) y & z
(C) x & y (D) w & z

10. Akash was with freely suspended magnet as shown in fig.1. He was part of expedition and he observed that needle was as shown in figure 2 and while observing the needle he heard a sound of bear then color of bear is –
(A) obviously black every bear is black
(B) white as teddy bear is white
(C) he maybe in wonderland so color may be red
(D) how needle will tell about color of bear

11. If force applied is 4.16 units and area is 4 units then the pressure exerted is –
(A) 1.4 units (B) 16.64 units
(C) 8.16 units (D) none

12. A horse shoe magnet is freely suspended from its centre by a string then its north pole will point towards—
(A) north direction
(B) south direction
(C) the same direction in which south pole will point
(D) north and south will point in opposite direction

13. If a ray of light is incident on mirror as shown then angle of incidence and angle of reflection is
(A) 0^0 and 0^0
(B) 90^0 & 90^0
(C) 180^0 and 180^0
(D) none

14. If initially liquid is as shown in figure, when we open the tab then after some time the final stage is correctly shown by –
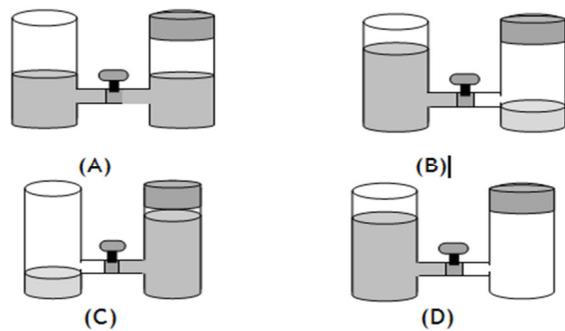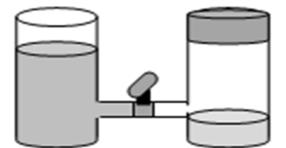
15. Electricians use rubber gloves while working because
(A) rubber is an insulator
(B) rubber is good conductor
(C) it is easy to work while wearing gloves
(D) none

16. A person is standing in front of the plane mirror at a distance of 20 m then the distance between the mirror and its image will be. (in m)
(A) 5   (B) 10   (C) 15   (D) 20

17. A cell converts
(A) electrical energy into chemical energy
(B) chemical energy into electrical energy
(C) magnetic energy into electrical energy
(D) electrical energy into mechanical energy

18. poles of magnet can't be isolated because magnet consists of
(A) positive & negative charges
(B) south & north pole
(C) every electron is a magnet
(D) none

19. when pressure is applied through a piston at the top of closed tube containing water, the pressure is transmitted to
(A) only the bottom of container
(B) all directions
(C) only the side faces & the bottom of he container
(D) None

20. A common dry cell produce a voltage of
(A) 3 V   (B) 30 V   (C) 1.5 V   (D)15V

CHEMISTRY

21. A chemical reaction involves
(A)only breaking of bonds
(B)only formation of bonds
(C)both breaking and formation of bonds
(D)none of these

22.Coke is used in the manufacturing of
(A)lead   (B)iron
(C)steel   (D)copper

23. The method of purification that does not kill germs:
(A) distillation   (B) oiling
(C) chlorination   (D) filtration

24. Ignition temperature is
(A) The maximum temperature at which a substance catches fire
(B) The minimum temperature at which a substance catches fire
(C) The temperature of burning substance
(D) The temperature in the substance when fire if put off

25.Incomplete combustion of fuel such as petrol & diesel gives
(A) nitrogen oxide   (B)sulphur dioxide
(C)carbon dioxide   (D)carbon monoxide

26.The metal always found in free state is
(A)Au   (B)Ag   (C)Cu   (D)Na

27. Identify the type of reaction ,
$N_2 + 3H_2 - 42 \text{ kcals} = 2NH_3$
(A) endothermic   (B) exothermic
(C) both A & B   (D) neither of A or B

28. The boiling point of water at STP is
(A)100K   (B)373K
(C)273K   (D)373^0C

29.Naphthalene balls are obtained from
(A)carbon   (B)coke
(C)coal tar   (D)coal gas

30. When oil or petrol catches fire, water is not used to extinguish it because
(A) Water covers oil and oil burns under water layer which may not be noticeable
(B) Water is heavier than oil / petrol and so remains below the oil layer which continues to burn
(C) Water get mixed with oil and increases fire
(D) Water gets evaporated

31. When a new substance is made in a chemical change, sign of this could be
(A) melting or freezing of the substance
(B) dissolving or filtration of a substance
(C) a colour change or bubbles
(D)change in shape of substance

32. Rusting of iron is an example of
(A)reduction   (B)ionization
(C)oxidation   (D)dissociation

33.Which of the following gases can contribute to the green house effect?
(A)oxygen   (B)hydrogen
(C)nitrogen   (D)methane

34. Which of the following is ductile?
(A)sodium   (B)potassium
(C)graphite   (D)zinc

35. Black gold is
(A)petroleum   (B)gold
(C)coal tar   (D)natural gas

36. Sonika wants to contribute in reducing air pollution. Which vehicle should she use for going to school?
(A)car   (B)school bus
(C)autorickshaw   (D)scooter

37. _____ is an example of natural polymer
(A) Rayon   (B) Cellulose
(C) Nylon   (D) All of the above

38.Polythene and PVC are examples of
(A) Bio degradable substance
(B) Thermosetting plastics
(C) Thermoplastics
(D) Rayon

39. Which of the following materials is the best for making garments that can be used in wet or damp environments?
(A)polyester   (B)Wool
(C)cotton   (D)none of these

40. Out of these ,which one is a non metal and good conductor of electricity?
(A)copper   (B)graphite
(C)iron   (D)bromine

BIOLOGY

41. Largest cell is -
(A) muscle cell   (B) nerve cell
(C) paramecium   (D) egg of ostrich

42. Outermost covering in animal cell is -
(A) Cell membrane   (B) Cell wall
(C) Nuclear wall   (D) Cellulose

43. Cell membrane is also called as -
(A) Plasma membrane   (B) Unit membrane
(C) Selective permeable   (D) all of these

44. Nucleus contains chromosomes & . . . .
(A) Nucleolus   (B) Cytoplasm
(C) Vacuoles   (D) none of these

45. Chromosomes are made up of -
(A) DNA   (B) RNA
(C) Carbohydrates   (D) both A & B
46. . . . . cell show branched structure.
(A) Muscle   (B) WBC
(C) Nerve   (D) all of these
47. The chromosomes can be seen only when the cell . . . .
(A) at rest   (B) divides
(C) is active   (D) dies
48. . . . . are of different colors.
(A) Leucoplasts   (B) Chromosomes
(C) Plastids   (D) Ribosomes
49. Units of inheritance present on the chromosomes are called -
(A) RNA   (B) Genes
(C) DNA   (D) Nucleus
50. A group of cells is called as -
(A) Tissue   (B) Bone
(C) Colony   (D) none of these
51. Outermost covering in nerve cell is -
(A) Cell membrane   (B) Cell wall
(C) Chitin   (D) Cellulose
52. Amoeba moves from one place to another with the help of
(A) Cillia   (B) Small legs
(C) Pseudopodia   (D) Flagella
53. . . . . . cell can change its shape
(A) Amoeba   (B) Onion
(C) WBC   (D) both A & C
54. . . . . is a multi cellular organism
(A) Rhoeo   (B) Dog
(C) Tradescantia   (D) all of these
55. Entire content of living cell is called -
(A) Cytoplasm   (B) Protoplasm
(C) Nucleoplasm   (D) Protochord
56. . . . is known as transport system of cell
(A) Golgi complex   (B) Chromosomes
(C) Endoplasmic reticulum   (D) Nucleus
57. Cell membrane is made up of -
(A) Protein & lipid   (B) Fats & starch
(C) Starch & cellulose   (D) Cellulose only
58. Respiration in cell takes place in -
(A) Ribosomes   (B) Mitochondria
(C) Nucleus   (D) Golgi complex
59. Fungus do not have . . . .
(A) Cytoplasm   (B) Nucleus
(C) Cell wall   (D) Chlorophyll
60. Find Odd man out – Amoeba , Paramecium , Plasmodium , Star fish
(A) Paramecium   (B) Amoeba
(C) Plasmodium   (D) Star fish

MATHS

61.simplify:

$$\frac{\left(\frac{2}{3}\times\left(-\frac{5}{4}\right)\right)+\left(\left(-\frac{10}{3}\right)\times\frac{5}{2}\right)-\left(\left(-\frac{16}{3}\right)\times\left(-\frac{55}{32}\right)\right)}{\frac{3}{2}\times\left(\left(-\frac{9}{14}\right)\times\left(-\frac{1}{7}\right)\right)}$$

(A) 1082/81   (B) -1082/81

(C) $-133\frac{7}{81}$ (D) $133\frac{7}{81}$

62.Solve for x : $\frac{x+9}{28}+\frac{x-4}{3}=\frac{5x-32}{9}-\frac{2x-3}{35}$

(A) 19   (B) -19   (C)29   (D) -29

63.Which of the following is INCORRECT for an exterior angle of a regular polygon with n sides ?
(A) All exterior angles of a polygon add upto 360^0
(B)Exterior angle =180^0-Interior angle
(C) $n=\frac{360^0}{Exterior\,angle}$

(D)Each exterior angle =$\frac{(n-2)\times180^0}{n}$

64.Find the square root of $21\frac{2797}{3364}$

(A) $4\frac{33}{58}$ (B) $4\frac{39}{58}$ (C) $4\frac{29}{57}$ (D) $4\frac{27}{52}$

65.By what least number 3600 be divided to make it a perfect cube ?
(A) 9   (B) 50   (C) 300   (D) 450
66. If 1/8 of a pencil is black ,1/2 of the remaining is white and the remaining $3\frac{1}{2}$ cm is blue ,find the total length of the pencil.
(A) 5cm   (B) 9cm   (C) 6cm   (D) 8cm
67. If an angle of a parallelogram is two third of its adjacent angle ,the smallest angle of the parallelogram is
(A) 54^0 (B) 72^0 (C) 81^0 (D) 108^0
68.The average age of three persons is 60years the age of the first person is ¼ of the total age of the other persons .what is the age of the first person ?
(A) 46   (B) 56   (C) 36   (D) 66
69.The value of $\sqrt{\frac{0.00001225}{0.00005329}}-\sqrt[3]{\sqrt{0.000064}}=$
(A) 0.2   (B) 0.279   (C) 0.479   (D) 0
70.The sum of adjacent angle of a parallelogram is
(A) 360^0 (B) 90^0 (C) 180^0 (D) 0^0
71.The range of x,32,41,62,64 and 71 is 45.which of the following can be the value of x ?
(A) 32   (B) 47   (C) 48   (D) 26
72.What is the smallest number to be subtracted from 549162 in order to make it a perfect square, is
(A) 28   (B) 36   (C) 62   (D) 81
73.The value of $\frac{(6+6+6+6)\div6}{4+4+4+4\div4}$ is equal to
(A) 1   (B) 3/2   (C) 4/13   (D) 6/13
74.A quadrilateral ,in which only one pair of opposite sides is parallel is a …….
(A) rectangle   (B) kite
(C) trapezium   (D) rhombus

75.The value of $\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}$ is
(A) 4   (B) 6   (C) 8   (D) 10
76. Mr. Bajaj has a square plot with the measurement as shown in the figure. He wants to construct a house in the middle of the plot. A garden is enveloped around the house. Find total cost of develo ping a garden around the house at the rate of Rs 500 per m².
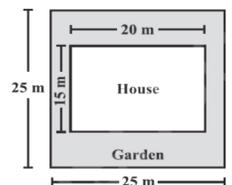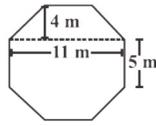

(A)Rs.162500   (B) Rs.150000
(C) Rs.250000   (D) Rs.325000
77. Choose the option in which numbers are in proportion.
(A) 2, 4, 6, 8   (B) 1, 2, 4, 16
(C) 2, 3, 4, 6   (D) 0, 1, 4, 9

78. Top surface of a raised platform is in the shape of a octagon with all sides equal to 5m as shown in the figure. Find the area of the octagonal surface.

(A) $119m^2$ (B) $118m^2$ (C) $120m^2$ (D)$121m^2$

79. One factor of $x^4 + x^2 - 20$ is $x^2 + 5$ The other factor is

(A) $x^2 - 5$ (B) $x^2 - 4$ (C) x-4 (D) x+2

80. $\left(3x + \frac{3}{x}\right)^2 = 9x^2 + \frac{9}{x^2} + k$. Then k equals

(A) 2 (B) 6 (C) 18 (D) 27

81. The diagonal of a Rhombus are 8cm & 6cm. Then the perimeter of a rhombus is

(A) 8 (B) 14 (C) 20 (D) 16

82. The value of $5^{\frac{1}{4}} \div (125)^{0.25}$ is

(A) $1/\sqrt{5}$ (B) 0.2 (C) $5\sqrt{5}$ (D) 25

83. A cuboid is of dimensions 60 cm × 54 cm × 30 cm. How many small cubes with side 6 cm can be placed in the given cuboid?

(A) 16800 (B) 10 (C) 450 (D) 24

84. If $\frac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then the value of n is

(A) 0 (B) 2 (C) 3 (D) 4

85. A Point is at a distance of 3 units from x-axis and 5 units from y-axis. Points can have co-ordinates

(A) (3,3) (B) (-5,3) (C) (5,-5) (D) All

86. Six pipes are required to fill a tank in 1hr20min. How long will it take if only five pipes of same type are used?

(A) 1hr36min (B) 1hr30min
(C) 1hr0min (D) 1hr20min

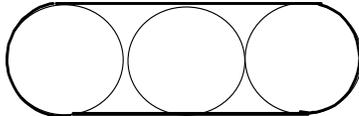87. If P(-a,b) lies in 3rd quadrant then which of the following is true about a and b

(A) a>0,b>0 (B) a>0,b<0
(C) a<0,b>0 (D) a<0,b<0

88. The area of the square shown in the picture 1 equals A. The area of each circle equals C. The area of the figure with the bold boundary in picture 2 is:
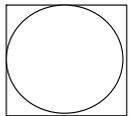
(1)   (2)

(A) 3C (B)3A (C) A + 2C (D) 2A + C

89. Both rows have the same sum.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 2010 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | x |

What is the value of x?

(A) 1010 (B) 1910 (C) 1990 (D) 2020

90. If $a = 33^3$, $b = 33^{3^3}$ and $c = 3^{33}$, then

(A) $a < b < c$ (B) $b < a < c$
(C) $c < b < a$ (D) $c < a < b$

MAT (IT)

91. Solve

```
    9 days,  5 hours, 48 minutes
    7 days, 15 hours,  9 minutes
+   3 days, 13 hours, 13 minutes.
_____
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(A) 19 days, 13 hours, 40 minutes
(B) 19 days, 12 hours, 30 minutes
(C) 20 days, 11 hours, 20 minutes
(D) 20 days, 10 hours, 10 minutes

92. Assume following statements to be true.
- 1: All planets are moons.
- 2: All moons are stars.

Check which of these conclusions follow from statements)
- I: All moons are planets
- II: All planets are stars

(A) Only I follows (B) Only II follows
(C) Both I and II follow (D) Neither I nor II follows

93. The diagram shows an L-shape made from four small squares. An extra small square is to be added to form a shape with a line of symmetry. In how many ways can this be done?
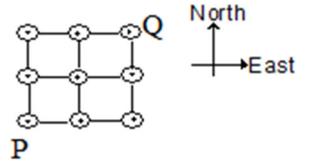
(A) 5 (B) 2 (C) 3 (D) 4

94. Find the odd man out.

(A) River (B) Tower (C) Valley (D) Sea

95. If an ant can travel only in the North or in the East direction, in how many possible routes can an ant travel from cell P to cell Q?
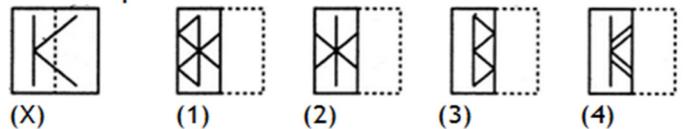
(A) 4 (B) 8 (C) 6 (D) 5

96. The time on a digital clock is 5:55. How many minutes will pass before the clock next shows a time with all digits identical?

(A) 71 (B) 72 (C) 255 (D) 316

97. Find out from amongst the four alternatives as to how the pattern would appear when the transparent sheet is folded at the dotted line.

(X) (1) (2) (3) (4)

(A) 1 (B) 2 (C) 3 (D) 4

98. A frog is at the bottom of a 30 meter well. Each day he summons enough energy for one 3 meter leap up the well. Exhausted, he then hangs there for the rest of the day. At night, while he is asleep, he slips 2 meters backwards. How many days does it take him to escape from the well?

Note: Assume after the first leap that his hind legs are exactly three meters up the well. His hind legs must clear the well for him to escape.

(A) 30 (B) 29 (C) 28 (D) 27

99. A blast of wind has separated the pages of a local newspaper. From the page numbers shown below, can you determine page number of the final page of the newspaper?

(A) 56
(B) 58
(C) 54
(D) none of these

100. Roshni has a pair of scissors and four cardboard letters. She cuts each letter exactly once (along a straight line) so that it falls apart in as many pieces as possible. Which letter falls apart into the not more than two pieces?

(A) M (B) O (C) S (D) H