BIOLOGY

01. . . . . gives 'Back bone' support to cell
(A) endoplasmic reticulum
(B) golgi complex
(C) Plastids
(D) chromosomes

02. . . . . is known as 'power house' of cell
(A) Chromosomes   (B) Nucleolus
(C) Ribosomes   (D) Mitochondria

03. Which cell organelle having double membrane
(A) mitochondria   (B) chloroplast
(C) nucleus   (D) all of these

04. Leucoplast stores . . . .
(A) Oil   (B) Protein
(C) Starch   (D) all of these

05. Stroma & Grana belong to which cell organelle ?
(A) Mitochondria   (B) Chloroplast
(C) Endoplasmic reticulum   (D) none of these

06. During photosynthesis when 1 molecule of Glucose is produced _____ molecule of Oxygen are released.
(A) 1   (B) 3
(C) 5   (D) 6

07. . . . is known as 'suicide bag'
(A) Lysosome   (B) Ribisome
(C) Chromosome   (D) Vacuole

08. Lysozyme is a . . . . . enzyme
(A) respiratory   (B) transportive
(C) Digestive   (D) Nurotic

09. All activities of cell are controlled by -
(A) Nucleolus   (B) DNA
(C) Cell membrane   (D) nucleus

10. In this figure type of chromosome is-
(A) metacentric   (B) submetacentric
(C) acrocentric   (D) telocentric

11. Smooth endoplasmic reticulum do not take part in protein synthesis because . . . . are absent in it -
(A) mitochondria   (B) Ribosomes
(C) golgi bodies   (D) DNA

12. Cytoplasm + ... = Protoplasm
(A) Chloroplasm   (B) Chromoplasm
(C) Nucleolus   (D) Nucleoplasm

13. All cells arise from . . . .
(A) pre existing cells   (B) new cells
(C) products of cells   (D) any of these

14. The organelle present only in plant cell is -
(A) Ribosome   (B) Mitochondria
(C) Plastids   (D) Nucleus

15. Cytoplasm is . . . substance
(A) Fluid   (B) Solid
(C) Semi-fluid   (D) none of these

16. Function of cell wall is to -
(A) give strength   (B) protect organelles
(C) maintain cell shape   (D) all of these

17. Large vacuoles are present in -
(A) Animal cell   (B) Plant cell
(C) Bacterial cell   (D) viruses

18. . . . . is/are essential for photosynthesis
(A) Water   (B) Chlorophyll
(C) Carbon dioxide   (D) all of these

19. . . . . separates cytoplasm from nucleoplasm
(A) cell wall   (B) cell membrane
(C) nuclear membrane   (D) vacuole

20. . . . . is unicellular organism
(A) Amoeba   (B) Paramecium
(C) Hydra   (D) both A & B

MATHS

21. For what value of * the statement $\left(\dfrac{*}{15}\right)\left(\dfrac{*}{135}\right)=1$ is true
(A) 15   (B) 25   (C) 35   (D) 45

22. The value of $\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}$ is
(A) 4   (B) 6   (C) 8   (D) 10

23. $3-[1.6-\{3.2-(3.2+2.25\div x)\}]=0.65$ The value of x is
(A) 0.3   (B) 0.7   (C) 3   (D) 7

24. If 1/8 of a pencil is black ,1/2 of the remaining is white and the remaining $3\dfrac{1}{2}$ cm is blue ,find the total length of the pencil.
(A) 5cm   (B) 9cm   (C) 6cm   (D) 8cm

25. If $a^2+b^2=117$ and ab=54,then find the value of $\dfrac{a+b}{a-b}$
(A) 5   (B) 2   (C) 3   (D) 4

26. If x:y=3:4,then (4x+5y):(5x-2y)
(A) 25/7   (B) 25   (C) 32/7   (D) 32

27. The area of a right angled triangle whose base is 12 cm and hypotenuse 13 cm
(A) 20 cm^2 (B) 30 cm^2
(C) 35 cm^2 (D) 45 cm^2

28. The base of a parallelogram is twice its height .if the area of the parallelogram is 72 sq,cm, find its height
(A) 5cm   (B) 6cm
(C) 4cm   (D) 8cm

29. The difference between the circumference and the radius of a circle is 37cm The area of the circle is
(A) 111cm^2 (B) 148cm^2
(C) 154cm^2 (D) 259cm^2

30. If the ratio of areas of two circles is 4:9 ,then the ratio of their circumference
(A) 2:3   (B) 3:2
(C) 4:9   (D) 9:4

31. The three sides of a triangle are 5cm,12cm and 13cm respectively. then ,its area is
(A) $10\sqrt{3}cm^2$ (B) $10\sqrt{6}cm^2$
(C) 20 cm^2 (D) 30 cm^2

32. 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

33. The sum of $-\dfrac{1}{8}$ and $-\dfrac{1}{8}$ is
(A) 1/4   (B) -1/4   (C) 0   (D) 1

34. What should be added to $\left(\dfrac{3}{4}+\dfrac{2}{5}\right)$ to get $\dfrac{-8}{15}$
(A) -101/60   (B) 101/60
(C) 21/60   (D) -21/60

35. The value of $\left(\dfrac{75983\times75983-45983\times45983}{30000}\right)$
(A) 121936   (B)121866
(C) 121966   (D)121456

36. Cube root of -2700 will be
(A) $+30$ (B) -30
(C) either $+30$ or -30 (D) it is not perfect cube

37. I gain 70Rs. on Rs 2000.My gain percent is
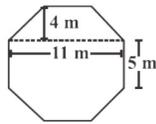(A) 0.7%   (B)3.5%   (C) 7%   (D) 35%

38. 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

39. If $\dfrac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then the value of n is
(A) 0   (B) 2   (C) 3   (D) 4

40. Top surface of a raised platform is in the shape of a regular octagon as shown in the figure. Find the area of the octagonal surface.
(A) 119m^2 (B) 118m^2
(C) 120m^2 (D)121m^2

41. 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?
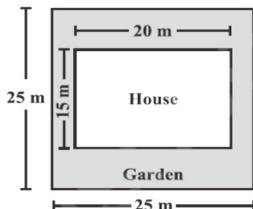(A) 16800   (B) 10   (C) 450   (D) 24

42. $\left(3x + \dfrac{3}{x}\right)^2 = 9x^2 + \dfrac{9}{x^2} + k.$ Then k equals
(A) 2   (B) 6   (C) 18   (D) 27

43. At the grocery store last week, small boxes of facial tissue were priced at 4 boxes for Rs.5. This week they are on sale at 5 boxes for Rs.4. The percent decrease in the price per box during the sale was
(A) 30%   (B) 36%   (C) 40%   (D) 45%

44. 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 developing a garden around the house at the rate of Rs 500 per m^2.
(A)Rs.162500   (B) Rs.150000
(C) Rs.250000   (D) Rs.325000

45. If we divide $3x^1 + 4$ by x^2 then remainder will be ___
(A) 0   (B) $3x^1 + 4$ (C) 4   (D) 3

46. A receives the compound interest on principle Rs. 1000 over period of 3 years at rate 30% per annum. B receives simple interest on same principle over same period at same rate.
How many Rs. will A receive more?
(A) 147   (B) 297   (C)197   (D) 97

47. If $a = 33^3$, $b = 3^{3^3}$ and $c = 3^{33}$, then
(A) $a < b < c$ (B) $b < a < c$
(C) $c < b < a$ (D) $c < a < b$

48. One factor of $(8x^3 - 125y^3)$ is $(2x-5y)$ and the other factor is ____
(A) $4x^2 + 25y^2$ (B) $2x+5y$
(C) $4x^2 + 10xy + 25y^2$ (D) $4x^2 + 20xy + 25y^2$

49. What will be radius of circle whose area equals difference of areas of two circles having radii 8cm and 10cm?
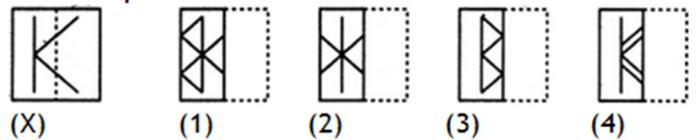(A) 6cm   (B) 2cm   (C) 5cm   (D) 9cm

50. The measure of an inscribed angle in circle is 80^0,what will be the measure of the arc it intercepts?
(A) 80^0 (B) 180^0 (C) 160^0 (D) 40^0

MAT (IT)

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

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

52. Solve   9 days, 5 hours, 48 minutes
                7 days, 15 hours, 9 minutes
            +   3 days, 13 hours, 13 minutes.

(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
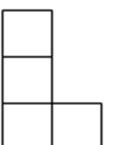
53. Assume following statements to be true.
    o 1: All planets are moons.
    o 2: All moons are stars.
Check which of these conclusions follow from statements)
    o I: All moons are planets
    o II: All planets are stars
(A) Only I follows   (B) Only II follows
(C) Both I and II follow   (D) Neither I nor II follows

54. 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?
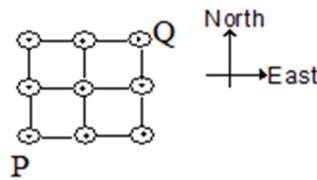(A) 5   (B) 2   (C) 3   (D) 4

55. Find the odd man out.
(A) River   (B) Tower   (C) Valley   (D) Sea

56. 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

57. 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

58. 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

59. 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?
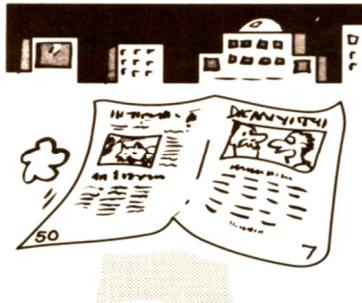
(A) 56
(B) 58
(C) 54
(D) none of these

60. 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)   (B)   (C)   (D)
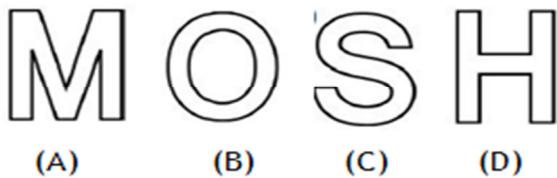
PHYSICS

61. If today in Akola, the moon is seen at horizon at 5.30 pm then tomorrow it will be seen at horizon from the same place at
(A) 5.30 pm   (B) 5.45 pm
(C) 6.00 pm   (D) 6.20 pm

62. Which of the following is/are not planet
(A) Uranus   (B) Earth
(C) Pluto   (D) Both B and C

63. GMRT is
(A) a telescope
(B) a satellite launched by India
(C) **G**alaxy **M**easurement **R**ealization **T**echnique
(D) **Gi**ant **M**agnification **R**adio **T**echnique

64. The period of revolution of planet is
(A) Increases as distance from the sun increases
(B) Decreases as distance from the sun increases
(C) Does not depend on distance from the sun
(D) A or B depending on which planet we are considering.

65. If pressure exerted on a rectangular surface of length 10m & breadth 8m is $40N/m^2$ then the force exerted is –
(A) 320 N   (B) 3200N
(C) 720 N   (D) 1440 N

66. Keeping the value of force constant, if the area increases pressure will
(A) Increase   (B) Decrease
(C) Remain same   (D) Can't be said

67. Fluids exert pressure
(A) Only in perpendicular direction to the surface
(B) Only parallel to the surface
(C) In all directions
(D) A or B

68. Which of the following is not magnetic substance
(A) Iron   (B) Nickel
(C) Cobalt   (D) Copper

69. Which of the following is true
(A) Magnet's strength is uniform
(B) Magnet's strength is concentrated at its centre
(C) Magnet's strength is concentrated at its pole
(D) Both B and C

70. Like magnetic poles _ _ _ _ each other and unlike magnetic poles _ _ _ _ each other
(A) Repel , Attract   (B) Attract , Repeal
(C) Repel , Repel   (D) Attract , Attract

71. If Santosh writes number 5 on a piece of paper and place mirror in front of it, 5 appears 5 this means –
(A) Santosh is illiterate
(B) mirror is magic mirror
(C) script is Roman
(D) Santosh is using periscope

72. If a person is standing at a certain distance from mirror, his image is formed behind the mirror. Now mirror is moved away from a person by 4m then the distance between person and his image will –
(A) be 8m   (B) be more by 4m
(C) be 4m less than before   (D) be more by 8m

73. If angle of incidence is 0° then
(A) angle of reflection is 0°
(B) ray of light is not perpendicular to mirror
(C) incident & reflected ray will trace different path
(D) Both A and C

74. The unit of energy is –
(A) joule   (B) Boost   (C) watt   (D) Newton

75. When silk is rubbed on glass, glass & silk develops _ _ respectively
(A) negative & positive electric charge
(B) positive & negative electric charge
(C) positive & positive electric charge
(D) None of these

76. In electric bulb –
(A) light energy is converted in electrical energy
(B) electrical energy is converted in light energy
(C) light energy is converted into heat energy
(D) magnetic energy is converted in electrical

77. A strong magnet is brought near the coil and kept as it is then –
(A) a current flow through coil called as magnetic current
(B) current flows through wire called as induced current
(C) no current will flow through coil
(D) current will flow but keep on changing

78. Energy given by 5 kg of wood is about
(A) 1700 kJ   (B) 1000 kJ
(C) 8500 kJ   (D) 5000 kJ
79. If the height of a person is 0.2 m then height of his image in the plane mirror will be
(A) 0.2 m   (B) 0.3 m
(C) 0.4 m   (D) 0.6 m
80. Largest planet in the solar system is
(A) Saturn   (B) Mars
(C) Mercury   (D) Jupiter

CHEMISTRY

81. 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
82. Which of the following properties of atom could be explained correctly by Thomson model of atom ?
(A) Over all neutrality of atom
(B) Spectra of hydrogen atom
(C) Position of electrons, protons and neutrons in atom.
(D) Stability of atom.
83. If number of protons & electrons are 8 respectively, valence electrons are
(A)2 in number   (B)4 in number
(C) 6 in number   (D)8 in number
84. Mixture of sand and sulphur may best be_____ separated by
(A) fractional crystallization from aq. Solution
(B) magnetic method
(C) fractional distillation
(D) dissolving in CS_2 and filtering
85. Identify the type of reaction,
   $2KClO_3 = 2KCl + 3O_2$
(A) combination reaction
(B) decomposition reaction
(C) displacement
(D) double displacement
86.The metal always found in free state is
(A) Au   (B) Ag
(C)Cu   (D)Na
87. Identify the type of reaction ,
$N_2 + 3H_2 - 42$ kcals $= 2NH_3$
(A) endothermic   (B) exothermic
(C) both A & B   (D) neither of A or B
88. The boiling point of water at STP is
(A)100K   (B)373K
(C)273K   (D)373^{0}C
89. Sudden decrease in the intermolecular forces of attraction occur most efficiently in
(A) evaporation   (B) melting
(C) sublimation   (D) condensation
90. If Z represents the atomic number & A represents mass number, then the number of electrons in an atom can be computed as
(A) A+Z   (B) A –Z
(C) Z-A   (D) Z

91. 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

92. Rusting of iron is an example of
(A) reduction   (B) ionization
(C) oxidation   (D) dissociation
93. Within an atom,the nucleus when compared to the extranuclear part is
(A) bigger in volume & heavier in mass
(B) smaller in volume but heavier in mass
(C) smaller in volume & lighter in mass
(D) same size
94. Which of the statements about the reaction below are incorrect?
   $2PbO + C = 2PbS + CO_2$
1.Lead is getting reduced
2.Carbon dioxide is getting oxidized
3.Carbon is getting oxidized
4.Lead oxide is getting reduced
(A) 1 & 2   (B) 1 & 3
(C) 1 ,2 & 3   (D) all
95. What eventually happens if energy is continually removed from a liquid?
(A) it boils   (B) it evaporates
(C) it freezes   (D) it melts
96. Quick lime(CaO) reaction with water is regarded as exothermic. A student mixes these two products in a test tube & touches its side surface. Which statement correctly describes the student's observation?
(A) the test tube becomes cold due to release of heat energy
(B) the test tube becomes hot due to release of heat energy
(C) the test tube becomes hot due to absorption of heat energy
(D) the test tube becomes cold due to absorption of heat energy
97. The subatomic particle not present in a hydrogen atom is
(A) electron   (B) proton
(C) neutron   (D) all are present
98. An atom with 3 protons & 4 neutrons will have a valency of
(A) 3   (B) 7
(C) 1   (D) 4
99. Which of the following is not a property of diamond?
(A)It is the hardest substance
(B)it has high refractive index
(C)it can conduct electricity
(D)in diamond each carbon is at the centre of tetrahedron
100. Out of these ,which one is a non metal and good conductor of electricity?
(A)copper   (B)graphite
(C)iron   (D)bromine