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OSAT 2024
(ODM Scholarship Admission Test)

ODM Scholarship Admission Test 2024
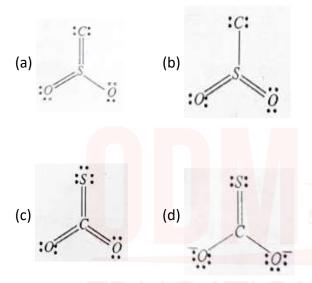
OSAT I SCIENCE

SAMPLE QUESTION PAPER

CHEMISTRY

01. The most common oxidation state of an element is -2. The number of electrons present in its outer most shell is:

(a) 2   (b) 4

(c) 6   (d) 8

02. The possible structure of monothiocarbonate ion is:

(a)   (b)

(c)   (d)

03. Statement-1 : Boron always forms covalent bond, because.

Statement-2: The small size of B^{3+} favours formation of covalent bond.

(a) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(b) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1

(c) Statement-1 is True, Statement-2 is False

(d) Statement-1 is False, Statement-2 is True

04. The enhanced force of cohesion in metals is due to:

(a) The covalent linkages between atoms

(b) The electrovalent linkages between atoms

(c) The lack of exchange of valency electrons

(d) The delocalization of valence electron between metallic kernels

05. Of the following molecules, the one, which has permanent dipole moment, is:
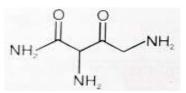
(a) SiF_4 (b) BF_3

(c) PF_3 (d) PF_5

06. The octet rule is not obeyed in:

(a) CO_2 (b) BCl_3

(c) PCl_5 (d) (b) and (c) both

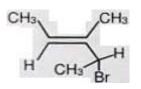**07.** The number of structural isomers for C_5H_{10} are:

(a) 8   (b) 6

(c) 9   (d) 10

08. The correct IUPAC name of the compound is:

(a) 1,2,3-Triaminobutane-1,3-dione

(b) 2,4-Diamino-3-oxobutanamide

(c) 1,3-Dioxobutane-1,2,4-triamine

(d) 1,3,4-Triaminobutane-2,4-dione

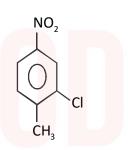
ROUGH WORK

09. What is the IUPAC name of the following compund?

(a) 2-Bromo-3-methylpent-3-ene

(b) 3-Bromo-1,2-dimethylbut-1-ene

(c) 4-Bromo-3-methylpent-2-ene

(d) 3-bromo-3-methyl-1,2-dimethyprop-1-ene

10. The correct IUPAC name of the following compound is:

(a) 3-chloro-4-methyl-1-nitrobenzene

(b) 5-chloro-4-methyl-1-nitrobenzene

(c) 2-methyl-5-nitro-1-chlorobenzene

(d) 2-chloro-1-methyl-4-nitrobenzene

11. The IUPAC name of the following compound is:

(a) 1,1-Dimethyl-2-ethylcyclohexane

(b) 2-Ethyl-1,1-dimethylcyclohexane

(c) 2,2-Dimethyl-1-ethylcyclohexane

(d) 1-Ethyl-2,2-dimethylcyclohexane

12. The correct set of four quantum numbers for the valence electrons of rubidium atom (Z=37) is:

(a) $5,0,0,+\dfrac{1}{2}$ (b) $5,1,0,+\dfrac{1}{2}$

(c) $5,1,1,+\dfrac{1}{2}$ (d) $5,0,1,+\dfrac{1}{2}$

13. The number of oribtals associated with quantum number n = 5, $m_s = +\dfrac{1}{2}$ is :

(a) 11   (b) 25

(c) 50   (d) 15

14. The orbit having Bohr radius equal to 1st Bohr orbit of H-atom is:

(a) $n = 2$ of He^+ (b) $n = 2$ of B^{+4}

(c) $n = 3$ of Li^{+2} (d) $n = 2$ of Be^{+3}

15. $xMnO_{4^-} + yC_2O_{4^{2-}} + zH^+ \rightarrow xMn^{2+} + 2yCO_2 + \dfrac{z}{2}H_2O$

The values of x, y and z in the reaction are, respectively:

(a) 5, 2 and 16   (b) 2, 5 and 8

(c) 2, 5 and 16   (d) 5, 2 and 8

16. The amount of oxygen in 3.6 moles of water is:

(a) 115.2 g   (b) 57.6 g

(c) 28.8 g   (d) 18.4 g

17. The empirical formula of a compound of molecular mass 120 u is CH_2O. The molecular formula of the compound is:

(a) $C_2H_4O_2$ (b) $C_4H_8O_4$

(c) $C_3H_6O_3$ (d) all of these

ROUGH WORK

18. What are the electronic configurations of Na^+ and Cl^- ions ?

(a) $Na^+ = 2,8,1$ and $Cl^- = 2,8,7$

(b) $Na^+ = 2,8$ and $Cl^- = 2,8,8$

(c) $Na^+ = 2,8,2$ and $Cl^- = 2,8,6$

(d) $Na^+ = 2,8$ and $Cl^- = 2,8,7$

19. Structure of nuclei of three atoms X, Y and Z are as follows:

(1) X has 90 Protons and 146 Neutrons

(2) Y has 92 Protons and 146 Neutrons

(3) Z has 90 Protons and 148 Neutrons

Which of the following statement is correct based on above data ?

(a) X and Z are isotopes; Y and Z are isobars

(b) X and Y are isotopes; X and Z are isobars

(c) Y and Z are isobars; X and Z are isobars

(d) X and Z are isotopes; X and Y are isobars

20. Soap solution is an example of

(a) true solution   (b) suspension

(c) colloidal solution   (d) None of these

21. Which of the following methods is used for separation of gangue from heamatite ore?

(a) Crystallisation   (b) Filtration

(c) Chromatography

(d) Magnetic separation

22. The boiling point of alcohol is 78^0C. What will be the temperature in Kelvin scale ?

(a) 373 K   (b) 351 K

(c) 375 K   (d) 78 K

23. The melting point of bromine is -7^0C and its boiling point is 59^0C. What is the state of bromine at room temperature ?

(a) Liquid

(b) Solid

(c) Gas

(d) Mixture of liquid and gas

24. When the solid melts, its temperature:

(a) increases

(b) decreases

(c) remain constant

(d) first increases then decrease

25. Cleansing action of soaps includes:

(a) formation of micelles

(b) emulsification of oil or grease.

(c) lowering of surface tension of water

(d) all of the above

26. The IUPAC name of

$CH_3 - C(CH_3)(OH)CH_2 - CH(CH_3)CH_3$ is:

(a) 2,4-Dimethylpentan-2-ol

(b) 2,4-Dimethylpentan-4-ol

(c) 2,2-Dimethylbutane

(d) Butanol-2-one

27. Which of the following forms a homologus series

(a) Ethane, ethylene, acetylene

(b) Ethane, propane, butanol

(c) methanal, ethanol, propanoic acid

(d) Butane,2-Methylbutane,2,3-Dimethyl butane

28. Nature of oxides of non-metal is:

(a) Acidic   (b) Basic

(c) AMphoteric   (d) Neutral

ROUGH WORK

29. Correct increasing order of reactivity of elements is:

(a) Au,Cu,K,H   (b) Au, Cu, H, K

(c) Cu, Au, K, H   (d) Cu, Au, H, K

30. Which one of the following reaction is not possible:

(a) $Ca + H_2SO_4 \rightarrow CaSO_4 + H_2$

(b) $Cu + H_2SO_4 \rightarrow CuSO_4 + H_2$

(c) $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$

(d) $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$

31. pH of an aqueous solution is 5.5. The hydroxyl ion conc. in the solution would be

(a) -5.5 M   (b) -8.5 M

(c) $10^{-8.5}M$ (d) $10^{8.5}M$

32. The element with atomic number 56 is likely to have the same outer shell configuration as the element with atomic number:

(a) 12   (b) 18

(c) 14   (d) 30

33. Which of the following orders of ionic radii is correctly represented?

(a) $H^- > H^+ > H$ (b) $Na^+ > F^- > O^{2-}$

(c) $F^- > Na^+ > O^{2-}$ (d) $H^- > H > H^+$

34. Which of the following is an example of oxidation reaction ?

(a) $Sn^{+2} - 2e^- \rightarrow Sn^{+4}$ (b) $Fe^{+3} + e^- \rightarrow Fe^{+2}$
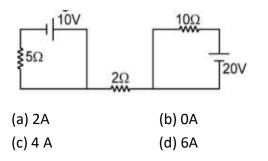
(c) $Cl_2 + 2e^- \rightarrow 2Cl^-$ (d) None of these

35. $BaCl_2(aq) + Na_2SO_4(aq) \rightarrow BaSO_4(s) + 2NaCl(aq)$

The types of reaction are

(1) Displacement

(2) Precipitation

(3) Combination

(4) Double displacement

(a) (1) and (3)   (b) (1), (2) and (3)

(c) (2) and (3)   (d) (2) and (4)

PHYSICS

36. A bullet of 5g, travelling at a speed of 100 m/s penetrates a wooden block up to 6.0 cm. Then the average force applied by the bullet on the block is

(a) 417 N   (b) 8333 N

(c) 83.3 N   (d) zero

37. The units for $\dfrac{G}{g}$ will be (symbols have their usual meanings)
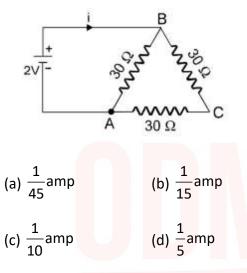
(a) m^2/kg (b) kg/m

(c) $\dfrac{kg}{m^2}$ (d) m/kg

38. In the figure shown the current through 2Ω resistor is

(a) 2A   (b) 0A

(c) 4 A   (d) 6A

39. A person moves 30 m north and then 20 m towards east and finally $30\sqrt{2}$ m in south-west direction. The displacement of the person from the origin will be

(a) 10 m along north (b) 10 m long south

(c) 10 m along west (d) zero

40. The current i in the circuit of figure is:

(a) $\dfrac{1}{45}$ amp (b) $\dfrac{1}{15}$ amp

(c) $\dfrac{1}{10}$ amp (d) $\dfrac{1}{5}$ amp

41. How much electrical energy in kilowatt hour is consumed in operating ten, 50 watt bulbs for 10 hours per day in a month of 30 days ?

(a) 15 (b) 150

(c) 1500 (d) 15000

42. An iceberg is floating in ocean. What fraction of its volume is above the water ?

(Given : density of ice = 900 kg/m³ and density of ocean water = 1030 kg/m³)

(a) 90/103 (b) 13/103

(c) 10/103 (d) 1/103

43. A 60 kg body is pused with just enough force to start it moving across a floor and the same force continues to act afterwards. The coefficient of static friction and sliding friction are 0.5 and 0.4 respectively. The acceleration of the body is
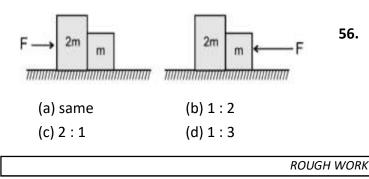
(a) $6 \, m/s^2$ (b) $4.9 \, m/s^2$

(c) $3.92 \, m/s^2$ (d) $1 \, m/s^2$

44. Three equal resistors connected in series across a source of emf dissipate 10 watt. If the same resistors are connected in parallel across the same emf, the power dissipated will be:

(a) 10 watt (b) 30 watt

(c) 103 watt (d) 90 watt

45. DC Motor convert electrical energy into:

(a) Light energy

(b) Mechanical energy

(c) Magnetic energy

(d) None of these

46. The distance of the centers of moon and the earth is D. The mass of the earth is 81 times the mass of the moon. At what distance from the centre of the earth, the gravitational force will be zero:

(a) $\dfrac{D}{2}$ (b) $\dfrac{2D}{3}$ (c) $\dfrac{4D}{3}$ (d) $\dfrac{9D}{10}$

47. The distance between an object and its doubly magnified image by a concave mirror is: [Assume f = focal length]

(a) 3 f/2 (b) 2 f/3 (c) 3 f

(d) depends on whether the image is real or virtual

ROUGH WORK

48. A particle is taken to a height R above the earth's surface, where R is the radius of the earth. The acceleration due to gravity there is:

(a) 2.45 m/s^2 (b) 4.9 m/s^2

(c) 9.8 m/s^2 (d) 19.6 m/s^2

49. An electric bulb is rated 220V and 100W. When it is operated on 110V, the power consumed will be:

(a) 100W   (b) 75W

(c) 50W   (d) 25W

50. If magnetic lines of force are emerging out from a face of circular current carrying conductor then that face will behave as:

(a) North pole

(b) South pole

(c) North pole for some time and then south pole

(d) Nothing can be said

51. Two blocks are in contact on a frictionless table. One has mass m and the other 2m. A force F is applied on 2m as shown in the figure. Now the same force F is applied from the right on m. In the two cases respectively, the ratio of force of contact between the two blocks will be:

(a) same   (b) 1 : 2

(c) 2 : 1   (d) 1 : 3

52. Lenz's law:

(a) is the same as the right hand palm rule

(b) determines the magnitude of an induced e.m.f.

(c) bears no relation to the law of conservation of energy

(d) is useful in deciding about the direction of an induced e.m.f.

53. 1.6 mA current is flowing in conducting wire then the number of electrons flowing per second is

(a) 10^{11} (b) 10^{16}

(c) 10^{19} (d) 10^{15}

54. The initial velocity of the particle is 10 m/s and its acceleration is -4 m/s^2. The distance moved by the particle in 3rd second of its motion is?

(a) 0 m   (b) 2m

(c) 0.5 m   (d) 1 m

55. Which of the following four statements is false

(a) A body can have zero velocity and still be accelerated

(b) A body can have a constant velocity and still have a varying velocity

(c) A body can have a constant speed and still have a varying velocity

(d) The direction of the velocity of a body can change when its acceleration is constant

56. A ray of light travels through a transparent slab with a speed of 2×10^{10} cms^{-1}. This implies that the refractive index of the slab material is

(a) 1.5   (b) 0.667

(c) 2.0   (d) 6.0

ROUGH WORK

57. The refractive index of water is $(4/3)$ and that of glass is $(3/2)$. If the speed of light in glass is $2\times10^8 \, m/s$. The speed of light in water will be:

(a) $1\times10^8 \, m/s$
(b) $(9/4)\times10^8 \, m/s$

(c) $(8/3)\times10^8 \, m/s$
(d) $4\times10^8 \, m/s$

58. Two points P and Q are maintained at the potentials of 10V and -4V, respectively. The work done in moving 100 electrons from P to Q.

(a) $9.60\times10^{-17} \, J$
(b) $-2.24\times10^{-16} \, J$

(c) $-2.24\times10^{-16} \, J$
(d) $-9.60\times10^{-17} \, J$

59. Power of combination of two lens of focal lengths 20 cm and 25 cm respectively.

(a) +1 D
(b) +9 D

(c) -1 D
(d) -9 D

60. A partical is moving towards a fixed spherical mirror. The image:

(a) must move away from the mirror

(b) must move towards the mirror

(c) may move towards the mirror

(d) will move towards the mirror, only if the mirror is convex

61. The distance travelled by light in glass (refractive index = 1.5) in a nanosecond will be

(a) 60 cm (b) 40 cm (c) 30 cm (d) 20 cm

62. A 60 kg man runs up a staircase in 12 seconds while a 50 kg man runs up the same staircase in 11 seconds, the ratio of doing their work is:

(a) 6 : 5
(b) 12 : 11

(c) 11 : 10
(d) 10 : 11

63. A sonar echo takes 4.4s to return from a submarine. If the speed of sound in water is 1500 ms^{-1}, then the distance of submarine from the sonar is:

(a) 1500 m
(b) 3000 m

(c) 3300 m
(d) 3600 m

64. The period of a periodic wave is 0.04s. At a particular position, there is a crest at t = 0. A trough appears at this position at t =

(a) 0.005 s
(b) 0.01 s

(c) 0.015s
(d) 0.02 s

65. A particle of mass m at rest in acted upon by a force F for a time t. Its kinetic energy after an interval t is :

(a) $\dfrac{F^2t^2}{m}$ (b) $\dfrac{F^2t^2}{2m}$ (c) $\dfrac{F^2t^2}{3m}$ (d) $\dfrac{Ft}{2m}$

66. Sound waves of wavelength λ travels from a medium in which their speed is V into a medium in which their speed is 4V. The wavelength of the sound in the second medium is:

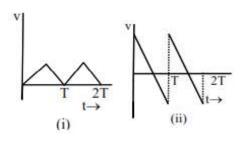(a) λ (b) 2λ (c) 3λ (d) 4λ
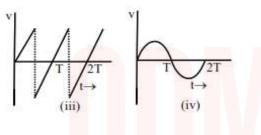
67. Pressure exerted by a liquid column:

(a) Is independent of its density

(b) Is independent of the acceleration due to gravity

(c) Decreases with depth

(d) Is normal to the surface to vessel

68. If the kinetic energy of a body is increased by 100%, then the change in momentum of the body is:

(a) 4.17%
(b) 41.4%

(c) 141.7%
(d) none of these

ROUGH WORK

69. A ball is dropped from certain height on a glass floor so that it rebounds elastically to the same height. If the process continues, the velocity time graph for such a motion would be

(a) (i)   (b) (ii)   (c) (iii)   (d) (iv)

70. A body of mass 5 kg is moving with a momentum of 10 kg m/s. A force of 0.2 N acts on it in the direction of motion of the body for 10 sec. The increase in its kinetic energy is

(a) 2.8 J   (b) 3.2 J   (c) 3.8 J   (d) 4.4 J

MATHEMATICS

71. A survey shows that 63% of the people in a city read newspaper A whereas 76% read news paper B. If x% of the people read both the newspapers, then a possible value of x can be _____.

(a) 37   (b) 29

(c) 65   (d) 55

72. $\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+\sqrt{6+.....}}}}}} = ?$

(a) 3   (b) 6

(c) 9   (d) ∞

73. For what values of a, the equation

$$(a-2)(a-3)x^2 - (a^2-3a+2)x + 2a - a^2 = 0$$

has more than two roots.

(a) 3   (b) 2

(c) 1   (d) 0

74. The quadratic equation with rational coefficients whose one root is $2+\sqrt{3}$ is _____.

(a) $x^2 + 4x + 1 = 0$ (b) $x^2 - 4x + 1 = 0$

(c) $x^2 + 4x - 1 = 0$ (d) $x^2 + 2x - 1 = 0$

75. The number of real roots of the equation $e^{4x} + 3^{3x} - 4e^{2x} + e^x + 1 = 0$ is :

(a) 1   (b) 2

(c) 3   (d) 4

76. A value of b for which the equations $x^2 + bx - 1 = 0$, $x^2 + x + b = 0$ having one root in common is _____.

(a) $-\sqrt{2}$ (b) $-i\sqrt{3}$

(c) $i\sqrt{5}$ (d) $\sqrt{2}$

77. In $\triangle ABC, \angle A : \angle B : \angle C = 2:3:5$ then angle at B is

(a) 54^0 (b) 126^0

(c) 136^0 (d) 64^0

ROUGH WORK

78. If two interior angles on the same side of a transversal intersecting two paralle lines are in the ratio 5 : 4, then the greatest angle is_____.

(a) 54^0 (b) 100^0

(c) 120^0 (d) 136^0

79. The line $2x - 3y = 5$ and $3x - 4 = 7$ are diameters of a circle of area 49π sq. units. Then the equation of this circle is _____.

(a) $x^2 + y^2 + 2x - 2y = 47$

(b) $x^2 + y^2 + 2x - 2y = 62$

(c) $x^2 + y^2 - 2x + 2y = 62$

(d) $x^2 + y^2 - 2x + 2y = 47$

80. The expression $\dfrac{\tan A}{1 - \cot A} + \dfrac{\cot A}{1 - \tan A}$ can be written as:

(a) $\sin A \cos A + 1$ (b) $\sec A \cosec A + 1$

(c) $\tan A + \cot A$ (d) $\sec A + \cosec A$

81. Find the value of

$\tan 225^0.\cot 405^0 + \tan 765^0 \cot 675^0$

(a) 1 (b) -1

(c) 0 (d) None

82. The mean of 16 observation is 16. If one observation 16 is deleted and three new observations valued 5,5 and 6 are added, then the mean of the new observations is _____.

(a) 16 (b) 15.5

(c) 14.22 (d) 13.5

83. In a frequency distibution, the mean and median are 21 and 22 respectively, then its mode is approximately.

(a) 20.5 (b) 22.0

(c) 25.5 (d) 24.0

84. How many three digit numbers are divisible by 6 ?

(a) 149 (b) 150

(c) 151 (d) 166

85. If a rectangulars sheet of paper $44cm \times 22cm$ is rolled along its length of form of cylinder, then find the volume of cylinder.

(a) 3388 CH^3 (b) 3888 CH^3

(c) 8833 CH^3 (d) 3838 CH^3

86. Length of minute hand a clock is 14cm. Area formed by this hand in 5 minutes is _____.

(a) $\dfrac{154}{3}$ (b) 154

(c) $\dfrac{215}{3}$ (d) $\dfrac{205}{3}$

87. A semi-circular piece of paper of radius rcm is folded to form a cone. The volume of the cone thus formed is _____ CH^3.

(a) $\dfrac{\pi r^3}{\sqrt{3}}$ (b) $\dfrac{\pi r^3}{8\sqrt{3}}$

(c) $\dfrac{\pi r^3}{2\sqrt{3}}$ (d) $\dfrac{\pi r^3}{4\sqrt{3}}$

ROUGH WORK

88. Side of a cube is increased by 50% then what percent increase will be in the area of the vertical faces of the cube ?

(a) 125% (b) 150%

(c) 100% (d) 50%

89. The area of the largest circle that can be drawn inside a square side 28 cm is _____ .

(a) 17248 (b) 784

(c) 8624 (d) 616

90. A number is selected from numbers 1 to 27. The probability that its prime is :

(a) $\dfrac{2}{3}$ (b) $\dfrac{1}{6}$

(c) $\dfrac{1}{3}$ (d) $\dfrac{2}{9}$

91. If $x^2 - 3x + 1 = 0$, then the value of $x^5 + \dfrac{1}{x^5}$.

(a) 87 (b) 123

(c) 135 (d) 201

92. If $p(x) = 2x^3 - 3x^2 + 5x - 4$ is divided by $(x - 2)$. What is remainer ?

(a) 12 (b) 8

(c) 10 (d) 1.5

93. If ratio of length of a vertical rod and length at its shadow is $\sqrt{3} : 1$, then the angle of elevation of sum will be:

(a) 30^0 (b) 45^0

(c) 60^0 (d) 90^0

94. In $\triangle ABC$, $m\angle B = 90^0$, $AB = 4\sqrt{5}$, $BD \perp AC$, $AD = 4$ then $ar(\triangle ABC) = $ _____ .

(a) 96 sq. units (b) 80 sq. units

(c) 120 sq. units (d) 160 sq. units

95. In a right angled triangle, the difference of the hypotense and the base is 2 cm. The hypotenese exceeds twice the height by 1 cm. The base of the triangle is ____ cm.

(a) 8 (b) 15

(c) 17 (d) 21

96. If the vertices of a ttriangle ABC are $(2, -2)$, $(-2, 1)$ and $(5, 2)$ will be

(a) scalenle triangle

(b) equilateral triangle

(c) isosceles triangle

(d) right-angle triangle and isosceles triangle

97. The x-axis divides the line joining A(2,-3) and B(7,4) in the ratio:

(a) 2 : 15 (b) 2 : 3

(c) 3 : 2 (d) 1 : 2

98. If 9 times the 9th term of an Ap is equal to 13 times the 13th term then the 22nd term of the AP is _____ .

(a) 13 (b) 9

(c) 22 (d) 0

99. How many terms of the sequence, $20 + 19\dfrac{1}{3} + 18\dfrac{2}{3} + $ _____ must be taken so that then sum is 300.

(a) 25 or 36 (b) 25 or 31

(c) 26 or 31 (d) 21 or 36

ROUGH WORK

100. The angle of a quadrilateral are in AP and the greatest angle is 120., the angles in radian are

(a) $\dfrac{\pi}{3}, \dfrac{4\pi}{9}, \dfrac{5\pi}{9}, \dfrac{2\pi}{3}$　　(b) $\dfrac{\pi}{3}, \dfrac{\pi}{2}, \dfrac{2\pi}{3}, \dfrac{3\pi}{3}$

(c) $\dfrac{\pi}{3}, \dfrac{\pi}{2}, \dfrac{\pi}{6}, 3\pi$　　(d) None

BIOLOGY

71. Chromosomes are composed of ___(i)___ and proteins and the functional segments of ___(i)___ are called ___(ii)___ here (i) and (ii) respectively are

(a) Carbohydrate and gene

(b) DNA and Gene

(c) Lipid and Carbohydrate

(d) Carbohydrate and DNA

72. Which of the following tissue connect muscle to bone ?

(a) Cartilage　　　(b) Tendon

(c) Ligament　　　(d) Fibroblast

73. The function of ___(i)___ is to release Energy in Form of ATP. Here (i) is

(a) Leucoplast　　(b) Ribosome

(c) Mitochondria　(d) Golgi apparatus

74. Which plant tissue has lignified cell wall ?

(a) Parenchyma　　(b) Collenchyma

(c) Epidermis　　　(d) Sclerenchyma

75. Crops like Maize and cotton generally sown From

(a) October to March

(b) June to September

(c) March to April

(d) January to March

76. How many of following Disease are caused by Bacteria ?

Dengue, Hepatitis, Anthrax, Malaria, Typhoid, Tuberculosis, chicken pox

(a) Three　　　　(b) Two

(c) Five　　　　　(d) Four

77. Species found only in particular area, Not naturally found anywhere else.

(a) Threatened species

(b) Endemic species

(c) Endangered species

(d) Extinct species

78. **Assertion - Reason type question.**

Assertion : Birds cover long distance called migratory Bird.

Reason : India has 85% of Asian elephant in whole word.

(a) Both Assertion and Reason are true and (R) is correct explanation of Assertion.

(b) Both Assertion and Reason are true and (R) is not correct explanation of Assertion.

(c) Assertion is true but Reason is false.

(d) Assertion is false but Reason is true.

ROUGH WORK

79. Match the column.

Column I (Agricultural Tools)	Column II (Their Uses)
A. Dhekli	P. used for cutting of crops
B. Hoe	Q. used to remove weeds
C. Seed drill	R. used for sowing
D. Sickle	S. used for sowing

(a) A(P), B,(Q), C(P,S), D(R,S)

(b) A(R), B(Q), C(Q,S), D(P)

(c) A(P,S), B(Q), C(R,S), D(P)

(d) A(Q,S), B(P), C(Q), D(R)

80. Which of following is multicellular organism?

(a) Bacteria   (b) Paramecium

(c) Chlamydomonas   (d) Penicillium

81. Who coined the term "Protoplasm is fluid substance of the cell"?

(a) Robert Hooke   (b) Robert Brown

(c) Purkinje   (d) Virchow

82. The Disease ___(i)___ is transmitted by Sexual contact whereas the Disease ___(ii)___ spreads through bite of infected Dogs. Here (i) & (ii) are

(a) Typhoid and Syphillis

(b) AIDS and Rabies

(c) Pneumonia and AIDS

(d) Syphillis and Tuberculosis

83. Which of following Flora of pachmarhi Biosphere Reserve ?

(a) Bison   (b) Barking Deer

(c) Sal   (d) Cheetal

84. Which of following is not an example of eukaryotic cell ?

(a) Amoeba   (b) Rhoeo leaf cell

(c) Lactobacillus   (d) Paramecium

85. Which of following plant has unisexual Flowers?

(a) Hibiscus   (b) Papaya

(c) Mustard

(d) Both Papaya and Mustard

86. Male germ cell produced by pollen grain Fuses with female gamete present in ?

(a) Stigma   (b) Ovule

(c) Pollen tube   (d) Stamen

87. Select correct one From Following regarding Haemodialysis?

(a) (Osmotic pressure) Blood = (osmotic pressure) Dialysing fluid

(b) (Osmotic pressure) Dialysing fluid > (Osmotic pressure) Blood

(c) (Osmotic pressure) Dialying fluid < (osmotic pressure) Blood

(d) (Osmotic pressure) Blood $\geq$ (Osmotic pressure) Dialysing fluid.

88. When a pea plant heterozygous for violet Flower colour is self crossed then 450 offspring have violet colour. What is number of offspring heterozygous for violet Flower colour ?

(a) 300   (b) 225   (c) 113   (d) 200

89. Which of following changes that occur in early teenage years is not common to both boys and girls?

ROUGH WORK

(a) Hair appears on leg and arm

(b) Skin becomes oily and begins to develop pimples

(c) Genital area becames darker in colour

(d) Voice begin to crack

90. At night transport of water and minerals in plants occurs mainly due to effect of ?

(a) Transpiration pull (b) Root pressure

(c) Suction pressure (d) Systolic pressure

91. Which of following combination of Tissue Fundamentally enables most animals to move rapidly in response to Stimuli ?

(a) Nervous Tissue and Muscular Tissue

(b) Adipose Tissue and Muscular Tissue

(c) Connective Tissue and Nervous Tissue

(d) Epithelial Tissue and Connective Tissue

92. **Statement: I-** Funaria and Fern have naked embryos that are called Spores.

Statement: II- Anglosperm are non Flowering plant.

(a) Statement I is True and statement II is False

(b) Statement II is True and statement I is False

(c) Both Statement are True

(d) Both Statement are False

93. Nucleolus is present in

(a) Cytoplasm of prokaryotes

(b) Nucleoid of prokarryotes

(c) Cytoplasm of Eukaryotes

(d) Nucleus of Eukaryotes

94. Time duration For completion of one cardiac cycle?

(a) 0.6 sec (b) 0.7 sec

(c) 0.8 sec (d) 0.9 sec

95. Largest Gland of Human Body is ?

(a) Femur (b) Pancreas

(c) Lungs (d) Liver

96. A Farmer needs to spray 2, 4-D in crop Field This indcates that

(a) He wants to make his crop resistant to drought

(b) There are undesirable plant in his crop field

(c) His crop requires more nitrogen

(d) His crop is suffering from Bacterial and Fungal infection

97. Matrix of connective tissue contain calcium and phosphorous Minerals and specialised cell named _____ ?

(a) Chondrocytes (b) Fibroblast

(c) Mast (d) Osteocytes

98. Excretory parts that are paired occurs in Human being ?

(a) Ureter, Urethra, Urinary Bladder

(b) Urinary Bladder and Urethra

(c) Kidney and urter

(d) Kidney and urethra

99. Consider following Box.

| Fog, Mist, Sponge, Clouds, Pumice |

Total number of Aerosol is ?

(a) 2 (b) 3

(c) 4 (d) 5

100. Normal value of Blood pressure in Human is ?

(a) $\dfrac{140}{90}$mm Hg (b) $\dfrac{120}{80}$mm Hg

(c) $\dfrac{150}{90}$mm Hg (d) $\dfrac{110}{60}$mm Hg

| ROUGH WORK |

ODM Scholarship Admission Test 2024

OSAT I COMMERCE

SAMPLE QUESTION PAPER

MAT

1. You are visiting a place for the first time and are travelling in a bus. Suddenly you realise that the driver is taking the bus to a lonely place with no right intentions. You would
   (a) with the help of some other passengers, try to baffle the driver and take over the bus
   (b) sit and wait to face the repercussions
   (c) jump out of the running bus
   (d) console the worried passengers

2. 5 days ago Shweta lost her phone. 2 days after loosing the phone she lodged a complaint with police. 6 days after lodging the complaint she bought a new phone. 4 days after buying a new phone i.e on a Thursday she found her old phone. One which day did she loose her phone?
   (a) Sunday   (b) Monday
   (c) Saturday   (d) Friday

3. Which year subsequent to 1996 had the same calendar as that of the year 1996?
   (a) 2001   (b) 1998   (c) 1999   (d) 2024

4. Nisha was born on 30 January. Reshma is older than Nisha by 21 days. During that year, the Republic day was celebrated on Wednesday. On which day was Reshma born?
   (a) Sunday   (b) Monday
   (c) Tuesday   (d) Friday

5. If any two letters in the word PRISON have as many letters between them in the word as there are in the English alphabet, they form an alpha-pair. How many such alpha-pairs are there in the word PRISON?
   (a) 4   (b) 1   (c) 2   (d) 3

6. Find the missing number in the given figure-

9	8	4
	2	
2	6	?

   (a) 6   (b) 8   (c) 7   (d) 9

7. Number of letters skipped in between adjacent letters in the series decreases by two. Which of the following series observes this rule?
   (a) EPVAF   (b) GPWBE
   (c) UCJOP   (d) XFMQU

Directions (Q. No. 8 to 12):- Write which number in sequence replaces the question mark (?)

8. 2, 9, 28, 65, ?
   (a) 121   (b) 195   (c) 126   (d) 103

9. 78, 79, 81, ?, 92, 103, 119
   (a) 88   (b) 85   (c) 84   (d) 83

10. 2, 12, 36, 80, 150, ?
    (a) 194   (b) 210   (c) 252   (d) 258

11. 1234, 1240, 1246, 1258, 1268, ?
    (a) 1280   (b) 1284   (c) 1285   (d) 1290

12. 21, 23, 29, 47, 75, ?
    (a) 87   (b) 92   (c) 99   (d) 110

13. You are the manager of the department. You get to know that one of the subordinates is having a problem with his family, since his father is supposed to undergo bypass surgery. But at the same time the subordinate is very important for the current project which you have undertaken. The subordinate wants two-weeks leave. What would you do?
    (a) Give him your support by assuring him that his duty towards his father is more important.
    (b) Not empathizes with the employee's situation and ask him to stay
    (c) Get an extension for the project to be submitted as the employee is very efficient and you can't trust anyone else
    (d) Transfer the work to some other employee of similar calibre

14. Pramod is standing in the centre of the row of boys. Pradip is on the fourth place of left side of Pramod. Prasad is on the 8th place of right side of Pradip. Prasad is standing in the centre of Prasanna and Pramod. Then, how many boys are there to the left side of Prasad?
    (a) 12   (b) 15   (c) 17   (d) 8

15. In a row A is standing on the 11th place. B is standing on the 4th place of right side of A. C is standing on the 12th place before B. so what will be the position number of boy standing between C and A?
    (a) 5th   (b) 8th   (c) 6th   (d) 7th

16. In a row Manoj is last but second. Rasmesh is standing before him after three students. Suresh is standing on 7th place before Ramesh. The place of Suresh is 5th in a row, so what is the total No. of students in a row?

(a) 13   (b) 16   (c) 14   (d) 17

17. In a code language:

CAR = 234   FAT = 256   TOC = 468   Then 'F' = ?

(a) 6   (b) 2   (c) 5   (d) 4

Directions (Q. No. 18 & 19) Choose and substitute the correct set of signs in place of (*) star, selecting from the given alternatives to make the equations meaningful.

18. 48 * 5 * 9 * 3

(a) +, ×, =   (b) =, +, ×
(c) ×, +, =   (d) =, ×, +

19. 35 * 7 * 6 * 3 * 10

(a) +, −, =, ×   (b) =, ×, +, −
(c) −, +, ×, =   (d) =, ×, −, +

20. Find the missing number in the given figure.

(a) 6   (b) 7   (c) 8   (d) 9

Directions (Q. No. 21 to 23): The following questions based on the letters arranged in a pyramid. Study the pattern and find the missing set of letters using the pyramid.

21. R K F : Q J E :: ? : Y P I

(a) S L G   (b) Y X W   (c) X O H   (d) I O W

22. B C D : F G H :: L M N : ?

(a) K L M   (b) S T U   (c) V W X   (d) T U V

23. J K S : P O W :: L M U : ?

(a) P X Y   (b) N M U   (c) K L T   (d) O N V

Directions (Q. No. 24 to 28): Observe the solid and answer the questions.

24. How many cubes are there?

(a) 55   (b) 60   (c) 64   (d) 63

25. How many cubes are there in the 2nd layer from the top?

(a) 12   (b) 14   (c) 16   (d) 18

26. How many cubes are there in the 2nd layer from the bottom?

(a) 12   (b) 14   (c) 16   (d) 18

27. How many minimum number of cubes are required to make a larger cube?

(a) 7   (b) 8   (c) 9   (d) 10

28. How many cubes are there, whose we can see only three surfaces from all sides?

(a) 7   (b) 9   (c) 10   (d) 12

29. $50 \times 50 \times 50 \times \ldots$ (where there are a hundred 50s is how many times of $100 \times 100 \times 100 \times \ldots$ (where there are fifty 100s)?

(a) $25 \times 25 \times 25 \times \ldots$ (where there are fifty 25s)

(b) $4 \times 4 \times 4 \times \ldots$ (where there are fifty 4s)

(c) $2 \times 2 \times 2 \times \ldots$ (where there are fifty 2s)

(d) None of these

30. There are nine coins that are identical in appearance. One coin weighs more than the other coins which have equal weight. With a balance scale to determine the coin that is heavier in only two weighings, how many coins on each side of the balance scale would you weigh first?

(a) 1 vs 1   (b) 2 vs 2   (c) 3 vs 3   (d) 4 vs 4

ENGLISH

31. The birth of a girl child in Indian society is an _____ event.
    (a) Unwelcomeness   (b) Unwelcome
    (c) Unwelcomely   (d) Unwelcomingly

32. We should plant a _____ number of trees to reduce the environmental pollution
    (a) great   (b) big   (c) large   (d) high

33. The tireless work and selfless help of the people controlled the _____ within a few day
    (a) occasion   (b) event
    (c) situation   (d) incident

34. Three children have been _____ from the school for persistent bad behavior.
    (a) removed   (b) deleted
    (c) creased   (d) abolished

35. Tanu Bhardwaj, a young poetess have been receiving a lot of _____ publicity for her impressive poetry.
    (a) adorable   (b) adverse
    (c) additive   (d) average

36. The Kapil Sharma show has been _____ the best comedy show of the year.
    (a) valued   (b) rated
    (c) evaluated   (d) viewed

37. The chief guest was _____ at the school gate by the principal and other staff members.
    (a) respected   (b) greeted
    (c) humoured   (d) welcomed

38. All firsts of the baby are _____ in the parents' memories.
    (a) written   (b) carved
    (c) inscried   (d) etched

39. Market leaders usually want to _____ their market share even further, or at least to protect their current market share.
    (a) establish   (b) increase
    (c) dominate   (d) decrease

40. Children grow up and eventually start leading their individual life 'a life that _____ to them'.
    (a) refers   (b) belongs
    (c) relates   (d) concerns

Direction: (Q. No. 41 to 50) In the following passage there are some numbered blanks. Fill in the blanks by selecting the most appropriate word for each blank from the given options.

An important task (41) _____ the youth can successfully undertake is to eliminate the curse of dowry. Dowry is responsible for a large number of deaths of innocent married girls and harassment (42) _____ the parents of the marriageable daughters. The birth of (43) _____ daughter in India society is an unwelcome event. It generates gloom and despair (44) ____ the parents simply because of the large dowry which will be required for marrying the girl. The youth (45) _____ boys and girls, can take a pledge (46) _____ force their parents to stop this undesirable practice. This problem directly concerns the youth (47) _____. Therefore they can easily fight it and (48) _____ lives from being lost. The youth in the cities can get in touch with the youth in the rural areas (49) _____ educate them with a view of creating a mass movement for the abolition of dowry. Where legal sanctions against dowry (50) ____ this social movement by the youth will prove effective.

41. (a) this   (b) that   (c) who   (d) what
42. (a) to   (b) by   (c) for   (d) of
43. (a) any   (b) the   (c) a   (d) each
44. (a) with   (b) to   (c) among   (d) for
45. (a) every   (b) both   (c) all   (d) no
46. (a) will   (b) can   (c) might   (d) ought
47. (a) themselves   (b) himself
    (c) herself   (d) itself
48. (a) can save   (b) saved
    (c) save   (d) saves
49. (a) yet   (b) and
    (c) although   (d) but
50. (a) will nearly fail   (b) had nearly failed
    (c) nearly failed   (d) have nearly failed

Direction: (Q. No. 51 to 55): Read the following passage carefully and answer the questions based on it. Choose the most appropriate option.

The capitalist system of society does not foster healthy relations among human beings. A few people own all the means of production and others though nominally few have to sell their labour under conditions imposed upon them. The emphasis of capitalism being on the supreme importance of material wealth and intensity of its appeal is to the acquisitive intensity to promotes warship of economic power with little regard to the means employed for the acquisition and the end that it serves. By the exploitation of human being to the limits of endurance its concentration is on the large profit rather than maximum production. Thus, the division of human family depends on the basis of economic circumstance as this is injurious to division of human dignity. And, when the harrowed poor turn into the founders of religion for succour, they rather offer a subtle defense for the established order. They promise future happiness for their present suffering and conjure up visions of paradise to redress the balance to soothe the suffering and this revolt of the tortured men. The system imposes injustice, the religion justifies it.

51. Capitalism is injurious to human relations because it divides society into two groups:
    (a) working and non-working
    (b) exploiters and exploited
    (c) religious and irreligious
    (d) buyers and sellers

52. In a capitalistic system of society each man wishes:
    (a) to require maximum wealth
    (b) to produce maximum wealth
    (c) to have visions of paradise
    (d) to soothe the sufferings of others

53. In a capitalist system:
    (a) the means justify the ends
    (b) the ends justify the means
    (c) the means endorsed by religion are strictly followed
    (d) means which lead to exploitation are strictly prohibited

54. The passage indicates that the capitalist system is:
    (a) fair   (b) ambitious
    (c) prosperous   (d) dehumaning

55. The established order is supported by religion to
    (a) alleviate the suffering of the poor in the capitalist system
    (b) perpetuate the injustice imposed by the capitalist system
    (c) balance the suffering of the poor with hopes of future rewards
    (d) help the tortured men to seek redress

Direction: (Q. No. 56 to 60) Read the following poem carefully and answers the questions based on it. Choose the most appropriate option:

I lay in sorrow, in deep distress,
        My grief a proud man heard:
His looks were cold, he gave me gold,
        But not a kindly word
My sorrow passed-I paid him back
        The gold he gave to me.
Then stood erect and spoke my thanks
        And blessed his charity
I lay in what and grief and pain
        A poor man passed my way
He bound my head, he gave me bread,
        He watched me night and day
How shall I pay him back again
        For all he did to me?
Oh, gold is great, but greater far
        Is heavenly sympathy

56. How did the proud man help the poet when he was in deep distress?
    (a) He took him home
    (b) he gave some money
    (c) he pitied the poet
    (d) he watched the poet day and night

57. What was not given by the proud man to the poet?
    (a) gold   (b) sympathy
    (c) money   (d) attention

58. How did the poor man take care of the poet?
    (a) The poor man bound his head which was hurt
    (b) The poor man gave him food and gold
    (c) The poor man gave him some money
    (d) The poor man gave food to the poet and took care of him day and night

59. Which of the following statement is not true?
    (a) The poor man thanked the heavenly sympathy of the poet.
    (b) When the poet was in sorrow he was given money
    (c) The poet repaid his debt to the proud man by blessing his charity
    (d) The poet says he cannot repay the poor man for his sympathy

60. Which word in the poem "feeling of pity or sorrow for the distress of another"?
    (a) kindness   (b) blessing
    (c) sympathy   (d) charity

SOCIAL STUDIES

61. Arrange the following states in ascending order of population density.
    (I) Assam   (II) Nagaland
    (III) Tripura   (IV) Mizoram
    (a) (I), (II), (III), (IV)   (b) (II), (III), (IV), (I)
    (c) (IV), (II), (III), (I)   (d) (IV), (I), (II), (III)

62. Find out the incorrect statement with respect to black soil
    (a) Black soil is well known for its capacity to hold moisture
    (b) Black soil is rich in phosphoric content
    (c) Black soil is sticky when wet and difficult to work
    (d) Deep crack in black soil helps in the proper aeration of the soil

63. Which type of drainage pattern is formed when the river channel flows along the slope of the terrain?
    (a) Radial   (b) Rectangular
    (c) Trellis   (d) Dendritic

64. Tropic of cancer passes through _____.
    (a) Mizoram   (b) Bihar
    (c) U.P   (d) Nagaland

65. Sivasamudram waterfall is formed by _____ river.
    (a) River Kaveri   (b) River Tapti
    (c) River Narmada   (d) River Godavari

66. Which of the following is not a non-ferrous mineral?
    (a) Bauxite   (b) Copper
    (c) Zinc   (d) Manganese

67. Which of the following mountain peak does not lie in India?
    (a) NamchaBarua   (b) Nanda Devi
    (c) Annapuran   (d) Kamet

68. Which of the following state lead the unification of Germany?
    (a) Rhineland   (b) Hanover
    (c) Prussia   (d) Brunswick

69. Who was the founder of the HoaHao movement?
    (a) PhanBoiChau   (b) HuyunhPhu So
    (c) Liang   (d) Phanchu

70. Which of the following style of education was provided by Tonkin Free School (1907)
    (a) Chinese   (b) French
    (c) Western   (d) Vietnamese

71. The Russian parliament was called as
    (a) Reichstag
    (b) National Assembly
    (c) House of commons
    (d) Duma

72. Which of the following forest communities is wrongly matched.
    (a) Santhals .... Jharkhand
    (b) Oraon .... Nagaland
    (c) Gonds .... Chhattisgarh
    (d) Khassas .... Himachal

73. Which of the following state fall in the category of holding together federations?
    (a) Switzerland   (b) Australia
    (c) US   (d) Spain

74. Match list I with list II and select the answer using the order given below the list
    I. Pressure group   A. Assam Gan
    II. Long term   B. Fertilizer
        Movement   dealing association

III. Single issue movement   C. Women movement

IV. Political party   D. Narmada BachaoAndolan

(a) I-C, II - D, III - A, IV - B

(b) I-B, II - C, III - D, IV-A

(c) I-B, II-D, III-C, IV-A

(d) I-C, II-C, III-B, IV-A

75. Which of the following union territory has its own assembly?

(a) Chandigarh   (b) Lakshaweep

(c) Puducherry   (d) Daman and diu

76. In which of the following country the participation of women in public life is highest.

(a) Denmark   (b) Estonia

(c) Slovakia   (d) Norway

77. How long can the Rajya Sabha delay the money bill passed by the Lok Sabha.

(a) 7 days   (b) 20 days

(c) 25 days   (d) 14 days

78. In which year South Africa become a democratic country.

(a) 26 April 1995   (b) 26 May 1996

(c) 26 April 1994   (d) 25 April 1996

79. Which of the following statement about Kosovo is correct?

(a) Before partition, Kosova was a province of Russia

(b) There were majority of the Albanian people in this province

(c) Massacre of serbs took place

(d) Albanian nationalist Milosevic had won the election

80. Which organization carries out survey for determining the poverty line?

(a) NSSO

(b) CSO

(c) Planning commission

(d) None of the above

81. The price announced by the Government before the sowing season is called

(a) Minimum Price   (b) Support Price

(c) Market Price   (d) Issue Price

82. Which of the following group of countries has better performance in terms of human development than India?

(a) Bhutan, Srilanka, Nepal

(b) Pakistan, Bangladesh, Srilanka

(c) Srilanka, Indonesia, Cuba

(d) Ghana, Kenya, Bangladesh

83. Right to choose, Right to seek redressal, Right to represent and Right to be informed are

(a) Fundamental Rights

(b) Consumer Rights

(c) Fundamental Duty

(d) Consumer Movement

84. In India who directly controls the 'Monetary Policy'

(a) Finance Department of India

(b) Reserve Bank of India

(c) State Bank of India

(d) Prime Minister of India

85. On the basis of ownership types of economy are:

(a) Capitalistic, Socialistic, Developing-Economy

(b) Socialistic, Mixed, Developing-Economy

(c) Capitalistic, Socialistic, Mixed-Economy

(d) Mixed, Developed, Developing-Economy

MATHEMATICS

86. What is the smallest number which leaves the same remainder 1 on division by 18, 24, 30, 42?

(a) 2519   (b) 2520   (c) 2521   (d) 2522

87. What is sum of all factors of 256?

(a) 511   (b) 512   (c) 1023   (d) 1024

88. The difference of the squares of two consecutive natural numbers is 101, what is the sum of the numbers?

(a) 102   (b) 101   (c) 100   (d) 99

89. The sum of two numbers is 40 and their difference is 10. What is their product?

(a) 325   (b) 350   (c) 17   (d) 18

90. The 5th term of an arithmetic sequence is 5 and sum of the first 5 terms is 55. What is its first term?

(a) 15   (b) 16   (c) 17   (d) 18

91. The sum of the first 11 terms and the sum of the first 17 terms of a sequence are equal. What is the sum of the first 28 terms?

(a) 28   (b) 1   (c) -1   (d) 0

92. There are two taps to fill a tank. If both are opened, the tank fills in 1 hour. If the smaller tap alone is opened. It takes 3 hours to fill the tank. How many hours will take to fill the tank, the larger tap alone is opened?

(a) 2   (b) $1\frac{1}{2}1$ (c) $1\frac{1}{3}$ (d) $1\frac{1}{4}$
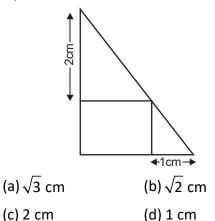
93. What is the number you get on simplifying the sum $\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}+......+\frac{1}{3^{10}}+\frac{1}{2\times 3^{10}}$?

(a) 1   (b) $\frac{2}{3}$ (c) $\frac{1}{2}$ (d) $\frac{1}{3}$

94. What do we get on simplifying the expression? $\frac{x}{x+1}+\frac{x+1}{x}-\frac{1}{x(x+1)}$?

(a) 2   (b) $\frac{1}{2}$ (c) $2x$ (d) $\frac{1}{2}x$

95. The figure shows a right triangle and square inside it. What is the length of a side of the square?

(a) $\sqrt{3}$ cm   (b) $\sqrt{2}$ cm

(c) 2 cm   (d) 1 cm

96. The sum of two numbers and the difference of their squares are both 10. What is the larger of these two numbers?

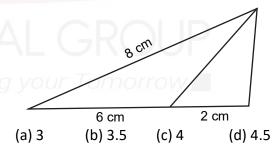(a) 4   (b) $1\frac{1}{4}$ (c) 5   (d) $5\frac{1}{2}$

97. Two dice marked with numbers 1 to 6 are rolled together. What is the probability of getting an odd numbers on one of these and a multiple of three one the other?

(a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{11}{36}$ (d) $\frac{13}{36}$

98. A square is drawn with vertices on a circle. The area of the square is 4 square centimeters. What is the area of the circle (in sq. cm)?

(a) π (b) $\sqrt{2}\,\pi$ (c) $2\,\pi$ (d) $4\,\pi$

99. In the figure. The bisector of an angle of the large triangle cuts the opposite side into two pieces. What is the length of the third side of the triangle in centimeters?

(a) 3   (b) 3.5   (c) 4   (d) 4.5

100. In the figure three vertices of a regular octagon are joined to form a triangle. What is the angle at the top vertex of the triangle?

(a) $22\frac{1}{2}^{0}$ (b) 25^{0} (c) $27\frac{1}{2}^{0}$ (d) 30^{0}

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