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STATE LEVEL SCIENCE TALENT SEARCH EXAMINATION - 2013

SOLUTIONS FOR CLASS : 9

Mathematics

1. (C) Given α and β are the zeroes of f(x). Comparing f(x) with the general form of a quadratic equation, x^2 – (sum of the roots) x + (product of the roots) = 0, we get

$\alpha+\beta = (p-1)$ and $\alpha\beta = (p+2)$.

$$\therefore \alpha^2+\beta^2 = (\alpha+\beta)^2 - 2\alpha\beta$$
$$= (p-1)^2 - 2(p+2)$$
$$= p^2 - 2p + 1 - 2p - 4$$
$$= p^2 - 4p - 3$$

$\therefore$ The required value of $\alpha^2+\beta^2$ $= p^2 - 4p - 3$

2. (D) Diameter of the solid copper ball = 14 cm $\Rightarrow$ radius = 7 cm

Volume of the copper ball

$$= \frac{4}{3}\pi r^3 = \frac{4}{3}\times\frac{22}{7}\times 7\times 7\times 7\ \text{cm}^3$$

$$= \frac{88\times 49}{3}\ \text{cm}^3$$

Diameter of the cylindrical copper wire = 1.4 cm $\Rightarrow$ r = 0.7 cm

Volume of the wire = Volume of the copper ball

Let the length of the wire be 'l' cm.

Then $\frac{88\times 49}{3} = \frac{22}{7}\times 0.7\times 0.7\times l$

$$\Rightarrow l = \frac{88\times 49\times 10}{3\times 22\times 0.7} = \frac{2800}{3}\ \text{cm}$$

$$\Rightarrow l = \frac{2800}{3}\div 100\ \text{m} = 9.33\ \text{m}$$

3. (A) The sum of transposes of the given matrices is the same as the transpose of their sum.

4. (B) Let $x = 16^{50}$. Then $\log x = \log 16^{50}$
$= 50 \log 16$
$= 50 \log 2^4$
$= 50\times 4\times \log 2$
$= 200\times 0.3010$
$= 60.2$

The characteristic is 60. Therefore, the number of digits in 16^{50} is 60 + 1 = 61.

5. (C) According to the definitions of the given sets,

$\mu = \{1, 2, 3, 4, 5, ...\}$; A = {2, 4, 6, 8, ...} and B = {1, 3, 5, 7, ...}

Therefore, (i) $A \cap B = \phi$;

(ii) $A \cap B' = A$;

(iii) $B' - A' = \phi$ and

(iv) $A' - B' = \phi$

Thus, only (i), (iii) and (iv) are equal.

6. (A) If the C.Is of a frequency distribution decrease, the points of the frequency polygon come closer and so, the frequency polygon tends to be a curve. Thus, the limiting form of a frequency polygon is a frequency curve.

7. (A) Given x–intercept is (–3) and y–intercept is 7.

$\therefore$ Equation of the straight line is $\frac{x}{a}+\frac{y}{b} = 1$.

Substituting a = (–3) and b = 7 in $\frac{x}{a}+\frac{y}{b} = 1$

$$\Rightarrow \frac{x}{(-3)}+\frac{y}{7} = 1$$

$$\Rightarrow 7x - 3y = -21$$

$\therefore$ The required equation is $7x - 3y + 21 = 0$.

8. (D) Area = $\left(11\sqrt{2}-2\right)\text{cm}^2$

Length = $\left(5-\frac{4}{\sqrt{2}}\right)\text{cm}$

Therefore, the other side = $\frac{\left(11\sqrt{2}-2\right)\sqrt{2}}{5\sqrt{2}-4}$

$= \frac{\left(22-2\sqrt{2}\right)}{\left(5\sqrt{2}-4\right)} \times \frac{\left(5\sqrt{2}+4\right)}{\left(5\sqrt{2}+4\right)}$

$= \left(3\sqrt{2}+2\right)\text{cm}$

9. (B) For any three sets P, Q and R,

$P \times (Q \cup R) = (P \times Q) \cup (P \times R)$; and not

$(P \cup Q) \times (P \cup R)$.

10. (D) T.S.A. of the cuboidal box

$= 2(lb + bh + hl)$

$= 2(36 \times 24 + 24 \times 12 + 12 \times 36)$

$= 2(864 + 288 + 432)$

$= 2(1584) = 3168 \text{ cm}^2$

Area of each sheet of decorative paper

$= 22 \text{ cm} \times 18 \text{ cm}$

$= 396 \text{ cm}^2$

$\therefore$ No. of sheets needed to gift wrap the box

$= \frac{3168}{396} = 8$

11. (C) From the given Venn diagram,

$X \cup Y = (3x + 43) + 39 + (x + 20)$.

Thus, $127 - x = (3x + 43) + 39 + (x + 20)$

$\Rightarrow 127 - 43 - 39 - 20 = 3x + x + x$

$\Rightarrow 25 = 5x$

$\Rightarrow x = 5$

12. (A) A square has 4 lines of symmetry and a point symmetry at the point of intersection of its diagonals.

Hence, P is true.

An isosceles trapezium has a line symmetry. The line of symmetry passes through the midpoints of parallel sides of the trapezium. Its diagonals are not lines of symmetry. Hence, Q is false.

13. (D) The relation R is reflexive, symmetric and transitive. So, R is an equivalence relation.

14. (C) GK = KH (Given) $\Rightarrow \angle HGK = 55^\circ$

$\therefore \angle JGH = 30^\circ + 55^\circ = 85^\circ$

$\angle JIL$ is the exterior angle of the cyclic quadrilateral GHIJ.

Hence, $\angle JIL = \angle JGH = 85^\circ$.

(Since exterior angle of a cyclic quadrilateral is equal to its interior opposite angle.)

15. (B) The area of the prism painted is its total surface area.

= Area of trapezium ABCD + Area of trapezium EFGH + Area of rectangle BCGF + Area of square CDHG + Area of rectangle ABFE + Area of rectangle ADHE

$\left[\frac{1}{2} \times 2 \times (4.5 + 3) + \frac{1}{2} \times 2 \times (4.5 + 3)\right.$

$\left. = +(3 \times 2) + (3 \times 3) + (4.5 \times 3) + (2.5 \times 3)\right] \text{cm}^2$

$= [7.5 + 7.5 + 6 + 9 + 13.5 + 7.5] \text{ cm}^2$

$= 51 \text{ cm}^2$

16. (B) From the given graph, A = (–4, 3) ; B = (5, 3) and C = (2, –4).

Using the distance formula

$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$,

$\overline{AB} = \sqrt{(5+4)^2 + (3-3)^2} = \sqrt{9^2 + 0} = \sqrt{81}$ units

$\overline{BC} = \sqrt{(2-5)^2 + (-4-3)^2} = \sqrt{9+49} = \sqrt{58}$ units

$\overline{CA} = \sqrt{(-4-2)^2 + (3+4)^2} = \sqrt{36+49} = \sqrt{85}$ units

Hence, $\overline{BC} < \overline{AB} < \overline{CA} \Rightarrow \overline{CA}$ is the longest side. The angle opposite to the longest side is the largest.

Therefore, $\angle A < \angle C < \angle B$ is true

$\Rightarrow \angle A < \angle B < \angle C$ is false.

17. (C) Area of parallelogram PQRS

$= \text{base} \times \text{height}$

$= 9 \text{ cm} \times 3 \text{ cm} = 27 \text{ cm}^2$

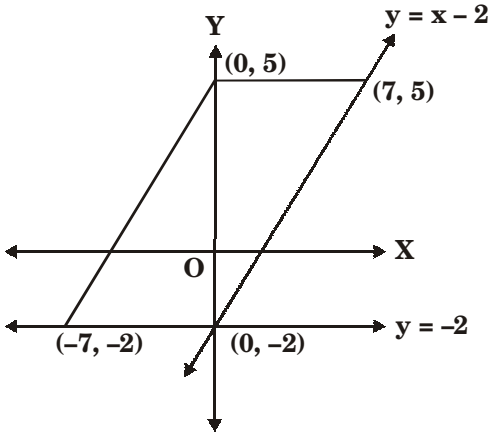
Area of ΔXYZ = Area of parallelogram PQRS.

$\therefore \text{Area of } \Delta XYZ = \frac{1}{2} \times \text{base} \times \text{height}$

$\Rightarrow 27 = \frac{1}{2} \times \overline{XZ} \times \text{height} = \frac{1}{2} \times 13.5 \times \text{height}$

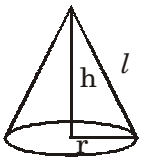
$\therefore$ Height of $\Delta XYZ = \frac{27 \times 2}{13.5} \text{cm} = 4 \text{cm}$

18. (A) Clearly, (5, –2) is not the coordinate of any of the remaining vertices of the parallelogram.



19. (D)

	r	h	l
Raghu's cap	5 cm	12 cm	13 cm
Anand's cap	12 cm	12 – 3 = 9 cm	15 cm



$l = \sqrt{r^2 + h^2} \Rightarrow l_1 = \sqrt{5^2 + 12^2}$

$= \sqrt{25+144}$

$= \sqrt{169}$

$= 13$ cm

and $l_2 = \sqrt{12^2 + 9^2}$ $= \sqrt{144+81}$

$= \sqrt{225}$

$= 15$ cm

C.S.A. $= \pi r_1 l_1$ and C.S.A. $= \pi r_2 l_2$

$\therefore$ The required ratio $= \frac{r_1 l_1}{r_2 l_2} = \frac{5\times13}{12\times15} = \frac{13}{36}$

$= 13 : 36$

20. (C) $\sum_{p,q,r} (p-q)^5 = (p-q)^5 + (q-r)^5 + (r-p)^5$

$\sum_{p,q,r} p^3 = p^3 + q^3 + r^3$

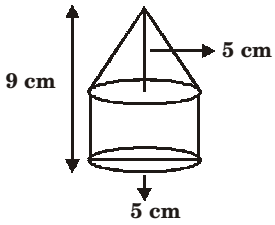
$\left(\sum_{p,q,r} p\right)^4 = (p+q+r)^4$

$\therefore$ The required expression is

$(p-q)^5 + (q-r)^5 + (r-p)^5$

$-(p^3 + q^3 + r^3) + (p+q+r)^4$

21. (A)



Radius of cone = Radius of cylinder

$= \frac{1}{2}\times5\,\text{cm} = 2.5\,\text{cm}$

Height of cone = 5 cm and height of the toy = 9 cm $\Rightarrow$ Height of cylindrical part = (9 – 5) cm = 4 cm

$\therefore$ Volume of wood used to make the toy

= Volume of conical part + Volume of cylindrical part

$= \frac{1}{3}\pi r^2 h_1 + \pi r^2 h_2$

$= \pi r^2\left(\frac{h_1}{3} + h_2\right)$

$= 3.14\times2.5\times2.5\left(\frac{5}{3}+4\right) = 19.625\times\frac{17}{3}$

$= 111.208$

$= 111.21\ \text{cm}^3$

22. (B) $P = 12\sqrt{2} + 4\sqrt{3} - 3\sqrt{12} - \sqrt{50}$

$= 12\sqrt{2} + 4\sqrt{3} - 3\times2\sqrt{3} - 5\sqrt{2}$

$= 12\sqrt{2} + 4\sqrt{3} - 6\sqrt{3} - 5\sqrt{2}$

$= (12-5)\sqrt{2} + (4-6)\sqrt{3}$

$= 7\sqrt{2} - 2\sqrt{3}$

$= 7(1.414) - 2(1.732)$

$= 9.898 - 3.464 = 6.434$

$= 6.43$ (correct to 2 decimal places)

23. (D) Area of the rectangular sheet of paper

$= (6x^2 + 5x + 1)$ sq. units.

To find its dimensions, we need to factorise $6x^2 + 5x + 1$.

$6x^2 + 5x + 1 = 6x^2 + 3x + 2x + 1$

$= 3x(2x + 1) + 1(2x + 1)$

$= (2x + 1)(3x + 1)$

$\therefore$ Length of the rectangular sheet is $(3x + 1)$ units and its breadth is $(2x + 1)$ units.

24. (C)

$$\sqrt{(21p^2+29p-10)(43-28p^2-10)(25-5p-12p^2)}$$

$$=\sqrt{[(3p+5)(7p-2)][(5-4p)(7p-2)][(3p+5)(5-4p)]}$$

(Factorising each expression separately.)

$= (3p + 5)(5 - 4p)(7p - 2)$

25. (D) $\log(x + 1) + \log(x^2 - x + 1) = \log 1001$

$\Rightarrow \log\left[(x+1)(x^2-x+1)\right] = \log 1001$

$\Rightarrow (x + 1)(x^2 - x + 1) = 1001$

$\Rightarrow x^3 + 1 = 1001 \Rightarrow x^3 = 1000$

$\Rightarrow x = \sqrt[3]{1000} = 10$

Physics

26. (A) Effort × effort arm = Load × load arm

$F \times 40\text{ cm} = 2N \times (40 + 60)\text{ cm}$

$$F = \frac{2 \times 100}{40} = 5\text{ N}$$

27. (C) A 100 million years ago, the earth was dominated by dinosaurs on land, in water and in the air.

28. (B) Distance covered in first 5 s

$$S = ut + \frac{1}{2}at^2$$

$$= 0 + \frac{1}{2} \times 2 \times (5)^2 = 25\text{ m}$$

Velocity after 5 s

$v = u + at$

$= 0 + 2 \times 5 = 10\text{ m s}^{-1}$

Distance covered in the next 10 s

$= 10 \times 10 = 100\text{ m}$

Total distance covered by the body

$= 25\text{ m} + 100\text{ m} = 125\text{ m}$

29. (A) At the magnetic pole of the earth, the angle of dip is 90°.

30. (B) Moment of force = Force × perpendicular distance.

$= 10\text{ N} \times 0.2\text{ m}$

$= 2\text{ N m}$

31. (B)
(i) In a stationary wave, the total energy associated with it is twice the energy of each i.e., incident wave and reflected wave.

(ii) Large amount of energy is trapped and stored equally in standing waves. Hence, there is no transmission of energy through the waves.

(iii) A single string appears as double because of the formation of loops due to simultaneous travelling of incident and reflected waves. This occurs due to persistence of vision of our eyes.

32. (C)
(i) When the bob is at the extreme positions 'X' and 'Z', the velocity of the bob is zero and K.E. is also zero. Hence, it has only potential energy at 'X' and 'Z'.

(ii) At position 'Y', the bob has maximum kinetic energy only.

(iii) In between X and Y, Y and Z, it has both potential and kinetic energies.

(iv) The total amount of energy at any point in the path of a pendulum is constant (ignoring the friction due to the air). So, at any point, the total energy is the sum of P.E. and K.E. The total energy in any system always remains constant.

33. (A) The buoyant force does not act through the centre of mass of the body, but it acts through the centroid of the displaced fluid.

34. (B) The given features are related to a screw-jack.

35. (D)
(i) Geothermal heat or energy is used in New Zealand, Iceland, Italy and Northern California because they have natural reservoirs of both hot water and steam.

(ii) Water which percolates into the deeper layers of earth is heated up and converted into steam due to enormous heat of 6000° C in the interior of the earth.

(iii) Electricity generated from the earth is cheap and does not cause air or water pollution.

36. (D) A magnetic needle pivoted at its centre and made to rotate along north-south direction does not remain in vertical position but remains inclined. This inclination varies from place to place on the earth. These observations prove that the earth behaves as a huge magnet. Earth's magnet may be imagined as a giant bar magnet stuffed inside the earth whose two ends running between the geographical north to the geographical south. The earth exerts its magnetic influence upto an extent of 5,28,000 km from its surface.

37. (D)
(i) Metal ring is a solid and it expands on heating and contracts on cooling.

(ii) When a metal ring is heated evenly by placing it in boiling water, it absorbs heat uniformly and expands.

(iii) Both the diameters A and B increase in dimensions.

38. (A) Work done = Force × Distance/displacement

$= 300\text{ N} \times 6\text{ m} = 1800\text{ J}$

39. (A) (i) Sound waves are longitudinal, mechanical waves which need a medium for their propagation and cannot travel through vacuum.

(ii) Elasticity and inertia in a medium play an important role to transmit sound waves.

40. (B) If 'm' is the mass of steam, by using the principle of calorimetry,

Heat lost by a body at higher temperature = Heat gained by a body at lower temperature

$= 100 \times 1 \times (90 - 24) = m\ 540 + m\ (100 - 90)$

$= 100 \times 66 = (540 + 10)\ m = 550\ m$

$550\ m = 100 \times 66 = 6600$ or $m = \frac{6600}{550} = 12\ g$

41. (C) Statements (A), (B) and (D) are true. Statement (C) is false because a dormant volcano is temporarily inactive.

42. (A) Power $= \frac{\text{work done}}{\text{time}}$

Total force used by the boy $= 55 \times 10$

$= 550\ N$

Work done $= 550\ N \times 6\ m$

Power (W) $= \frac{\text{Work done (J)}}{\text{Time taken (s)}}$

$= \frac{(550 \times 6)\ J}{60\ s} = \frac{3300}{60} = 55\ W$

43. (C) The pressure at a point inside a liquid does not depend on the shape of the container or the containing vessel.

44. (A) (i) A fire - alarm has a bimetallic strip made up of two different metals. They expand at different temperatures due to heating or heat absorbed during a fire accident.

(ii) During a fire accident, the metals in metallic strip absorb heat, expand and produce an alarm automatically.

(iii) Among copper and iron, copper expands more than iron, so it bends inwards. It completes the circuit to make the gong to strike the bell.

45. (D) (i) In a triple beam balance, the upper beam is calibrated to measure the mass of objects from 0 to 10 g

(ii) Middle beam – 0 - 100 g

(iii) Lower beam – 0 - 3 kg

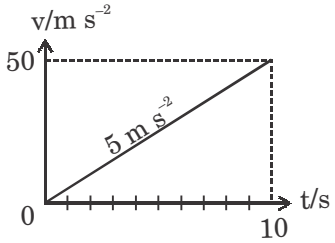
46. (B) A second is the time taken for completing 9,192,631,770 vibrations by a cesium atom of atomic mass number 133.

47. (B) (i) When a car accelerates at 5 m s^{-2} speed, it means that it is moving with a speed of 5 m s^{-1} in every second.

$v = u + at$

$v = 0 + (5)\ (10) = 50\ m\ s^{-1}$

The speed of car at the end of 10 s is 50 m s^{-1}.



48. (C) Alcohol has weak forces of attraction between their molecules so, it is easy to flow. Hence, the shearing stress is rapid in it.

49. (D) Thermostats are used in refrigerators, fire alarms, iron boxes etc. to control the heat produced due to the passage of electric current through them.

50. (D) Biogas has 65% of methane. It also has carbondioxide, hydrogen and hydrogen sulphide gases.

Chemistry

51. (D) Statements (A), (B) and (C) are true of cathode rays.

(i) They are a stream of electrons.

(ii) They are negatively charged particles.

(iii) They are deflected by electric and magnetic fields.

52. (A) For every 10 °C rise in temperature, the rate of a chemical reaction is generally doubled or tripled.

53. (A) By combining Boyle's and Charle's laws, we get a new equation, $\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$ where

$P_1 = 620$ mm $\quad P_2 = 640$ mm

$V_1 = 300$ ml $\quad V_2 = ?$

$T_1 = 27+273 = 300$ K $\quad T_2 = 47+273 = 320$ K

By substituting the above values

$\frac{620 \times \cancel{300}}{\cancel{300}} = \frac{640 \times V_2}{320}$

$V_2 = \frac{^{310}\cancel{620} \times {}^{1}\cancel{320}}{\cancel{640}_{2}} = 310\ ml$

54. (C) (i) Molecules with two oppositely charged poles are called polar molecules and the bond formed between them is called polar covalent bond.

(ii) In non-polar molecules, the two atoms attract the pair of electrons equally and the bond formed is called non-polar covalent bond.

(iii) $O^- - H^+$ bond is polar

$O^- - O^-$ bond is non-polar.

Hence, H_2O_2 can form both polar and non-polar covalent bonds.

55. (B) No. of moles of substance

$$= \frac{\text{Weight of the substance}}{\text{Mol. wt. of the substance}}$$

Mass of 1 mole of NaOH = 23 + 16 + 1 = 40

$\therefore$ No. of NaOH moles in 160 g = $\frac{160}{40} = 4$ moles.

56. (B) A molecule has different types of internal/ intrinsic energies like translational, rotational, vibrational, nuclear, interactional, binding etc. It does not include energy due to gravitation pull of the earth.

57. (A) According to Boyle's law, at constant temperature, $P\alpha\frac{1}{V}$. When the volume of a gas is reduced in a vessel, the number of molecules increase per unit volume. Because of this reason, more molecules collide with the walls of a vessel per second. Hence, number of collisions per second increases. Therefore, a greater momentum is transferred to the walls of a vessel per second and the pressure of a gas increases.

58. (C) Outside the nucleus of an atom, the sub-atomic particle neutron is unstable because it has no charge. The positive charge of proton inside the nucleus and negative charge of electron outside the nucleus are equally balanced and stable.

59. (D) Among the given gases, neon does not combine with other atoms because it is an inert and inactive gas.

The inert gases except helium have 8 electrons in their outermost orbit which accounts to their stability.

60. (A) $2C_2H_2 + 5O_2 \rightarrow 4CO_2 + 2H_2O$

2 vol. 5 vol. 4 vol.

As per the above equation 2 volumes of acetylene requires 5 volumes of oxygen for complete combustion to produce 4 volumes of carbondioxide.

$\therefore$ 200 ml of acetylene will require $\frac{5}{2}\times 200$

$= 500$ ml

i.e., 500 ml of oxygen is required to produce $200 \times 2 = 400$ ml of carbondioxide.

61. (C) (i) Molecules have various internal energies in them like kinetic, rotational, vibrational and binding.

(ii) Bond energies vary from one bond to another and change when products are formed from reactants.

(iii) Bond energy values help us to determine whether a chemical reaction is an exothermic or an endothermic one.

62. (C) Gram molecular mass of N_2

$= 2\times 14 = 28$ g

28 g of N_2 at S.T.P. occupies 22.4 litres.

$\therefore$ Volume occupied by 2.8 g of N_2 at S.T.P.

$$= \frac{22.4\times 2.8}{28} = 2.24\ l$$

63. (C) If the number of moles of reactants and products are same, then the pressure will not have any effect.

$N_2 + O_2 \leftrightarrow 2NO$

64. (D) Following properties belong to ionic substances:

(i) They are rigid and hard

(ii) They have geometrical shape

(iii) They are soluble in water

65. (D) The following factors contribute to the rate of a chemical reaction:

(i) Different substances have different reactivities. Hence, the rate of a chemical reaction depends on the nature of substances.

(ii) If concentration of reactants is increased, it increases the rate of a chemical reaction.

(iii) An increase in the temperature, increases the rate of a chemical reaction. Rate of a chemical reaction is doubled or tripled for every 10 °C rise in temperature.

(iv) Use of a catalyst increases or decreases the rate of a chemical reaction. A positive catalyst increases and a negative catalyst decreases the rate of a chemical reaction.

66. (D) $V_1 = 100$ ml $T_1 = (100 + 273) = 373$ K

$V_2 = 200$ ml $T_2 = ?$

$$\frac{V_1}{T_1} = \frac{V_2}{T_2} = \frac{100}{373} = \frac{200}{T_2}$$

$$T_2 = \frac{V_2T_1}{V_1} = \frac{200\times 373}{100} = 746\ \text{K}$$

T_2 in °C = 746 – 273 = 473 °C

67. (D) In solid state Na^+ and Cl^- ions are immobile. Hence, they are poor conductors of electricity. In molten or aqueous solution, the electrostatic lines of force between Na^+ and Cl^- break which make both the ions free to conduct electricity.

68. (D) (i) A catalyst does not change the equilibrium attained between the reactants and products.

(ii) It increases both the forward and backward reactions to the same extent without itself undergoing any chemical change.

69. (A) (i) To break a mole of H - H bond, 104.2 K.cal. of energy is required.

(ii) To break a mole of Cl - Cl bond, 57.8 K.cal. of energy is required.

(iii) Total energy required to break reactant molecules $H_2 + Cl_2$ is 104.2 + 57.8 = 162 K.cal.

(iv) The energy released in the formation of 2 moles of HCl bonds is 2×103 = 206 K.cal.

(v) Energy spent by reactants (162 K. cal) – Energy released by HCl (206 K. cal) = 44 K.cal.

44 K.cal of heat is released after the formation of HCl.

70. (B) (i) Two moles of hydrogen are same in both.

(ii) One mole of H_2SO_4 contains 1 mole of sulphur atoms and 4 moles of oxygen atoms.

(ii) One mole of H_2SO_3 contains 1 mole of sulphur atoms and 3 moles of oxygen atoms.

Biology

71. (C) X represents fungal cell and Y, animal cell.

72. (B) Kidneys are derived from mesoderm.

73. (D) During metaphase, the centromeres of the chromosomes are lined up along the equatorial plane.

74. (B) 'X' in the given figure represents squamous epithelium found in the alveoli of lungs.

75. (C) Flame cells are the excretory organs in flatworms. They excrete wastes from the body.

76. (A) Sodium chloride is extracted from the sea.

77. (D) Man is an omnivore. He feeds on plants and at the same time depends on primary consumers for their food.

78. (B) During the process of photosynthesis, plants take in CO_2 from the air and release O_2 into the atmosphere. During respiration plants take in O_2 and give out CO_2. Wood obtained from plants is used as fuel and on combustion it releases CO_2 into the air.

79. (B) Biogas is produced from organic wastes by anaerobic fermentation of bacteria.

80. (B) In the given figure 'Q' represents liver. Liver secretes bile salts and bile pigments there are no digestive enzymes in bile. But they change the fats into microscopic colloidal particles.

81. (C) The cap like structure present on kidneys is called adrenal gland.

82. (B) Theprocess of removal of excess water from the plants through stomata is called transpiration. It is not a process in carbon cycle.

83. (A) Cancer of lung is called carcinoma.

84. (C) Cuscuta is a parasitic plant.

85. (A) Meiosis is a reduction division. In meiosis haploid daughter cells are formed.

86. (A) Biomass is the total amount of dry mass produced in an ecosystem in a given period of time.

87. (C) Snails have sharp teeth like structures on their tongue called radula. They scrape the surface of food using radula and swallow the food particles.

88. (D) Animals get their nitrogen when they consume plants and animals.

89. (D) Muscle X is a smooth muscle. Smooth muscles are spindle shaped, unbranched, uninucleated and involuntary.

90. (C) The shape of the red blood cell is like a disc. Its shape allows it to flow easily through blood vessels.