CLASS : IX MATHEMATICS

1. **The remainder R obtained by dividing x^{100} by $x^2 - 3x + 2$ is a polynomial of degree less than 2.**

   Then R may be written as:

   (A) $2^{100} - 1$ (B) $2^{100}(x-1) - (x-2)$

   (C) $2^{100}(x-3)$ (D) $x(2^{100} - 1) + 2(2^{99} - 1)$

2. **Consider the following statements relating to the congruency of two right - angled triangles.**

   I. Equality of two sides of one triangle with some two sides of the second makes the triangles congruent.

   II. Equality of the hypotenuse and a side of one triangle with the hypotenuse and a side of the second respectively makes the triangles congruent.

   III. Equality of the hypotenuse and an acute angle of one triangle with the hypotenuse and an angle of the second respectively makes the triangles congruent.

   Which of the above statements are true?

   (A) I, II and III (B) I and II only

   (C) I and III only (D) II and III only

3. **If $\sqrt{6} = 2.449$, then the value of $\frac{3\sqrt{2}}{2\sqrt{3}}$ is close to:**

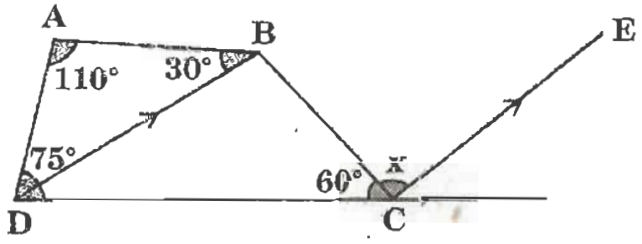
   (A) 1.225 (B) 0.816 (C) 0.613 (D) 2.449

4. **For the equation $\frac{1+x}{1-x} = \frac{N+1}{N}$ to be true, where 'N' is positive, 'x' can have:**

   (A) any positive value less than 1 (B) any value less than 1

   (C) any non-negative value (D) any value

5. **If CE is parallel to DB in the given figure, then the value of 'x' will be:**



   (A) 30° (B) 45° (C) 75° (D) 85°

6. **The polygon(s) formed by $y = 3x + 2$, $y = -3x + 2$ and $y = -2$ is/are:**

(A) an equilateral triangle

(B) an isosceles triangle

(C) a right angled triangle

(D) a triangle and a trapezoid

7. **The bottom, side and front areas of a rectangular box are known. The product of these areas is equal to:**

(A) the volume of the box

(B) the square root of the volume

(C) twice the volume

(D) the square of the volume

8. **ABCD is a parallelogram. 'P' is a point on AD such that $AP = \frac{1}{3}$ AD and 'Q' is a point on BC such that $CQ = \frac{1}{3}$ BC. Then AQCP is a:**

(A) parallelogram (B) rhombus

(C) rectangle (D) square

9. **Two parallel chords of a circle whose diameter is 13 cm are respectively, 5 cm and 12 cm in length. If both the chords lie in a semi-circle, then the distance between the chords is:**

(A) 8.5 cm (B) 5 cm (C) 3.5 cm (D) 3 cm

10. **The degree measure of each of the three angles of a triangle is an integer. Which of the following could not be the ratio of their measures?**

(A) 2 : 3 : 4 (B) 3 : 4 : 5 (C) 5 : 6 : 7 (D) 6 : 7 : 8

11. **Two adjacent sides of a parallelogram are 51 cm and 37 cm. One of its diagonals is 20 cm, then its area is:**

(A) 412 cm^2 (B) 512 cm^2 (C) 612 cm^2 (D) 712 cm^2

12. **If the radius of a circle is a rational number, then its area is given by a number which is:**

(A) rational (B) irrational

(C) integral (D) a perfect square

13. If $\left(a+\frac{1}{a}\right)^2 = 3$, then $a^3 + \frac{1}{a^3}$ equals:

(A) $\frac{10\sqrt{3}}{3}$ (B) $3\sqrt{3}$ (C) 0 (D) $6\sqrt{3}$

14. The solution set of the system of equations

$\frac{4}{x} + 5y = 7$, $\frac{3}{x} + 4y = 5$ is:

(A) $\left(\frac{1}{3}, -1\right)$ (B) $\left(\frac{-1}{3}, 1\right)$ (C) $\left(\frac{-1}{3}, -1\right)$ (D) $\left(\frac{1}{3}, 1\right)$

15. If the arms of one angle are respectively parallel to the arms of another angle, then the two angles are:

(A) neither equal nor supplementary
(B) not equal but supplementary
(C) equal but not supplementary
(D) either equal or supplementary

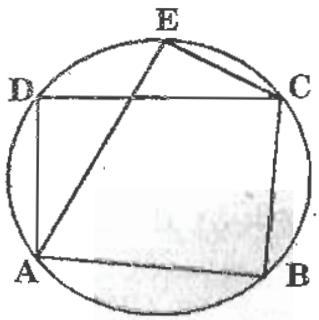
16. ABCD is a parallelogram of area 'S'. E and F are the mid-points of the sides AD and BC respectively. If G is any point on the line EF, then the area of $\triangle AGB$ is equal to:

(A) $\frac{S}{2}$ (B) $\frac{S}{3}$ (C) $\frac{S}{4}$ (D) $\frac{3S}{4}$

17. Mid-points of the sides AB and AC of a $\triangle ABC$ are (3, 5) and (–3, –3) respectively, then the length of the side BC is:

(A) 10 units (B) 15 units (C) 20 units (D) 30 units

18. Given a circle and a quadrilateral ABCD inscribed in it as shown. If $\angle B = 125°$, then $\angle E$ is equal to:

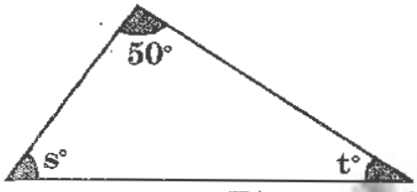


(A) 55° (B) 125° (C) 130° (D) 62.5°

19. A right circular cone has for its base a circle having the same radius as a given sphere. The volume of the cone is one-half that of the sphere. The ratio of the altitude of the cone to the radius of its base is:

(A) $\frac{1}{1}$ (B) $\frac{1}{2}$ (C) $\frac{2}{1}$ (D) $\frac{2}{3}$

20. In the figure given below, if $s < 50° < t$, then:



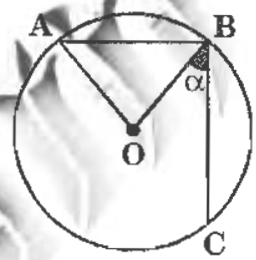
(A) $t < 80°$ (B) $s + t < 130°$

(C) $50° < t < 80°$ (D) $t > 80°$

21. If ABC is a triangle right angled at B and M, N are the mid-points of AB and BC, then $4(AN^2 + CM^2)$ is equal to:

(A) $4\,AC^2$ (B) $5\,AC^2$ (C) $\frac{5}{4}\,AC^2$ (D) $6\,AC^2$

22. In the given figure, 'O' is the centre of circle and AB = BC and $\angle AOB = 90°$, then $\angle\alpha$ is:



(A) 30° (B) 45° (C) 60° (D) None of these

23. Which of the following four numbers is/are rational?

I. $\sqrt{\pi^2}$ **II.** $\sqrt[3]{0.8}$

III. $\sqrt[4]{0.00016}$ **IV.** $\sqrt[3]{-1} \cdot \sqrt{(0.09)^{-1}}$

(A) I and IV (B) I only (C) IV only (D) All of the given

24. Find the value of 'a', if the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x - a$ leave the same remainder when divided by $(x - 1)$.

(A) $a = -1$ (B) $a = 1$ (C) $a = 2$ (D) $a = -2$

25. The line $x - 7 = 0$ is:

(A) parallel to y-axis (B) parallel to x-axis

(C) passing through the origin (D) none of these

CLASS : IX PHYSICS

26. For a moving particle, what does decrease in displacement with time mean ?

(A) The particle is moving towards its initial position.

(B) The acceleration of the particle is approaching zero.

(C) The particle is moving with uniform speed.

(D) The particle is moving with uniform motion.

27. A machine gun of mass 12 kg fires 25 g bullets at the rate of 4 bullets per second with a velocity of 500 m s^{-1}. What force must be applied to the gun to hold it in position ?

(A) 20 N (B) 12.5 N (C) 50 N (D) 75 N

28. *Assertion* : The buoyant force of water on a submerged wooden cube is greater than on a steel cube of equal volume.

***Reason* : The buoyant force on a body is equal to the weight of the liquid displaced by the body.**

(A) Both assertion and reason are true and reason is the correct explanation of assertion.

(B) Both assertion and reason are true, but reason is not the correct explanation of assertion.

(C) Assertion is true, reason is false.

(D) Assertion is false, reason is true.

29. Which of the following statements regarding gravitational force existing between two bodies is TRUE ?

(A) First body exerts attractive force on second body while second body exerts repulsive force on first body.

(B) The gravitational force is zero when they are kept in vacuum.

(C) Force exerted by first body on second is not equal to the force exerted by second body on first.

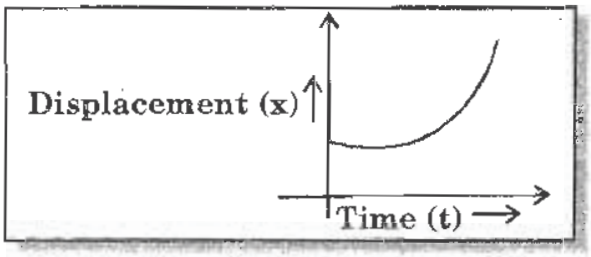
(D) Force exerted by first body on second body is equal to the force exerted by second body on first.

30. A wave source produces 10 oscillations in 100 ms. Find the time period of the wave.

(A) 1 second (B) 0.01 second

(C) 10 second (D) 0.1 second

31. **The graph below represents a particle moving along a straight line, such that its displacement 'x' varies with time 't' as $x = at^2 + bt + c$ where a, b, c are constant.**



Which of the following statements regarding the above graph is false ?

(A) The body moves with an uniform acceleration of 2a.

(B) The final velocity of the body is (b + 2at)

(C) The initial displacement of the body is c.

(D) The initial velocity of the body is (b + c)

32. **Identify which of the statements given below are applicable for an object to move in a circle ?**

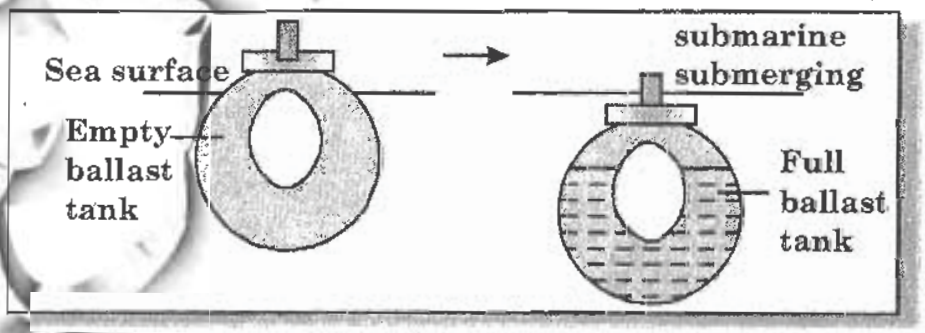
(A) Object must continually slow down.

(B) Object must accelerate.

(C) Object must be acted on by balanced forces.

(D) Object must move with uniform velocity.

33. **Figures (a) and (b) show that a submarine can either sink or float even though the upthrust acting on it is the same. What is the relationship between the weight of submarine and the upthrust when the submarine sinks in water ?**



(A) Weight of submarine < upthrust.

(B) Weight of submarine = upthrust.

(C) Weight of submarine > upthrust.

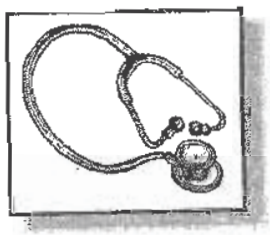
(D) Weight of submarine ≤ upthrust.

34. **An engine of 4.9 kW power is used to pump water from a well 20 m deep. What quantity of water in kiloliters which it can pump out in 30 minutes ?**

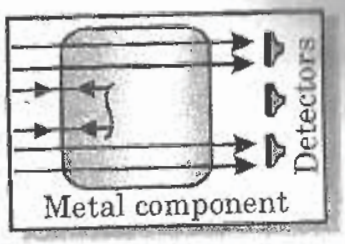
(A) 45 kl (B) 75 kl (C) 25 kl (D) 90 kl

35. **Which of the following applications given below are not applications of ultrasound waves ?**

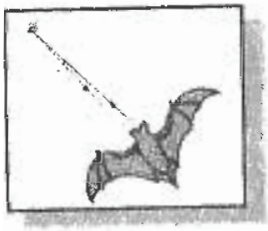
(A)



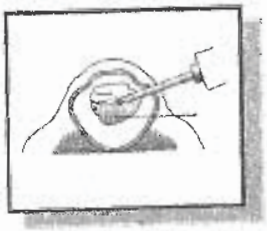
(B)



(C)



(D)



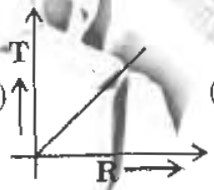
36. **What do you infer, if s - t graphs of two cyclists moving along a straight line, meet at a point ?**

(A) They collide. (B) They move with same speed.

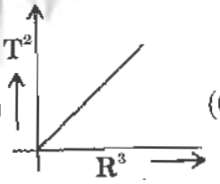
(C) They are at rest. (D) They are starting from rest.

37. **Which of the following graphs represent the motion of a planet about the sun ?**

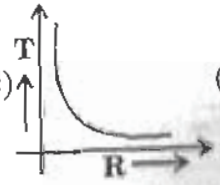
(A)



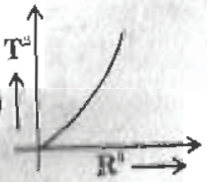
(B)



(C)



(D)



38. **A wooden cylinder floats vertically in water with one fourth of its length immersed. What will be the density of wood ?**

(A) It equals to the density of water.

(B) It equals to half the density of water.

(C) It equals to one fourth the density of water.

(D) It equals to three fourth the density of water.

39. Three different stones are lifted from the ground level to different heights on different planets as given below :

Case 1 :	A 250 g stone lifted to 10 m on earth.
Case 2 :	A 800 g stone lifted to 2 m on Saturn.
Case 3 :	A 1 kg stone lifted to 1 m on Jupiter.

Which of the following statements is true ? ***(Given that the acceleration due to gravity on the Earth, the Saturn and the Jupiter are 10 m s^{-2}, 15 m s^{-2} and 25 m s^{-2} respectively).***

(A) More energy is required in case 2 than case 1.

(B) More energy is required for case 1 than case 3.

(C) Case 1 and case 2 require the same amount of energy.

(D) Case 1 and case 3 require the same amount of energy.

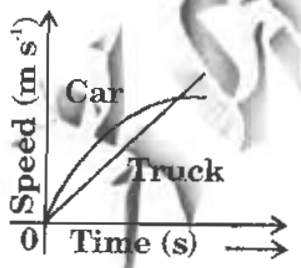
40. A body weighs 12 N on the surface of the moon. What is its weight on the surface of the earth ?

(A) 72 N (B) 2 N

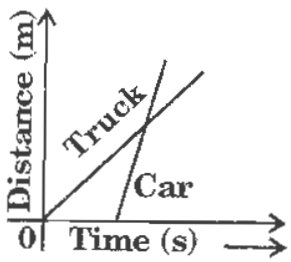
(C) 24 N (D) Zero

41. At the instant when traffic light turns green a car starts with a constant acceleration of 3 m s^{-2}. At the same instant, a truck, travelling with a constant speed of 15 m s^{-1} overtakes and passes the car. Which of the following graphs given below represents the above situation ?

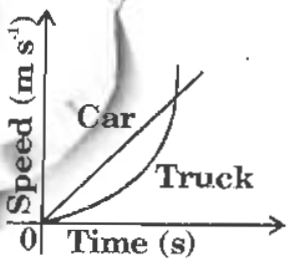
(A)



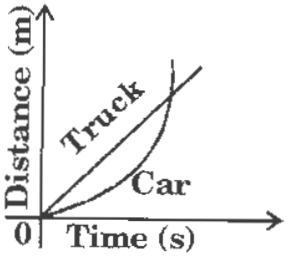
(B)



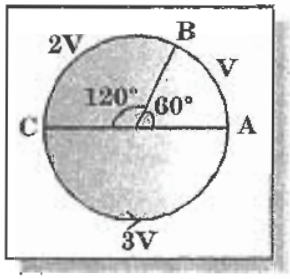
(C)



(D)

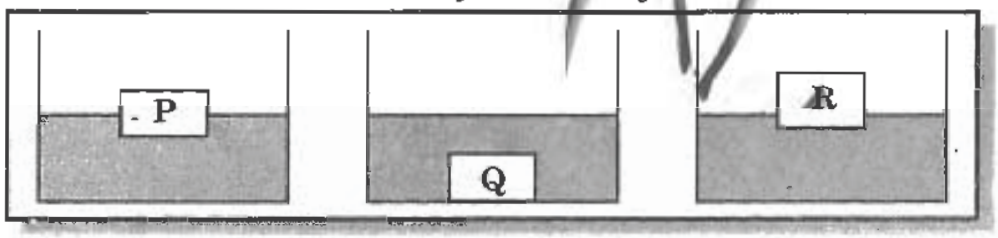


42. Sohail cycles on a circular track in anticlockwise direction as shown in figure. He travels with a speed 'V' to cover the path AB, next with speed '2V' from B to C and with a speed of '3V' from C to A. What is his average speed for the total journey ?



(A) 2V (B) 6V (C) 3V (D) $V/2$

43. Three objects are introduced into the same liquid as shown below. Which of the following is in descending order of relative density of the objects ?



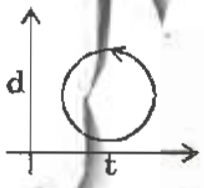
(A) P, Q, R (B) Q, P, R (C) R, P, Q (D) Q, R, P

44. A ball dropped from a 20 m height loses 40 % of its energy on hitting the ground. Find to what height does the ball rebound?

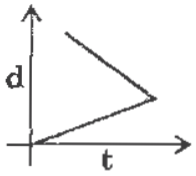
(A) 28 m (B) 8 m (C) 12 m (D) 20 m

45. The motion of an object is plotted by four distance – time graphs. Which of the following graphs given below correctly describe the possible motion of the object ?

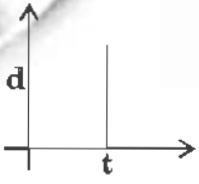
(A)



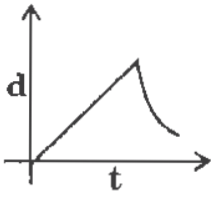
(B)



(C)



(D)



46. Which of the following safety features are used in vehicles to reduce the negative effects of inertia ?

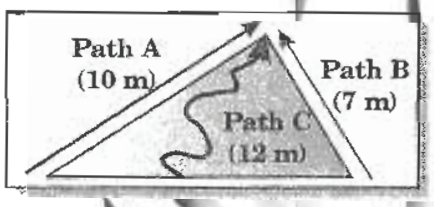
I. Safety seat belts
II. Automatic air bags
III. Absorber bumpers

(A) I and II only (B) I and III only
(C) II and III only (D) I, II and III

47. If F is the force between two bodies of masses m_1 and m_2 at certain separation, then what is the force between $\sqrt{5}\ m_1$ and $\sqrt{3}\ m_2$ at same separation ?

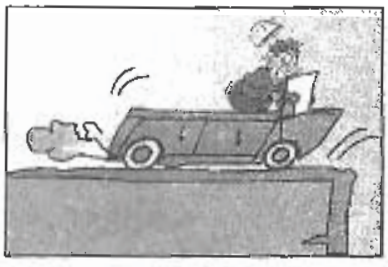
(A) $\sqrt{5}$ F (B) F/$\sqrt{15}$ (C) $\sqrt{15}$ F (D) F

48. There are three paths leading to the top of the hill as shown. Assuming that the friction of the ground is negligible, which of the following statements is true ?



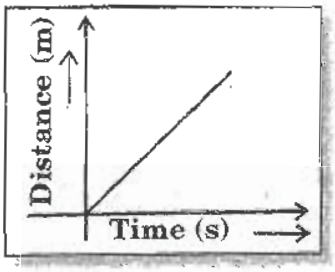
(A) Path C requires the more energy to reach the top.
(B) Path B requires the least energy to reach the top.
(C) Path B requires more energy than path A to reach the top.
(D) All the three paths require the same amount of energy to reach the top.

49. Observe the diagram carefully. A car braked suddenly near a cliff. Explain the motion of the driver.



(A) The driver remain stood up to look at how near his car was to the edge of the cliff.
(B) The driver was thrown forward when the car stopped, as he still has tendency to remain in motion.
(C) The driver tried to lean forward to balance himself.
(D) The driver was moved in the backward direction due to inertia of motion.

50. The translatory motion of an object moving on a smooth surface is represented by following distance – time graph.



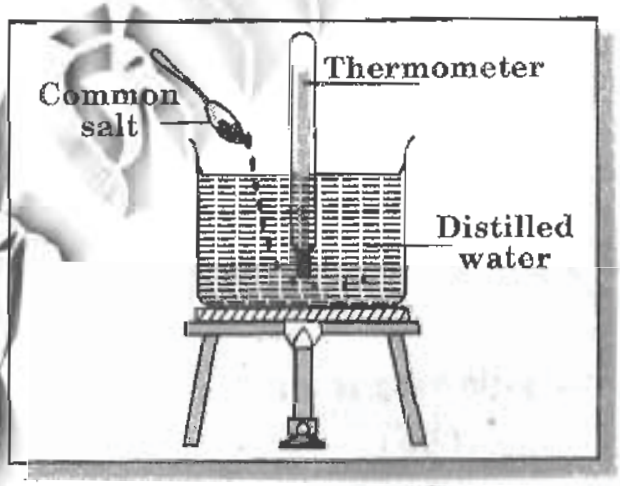
What can be inferred from the graph ?

I. No force is required to keep the object in motion.
II. The speed – time graph of the object is a straight line parallel to time axis.
III. The acceleration of the object is zero.

(A) I and II only (B) I and III only
(C) II and III only (D) I, II and III

CLASS : IX CHEMISTRY

51. A class teacher demonstrates the effect of impurities on the boiling point of water using the arrangement of apparatus as shown below:



What could be the probable thermometer readings recorded during the experiment ?

(A) 0 °C (B) 100 °C (C) 102 °C (D) 99 °C

52. What is the smallest constituent of a matter that retains its chemical identity ?

(A) Atom (B) Molecule (C) Ion (D) Radical

53. At what conditions a gas can be cooled and converted into liquid ?

(A) At its critical temperature by decreasing pressure on it.

(B) Above its critical temperature by increasing pressure on it.

(C) Above its critical temperature by decreasing pressure on it.

(D) Below its critical temperature by increasing pressure on it.

54. Which of the following pairs of colloidal solutions have dispersed phase as liquid and dispersing medium as gas?

(A) Fog, mist (B) Butter, milk

(C) Fog, smoke (D) Smoke, foam

55. The table below shows the melting and boiling points of substances P, Q, R and S:

Substance	Melting point (°C)	Boiling point (°C)
P	-210	-196
Q	-40	360
R	250	800
S	-8	60

Which substance exists in a liquid state over a wide range of temperature ?

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

56. Which of the following is a true solution ?

(A) Copper in gold (B) Sulphur in water

(C) Milk (D) KCl in sulphur dioxide

57. Which of the following is a physical change ?

(A) Magnetisation of iron (B) Curdling of milk

(C) Burning of a candle (D) Cooking of food

58. Identify a pure substance from the following ?

(A) Steel (B) Magnalium

(C) Ammonia (D) Gun powder

59. Identify the pair of substances having same formula unit mass ?

(A) Calcium chloride, potassium carbonate.

(B) Calcium oxide, hydrochloric acid.

(C) Carbon monoxide, ammonia.

(D) Carbon dioxide, nitrous oxide.

60. Which of the following ions is not divalent ?

(A) Sulphate (B) Nitrate (C) Hydrogen phosphate (D) Carbonate

61. Find the number of moles of sodium nitrate which contains 1.5 moles of oxygen atoms.

(A) 0.5 (B) 1.5 (C) 2.0 (D) 1.0

62. An element X combines with oxygen to form compounds P and Q. If the ratio of valency of element X in P to element X in Q is 3 : 5 respectively. What could be the probable compounds P and Q ?

	P	Q
(A)	CO	CO_2
(B)	N_2O_3	N_2O_5
(C)	H_2O	H_2O_2
(D)	CH_4	C_3H_8

63. What is the ratio of number of atoms of respective elements potassium, chlorine and oxygen present in 245 g of $KClO_3$?

(A) 2 : 2 : 3 (B) 1 : 1 : 3 (C) 39 : 36 : 48 (D) 1 : 2 : 6

64. On which of the following factors, molecular arrangement of a substance depends ?

(A) Temperature and pressure.

(B) Concentration and temperature.

(C) Temperature, pressure and concentration.

(D) Volume and pressure.

65. Carbon and oxygen react to produce carbon dioxide. What is the weight of oxygen required to convert 1.5 g of carbon to carbon dioxide ?

(A) 2 g (B) 6 g (C) 1 g (D) 4 g

66. Two atoms $_{92}P^{235}$ and $_{92}P^{238}$ are similar in terms of :

I. Number of protons
II. Number of neutrons
III. Number of electrons

(A) I only (B) I and II only (C) I and III only (D) I, II and III

67. Which of the following conclusions cannot be drawn on the basis of Rutherford's atomic model ?

(A) Total mass of the atom is concentrated at the centre of atom.

(B) Nucleus is located inside the atom containing positively charged particles.

(C) Most of the atom is empty in space.

(D) Electrons revolve around the nucleus in stationary circular orbits.

68. *Assertion :* ^{20}Ne and ^{22}Ne are isotopes.

***Reason :* Noble gases do not exist as isotopes as they are inert.**

(A) Both assertion and reason are true and reason is the correct explanation of assertion.

(B) Both assertion and reason are true, but reason is not the correct explanation of assertion.

(C) Assertion is true, reason is false.

(D) Assertion is false, reason is true.

69. What is the ratio of number of neutrons present in potassium atom and magnesium atoms with mass numbers 39 and 24 ?

(A) 19 : 12 (B) 5 : 3 (C) 5 : 6 (D) 4 : 3

70. The isotopes of an element X are $_{Z}X^{A}, _{Z}X^{A+1}, _{Z}X^{A+2}$ respectively. What is the ratio of number of nucleons in these respective isotopes ?

(A) A : (A + 1) : (A+ 2) (B) 1 : 1 : 1

(C) $(A-Z):((A+1)-Z):((A+2)-Z)$ (D) 1 : 2 : 3

CLASS : IX BIOLOGY

71. Which of the following processes cause juice to ooze out when sugar is sprinkled on strawberries?

(A) Diffusion (B) Transpiration (C) Osmosis (D) Plasmolysis

72. The schematic diagram of the endoplasmic reticulum is shown here. Which of the following statements about the ER is false?

(A) Cells that produce a lot of protein for export are packed with ER

(B) Carbohydrates are added to proteins to produce glycoproteins in the ER

(C) Ribosomes are located within the lumen of the Rough ER

(D) ER provides a pathway for the distribution of nuclear material from one cell to another

73. In an organism, the process of meiosis differs from the process of mitosis in terms of the number of:

I. times the DNA replicates
II. times the nucleus divides
III. daughter cells produced
IV. chromosomes in the daughter cells

(A) I and III only (B) I, II and III only
(C) II and IV only (D) II, III and IV only

74. Study the features given below.

The plant body is not differentiated into root, stem and leaves.
The sex organs are unicellular.

Into which of the following groups would you place the plant with the above features?

(A) Thallophyta (B) Bryophyta
(C) Pteridophyta (D) Phanerogams

75. Which of the following are the ways of conserving and preserving the Earth's natural resources?

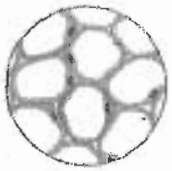
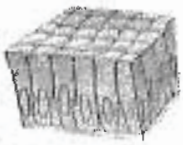
I. Recycle wastes
II. Use alternative energy sources
III. Curb the wastage of non-renewable natural resources

(A) I and II only (B) I and III only
(C) II and III only (D) I, II and III

76. Which of the following is NOT a natural way of destroying bacterial infection?

(A) The production of antibodies (B) The production of gastric juices
(C) The production of antibiotics (D) The production of antitoxins

77. Which of these is NOT an animal connective tissue?

(A)  (B)  (C)  (D) 

78. *Assertion (A)*: Pesticides are used only when the crop is in cultivation.

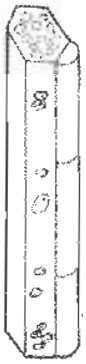
***Reasoning (R)*: They are used to destroy disease vectors.**

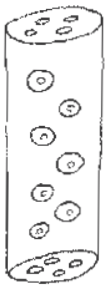
(A) Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'
(B) Both 'A' and 'R' are true, but 'R' is not the correct explanation of 'A'
(C) 'A' is true, 'R' is false
(D) 'A' is false, 'R' is true

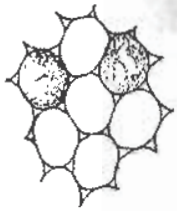
79. In most of the Aschelminthes, respiratory and circulatory systems are absent. Why?

(A) They can absorb oxygen directly from air
(B) They do not have fluids in their body to circulate
(C) They are mostly parasites, and use the two systems from their host
(D) They do not need oxygen to live

80. Which of the following tissues transports materials in plants as well as provides mechanical support?

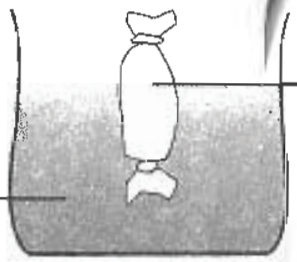
(A) 

(B) 

(C) 

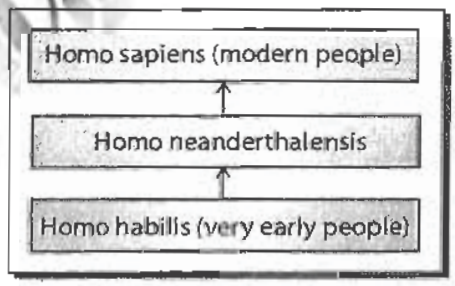
(D) 

81. The diagram shows an experiment on diffusion.
More sugar diffuses out of the bag than diffuses in.
What is the concentration of sugar in solution X?



(A) 10% (B) 20% (C) 30% (D) 40%

82. The diagram shows how Homo sapiens (modern people) could have evolved from their ancestors.



(A) They are in the same species and same genus
(B) They are in the same species but not the same genus
(C) They are in the same genus but not the same species
(D) They are neither in the same species nor in the same genus

83. The following symptoms were observed in a patient.

Swollen lymph glands
Decreased thrombocyte count
Decreased immunity and weight loss

Which of the following could be the reason for the spread of the disease with the above symptoms?

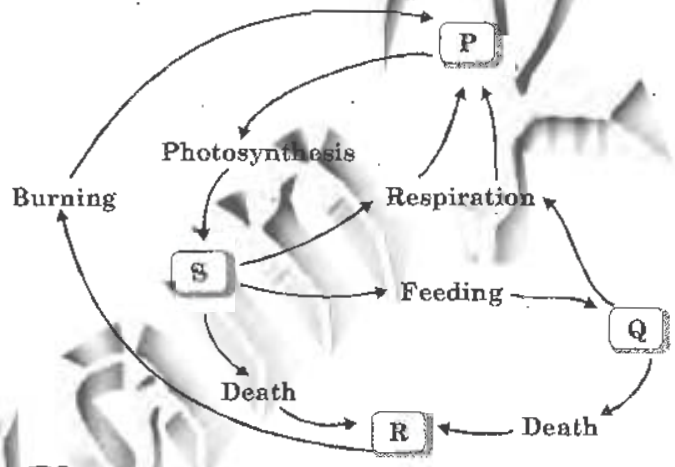
(A) Contaminated food and water

(B) Inhaling injected droplets released by injected person

(C) Transfusion of blood from infected person to healthy person

(D) Through infected mosquito bite

84. The figure given below shows a part of carbon cycle. P, Q, R and S are carbon compounds.



What is P?

(A) Carbon compounds in animals (B) Carbon compounds in plants

(C) Carbon dioxide in the air (D) Coal and oil

85. Neha observed the following observations while looking into a permanent slide.

Cells are long and cylindrical
Light and dark bands are present giving striated appearance

It would be a slide of:

(A) skeletal muscle fibre (B) smooth muscle fibre

(C) ligament (D) visceral muscle

86. Which of the following is a result of natural selection?

(A) Seedless grapes

(B) Insecticide - resistant mosquitoes

(C) Disease - resistant crop plants

(D) Cattle for high milk yield

87. Application of nitrogenous manure to a plant causes:

(A) early flowering

(B) growth retardation due to toxicity of ammonia

(C) early fruiting

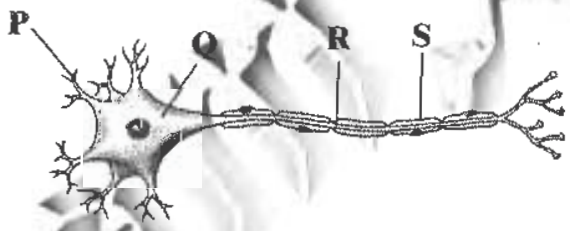
(D) vigorous vegetative growth

88. The chromosomes which are present in the neurons of a male human are:

(A) 44 + XX (B) 22 + Y

(C) 22 + X (D) 44 + XY

89. Which of the part labelled in the figure given above acts as a nerve insulator besides providing nutrients for the dendrite and axon?



(A) P (B) Q

(C) R (D) S

90. Why are houseflies NOT considered to be biological vectors?

(A) They do not spread diseases

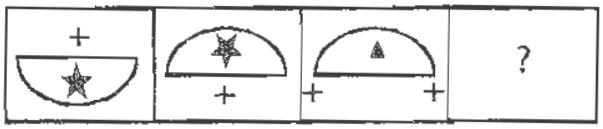
(B) They do not transmit the disease-causing organism directly into our body

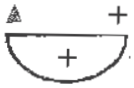
(C) They are parasites and not vectors

(D) None of these

CLASS : IX GENERAL QUESTIONS

91. Which figure should come next in the series given below?



(A)  (B)  (C)  (D) 

92. As the leaf of which tree is the Bharat Ratna designed?

(A) Peepal (B) Mango

(C) Lotus (D) Neem

93. Who among the following was the inventor of Barbie Doll?

(A) Jack Rijan (B) John White

(C) Ruth Handler (D) James Gate

94. Which musical instrument was Albert Einstein proficient at playing?

(A) Violin (B) Piano

(C) Flute (D) Sitar

95. In India, Who among the following appoints the chief election commissioner?

(A) President

(B) Prime Minister

(C) Chief Justice of the Supreme Court

(D) Chief Minister

96. Find the number in the following sequence, which does not follow the pattern of the series.

99, 51, 27, 15, 9, 7

(A) 27 (B) 15 (C) 9 (D) 7

97. Which of the following should come next in the series given below?

ABDG, GDFI, EFHK, ?

(A) GHJM (B) HILN

(C) HIMN (D) HIKM

98. Which famous architect designed the Baha'i Lotus Temple at New Delhi?

(A) Le Corbusier (B) Edwin Lutyens

(C) Laurie Baker (D) Fariborz Sahba

99. In which year did India become a member of the UN?

(A) 1945 (B) 1947

(C) 1951 (D) 1953

100. Which of the following is NOT a geographic area symbolized by the circles on the Olympic flag?

(A) Asia (B) Australia

(C) America (D) Russia

KEY FOR THE Q.P.-2010

1. B	2. D	3. A	4. A	5. D	6. B	7. D	8. A
9. C	10. D	11. C	12. B	13. C	14. A	15. D	16. C
17. C	18. A	19. C	20. D	21. B	22. B	23. C	24. A
25. A	26. A	27. C	28. D	29. D	30. B	31. D	32. B
33. C	34. A	35. A	36. A	37. B	38. C	39. D	40. A
41. D	42. A	43. B	44 C	45. D	46. D	47. C	48. D
49. B	50. D	51. C	52. B	53. D	54. A	55. C	56. A
57. A	58. C	59. D	60. B	61. A	62. B	63. B	64. C
65. D	66. C	67. D	68. C	69. B	70. A	71. C	72. C
73. D	74. A	75. D	76. C	77. C	78. A	79. C	80. B
81. A	82. C	83. C	84. C	85. A	86. B	87. D	88. D
89. D	90. B	91. D	92. A	93. C	94. A	95. A	96. D
97. A	98. D	99. A	100. D				