ROAD TO BOARD

STUDY mate helps excel in boards

Studymate Foundation Paper

Date : 23/12/2018 Duration : 90 Min. Max. Marks : 90	Science & Mathematics (Set-1)	CLASS IX

General Instructions:

1. All questions are compulsory.
2. Each question is allotted ONE mark for each correct response.
3. No deduction from the total score will be made if no response is indicated for the question in the answer sheet.
4. There is only **ONE** correct response for each question. Filling up **MORE THAN ONE** response in each question will be treated as wrong response and marks for wrong response will be deducted accordingly.
5. Use of calculators is not allowed.

Section A – Science

1. A freely falling object travels 4.9 m in 1st second, 14.7 m in 2nd second, 24.5 m in 3rd second, and so on. This data shows that the motion of a freely falling object is a case of

(a) uniform motion (b) uniform acceleration

(c) no acceleration (d) uniform velocity

2. A motorcycle is being driven at a speed of 20 m/s when brakes are applied to bring it to rest in five seconds. The deceleration produced in this case will be

(a) +4 m/s^2 (b) –4 m/s^2 (c) +0.25 m/s^2 (d) –0.25 m/s^2

3. A student draws a distance-time graph for a moving scooter and finds that a section of the graph is a horizontal line parallel to the time axis. Which of the following conclusion is correct about this section of the graph?

(a) the scooter has uniform speed in this section

(b) the distance travelled by scooter is the maximum in this section

(c) the distance travelled by the scooter is the minimum in this section

(d) the distance travelled by the scooter is zero in this section

4. An object of mass 2 kg is sliding with a constant velocity of 4 m/s on a frictionless horizontal table. The force required to keep this object moving with the same velocity is

(a) 32 N (b) 0 N (c) 2 N (d) 8 N

5. A boy of mass 50 kg standing on ground exerts a force of 500 N on the ground. The force exerted by the ground on the boy will be

(a) 50 N (b) 25000 N (c) 10 N (d) 500 N

6. The mass of moon is about 0.012 times that of earth and its diameter is about 0.25 times that of earth. The value of G on the moon will be

(a) less than that on the earth (b) more than that on the earth

(c) same as that on the earth (d) about one-sixth of that on the earth

7. Two particles are placed at some distance from each other. If, keeping the distance between them unchanged, the mass of each of the two particles is doubled, the value of gravitational force between them will become

(a) 1/4 times (b) 1/2 times (c) 4 times (d) 2 times

8. An object is put in three liquids having different densities, one by one. The object floats with $\frac{1}{9}, \frac{2}{11}$ and $\frac{3}{7}$ parts of its volume outside the surface of liquids of densities d_1, d_2 and d_3 respectively. Which of the following is the correct order of the densities of the three liquids?

(a) $d_1 > d_2 > d_3$ (b) $d_2 > d_3 > d_1$ (c) $d_1 < d_2 < d_3$ (d) $d_3 > d_1 > d_2$

9. Kepler's second law regarding constancy of arial velocity of a planet is a consequence of the law of conservation of

(a) energy (b) angular momentum

(c) linear momentum (d) none of these

10. Which one of the following statements about power stations is not true?

(a) hydroelectric power stations use water to drive turbines

(b) in a power station, turbines drive generators

(c) electricity from thermal power stations differs from that produced in hydroelectric power stations

(d) in hydroelectric power stations and thermal power stations, alternators produce electricity

11. If the speed of a wave is 340 m/s and its frequency is 1700 Hz, then λ for this wave in cm will be

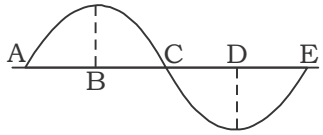
(a) 2 (b) 0.2 (c) 20 (d) 200

12. Which one of the following does not consist of transverse waves?

(a) light emitted by a CFL (b) TV signals from a satellite

(c) ripples on the surface of a pond (d) musical notes of an orchestra

13. In the sound wave produced by a vibrating turning fork shown in the diagram, half the wavelength is represented by



(a) AB (b) BD (c) DE (d) AE

14. An echo-sounder in a trawler (fishing boat) receives an echo from a shoal of fish 0.4 s after it was sent. If the speed of sound in water is 1500 m/s, how deep is the shoal?

(a) 150 m (b) 300 m (c) 600 m (d) 7500 m

15. The escape velocity of projection from the earth is approximately (R = 6400 km)

(a) 7 km/sec (b) 112 km/sec (c) 12.2 km/sec (d) 1.1 km/sec

16. Which of the following is a correct statement

(a) Na_2S is sodium sulphide, Na_2SO_3 is sodium sulphite, Na_2SO_4 is sodium sulphate

(b) Na_2S is sodium sulphite, Na_2SO_3 is sodium sulphide, Na_2SO_4 is sodium sulphate

(c) Na_2S is sodium sulphide, Na_2SO_3 is sodium sulphate, Na_2SO_4 is sodium sulphite

(d) Na_2S is sodium sulphite, Na_2SO_3 is sodium sulphite, Na_2SO_4 is sodium sulphide

17. Molecular weight of $CuSO_4.5H_2O$ is equal to

(a) 249.5 (b) 159.5 (c) 159.5 × 90 (d) 159.5 + 10 + 16

18. How many moles of electrons weigh 1 kg, mass of an electron is 9.1×10^{-31}

(a) 6.022×10^{23} (b) $1 \times 10^{31}/9.1$

(c) $6.022 \times 10^{23}/9.1 \times 10^{-31}$ (d) $10^8/9.1 \times 6.022$

19. Which of the following has the smallest number of molecules?

(a) 0.1 moles of CO_2 (b) 16g of O_2 gas (c) 2g of H_2 at STP (d) 3.4g of NH_3

20. 18g of water is electrolysed. The weight of oxygen obtained is

(a) 16g (b) 8g (c) 4g (d) 1g

21. Water was taken in four beaker. To these beakers, labelled I to IV, the following substances were added and then stirred

Beaker-I – Alum

Beaker-II – Glucose

Beaker-III – White of egg

Beaker-IV – A few drops of sulphuric acid and a few drops of barius chloride solution

After stirring, the contents of each beaker are filtered. The contents of which beaker will leave a residue on the filter paper ?

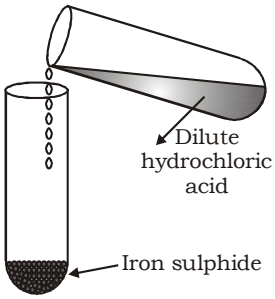
(a) Beaker I (b) Beaker II (c) Beaker III (d) Beaker IV

22. A student was asked to prepare a true solution of sugar in water. By chance, he added sugar in excess. He stirred for quite some time but some of it settled down. He filtered the contents. The filtrate will be

(a) true solution (b) colloidal solution

(c) suspension (d) can be true solution or colloidal solution

23. In the experiment shown, a gas is evolved. Four groups of students have recorded their observations on the gas produced as shown in the following table. Choose the correct set of observations. Note that the positive responses are shown by '✓' and negative by '×' signs respectively.



	Colour of the gas	Odour of the gas	Flammability	Action on lead acetate paper
(a)	×	✓	✓	×
(b)	×	✓	×	✓
(c)	✓	✓	×	✓
(d)	×	×	✓	×

24. Which one of the following statements is wrong about a mixture ?

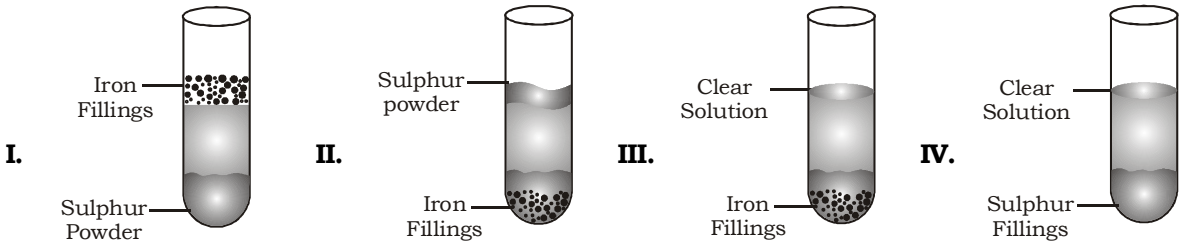
(a) It is always heterogeneous

(b) It may contain any numer of elements ro compounds

(c) The components of a mixture can be easily separated

(d) The properties of a mixture are same as those of its components

25. In an experiment, carbon disulphide was added to a test tube containing a mixture of iron filings and sulphur powder as shown in the given diagrams



The correct observation is represented in diagram

(a) I (b) II (c) III (d) IV

26. The fluorescent tubes and neon sign bulbs glow because of

(a) presence of charged particles (b) high density of gases

(c) high temperature (d) high applied voltage

27. When we mix $BaCl_2$ (aq) with Na_2SO_4 (aq), which of the following observations is correct?

(a) no reaction takes place (b) colourless solution is obtained

(c) white precipitate is formed (d) green precipitate is formed

28. Mixing of $Pb(NO_3)_2$ and KI solution should be done _____.

(a) slowly without stirring (b) slowly with constant stirring

(c) fast without stirring (d) very fast with constant stirring

29. Chlorine's (Cl) relative atomic mass is 35.5. this half number is due to

(a) isotopes (b) a half proton (c) a half neutron (d) a half electron

30. Atomic models have been improved over the years. Arrange the following atomic models in the order of their chronological order

(i) Ruther ford's atomic model (ii) Thomson's atomic model

(iii) Bohr's atomic model

(a) (i), (ii) and (iii) (b) (ii), (iii) and (i) (c) (ii), (i) and (iii) (d) (iii), (ii) and (i)

31. Which of the following impart red colour to tomato?

(a) Chloroplast (b) Chromoplast (c) Amyloplast (d) Leucoplast

32. Pick out the incorrect statement.

(a) Cell wall of fungi is made up of chitin.

(b) Vacuoles are large sized in plant cell.

(c) Protoplasm is a life giving substance of cell.

(d) Golgi apparatus acts as the site of protein synthesis.

33. A person met with an accident in which two long bones of hand were dislocated. Which among the following may be possible reason?

(a) Tendon break (b) Break of skeletal muscle

(c) Ligament break (d) Areolar tissue break

34. A fat person is less affected by the cold whether because of the presence of more:

(a) Striated muscles (b) Areolar tissue (c) Adipose tissue (d) Cardiac tissue

35. The type of symmetry found in coelentrates is:

(a) asymmetry (B) biradial symmetry

(c) circular symmetry (D) radial symmetry

36. Which of the following is not the character of aves?

(a) Body is streamlined (b) Bones have air cavities

(c) They have a beak (d) They are cold blooded organisms

37. Which is the correct descending sequence of taxanomic categories?

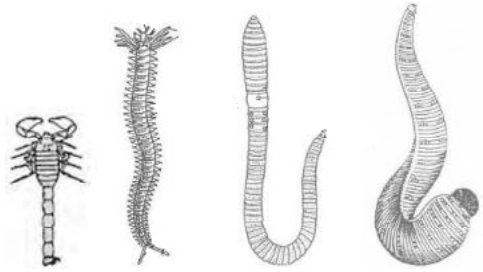
(a) Species, kingdom, division, class, order, family genus

(b) Kingdom, division, class, order, family, genus, species

(c) Species, genus, family, order, class, division, kingdom

(d) Kingdom, division, order, class, family, genus, species

38. Four animals A, B, C and D are given below. The animals that belong to phylum annelida are:



A B C D

(a) A, B and D (b) B, C and D (c) A, B and C (d) C, A and D

39. Pertusis can be prevented by the vaccine

(a) Penicillin (b) Streptomycin (c) BCG (d) DPT

40. Which of the following disease is not transmitted by mosquitoes?

(a) Malaria (b) Typhoid (c) Brain fever (d) Dengue

41. Choose the odd one out from the list of diseases with respect to the their causative agent

(a) Measles (b) Rabies (c) Small pox (d) Pneumonia

42. If there was no atmosphere around the earth, the temperature of earth will

(a) increase

(b) decrease

(c) increase during day and decrease during night

(d) unaffected

43. Soil structure is mainly decided by

(a) humus (b) particle size

(c) moisture content (d) microorganisms

44. Which of the following is a micronutrient for the crop plant

(a) Calcium (b) Magnesium (c) Iron (d) Potassium

45. Growing two or more crops in a definite row pattern is

(a) Mixed farming (b) Inter cropping (c) Crop rotation (d) Organic farming

Section – B (Mathematics)

46. Choose the wrong statement:

(a) There is no largest natural number.

(b) There is no largest integer.

(c) There is no smallest integer.

(d) The collection of rational numbers has largest as well as smallest.

47. Decimal representation of a rational number cannot be

(a) terminating (b) non-terminating

(c) non-terminating and repeating (d) non-terminating and non-repeating

48. Which of the following is an irrational number?

(a) $\sqrt{\frac{4}{9}}$ (b) $\frac{\sqrt{12}}{\sqrt{3}}$ (c) $\sqrt{7}$ (d) $\sqrt{81}$

49. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is

(a) $\frac{\sqrt{2}+\sqrt{3}}{2}$ (b) $\frac{\sqrt{2}\times\sqrt{3}}{2}$ (c) 1.5 (d) 1.8

50. The value of 1.9999... in the form $\frac{p}{q}$, where p and q are integers and $p \neq 0$, is

(a) $\frac{19}{20}$ (b) $\frac{1999}{1000}$ (c) 2 (d) $\frac{1}{9}$

51. The number $(2-\sqrt{3})^2$

(a) a natural number (b) an integer

(c) a rational number (d) an irrational number

52. The product $\sqrt[3]{2}.\sqrt[4]{2}.\sqrt[12]{32}$ equals

(a) $\sqrt{2}$ (b) 2 (c) $\sqrt[12]{2}$ (d) $\sqrt[12]{32}$

53. Which of the following is equal to x?

(a) $x^{\frac{12}{7}} - x^{\frac{5}{7}}$ (b) $\sqrt[12]{(x^4)^{\frac{1}{3}}}$ (c) $\left(\sqrt{x^3}\right)^{\frac{2}{3}}$ (d) $x^{\frac{12}{7}} \times x^{\frac{7}{12}}$

54. $\sqrt{2}$ is a polynomial of degree

(a) 2 (b) 0 (c) 1 (d) $\frac{1}{2}$

55. If $p(x) = (3x^2 - 1)(2x^3 + 1)$, then the leading coeffcient of the plynomial $p(x)$ is

(a) 3 (b) 2 (c) 5 (d) 6

56. A polynomial in one variable of degree 4 has atmost

(a) 3 terms (b) 4 terms (c) 5 terms (d) 6 terms

57. If $p(x) = x^2 - 2\sqrt{2}\ x + 1$, then $p(2\sqrt{2})$ is equal to

(a) 0 (b) 1 (c) $4\sqrt{2}$ (d) $8\sqrt{2}+1$

58. If $p(x) = kx,\ k \neq 0$, then zero of $p(x)$ is

(a) 0 (b) 1 (c) k (d) $-k$

59. If $x + 1$ is a factor of $2x^2 + kx$, then the value of k is

(a) –3 (b) 4 (c) 2 (d) –2

60. One of the factors of $(25x^2 - 1) + (1 + 5x)^2$ is:

(a) $5 + x$ (b) $5 - x$ (c) $5x - 1$ (d) $10x$

61. If $\frac{x}{y} + \frac{y}{x} = -1 (x, y \neq 0)$, then the value of $x^3 - y^3$ is

(a) 1 (b) – (c) 0 (d) $\frac{1}{2}$

62. For every line l and for every point P not lying on l, there

(a) is no line passing through P and parallel to l

(b) is a unique line passing through P and parallel to l

(c) are two lines passing through P and parallel to l

(d) are infinitely many lines passing through P and parallel to l.

63. Axioms are assumed

(a) universal truths in all branches of mathematics

(b) universal truths specific to geometry

(c) theorems

(d) definitions

64. It is known if $x + y = 10$ then $x + y + z = 10 + z$. the Euclid's axiom that illustrates this statements is

(a) first axiom (b) second axiom (c) third axiom (d) fourth axiom

65. Which of the following needs a proof?

(a) Theorem (b) Axiom (c) definition (d) Postulate

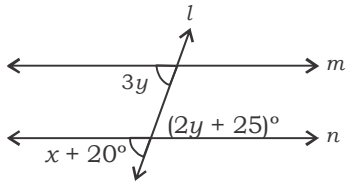
66. Euclid stated that all right angles are equal to each other in the form of

(a) an axiom (b) a definition (c) a postulate (d) a proof

67. If the sum of two adjacent angles is 100° and one of them is 35°, then the other

(a) 70° (b) 65° (c) 135° (d) 145°

68. In the adjoining figure, if $m \| n$ then the value of x is



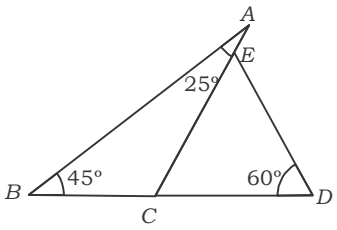
(a) 60°

(b) 55°

(c) 50°

(d) 45°

69. In the adjoining figure, the measure of ∠AED is



(a) 110°

(b) 120°

(c) 130°

(d) 140°

70. In ΔABC, AB = AC and ∠B = 50°. Then ∠C is equal to

(a) 40° (b) 50° (c) 80° (d) 130°

71. If a, b, c are the lengths of the sides of a triangle, then

(a) $a - b > c$ (b) $c > a + b$ (c) $c = a + b$ (d) $c < a + b$

72. It is not possible to construct a triangle when the lengths of its sides are

(a) 6 cm, 7 cm, 8 cm (b) 4 cm, 6 cm, 6 cm

(c) 5.3 cm, 2.2 cm, 3.1 cm (d) 9.3 cm, 5.2 cm, 7.4 cm

73. In ΔPQR, if ∠R > ∠Q, then

(a) QR > PR (b) PQ > PR (c) PQ < PR (d) QR < PR

74. D is point on the side BC of ΔABC such that AD bisects ∠BAC, then

(a) BD = CD (b) BA > BD (c) BD > BA (d) CD > CA

75. If the perpendicular distance of a point P from the x-axis is 5 units and the foot of perpendicular lies on the negative direction of x-axis, then the point P has

(a) x-coordinate = –5 (b) y-coordinate = 5 only

(c) y-coordinate = –5 only (d) y-coordiante = 5 or –5

76. The points whose abscissa and ordinate have different signs will lie in

(a) I and II quadrants (b) Ii and III quadrants

(c) I and III quadrants (d) Ii and IV quadrants

77. If P(–1, 1), Q(3, –4), R(1, –1), S(–2, –3) and T(–4, 4) are plotted on the graph paper, then point(s) in the fourth quadrant are

(a) P and T (b) Q and R (c) S only (d) P and R

78. If the perimeter of an equilateral triangle is 60 m, then the area is

(a) $10\sqrt{3}$ m^2 (b) $15\sqrt{3}$ m^2 (c) $20\sqrt{3}$ m^2 (d) $100\sqrt{3}$ m^2

79. If the sides of a parallelgram are 9 cm and 4 cm, then the ratio of their corresponding altitudes is

(a) 2 : 3 (b) 3 : 2 (c) 9 : 4 (d) 4 : 9

80. The sides of a triangle are 35 cm, 54 cm and 61 cm. The length of its longest altitude is

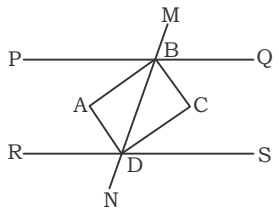
(a) $16\sqrt{5}$ cm (b) $10\sqrt{5}$ cm (c) $24\sqrt{5}$ cm (d) 28 cm

81. In a rhombus which is not true?

(a) Opposite sides are qual (b) Opposite sides are parallel

(c) Diagonals intersect each other (d) Diagonals are equal

82. PQ || RS, AB bisects ∠PBD and CD bisects ∠BDS, ABCD is a

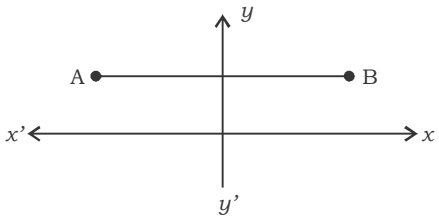


(a) Rectangle (b) Square (c) Parallelogram (d) Rhombus

83. Cost of a pencil (p) is 3 times the cost of an eraser (r). The equivalent linear equation is

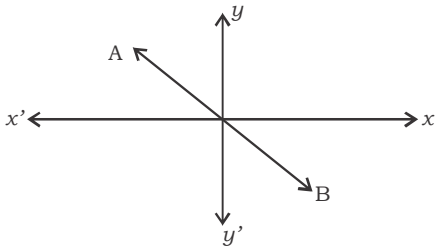
(a) $p = 3r$ (b) $3p = r$ (c) $p = 3 + r$ (d) $r = 3 + p$

84. Which equation represents the line AB



(a) $x = h$ (b) $y = k$ (c) $x + y = c$ (d) none of these

85. Which equation represents line AB?



(a) $x = h$ (b) $y = k$ (c) $x + y = c$ (d) $x + y = 0$

86. Total surface area of a cuboid of dimensions a, $2a$ and $3a$ is

(a) $30a^2$ (b) $22a^2$ (c) $24a^2$ (d) $12a^2$

87. The mean of 5 numbers is 18. If one number is excluded, then their mean is 16, then the excluded number is

(a) 23 (b) 24 (c) 25 (d) 26

88. The mean of 11 observations is 50. If the mean of first six observations is 49 and that of last six observations is 52, then the sixth observation is

(a) 56 (b) 55 (c) 54 (d) 53

89. Median of m observations, if $m = 2k + 1$, is

(a) $k + 1$ (b) $2k + 1$ (c) $2k + 3$ (d) $k + 3$

90. If the length of the median of an equilateral triangle is $\sqrt{3}$ cm, then its area is

(a) $\frac{\sqrt{3}}{4}$ cm^3 (b) $\sqrt{3}$ cm^2 (c) 4 cm^2 (d) 3 cm^2

× · × · × · × · ×