ROAD TO BOARD

STUDY mate
helps excel in boards

Studymate Foundation Paper

| Date : 20/01/2019 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 body is thrown vertically upward with velocity (u). The greatest height h to which it will rise is:

(A) u/g (B) $u^2/2g$ (C) u^2/g (D) $u/2g$

2. The numerical ratio of displacement to distance for a moving object is:

(A) always less than 1   (B) always equal to 1

(C) always more than 1   (D) equal or less than 1

3. Area under a v– t graph represent a physical quantity which has the unit

(A) m^2 (B) m (C) m^3 (D) $m\ s^{-1}$

4. A body goes from A to B with a velocity of 20 m/s and comes back from B to A with a velocity of 30 m/s. The Average velocity of the body during the whole journey is

(A) zero   (B) 25 m/s   (C) 24 m/s   (D) none of these

5. According to the third law of motion, action and reaction

(A) always act on th same body

(B) always act on different bodies in opposite directions

(C) have same magnitude and directions

(D) act on either body normal to each other

6. A goalkeeper in a game of football pulls his hands backward after holding the ball shot at the goal. This enables the goalkeeper to

(A) exert larger force on the ball

(B) reduce the force exerted by the ball on hands

(C) increase the rate of change of momentum

(D) decrease the change in momentum

7. A body P has mass 2 m and velocity 5v. Another body Q has mass 8 m and velocity 1.25 v. The ratio of momentum P and Q is

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

8. A boy is whirling a stone tied with a string in a horizontal circular path. If the string breaks, the stone

(A) will continue to move in the circular path

(B) will move along a straight line towards the centre of the circular path

(C) will move along a straight line tangential to the circular path

(D) will move along a straight line perpendicular to the circular path away from the boy

9. Law of gravitation gives the gravitional force between

(A) the earth and a point mass only

(B) the earth and Sun only

(C) any two bodies having some mass

(D) two charged bodies only

10. The value of 1 KwH is

(A) 3.6×10^5 J   (B) 3.6×10^7 J   (C) 3.6×10^6 J   (D) 3.6×10^9 J

11. A bomb explodes on the moon. How long will it take for the sound to reach the earth?

(A) 10 sec   (B) 1000 sec

(C) 1 day   (D) it will never reach the earth

12. In the curve (see fig.) half the wavelength is
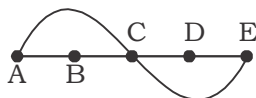
(A) A B   (B) B D   (C) D E   (D) A E

13. Arrange the following media in ascending order or speed of sound in them:

A – Water ; B – Steel ; C – Nitrogen

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

14. An echo is returned in 3 sec. If the speed of sound is 342 m/s, then the distance between the source of sound and the reflecting body is

(A) 513 m   (B) 351 m   (C) 153 m   (D) 254 m

15. Mahesh applied 10 N of force over 3 m in 10 seconds. Joy applied the same force over the same distance in 1 minute. Who did more work?

(A) Mahesh   (B) Joy

(C) Both did the same work   (D) Both did zero work

16. Which one of the following sets of phenomena would increase on raising the temperature?

(A) Diffusion, evaporation, compression of gases

(B) Evaporation, compression of gases, solubility

(C) Evaporation, diffusion, expansion of gases

(D) Evaporation, solubility, diffusion, compression of gases

17. During summer, water kept in an earthen pot becomes cool because of the phenomenon of

(A) diffusion   (B) transpiration   (C) osmosis   (D) evaporation

18. On converting 25°C, 38°C and 66°C to kelvin scale, the correct sequence of temperature will be

(A) 298 K, 311 K and 339 K   (B) 298 K, 300 K and 338 K

(C) 273 K, 278 K and 543 K   (D) 298 K, 310 K and 338 K

19. Tincture of iodine has antiseptic properties. This solution is made by dissolving

(A) iodine in potassium iodide   (B) iodine in vaseline

(C) iodine in water   (D) iodine in alcohol

20. Which of the following are chemical changes?

(i) Decaying of wood   (ii) Burning of wood

(iii) Sawing of wood   (iv) Hammering of a nail into a piece of wood

(A) (i) and (ii)   (B) (ii) and (iii)   (C) (iii) and (iv)   (D) (i) and (iv)

21. Which of the following are homogeneous in nature?

(i) ice   (ii) wood   (iii) soil   (iv) air

(A) (i) and (iii)   (B) (ii) and (iv)   (C) (i) and (iv)   (D) (iii) and (iv)

22. Which of the following statements is not true about an atom?

(A) Atoms are not able to exist independently

(B) Atoms are the basic units from which molecules and ions are formed

(C) Atoms are always neutral in nature

(D) Atoms aggregate in large numbers to form the matter that we can see, feel or touch

23. Which of the following contains maximum number of molecules?

(A) $1g\,CO_2$ (B) $1g\,N_2$ (C) $1g\,H_2$ (D) $1g\,CH_4$

24. Rutherford's 'alpha (α) particles scattering experiment' resulted in to discovery of

(A) Electron   (B) Proton

(C) Nucleus in the atom   (D) Atomic mass

25. The number of electrons in an element X is 15 and the number of neutrons is 16. Which of the following is the correct representation of the element?

(A) $^{31}_{15}X$ (B) $^{31}_{16}X$ (C) $^{16}_{15}X$ (D) $^{15}_{16}X$

26. Which of the following are true for an element?

(i) Atomic number = number of protons + number of electrons

(ii) Mass number = number of protons + number of neutrons

(iii) Atomic mass = number of protons = number of neutrons

(iv) Atomic number = number of protons = number of electrons

(A) (i) and (ii)   (B) (i) and (iii)   (C) (ii) and (iii)   (D) (ii) and (iv)

27. The balancing of chemical equations is in accordance with:

(A) Law of combining volumes   (B) Law of constant proportions

(C) Law of conservation of mass   (D) Both (B) and (C)

28. 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

29. If isotopic distribution of C-12 and C-14 is 98% and 2% respectively, then number of C-14 atoms in 12 g of C is:

(A) 3.88×10^{23} (B) 1.244×10^{23} (C) 3.88×10^{22} (D) 1.244×10^{22}

30. The combining capacity of an element is called

    (A) Valency   (B) Atomicity   (C) Atomic number   (D) Valence electrons

31. DNA stands for

    (A) Deoxyribonucleic acid   (B) Dihydroriboncleate acid

    (C) Dicarbonucleic acid   (D) Diribonucleate acetate

32. Cell wall in Agaricus is made up of

    (A) Cellulose   (B) Chitin   (C) Pectin   (D) All of these

33. Out of the following characters which one best suits a monocotyledon plant -

    (A) Reticulate venation   (B) Trimerous flower

    (C) Tap root   (D) Pentamerous flower

34. The starch storing bodies present in the chloroplast of Spirogyra are known as-

    (A) Zygospores   (B) zoospores   (C) Aplanospores   (D) Pyrenoids

35. What is common among silverfish, scorpion, honeybee and cockroach?

    (A) Compound eye   (B) Poision gland   (C) Jointed legs   (D) Metamorphism

36. The end of a long bone is connected to another long bone by-

    (A) Ligament   (B) Tendon   (C) Cartilage   (D) Muscle

37. Simple tissue in plants are-

    (A) Parenchyma, xylem, phloem   (B) Parenchyma, collenchyma, cork

    (C) Parenchyma, Sclerenchyma, Epidermis   (D) Parenchyma, Collenchyma, Sclerenchyma

38. Main deposit of biological carbon is-

    (A) Atmosphere   (B) Ocean   (C) Soil   (D) All of these

39. Renewable source of energy is-

    (A) Kerosene   (B) Coal   (C) Biomass   (D) Petrol

40. Leguminous crops helps to increase which nutrient in soil

    (A) Nitrogen   (B) Phosphorus   (C) Calcium   (D) Potassium

41. Which one of the following is a macronutrient-

    (A) Zinc   (B) Iron   (C) Copper   (D) Phosphorous

42. An Italian bee variety introduced in India for honey production is:

    (A) *Apis dorsata*   (B) *Apis mellifera*   (C) *Apis cerana*   (D) *Apis florea*

43. A polyculture of fish in a single pond having different food habits is known as

    (A) Aquaculture   (B) Mariculture

    (C) Integrated culture   (D) Composite fish culture

44. Warren and Marshall discovered-

    (A) Helicobacter which causes peptic ulcer

    (B) Typhoid causing bacteria

    (C) Trypansoma which causes sleeping sickness

    (D) DPT a triple vaccine

45. Typhoid : Bacterial :: Polio: _____

    (A) Protozoan   (B) Bacterial disease

    (C) Viral disease   (D) Worm disease

46. Number of circles passing through two given points is

(A) one   (B) two   (C) finite   (D) infinite

47. Which of the following cannot be the probability of an event?

(A) 1   (B) 36   (C) $\dfrac{25}{24}$ (D) 0.99

48. PAQ and XBY are straight lines, then bisectors of ∠PAB, ∠XBA, ∠BAQ and ∠ABY will form a quadrilateral which is

(A) rhombus   (B) parallelogram   (C) cyclic   (D) rectangle

49. Point of concurrence of altitudes of a triangle is called

(A) orthocentre   (B) incentre   (C) circumcentre   (D) centroid

50. A biqudratic polynomial can have maximum _____ zeroes.

(A) two   (B) three   (C) four   (D) six

51. If radius of the base of a cone is doubled and its height is halved, then the volume of the resultant cone gets:

(A) halved   (B) doubled   (C) remains same   (D) four times

52. The radius and height of a cylindrical box without lid, are r and h respectively. The total outer surface area of the box is

(A) $\pi h(2r + h)$ (B) $\pi r(h + 2r)$ (C) $\pi r(2h + r)$ (D) $\pi(2h + r)$

53. The class mark of the class $a – 150$ is 140, then the value of a is

(A) 130   (B) 140   (C) 120   (D) 110

54. If the class marks in a frequency distribution are 19.5, 26.5, 33.5, 40.5, then the class corresponding to the class mark 33.5 is

(A) 16–23   (B) 30–37   (C) 32–35   (D) 28–39

55. If P(E) is the probability of an event E, then

(A) $0 < P(E) < 1$ (B) $0 \le P(E) < 1$ (C) $0 \le P(E) \le 1$ (D) $0 < P(E) \le 1$

56. The graph of $y = m$, where m is a constant, is a line parallel to

(A) x-axis   (B) y-axis   (C) both the axes   (D) none of these

57. The graph of the equation $2x + 3y – 12 = 0$ intersects x-axis at

(A) (4, 0)   (B) (6, 0)   (C) (0, 4)   (D) (0, 6)

58. The equation $2x + 5y = 7$ has a unique solution if x and y are

(A) natural number   (B) positive real number

(C) real number   (D) rational number

59. Two adjacent sides of a parallelogram are 4 cm and 18 cm. If the distance between the longer sides is 12 cm, then the distance between the shorter sides is

(A) 18 cm   (B) 16 cm   (C) 9 cm   (D) None of these

60. The length of a chord in a circle of diameter 10 cm is 6 cm. The distance of the chord from the centre is

(A) 5 cm   (B) 3 cm   (C) 8 cm   (D) 4 cm

61. Sum of all the exterior angles of a triangle is

(A) 180°   (B) 2(180°)   (C) $\dfrac{1}{2}$(180°)   (D) 3(180°)

62. The value of $(x - y)^3 + (y - z)^3 + (z - x)^3$ is

(A) xyz (B) 3xyz (C) $(x - y)(y - z)(z - x)$ (D) $3(x - y)(y - z)(z - x)$

63. If $x^{51} + 51$ is divided by $(x + 1)$, the remainder is

(A) 0 (B) 102 (C) 50 (D) 52

64. The percentage increase in the area of a triangle, if its each side is doubled is

(A) 200% (B) 300% (C) 400% (D) 500%

65. Abscissa of a point in Cartesian plane represents perpendicular distance of the point from

(A) origin (B) x-axis (C) y-axis (D) none of these

66. The degree of a zero polynomial is

(A) 0 (B) 1 (C) 2 (D) not defined

67. The value of a for which $(x + a)$ is a factor of $x^3 + ax^2 - 3x + 16 + a$ is

(A) –4 (B) 4 (C) –2 (D) 2

68. The measure of each interior angle of a regular octagon is

(A) 120° (B) 130° (C) 135° (D) 125°

69. If each observation of the data is increased by 5, then their mean

(A) remain the same. (B) becomes 5 times the original mean.

(C) is decreased by 5. (D) is increased by 5

70. From the choices given below; mark the co-prime numbers.

(A) (2, 4) (B) (2, 110) (C) (2, 3) (D) (2, 6)

71. A die is thrown once. Probability of getting a number which is divisible by 2 or 3 is

(A) $\dfrac{2}{3}$ (B) $\dfrac{1}{3}$ (C) 1 (D) 0

72. If x is an integer, then $(x + 1)^4 - (x - 1)^4$ is always divisible by

(A) 6 (B) 8 (C) 9 (D) 12

73. How many $\dfrac{1}{6}$ are there is $3\dfrac{1}{3}$?

(A) 12 (B) 15 (C) 18 (D) 20

74. In ΔDEF and ΔPQR, if DE = PQ, EF = PR and FD = QR, then

(A) $\Delta DEF \cong \Delta RPQ$ (B) $\Delta DEF \cong \Delta QRP$ (C) $\Delta DEF \cong \Delta PQR$ (D) $\Delta DEF \cong \Delta QPR$

75. The total surface area of a solid cube is 24 cm². The volume of the cube is

(A) 4 cm³ (B) 8 cm³ (C) 24 cm³ (D) 27 cm³

76. The value of expression $\dfrac{2^{310} - 2^{301}}{2^{300}}$ is

(A) $2^9 - 1$ (B) $2^{10} - 1$ (C) $2(2^9 - 1)$ (D) $\dfrac{2^{10} - 1}{2}$

77. Shown here are expressions given to Seema, Anees, Asha and Tessy with their answers.

Seema: 4 × 1 + 8 ÷ 2 = 8 Annes: 6 + 4 ÷ 2 – 1 = 4

Asha: 9 + 3 × 2 – 4 ÷ 2 = 10 Tessy: 27 ÷ 3 – 2 × 3 = 21

Who has got the correct answer?

(A) Seema (B) Anees (C) Aaha (D) Tessy

78. Which of the following angles can not be constructed with compass and scale only?

    (A) 35.5°   (B) 40°   (C) 22.5°   (D) None of these

79. What is the mirror image of (2, –3) along y-axis?

    (A) (2, 3)   (B) (–3, 2)   (C) (–2, –3)   (D) (–2, 3)

80. Degree of a non-zero constant polynomial is

    (A) 1   (B) 0   (C) 2   (D) None of these

81. If $\dfrac{a}{b} + \dfrac{b}{a} = -1$ then $a^3 - b^3$ is

    (A) 1   (B) –1   (C) $\dfrac{1}{2}$ (D) 0

82. Which of the following numbers is irrational?

    (A) $\sqrt{\dfrac{4}{9}}$ (B) $\dfrac{\sqrt{12}}{\sqrt{3}}$ (C) $\sqrt{243}$ (D) $\sqrt{81}$

83. Lines are parallel if they "do not intersect" is stated in the form of

    (A) an axiom   (B) a definition   (C) a postulate   (D) a proof

84. Which of the following statements is not true?

    (A) If diagonals of a parallelogram are equal then its a rectangle.

    (B) If diagonals of a parallelogram are equal, it is a square.

    (C) If all four sides of a rectangle are equal, it is a square.

    (D) In a trapezium, parallel sides are equal.

85. Find median of m observations if $m = 2k + 1$, where k is a positive integer.

    (A) $k + 1$ (B) $2k + 1$ (C) $2k + 3$ (D) $k + 3$

86. Which statement is true for all parallelograms?

    (A) The diagonals are congruent.

    (B) The area is the product of two adjacent sides.

    (C) The opposite angles are congruent.

    (D) The diagonals are perpendicular to each other.

87. If $xy = 6$ and $x^2y + xy^2 + x + y = 63$. Find the value of $(x + y)$.

    (A) 8   (B) 7   (C) 9   (D) None of these

88. Diagonals of a parallelogram ABCD intersect at O. If $\angle BOC = 90°$ and $\angle BDC = 50°$, then $\angle OAB$ is

    (A) 90°   (B) 50°   (C) 40°   (D) 10°

89. Which of the following angles (in degree) cannot be constructed with the help of a ruler and a compass?

    (A) $7\dfrac{1}{2}$ (B) $22\dfrac{1}{2}$ (C) $30\dfrac{1}{2}$ (D) $37\dfrac{1}{2}$

90. On factorizing $-x^2 + 5x - 6$, we get

    (A) $(x - 2)(x - 3)$ (B) $(2 + x)(3 - x)$ (C) $(2 - x)(3 - x)$ (D) $-(2 - x)(3 - x)$

× · × · × · × · ×

THIS PAGE IS LEFT INTENTIONALLY BLANK.