

Concept Test

Date : _____
Duration : 90 Min.
Max. Marks : 90

Sample Paper

CLASS

IX

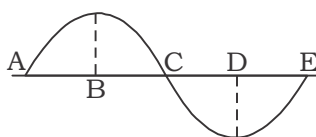
General Instructions:

1. All questions are compulsory.
2. Each question is allotted ONE mark for each correct response.
3. No negative marks for incorrect response.
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/s² (b) -4 m/s² (c) +0.25 m/s² (d) -0.25 m/s²
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 areal 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 tuning fork shown in the diagram, half the wavelength is represented by



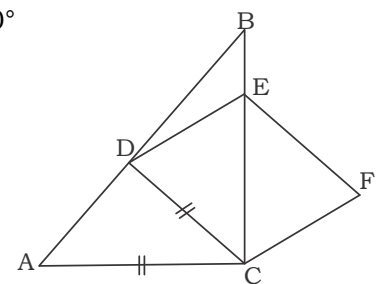
- (a) AB (b) BD (c) DE (d) AE
14. An echo-sounder in a trawler (fishing boat) receives an echo from a shoal of fish 0.4 s after it was sent. If the speed of sound in water is 1500 m/s, how deep is the shoal?
 (a) 150 m (b) 300 m (c) 600 m (d) 7500 m
15. The escape velocity of projection from the earth 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 $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ 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

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 $\text{Pb}(\text{NO}_3)_2$ 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) Rutherford'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. Who used the word 'protoplasm first time for living cells?
(a) Robert Hooke (b) Leeuwenhoek (c) Purkinje (d) Robert Brown
32. The main constituent of cell-wall is
(a) Starch (b) cellulose (c) protein (d) none of these
33. Function of centriole is
(a) formation of spindle fibre (b) nucleolus formation
(c) cell wall formation (d) cell division initiation
34. The growth in plants is
(a) limited to certain regions (b) uniform in all parts
(c) limited to top region (d) limited to roots only
35. Intercalary meristems are found
(a) at internodes and base of leaves (b) at growing tips of roots
(c) beneath the bark (d) at the tips of stem
36. Which animal tissue are usually separated from the underlying tissue by an extracellular fibrous basement membrane?
(a) Muscular tissues (b) Connective tissue
(c) Epithelial tissues (d) Nervous tissues
37. Oesophagus and the lining of the mouth are also covered with which tissues?
(a) Squamous epithelium (b) Ciliated epithelium
(c) Areolar connective (d) Striated muscle tissues
38. Pneumatic bones is an important characteristic of
(a) Reptiles (b) Amphibians (c) Aves (d) Mammals
39. Earthworm is
(a) bisexual with self fertilization (b) bisexual with cross-fertilization
(c) unisexual with corss-fertilization (d) none of these
40. Which one is a true fish?
(a) Jellyfish (b) Starfish (c) Dogfish (d) Silverfish

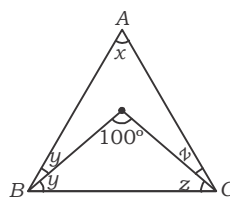
41. Which of the following is not an aerial adaptation of a bird?
 (a) Presence of strong flight muscles (b) Presence of vertebral columns
 (c) Streamlined body. (d) Forelimbs modified into wings
42. Diseases which are always present in certain location are called
 (a) epidemic diseases (b) endemic diseases
 (c) acute diseases (d) chronic diseases
43. DPT vaccines are administered to develop immunity against
 (a) Tetanus (b) Diptheria
 (c) Pertussis (d) All of these
44. What does a bacteria lack?
 (a) endoplasmic reticulum (b) DNA
 (c) cell wall (d) cytoplasm
45. The bacteria among the following is
 (a) *Plasmodium* (b) *Trypanosome* (c) Rabies virus (d) *Salmonella typhi*

Section – B (Mathematics)

46. The value of $0.\overline{23} + 0.\overline{22}$ is
 (a) $0.\overline{45}$ (b) $0.\overline{43}$ (c) 0.43 (d) 0.45
47. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} =$
 (a) 0 (b) 1 (c) -1 (d) 3
48. If $a + b + c = 9$ and $ab + bc + ca = 23$, then $a^2 + b^2 + c^2 =$
 (a) 35 (b) 58 (c) 127 (d) None of these
49. The perpendicular distance of the point $P(2, 3)$ from x -axis is
 (a) 2 (b) 3 (c) 6 (d) -1
50. The distance between the graphs of the equation $y = -2$ and $y = 3$ is
 (a) 2 (b) 3 (c) 5 (d) 7
51. In the given figure, $\triangle ABC$ is a right triangle, $AC = CD$ and $\angle C = 90^\circ$
 $CDEF$ is a rectangle and $\angle BAC = 50^\circ$, then $\angle BDE =$
 (a) 30°
 (b) 40°
 (c) 50°
 (d) 60°

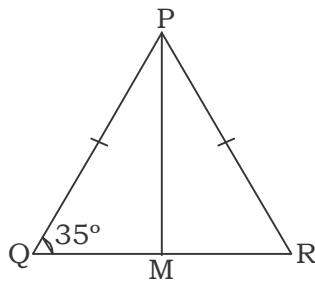


52. If $\frac{y}{x} = 2$ and $\frac{z}{x} = 1$, where x, y and z are angles of a triangle, then the value of x is
 (a) 8° (b) 180° (c) 45° (d) 15°
53. In $\triangle ABC$, find the value of x



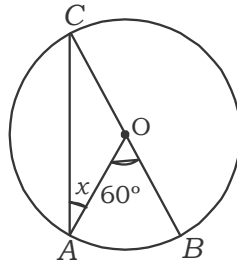
- (a) 120° (b) 80° (c) 20° (d) 100°

54. If $a = \frac{\sqrt{3}}{2}$, then value of $\sqrt{1+a} + \sqrt{1-a}$ is
 (a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $2 + \sqrt{3}$ (d) $2 - \sqrt{3}$
55. If the diagonals of a rhombus are 18 cm and 24 cm respectively, then length of its side is
 (a) 16 cm (b) 15 cm (c) 20 cm (d) 17 cm
56. When the polynomials $x^3 + 2x^2 - 5kx - 7$ and $x^3 + kx^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ the remainder obtained are p and q respectively. Then, if $2p + q = 0$, the value of k is
 (a) 1 (b) 2 (c) 3 (d) None of these
57. ABCD is a cyclic quadrilateral such that $\angle ADB = 30^\circ$ and $\angle DCA = 80^\circ$, then $\angle DAB =$
 (a) 170° (b) 100° (c) 125° (d) 70°
58. The chord of a circle is equal to its radius. The angle subtended by this chord at the minor arc of the circle is
 (a) 150° (b) 70° (c) 125° (d) 50°
59. If the length of a median of an equilateral triangle is x cm, then its area is
 (a) x^2 (b) $\frac{\sqrt{3}}{2}x^2$ (c) $\frac{x^2}{\sqrt{3}}$ (d) $\frac{x^2}{2}$
60. If every side of a triangle is doubled, then increase in the area of triangle is
 (a) 100% (b) 200% (c) 300% (d) 400%
61. If $10^{2x} = 25$, then 10^{-x} equals
 (a) $\frac{-1}{5}$ (b) $\frac{1}{50}$ (c) $\frac{1}{625}$ (d) $\frac{1}{5}$
62. If $(2k - 1, k)$ is a solution of the linear equation $2x + y = 5$, then $k =$
 (a) $\frac{5}{7}$ (b) $\frac{7}{5}$ (c) 3 (d) 4
63. If $(x + a)$ is a factor of $(x^n - a^n)$, then 'n' is:
 (a) an even positive integer (b) an odd positive integer
 (c) any integer (d) any real number
64. PQR is an isosceles triangle such that $PQ = PR$ and PM is the median to the base QR. Then $\angle QPM =$

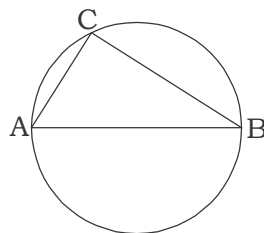


- (a) 55° (b) 70° (c) 35° (d) 110°
65. If $\sqrt{2^n} = 1024$, then $n =$
 (a) 10 (b) 20 (c) 5 (d) 15
66. Value of $\frac{(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3} =$
 (a) $(a + b)(b + c)(c + a)$ (b) $3(a - b)(b - c)(c - a)$
 (c) $(a - b)(b - c)(c - a)$ (d) None of these

67. If $x^{200} + 2x^{121} + k$ is divisible by $x + 1$, then the value k is
 (a) -1 (b) 0 (c) 1 (d) 2
68. In $\triangle ABC$ and $\triangle DEF$, $AB = DF$ and $\angle A = \angle D$. The triangles will be congruent by SAS axiom if
 (a) $BC = EF$ (b) $AC = DE$ (c) $BC = DE$ (d) $AC = EF$
69. In a $\triangle ABC$, side BC is produced both ways and the measure of exterior angles formed are 120° and 110° , then $\angle BAC$
 (a) 50° (b) 70° (c) 90° (d) 110°
70. A, B, C, D are mid-points of parallelogram PQRS. If $\text{ar}(PQRS) = 28 \text{ cm}^2$, then $\text{ar}(ABCD) =$
 (a) 56 cm^2 (b) 18 cm^2 (c) 14 cm^2 (d) 20 cm^2
71. Value of x is



- (a) 60° (b) 30° (c) 20° (d) None of these
72. If the coordinates of the two points are $P(-2, 3)$ and $Q(-3, 5)$, the (abscissa of P) – (abscissa of Q) is
 (a) -5 (b) 1 (c) -1 (d) -2
73. If $\frac{a}{b} + \frac{b}{a} = 1$, then $a^3 + b^3 =$
 (a) 1 (b) -1 (c) $\frac{1}{2}$ (d) 0
74. Equation of a line passing through the point $(0, 4)$ and parallel to x -axis is
 (a) $x = 4$ (b) $y = 4$ (c) $x = 0$ (d) $y = 0$
75. Perimeter of a parallelogram is 22 cm . If longer side is 6.5 cm , then shorter side
 (a) 3.5 cm (b) 6.5 cm (c) 5 cm (d) 4.5 cm
76. If $(x - 1)^3 = 8$, find $(x + 1)^2 =$
 (a) 15 (b) 16 (c) 8 (d) 9
77. Degree of a zero polynomial is
 (a) 0 (b) 1 (c) 2 (d) not defined
78. A point whose abscissa is -5 and ordinate is 3 , lies in
 (a) I quadrant (b) II quadrant (c) III quadrant (d) IV quadrant
79. In the given figure, if length of chord AC is 5 cm , radius is 6.5 cm and AB is the diameter. Then, the area of $\triangle ABC$ is



- (a) 60 cm^2 (b) 30 cm^2 (c) 40 cm^2 (d) 52 cm^2
80. If the volume of a cuboid is $3x^2 - 27$, then its possible dimensions are
 (a) $3, 3, 3$ (b) $3, x^2, -27x$ (c) $3, x - 3, x + 3$ (d) $3, x^2 - 9, x$

81. Value of $\frac{(0.03)^3 + (0.07)^3}{(0.03)^2 - 0.03 \times 0.07 + (0.07)^2}$ is
(a) 0.10 (b) 0.04 (c) 0.7 (d) None of these
82. D is a point on the side BC of a $\triangle ABC$ such that AD bisects $\angle BAC$. Then
(a) $BD = CD$ (b) $BA > BD$ (c) $BD > BA$ (d) $CD > CA$
83. Which of the following is an irrational number?
(a) $\sqrt{\frac{9}{27}}$ (b) $-\sqrt{64}$ (c) $\sqrt{1.44}$ (d) $\sqrt{\frac{1}{4}}$
84. In a triangle, if its longest side has length 20 cm and another of its side has length 10 cm and the area is 80 cm^2 , then the exact length of third side in (cm) is
(a) $\sqrt{260}$ (b) $\sqrt{250}$ (c) $\sqrt{240}$ (d) $\sqrt{230}$
85. If $\frac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$, then
(a) $a = 2, b = 1$ (b) $a = 2, b = -1$ (c) $a = -2, b = 1$ (d) $a = b = 1$
86. The base of an isosceles right triangle is 30 cm. Its area is
(a) 225 cm^2 (b) $225\sqrt{3} \text{ cm}^2$ (c) $225\sqrt{2} \text{ cm}^2$ (d) 450 cm^2
87. Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by x
(a) 3 (b) 2 (c) 1 (d) 0
88. If $\sqrt[3]{x} + \sqrt[3]{y} + \sqrt[3]{z} = 0$, then $(x + y + z)^3 =$
(a) xyz (b) $2xyz$ (c) $3xyz$ (d) $27xyz$
89. $(a - b)(a + b)(a^2 + b^2)(a^4 + b^4)$ is equal to
(a) $a^{16} - b^{16}$ (b) $a^8 - b^8$ (c) $a^8 + b^8$ (d) $a^{16} + b^{16}$
90. Decimal representation of an irrational number is
(a) Terminating (b) Non-terminating and recurring
(c) Non-terminating (d) Non-terminating and non-recurring

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