



Monthly Progressive Test

Class: IX

Subject: PCMB



Test Booklet No.: MPT02

Test Date:

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Time: 180 mins

Full Marks: 200

Important Instructions :

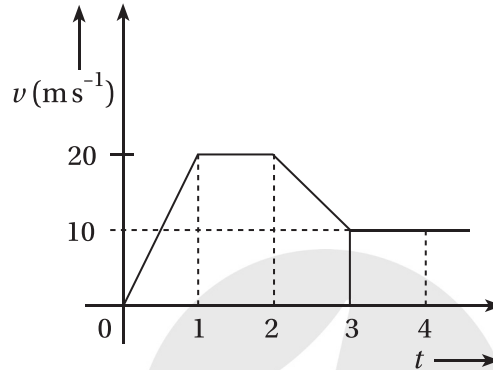
1. The Test is of 180 mins duration and the Test Booklet contains 100 multiple choice questions of single correct option only. There are four sections with four subjects. You have to attempt all 100 questions (Candidates are advised to read all 100 questions). Questions 1 to 25 contain Physics, Questions 26 to 50 contain Chemistry, Questions 51 to 75 contain Mathematics, Questions 76 to 100 contain Biology.
2. Each question carries 2 marks. For each correct response, the candidate will get 2 marks. There is no negative mark for wrong response. The maximum mark is 200.
3. Use Blue / Black Ball point Pen only for writing particulars marking responses on Answer Sheet.
4. Rough work is to be done in the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must handover the Answer Sheet to the invigilator before leaving the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
6. The CODE for this Booklet is Off Line MPT0210052024.
7. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your UID No. anywhere else except in the specified space. Use of white fluid for correction is NOT permissible on the Answer Sheet. **Do not scibble or write on or beyond discrete bars of OMR Sheet at both sides.**
8. Each candidate must show on-demand his/her Registration document to the Invigilator.
9. No candidate, without special permission of the Centre Superintendent or Invigilator, would leave his/her seat.
10. Use of Electronic Calculator/Cellphone is prohibited.
11. The candidates are governed by all Rules and Regulations of the examination with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of this examination.
12. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
13. There is no scope for altering response mark in Answer Sheet.

Space For Rough Works



Physics

- The ratio of magnitude of displacement to distance is always:
 - less than 1
 - greater than 1
 - equal to 1
 - less than or equal to 1
- The variation of the velocity of a particle moving along a straight line is illustrated in the graph given below. The distance covered by the particle in 3 seconds is (m).

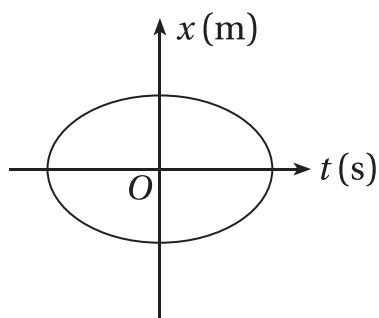


- 20
 - 35
 - 40
 - 45
- A person travels along a straight road for the first half length with a constant speed v_1 and the second half length with a constant speed v_2 . The average speed V is
 - $(v_1 + v_2)^{1/2}$
 - $\frac{2v_1v_2}{v_1 + v_2}$
 - $(v_1v_2)^{1/2}$
 - $\left(\frac{v_2}{v_1}\right)^{1/2}$
 - A 120 m long train is moving to north at a speed of 9 m/s. A parrot flying towards south with a speed of 3 m/s crosses the train. The time taken by the parrot to cross the train would be
 - 30 s
 - 15 s
 - 8 s
 - 10 s
 - How long will it take to stop a car travelling at a speed of 10 m/s, if the uniform retardation during braking is 1 m/s^2 ?
 - 100 s
 - 10 s
 - 0.25 s
 - 0.01 s
 - A particle starts moving from the position of rest under a constant acceleration. It travels a distance x in the first 10 sec and distance y in the next 10 sec, then
 - $y = x$
 - $y = 2x$
 - $y = 3x$
 - $y = 4x$
 - A body falling under gravity moves with uniform
 - Speed
 - Velocity
 - Momentum
 - Acceleration

8. A car starts from rest and achieves a velocity of 10m/s in 5s. What is the acceleration?
Ⓐ 1 m/s² Ⓑ 2 m/s² Ⓒ 3 m/s² Ⓓ 4 m/s²
9. Starting from rest, a ball falls freely for 10 s. What is its speed after 10 s?
Ⓐ 1 m/s Ⓑ 10 m/s Ⓒ 100 m/s Ⓓ 1000 m/s
10. In the kinematic equations of motion, what does v represent?
Ⓐ Initial velocity Ⓑ Final velocity Ⓒ Displacement Ⓓ Time
11. When the object is at rest how distance versus time graph look?
Ⓐ A straight line passing through the origin
Ⓑ A curve passing through the origin
Ⓒ A straight line parallel to x axis
Ⓓ Both of these
12. A man completes one revolution along a circular track. If the radius of the circle is R , then the displacement is
Ⓐ πR Ⓑ $2\pi R$ Ⓒ $\pi R/2$ Ⓓ Zero
13. If an athlete takes time t to go around once a circular track of radius r , then his speed is
Ⓐ r/t Ⓑ $2r/t$ Ⓒ $2\pi r/t$ Ⓓ $4\pi r/t$
14. A man runs 10 m in 2 s and then runs 11 m in 5 s. What is his average speed?
Ⓐ 3 m/s Ⓑ 2 m/s Ⓒ 4 m/s Ⓓ 5 m/s
15. 36 km/hr =
Ⓐ 1 m/s Ⓑ 5 m/s Ⓒ 10 m/s Ⓓ 0.1 m/s
16. Dimension of pressure \times area \times (time)²
Ⓐ MLT Ⓑ ML Ⓒ MLT² Ⓓ ML²T
17. Dimension of [length] - [length]
Ⓐ L³ Ⓑ L² Ⓒ L Ⓓ Dimensionless
18. If strain is defined as extension of length/original length, then dimension of strain is
Ⓐ MLT Ⓑ ML²T Ⓒ MLT² Ⓓ Dimensionless
19. The unit of impulse is
Ⓐ Ns Ⓑ kgm/s
Ⓒ Dyne \cdot s Ⓓ All of these are correct
20. In general, least count of vernier scale is
Ⓐ 0.1 mm Ⓑ 0.01 mm Ⓒ 0.5 mm Ⓓ 0.05 mm

[3]

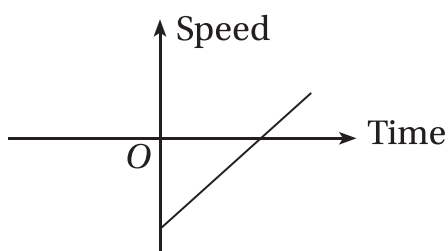
21. In one dimension motion, the position vs. time graph is shown below.



The graph is

- (A) Correct (B) Wrong (C) May be correct (D) None of these

22.



The above graph is

- (A) Correct (B) May be correct (C) Wrong (D) None of these

23. The magnitude of velocity at highest point of vertical motion under gravity is

- (A) 2 m/s (B) 1 m/s (C) 0 m/s (D) 10 m/s

24. A particle is moving in straight line with uniform acceleration. Initial and final velocity of particle are 2 m/s and 4 m/s respectively. If the duration be 2 s, then displacement of particle is

- (A) 6 m (B) 3 m (C) 2.5 m (D) 3.5 m

25. In general, the stopping distance of a car after applying brake (symbols with usual notation) is

- (A) $\frac{u^2}{a}$ (B) $\frac{u^2}{2a}$ (C) $\frac{2u^2}{a}$ (D) None of these

Chemistry

26. Which of the following has the strongest interparticle force at the room temperature?

- (A) Nitrogen (B) Mercury (C) Iron (D) Chalk

27. The boiling point of water on kelvin scale is

- (A) 573 K (B) 273 K (C) 373 K (D) 100 K

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38. The type of motion that is present in gases is
Ⓐ Random Ⓑ Linear (in a straight line)
Ⓒ Vibratory Ⓓ Circular
39. Evaporation is called as
Ⓐ Surface phenomenon Ⓑ Bulk phenomenon
Ⓒ Both surface and bulk phenomenon Ⓓ Rare phenomenon
40. Boiling of a liquid takes place at
Ⓐ a fixed temperature lower than its boiling point
Ⓑ a fixed temperature and normal atmospheric pressure
Ⓒ a fixed temperature higher than its boiling point
Ⓓ a fixed temperature and higher than atmospheric pressure
41. The short form of an element is known as
Ⓐ Compound Ⓑ Molecule
Ⓒ Symbol Ⓓ Mixture
42. Which of the following is an inert gas?
Ⓐ Arsenic Ⓑ Argon Ⓒ Carbon Ⓓ Iron
43. Smallest particle of the element which may or may not exist independently but take part in the chemical reactions is known as?
Ⓐ Atom Ⓑ Molecule Ⓒ Symbol Ⓓ Metal
44. Which of the following is a metalloid?
Ⓐ Carbon Ⓑ Arsenic Ⓒ Iron Ⓓ Sodium
45. The symbol of cobalt is
Ⓐ Co Ⓑ Cb Ⓒ Ct Ⓓ C
46. The unit of pressure of a gas is
Ⓐ Pascal Ⓑ Kilogram Ⓒ Metre Ⓓ Cubic centimetre
47. Ammonia and hydrogen chloride combine with each other to form ammonium chloride. This is an example of
Ⓐ Chemical change Ⓑ Physical change
Ⓒ Evaporation Ⓓ Cracking

48. Which has the highest density ?

- (A) Gas (B) Liquid
(C) Solid (D) All have same density

49. When sugar is added to water then

- (A) Water evaporates (B) Solution is formed
(C) Sugar does not mix with water (D) Water becomes solid

50. On which factor the rate of evaporation does not depend

- (A) Surface area (B) Material of the vessel
(C) Temperature (D) Humidity

Mathematics

51. Which among the options is one of the factors of $x^2 + \frac{x}{6} - \frac{1}{6}$?

- (A) $3x + 1$ (B) $2x + 1$ (C) $x - \frac{1}{5}$ (D) $x - \frac{1}{2}$

52. If $x - \frac{1}{x} = 2$, then the value of $x^4 + \frac{1}{x^4}$ is

- (A) 4 (B) 8 (C) 12 (D) 34

53. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ac} + \frac{c^2}{ab} =$

- (A) 0 (B) 1 (C) -1 (D) 3

54. If $a^{1/3} + b^{1/3} + c^{1/3} = 0$, then

- (A) $a + b + c = 0$ (B) $(a + b + c)^3 = 27abc$
(C) $a + b + c = 3abc$ (D) $a^3 + b^3 + c^3 = 0$

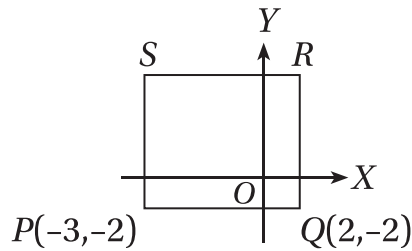
55. Abscissa of all the points on x -axis is _____.

- (A) 0 (B) 1 (C) 2 (D) any number

56. The Cartesian system is named in honour of the mathematician _____.

- (A) Leibnitz (B) Euclid (C) Laplace (D) Rene Descartes

57. The given diagram is drawn on a cartesian plane



PQRS is a square. The coordinates of S are

- (A) $(-3, 3)$ (B) $(3, -3)$ (C) $(-3, -3)$ (D) $(-3, 2)$

58. Which of the following expressions is a polynomial in one variable?

- (A) $x + \frac{2}{x} + 3$ (B) $3\sqrt{x} + \frac{2}{\sqrt{x}} + 5$ (C) $\sqrt{2}x^2 - \sqrt{3}x + 6$ (D) $x^{10} + y^5 + 8$

59. $\sqrt{3}$ is a polynomial of degree

- (A) $\frac{1}{2}$ (B) 2 (C) 1 (D) 0

60. If $p(x) = x + 4$, then $p(x) + p(-x) = ?$

- (A) 0 (B) 4 (C) $2x$ (D) 8

61. If $a + b + c = 12$ and $a^2 + b^2 + c^2 = 50$, find the value of $ab + bc + ca$.

- (A) 44 (B) 45 (C) 46 (D) 47

62. The point $P(-5, 3)$ lies in

- (A) quadrant I (B) quadrant II (C) quadrant III (D) quadrant IV

63. The point at which the two coordinate axes meet is called

- (A) the abscissa (B) the ordinate (C) the origin (D) the quadrant

64. The perpendicular distance of the point $A(7, 5)$ from y -axis is

- (A) 7 units (B) 5 units (C) 12 units (D) 2 units

65. The coordinates of two points are $A(3, 4)$ and $B(-2, 5)$, then (abscissa of A) - (abscissa of B) = ?

- (A) 1 (B) -1 (C) 5 (D) -5

66. The value of $\sqrt[4]{\sqrt[3]{2^2}}$ is equal to

- (A) $2^{-1/6}$ (B) 2^{-6} (C) $2^{1/6}$ (D) 2^6

67. $\sqrt[3]{2} \times \sqrt[4]{2} \times \sqrt[12]{32} = ?$
 (A) 2 (B) $\sqrt{2}$ (C) $2\sqrt{2}$ (D) $4\sqrt{2}$
68. $\frac{(X^{a+b})^2(X^{b+c})^2(X^{c+a})^2}{(X^a \cdot X^b \cdot X^c)^4}$
 (A) -1 (B) 0 (C) 1 (D) None of these
69. The value of $\frac{(25)^{5/2} \times (243)^{2/5}}{(16)^{3/4} \times (8)^{5/3}}$ is
 (A) $\frac{5625}{128}$ (B) $\frac{5615}{256}$ (C) $\frac{5625}{256}$ (D) None of these
70. If $a = \frac{1}{3-2\sqrt{2}}$, $b = \frac{1}{3+2\sqrt{2}}$ then the value of $a^2 + b^2$ is
 (A) 34 (B) 35 (C) 36 (D) 37
71. If $x^2 + 2x = 45$, what is the value of $x^4 + 4x^3 + 4x^2 - 13$?
 (A) 2013 (B) 1986 (C) 2012 (D) 32
72. If $x^3 - 5x^2 + 7$ is divided by $(x + 2)$, then the remainder is
 (A) -21 (B) -20 (C) -17 (D) -25
73. If $a = 2^{\frac{1}{3}} - 2^{-\frac{1}{3}}$, then find the value of $2a^3 + 6a - 3$
 (A) 1 (B) -1 (C) 0 (D) 2
74. What is the quadrilateral that is formed by joining the points (1, 1), (2, 4), (8, 4) and (10, 1)?
 (A) A triangle (B) A square (C) A rectangle (D) A trapezium
75. A straight line parallel to the x-axis has equation
 (A) $x = a$ (B) $y = a$ (C) $y = x$ (D) $y = -x$

Biology

76. Hydrolytic enzymes are located in :
 (A) Lysosomes (B) Ribosomes (C) Microsomes (D) Mesosomes
77. Tonoplast is a membrane surrounding the :
 (A) Cytoplasm (B) Nucleus (C) Vacuole (D) Mitochondria

78. Within the cell, the site of respiration or oxidative phosphorylation is :
 (A) Mitochondria (B) Nucleolus (C) Golgi bodies (D) Ribosomes
79. Choose the correct option :
 (A) Membrane biogenesis - ER (B) Power house - Golgi body
 (C) Suicidal bags - Mitochondria (D) Director of cell - Chloroplast
80. Example of uni-membranous cell organelle is :
 (A) Vacuole (B) Golgi body (C) ER (D) All of these
81. SER takes part in synthesis of :
 (A) Lipids and steroids (B) Vitamins
 (C) Carbohydrate (D) All of the above
82. Golgi apparatus is concerned with :
 (A) Excretion (B) Secretion (C) ATP synthesis (D) RNA synthesis
83. Grana & stroma occur in—
 (A) Ribosome (B) Chloroplast (C) Mitochondria (D) Golgi body
84. Mitochondria were first observed by—
 (A) Benda (B) Kolliker (C) Schwann (D) R. G. Harrison
85. 'Suicidal bag' is the nick name for—
 (A) ER (B) Vacuole (C) Ribosome (D) Lysosome
86. Kitchen of the cell is—
 (A) Mitochondria (B) ER (C) Chloroplast (D) Golgi apparatus
87. The energy currency of a cell is—
 (A) ADP (B) AMP (C) ATP (D) CTP
88. Ribosomes are centre for—
 (A) Respiration (B) Photosynthesis (C) Protein synthesis (D) Fat synthesis
89. Which cell organelle is not bounded by a membrane?
 (A) Nucleus (B) Lysosome
 (C) Ribosome (D) ER
90. Cell organelle, common to prokaryotes and eukaryotes is
 (A) Mitochondria (B) Golgi body
 (C) Ribosome (D) Endoplasmic reticulum

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91. Controlling centre of a cell is :

- (A) Nucleus (B) Nucleolus (C) Chloroplast (D) Ribosome

92. The plasma membrane of all cells is _____

- (A) Impermeable (B) Semi permeable
(C) Permeable (D) Selectively permeable

93. Which one is not a part of nucleus ?

- (A) Chromatin (B) Nucleolus (C) Centrosome (D) Nucleoplasm

94. Which of the following cells do not have a well defined nucleus?

- (A) Egg cell (B) Neuron (C) Bacterial cell (D) All of the above

95. When a raisin is put in water, it swells up after sometime due to the process of:

- (A) Diffusion (B) Exosmosis
(C) Endosmosis (D) None of the above

96. The plastid that has no pigment is

- (A) Chloroplast (B) Chromoplast (C) Leucoplast (D) All of the above

97. RER is rough because of _____ attached to it.

- (A) ribosome (B) centrosome
(C) lysosome (D) nuclear membrane

98. In a mature plant cell,

- (A) vacuoles are absent.
(B) vacuoles are small and scattered all over the cytoplasm.
(C) vacuoles are located centrally and are small.
(D) a single big vacuole occupies almost the entire inner space of the cell.

99. The golgi apparatus is involved in the formation of

- (A) Ribosome (B) Centrosome
(C) Lysosome (D) Endoplasmic reticulum

100. Transport of substances between the cytoplasm and nucleus occurs through the

- (A) Endoplasmic reticulum (B) Golgi body
(C) Mitochondria (D) Lysosome

Space For Rough Works



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