



Monthly Progressive Test

Class: IX

Subject: PCMB

Test Booklet No.: MPT03

Test Date:

1	4	0	6	2	0	2	4
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Time: 180 mins

Full Marks: 200

Solutions

Physics

1. ©

$$\frac{10-40}{6} = -5 \text{ m/s}^2$$

2. Ⓓ

If $u = 0$, s is directly proportional to t^2

$$\frac{S_1}{S_2} = \left(\frac{1}{\sqrt{3}}\right)^2 = \frac{1}{3}$$

3. Ⓓ

as velocity is constant, therefore acceleration is zero

4. Ⓐ

$$S = 0 + \left(\frac{a}{2}\right)(6-1) = 9 \Rightarrow a = 3.6 \text{ m/s}^2$$

5. Ⓑ

$$h = \frac{5^2}{2g} \Rightarrow 10h = 12.5 \text{ m}$$

6. ©

$$h_1 = \frac{1}{2} \times 10 \times t_1^2 \Rightarrow 500 = 5t_1^2 \Rightarrow t_1 = 10 \text{ s}$$

Again, $500 = 330 \times t_2 \Rightarrow t_2 = 1.5 \text{ s (nearly)}$

Therefore, total time = $10 + 1.5 = 11.5 \text{ s}$

7. **Ⓑ**

5 steps require 5 s, as 2 m progress requires 8 s, therefore 6 m progress requires $8 \times 3 = 24$ s. So total time required = $24 + 5 = 29$ s.

8. **Ⓐ**

Yes

9. **Ⓒ**Speed = $2\pi r/t$ 10. **Ⓑ**

m/s for both

11. **Ⓒ**

0 m/s

12. **Ⓓ**

cm/s

13. **Ⓒ**

Retardation

14. **Ⓒ**

10 m/s

15. **Ⓒ** m/s^2 16. **Ⓑ**As impulse = $F \cdot t = mv - mu$ 17. **Ⓓ**

Mole

18. **Ⓑ**As pressure \times area = Force19. **Ⓒ**

At highest point, velocity is zero

20. **Ⓒ**

As speed cannot be negative



[3]

21. (A)

As $V^2 = u^2 + 2as$, put $u = 0$ m/s

22. (C)

As $s = \frac{u+v}{2} \times \text{time}$

23. (A)

Apply $x = \frac{1}{2}a(2t-1)$, as $u = 0$; $t = 3$ s

24. (A)

$$\frac{\tan 60^\circ}{\tan 30^\circ} = 3$$

25. (B)

As 'g' is acting downward with constant magnitude. (Vector plotting)

Chemistry

26. (C)

AB_2 ;

A has valency 2

B has valency 1

\therefore Formula is AB_2

27. (B)

3 & 4;

In XCl_3 , valency of 'X' = 3

In YCl_4 , valency of 'Y' = 4

28. (D)

CO_2 in solid state

Dry ice solid CO_2

29. (C)

Both A & B;

Rate of evaporation depends on both temperature and surface area.

30. Ⓑ

Boiling point;

By definition boiling point is the temperature at which liquid starts boiling at atmospheric pressure.

31. Ⓐ

If a perfume bottle is opened in one corner of room, the smell can be felt after sometime in the opposite corner, then the particles of matter are constantly moving due to diffusion.

32. Ⓒ

Dalton's atomic theory

All matter is made up of very small particles which can not be further broken down. These particles are called atoms.

33. Ⓓ

M_2O_3 ;

In MCl_3 , the valency of 'M' is 3.

So, the formula of metal oxide is M_2O_3 (since oxygen valence is 2)

34. Ⓒ

5;

In A_2O_5 the valency of A is 5.

35. Ⓓ

(A) is false and (R) is true fact.

36. Ⓒ

960 Cal;

Heat (Q) = mass (m) \times Latent heat of melting (L)

$$= 12 \text{ g} \times 80 \text{ Cal/g} = 960 \text{ Cal}$$

37. Ⓐ

Evaporation is called as surface phenomenon.

38. Ⓑ

Boiling of a liquid takes place at a fixed temperature and normal atmospheric pressure.

39. (A)

Latent heat;

The amount of heat causes the change of state, but the temperature of a substance to remain constant is called latent heat.

40. (D)

Diffusion;

Movement of the particles from higher concentration to lower concentration is called diffusion. Here, incense stick when lit the aroma smoke diffuses in all parts of the room.

41. (D)

Nitrogen;

Carbon dioxide (CO_2) is a compound, water (H_2O) is a compound. Air is a mixture of N_2 , O_2 , CO_2 etc.

42. (C)

 KMnO_4 ;

Chemical formula of Potassium permanganate is KMnO_4 .

43. (A)

Liquids and gases together is called fluids.

44. (B)

Arsenic;

Carbon is non-metal

Iron is metal

Sodium is metal

45. (B)

Rate of evaporation depends on surface area, temperature and humidity but it does not depend on material of the vessel.

46. (C)

The chemical formula of Aluminium sulphate is $\text{Al}_2(\text{SO}_4)_3$.

Valency of Al = 3

Valency of $\text{SO}_4^{2-} = 2$

47. Ⓓ

Balance equation is:

So, $a = 2$, $b = 2$, $c = 4$

48. Ⓓ

States of matter are:

Solid, Liquid, Gas, Plasma, B.E.C. (Bose Einstein Condensate)

49. Ⓑ

Sublimation: Conversion of solid into vapours is called sublimation.

Vapourisation: Conversion of liquid into gas.

Freezing: Conversion of liquid into solid.

50. Ⓓ

Mathematics

51. Ⓓ

$$x + y = 2013, \quad \frac{1}{x} + \frac{1}{y} = 2013$$

$$\Rightarrow \frac{y+x}{xy} = 2013 \quad \Rightarrow \frac{2013}{xy} = 2013 \quad \Rightarrow xy = 1$$

52. Ⓓ

$$2x - 5y + k = 0$$

$$2(3) - 5(-1) + k = 0 \quad \Rightarrow k = -11$$

53. Ⓒ

$$2x - 3y = 7; \quad 4x - 6y = 20 \quad \Rightarrow 2x - 3y = 10$$

$$\frac{2}{2} = \frac{-3}{-3} \neq \frac{7}{10}$$

∴ no solution

54. Ⓓ

 $2x + 3y = 6$. It passes through (3,0) and (0,2).

IV will be the graph.

55. Ⓓ

$$3x - 4y = 7; x + cy = 13$$

$$\frac{3}{1} = \frac{-4}{c} \neq \frac{7}{13} \Rightarrow c = -\frac{4}{3}$$

56. Ⓐ

The line $x - 7 = 0$ is parallel to y -axis.

57. Ⓒ

Let no. of chickens be x and no. of goats be y .

$$\therefore x + y = 30 \Rightarrow x = 30 - y$$

$$2x + 4y = 84 \Rightarrow x + 2y = 42$$

$$\therefore 30 - y + 2y = 42 \Rightarrow y = 12$$

$$\therefore x = 18$$

$$x : y = 18 : 12 = 3 : 2$$

58. Ⓑ

$$\frac{C}{5} = \frac{F - 32}{9} \Rightarrow \frac{C}{5} = \frac{37 - 32}{9} \Rightarrow C = \frac{25^\circ}{9}$$

59. Ⓐ

$$\frac{C}{5} = \frac{C - 32}{9} \Rightarrow 9C = 5C - 160 \Rightarrow 4C = -160 \Rightarrow C = -40$$

60. Ⓐ

$$3 \times 4 = a \times 3 + 7 \Rightarrow 3a = 5 \Rightarrow a = \frac{5}{3}$$

61. Ⓑ

$x + y = 0$ is satisfied by $(2, -2)$, $(0, 0)$ and $(-3, 3)$.

62. Ⓑ

$$a \neq 0, b \neq 0$$

63. Ⓐ

$$x + y = 12, xy = 35$$

$$\therefore \frac{1}{x} + \frac{1}{y} = \frac{y + x}{xy} = \frac{12}{35}$$

64. (A)

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

$\left(\frac{1}{3}, -1\right)$ satisfy both the equations.

65. (D)

$$1 = a - b \Rightarrow a = 1 + b$$

$$5 = a - \frac{b}{5} \Rightarrow 5 = 1 + b - \frac{b}{5} \Rightarrow 4 = \frac{4b}{5} \Rightarrow b = 5$$

$$\therefore a = 6$$

$$\therefore a + b = 6 + 5 = 11$$

66. (A)

$$x = \frac{1}{3 - 2\sqrt{2}} = 3 + 2\sqrt{2}$$

$$y = \frac{1}{3 + 2\sqrt{2}} = 3 - 2\sqrt{2}$$

$$x + y = 6; \quad xy = 1$$

$$\therefore x^2 + y^2 = (x + y)^2 - 2xy = 36 - 2 = 34$$

67. (A)

$$\sqrt{x} + \frac{1}{\sqrt{x}} = 2 \Rightarrow x + \frac{1}{x} + 2 = 4 \Rightarrow x + \frac{1}{x} = 2 \Rightarrow x^2 + 1 = 2x \Rightarrow (x - 1)^2 = 0 \Rightarrow x = 1$$

$$\therefore x^8 + \frac{1}{x^8} = 1 + 1 = 2$$

68. (D)

Abscissa of all the points on x -axis is any number.

69. (A)

$$PQ = 5 \text{ units}$$

\therefore Co-ordinates of S is $(-3, 3)$

70. (B)

$P(-5, 3)$ lies in quadrant II.

71. (A)

$$x + y = 2 \Rightarrow y = 2 - x$$

$$\therefore x - y = 1 \Rightarrow x - (2 - x) = 1 \Rightarrow x - 2 + x = 1 \Rightarrow 2x = 3 \Rightarrow x = \frac{3}{2}$$

72. (B)

$$x - y = 1,$$

$$x^2 - y^2 = 3 \Rightarrow (x + y)(x - y) = 3 \Rightarrow (x + y) \times 1 = 3 \Rightarrow x + y = 3$$

73. (D)

(4,0), (0,4), (2,2) satisfy the equation $x + y = 4$

74. (B)

$$x - y = 3 \quad \therefore y = x - 3$$

75. (C)

$$x + y = 3, x - y = 1$$

$$\therefore x^2 - y^2 = (x + y)(x - y) = 3 \times 1 = 3$$

Biology

76. (A)

Amitosis

77. (A)

Flemming

78. (A)

Two daughter cells are produced

79. (A)

M phase

80. (B)

Diploid

Diploid mother cell produces haploid gametes through meiosis.

81. (B)

Diploid

Mitosis is an equational division.

82. ©

S phase

Therefore called Synthetic phase.

83. ©

Nageli

84. Ⓑ

Centrosome

85. Ⓐ

Karyokinesis

86. Ⓓ

Prophase → Metaphase → Anaphase → Telophase

87. ©

All living cells of the body, except those leading to the formation of gametes.

88. Ⓑ

Equational division

Results in the formation of two daughter cells, identical to the mother cell.

89. Ⓓ

Four

90. Ⓓ

Both Ⓐ and Ⓑ

91. Ⓐ

Cytoplasm

92. Ⓐ

One

93. Ⓑ

Chloroplast

94. Ⓓ

Lysosome

In old and worn out cells, lysosomes burst to release its hydrolytic enzymes. These enzymes digest the whole cell.

95. ©

Protein synthesis

96. Ⓑ

The nuclear region is covered by the nuclear membrane.

The nuclear region is naked in prokaryotic cells and lies freely in the cytoplasm.

97. ©

Producing energy during respiration.

98. Ⓓ

No change will be observed in the size of the cell

In isotonic solutions, exosmosis = endosmosis. Hence no change is seen in shape and size of the cell.

99. ©

Are devoid of ribosomes.

100. Ⓐ

Chromoplast

Contains pigments other than chlorophyll.

