Monthly Progressive Test (Solution)

Class: VIII

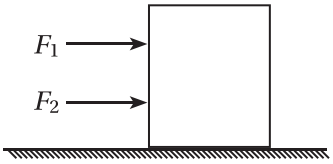
Subject: PCMB

Academic Excellence Programme TECHNO ACE

Test Booklet No.: MPT010 **Test Date: 10022025**

Physics

1. Ⓓ

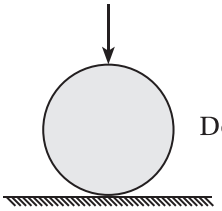


$F_{net} = F_1 + F_2$

2. Ⓑ

$F = mg = (2)(10) = 20$ N

3. Ⓑ



Downward

4. Ⓑ

A force cannot change the mass of an object.

5. Ⓐ

The SI unit of pressure is N/m^2.

6. Ⓓ

It is due to atmospheric pressure.

7. Ⓑ

It is due to electrostatic repulsion.

8. Ⓓ

As pressure $\propto$ Depth of liquid

9. Ⓓ

As similar charges/poles repel

10. Ⓐ

As depths are same

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11. Ⓐ

As, pressure $= \dfrac{mg}{\text{contact area}}$

12. Ⓐ

As frequency $= \dfrac{1}{\text{Time period}}$

13. Ⓑ

$$\frac{I_1}{I_2} = \frac{a^2}{b^2} = \frac{1}{2} \quad \therefore \frac{a}{b} = \frac{1}{\sqrt{2}}$$

14. Ⓒ

$$\frac{I_2}{I_1} = 100 = \frac{b^2}{a^2} \quad \Rightarrow \frac{b}{a} = 10 \quad \Rightarrow b = 10a$$

15. Ⓐ

Shrill voice has higher pitch which means higher frequency.

16. Ⓑ

Rolling friction is least

17. Ⓓ

Applied force is greater than limiting static friction.

18. Ⓒ

As within limiting friction, value applied force = frictional force.

19. Ⓒ

Normal contact force should be normal to contact surface.

20. Ⓒ

As straight line passing through origin.

21. Ⓒ

Image is laterally inverted.

22. Ⓓ

As, for image diagram, reflected rays are to be drawn backward.

23. Ⓒ

As reflected beams are not parallel.

24. Ⓐ

As like charges repel each other.

25. Ⓓ

As aluminium foils get similar charges.

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26. Ⓐ

T > R > Q > S > P

Hydrogen > L.P.G. > Petrol > Wood > Cow dung cakes

Fuel	**Calorific value (kJ/kg)**
Hydrogen	1,50,000
L.P.G.	50,000
Petrol	47,000
Wood	17,000–22,000
Cow dung cake	6000–8000

27. Ⓒ

P—(iii), (x); Q—(ii), (z); R—(i), (y)

Hottest part–outermost zone of complete combustion—Blue.

28. Ⓑ

Anthracite coal is mostly used to produce coke.

29. Ⓒ

The colour change of $CuSO_4$ solution can be observed when it is made to react with zinc.

30. Ⓓ

Acids, bases and salts are good conductors of electricity in its aqueous solution.

31. Ⓑ

Heat produced by 1 kg of fuel $= \frac{1,80,000}{4.5} = 40,000$ kJ

So, Calorific value = 40,000 kJ/kg

32. Ⓐ

The gas which has the highest contribution to global warming is carbondioxide (CO_2), [55%].

33. Ⓓ

Acid rain can be caused by the burning of coal.

34. Ⓐ

Producer gas is ($CO + N_2$)

35. Ⓑ

Fuel must be heated to its ignition temperature before it starts burning.

36. Ⓑ

The correctly categories the substances *P*, *Q* and *R* as follows. Substance *P* undergoing rapid combustion, substance *Q* undergoing spontaneous combustion where substance *R* is undergoing explosion.

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37. Ⓑ

Both assertion and reason are correct, but reason is not the correct explanation of assertion.

38. Ⓐ

Since the bulb glows more brightly in set up *A*, so, the higher current is flowing through the circuit in set up *A*.

39. Ⓒ

Electroplating is based on the principles of electrolytes.

40. Ⓒ

Alcohol is a non-electrolyte while Hydrochloric acid, vinegar and sodium chloride are electrolyte.

41. Ⓒ

During electrolysis of copper sulphate solution using copper electrode Anode reaction is : $Cu - 2e^- \rightarrow Cu^{++}$

42. Ⓒ

During the electroplating of a iron spoon by silver, spoon and silver metals are kept as follows : silver at anode and spoon at cathode.

43. Ⓒ

A solution of chemical compound which does not conducts electric current and the same time does not undergoes a chemical change is known non-electrolyte.

44. Ⓓ

Distilled water is very good conductor of electricity. This is wrong. Glowing of a bulb is due to heating effect of current. This is true. Thus, the answer is Ⓓ.

45. Ⓑ

LED means light emitting diode. This is correct. LED is used to measure weak electric current. This is correct but not the correct explanation of assertion.

46. Ⓐ

Both assertion and reason are correct and the reason is the correct explanation of assertion.

47. Ⓐ

The negatively charged ion formed when a chemical compound is dissolved in water is called anion.

48. Ⓓ

The chemical compound which conducts electric current and decompose to give new compound in its aqueous solution is called electrolyte. Positively charged ions in the solution are called cations.

49. Ⓑ

Carbondioxide gas has the highest contribution of global warming amongst ozone, carbondioxide, Methane, Nitrous Oxide.

50. Ⓑ

(i) L.P.G.—(c) Liquefied petroleum gas;

(ii) C.N.G.—(a) Compressed natural gas;

(iii) Petrol—(b) Inflammable substance;

(iv) Sand—(d) Non-combustible substance.

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51. Ⓐ

$$\frac{x+6}{4}+\frac{x-3}{5}=\frac{5x-4}{8}$$

$$\Rightarrow \frac{x+6}{4}\times 40+\frac{x-3}{5}\times 40=\frac{5x-4}{8}\times 40$$

$\Rightarrow 10x + 60 + 8x - 24 = 25x - 20$

$\Rightarrow 18x + 36 = 25x - 20$

$\Rightarrow 7x = 56$

$\Rightarrow x = 8$

52. Ⓓ

$$\text{No. of diagonals} = \frac{6(6-3)}{2} = 3\times 3 = 9$$

53. Ⓓ

Minimum possible interior angle of a regular polygon = 60°

$\therefore$ Maximum possible exterior angle of a regular polygon = 120°

54. Ⓓ

Total outcomes = 25

No. of favourable outcomes = 5

$$\therefore \text{ Required probability} = \frac{5}{25} = \frac{1}{5}$$

55. Ⓑ

C. P. of almirah = ₹ (6250 + 375)

= ₹ 6625

Gain = ₹ (6890 – 6625)

= ₹ 265

$$\therefore \text{ Gain \%} = \frac{\cancel{265}^{\,53}}{\cancel{6625}_{\,1325\ \ 25}}\times {}^{4}\cancel{100}\ \%$$

= 4% .

56. Ⓐ

Principal = ₹ 30000

Interest = ₹ 4347

$\therefore$ Amount = ₹ (30000 + 4347) = ₹ 34347

$$\therefore 34347 = 30000\left(1+\frac{7}{100}\right)^{n}$$

$$\Rightarrow \frac{\cancel{34347}^{\,11449}}{10000\ \cancel{30000}} = \left(\frac{107}{100}\right)^{n}$$

$$\Rightarrow \left(\frac{107}{100}\right)^{2} = \left(\frac{107}{100}\right)^{n} \Rightarrow n = 2$$

$\Rightarrow$ Time = 2 years

57. Ⓐ

Let C. P. of the article be ₹ x.

gain % = 10%

$\therefore$ S. P = ₹ $x\left(\frac{110}{100}\right)$ = ₹ $\left(\frac{11x}{10}\right)$

New C. P. = ₹ $\left(x-\frac{20}{100}\times x\right)$ = ₹ $\left(x-\frac{x}{5}\right)$

= ₹ $\frac{4x}{5}$

Profit % = 40%

$\therefore$ New S. P. = ₹ $\frac{4x}{5}\left(\frac{140}{100}\right)$

= ₹ $\frac{4x}{5}\times\frac{^{7}\cancel{14}\cancel{0}}{_{5}\cancel{10}\cancel{0}}$

= ₹ $\frac{28x}{25}$

$\therefore$ $\frac{28x}{25}-\frac{11x}{10}=10$

$\Rightarrow$ $\frac{56x-55x}{50}=10$

$\Rightarrow$ $\frac{x}{50}=10$

$\Rightarrow$ x = 500

$\therefore$ C. P. = ₹ 500

58. Ⓑ

The number of faces of a square pyramid = 5

59. Ⓒ

F + V = E + 2

$\Rightarrow$ 20 + 12 = E + 2

$\Rightarrow$ E = 30

60. Ⓒ

Sum of two opposite faces = 7

$\therefore$ numbers on the opposite faces are 2 and 1.

$\therefore$ total = 2 + 1 = 3

61. Ⓑ

Dimensions of the resulting cuboid = 24 cm × 12 cm × 12 cm

$\therefore$ total surface area of the resulting cuboid

= 2 (24 × 12 + 24 × 12 + 12 × 12) cm^2

= 2 × 12 (24 + 24 + 12) cm^2

= 24 × 60 cm^2 = 1440 cm^2

62. Ⓐ

Radius = 42 cm

height = 120 cm

$\therefore$ CSA = $2\times\frac{22}{\cancel{7}}\times\cancel{42}^{6}\times 120$ cm^2

= 1440 × 22 cm^2

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$\therefore$ 9n 500 complete revolution, area covered = $500 \times 1440 \times 22$ cm^2

$\therefore$ Area of playground in m^2 = $\frac{\cancel{500} \times 144\cancel{0} \times 22}{\cancel{100} \times \cancel{10\,0}}$

= 1584

63. Ⓓ

area of rectangle = 5×12 cm^2

= 60 cm^2

Diameter = 13 cm

$\therefore$ Radius = $\frac{13}{2}$ cm

$\therefore$ Area of circle = $3.14 \times \frac{13}{2} \times \frac{13}{2}$ cm^2

= 132.665 cm^2

$\therefore$ Area of shaded region = (132.665 – 60) cm^2

= 72.665 cm^2

64. Ⓒ

Petrol (in litres)	Distance covered (in km)
36	522
14	x

$\therefore$ $\frac{x}{522} = \frac{14}{36}$

$\Rightarrow x = \frac{14 \times 522}{36} = 203$

$\therefore$ Distance covered = 203 km

65. Ⓐ

No. of men	No. of days
120	195
90	x

$\therefore$ $\frac{x}{195} = \frac{120}{90}$

$\Rightarrow x = \frac{12\cancel{0} \times 195}{9\cancel{0}} = 260$

$\therefore$ Required days = 260

66. Ⓐ

Maths

67. Ⓐ

English

68. Ⓓ

Marks in science in 2006 - 07 = 60

69. Ⓐ

One angle of a parallelogram is a right angle.

$\therefore$ all angles of this parallelogram are 90° each.

$\therefore$ it is a rectangle.

$\therefore$ Assertion is true.

Reason is also correct and reason is the correct explanation of (A).

70. Ⓐ

$(x + 4)\, x = 140$

$\Rightarrow x^2 + 4x = 140$

$\Rightarrow x^2 + 4x - 140 = 0$

$\Rightarrow x^2 + 14x - 10x - 140 = 0$

$\Rightarrow x(x + 14) - 10(x + 14) = 0$

$\Rightarrow (x + 14)(x - 10) = 0$

$\therefore$ x = –14 (Not possible), x = 10

$\therefore$ length = 14 cm and breadth = 10 cm

$\therefore$ Assertion is true.

Reason is also correct and reason is the correct explanation of (A) .

71. Ⓑ

$$x - \frac{1}{x} = 5$$

$$\Rightarrow x^2 + \frac{1}{x^2} = 27$$

$$\Rightarrow x^4 + \frac{1}{x^4} = 729 - 2 = 727$$

72. Ⓐ

$$\left\{\left(\frac{1}{3}\right)^{-3} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-3}$$

$= \{3^3 - 2^3\} \div (4)^3$

$= (27 - 8) \div 64$

$= \frac{19}{64}$

73. Ⓑ

$\therefore$ a and b varies inversely as each other.

$\therefore$ ab = k (k is non-zero constant)

When a = 16, b = 4

$\therefore$ 64 = k

$\therefore$ ab = 64

When a = 8, $b = \frac{64}{8} = 8$

74. Ⓐ

$12x^2 - 7x + 1$

$= 12x^2 - 4x - 3x + 1$

$= 4x(3x - 1) - 1(3x - 1)$

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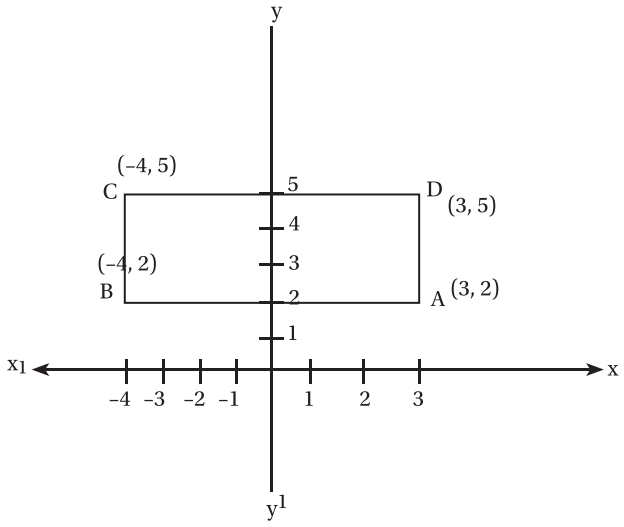
= (3x – 1) (4x – 1)

75. ©



co-ordinates of fourth vertex D = (3, 5)

Biology

76. Ⓐ

Wheat
It is a rabi crop

77. Ⓐ

Ploughing

78. Ⓒ

Water
Water promotes the growth of microbes

79. Ⓐ

Mosquitoes

80. Ⓑ

Virus

81. Ⓒ

Amoeba
Amoeba shows binary fission

82. Ⓓ

Fish

83. Ⓐ

A sperm produces a zygote
A sperm and an ovum, after fusion, produces a zygote

84. Ⓐ

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Pancreas
As pancreas produce the hormone, insulin, which controls blood sugar

85. Ⓐ
Thyroxine

86. Ⓐ
Puberty

87. Ⓓ
Ovulation

88. Ⓓ
All of them

89. Ⓐ
Flora

90. Ⓒ
Dodo

91. Ⓓ
A is false but R is true
In crop rotation, different crops are sown in the same field in a preplanned succession

92. Ⓓ
A is false but R is true
Biodiversity refers only to the different types of living things

93. Ⓐ
A and R both are true and R is the correct explanation of A

94. Ⓑ
A and R both are true but R is not the correct explanation of A

95. Ⓐ
A and R both are true and R is the correct explanation of A

96. Ⓒ
Has a pointed head and a long tail

97. Ⓓ
All the statements about gonads are correct

98. Ⓐ
Testis
Testis produce the hormone, testosterone

99. Ⓓ
Secretion of accessory reproductive glands + sperms

100. Ⓒ
Middle piece

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