Monthly Progressive Test

Class: VIII

Subject: PCMB (G)

Test Booklet No.: MPT05	Test Date: 22082024
Time: 180 mins	Full Marks: 200

Solutions

Physics

1. Ⓑ

   Two forces – weight and tension.

2. Ⓒ

   m = 1kg

   Weight = mg = 1 × g = g N = 1kgf

   Normal force = Weight

3. Ⓒ

   Like in walking friction is advantageous

4. Ⓒ

   Pressure = height of column × density × g

5. Ⓑ

   Density of mercury is more than water than air

6. Ⓑ

   Sound in air is longitudinal in nature.

7. Ⓓ

   Friction, weight and normal contact force

8. Ⓑ

   As $P = \frac{F}{A}$ and $P \propto \frac{1}{A}$

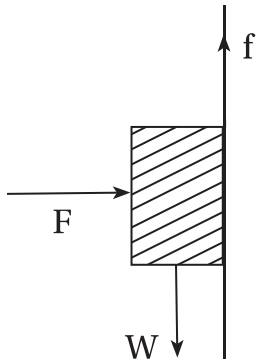
9. Ⓒ

Reason is wrong as $P \propto \frac{1}{A}$

10. Ⓒ

Wearing out of soles, machine parts

11. Ⓑ



12. Ⓓ

As $P \propto \frac{1}{A}$

13. Ⓐ

As $P \propto \frac{1}{A}$

14. Ⓓ

State of rest, motion, can change the shape/size

15. Ⓐ

The spring will be extended

16. Ⓐ

As P $\propto$ height of column of air

17. Ⓓ

Normal contact force acts normal (90°) to contact surface

18. Ⓓ

Sliding, turning (torque), deformation effects

19. Ⓐ

As limiting friction $\propto$ Normal contact force

20. Ⓐ

$\mu_{static} > \mu_{sliding}$

21. Ⓒ

Camel has their feet are wider

22. Ⓒ

As $P \propto h$ (hydro static paradox)

23. Ⓑ

Known as hydrostatic paradox

24. Ⓐ

Pressure does not depend on quantity of water

25. Ⓑ

As $P \propto \frac{1}{A}$ and $P = hpg$

Chemistry

26. Ⓓ

Electric current can result heating effect (glowing of a bulb), chemical effect (electrolysis and electroplating) and magnetic effect (deflection of the needle of compass when it is taken close to a live wire).

27. Ⓓ

Aqueous solution of sodium chloride, silver nitrate, copper sulphate all can easily produce ions hence they are the good conductors of electricity. But sugar solution cannot produce ions hence it cannot conduct electric current.

28. Ⓒ

Iron nail is a good conductor of electricity.

29. Ⓑ

A bulb glows due to heating effect of current.

30. Ⓒ

Passage of electric current is associated with the presence of various ions in the solution.

31. Ⓐ

Lemon juice contains acids (which can easily form ions) and for this reason it acts as a good conductor of electric current

32. Ⓑ

More the amount of electric current is passed then the bulb starts to glow brighter as higher amount of electric current results higher amount of heating effect.

33. Ⓐ

Plastic , wood, rubber do not conduct electricity.

34. Ⓓ

Inverters supply electricity.

35. Ⓒ

Insulators do not conduct electricity,

36. Ⓓ

When electrical appliances are touched by wet hands then it can conduct electricity if there is any type of leakage is there. It can be fatal and may cause death of the person

37. Ⓑ

Flow of electricity is termed as electric current.

38. Ⓑ

Copper is a good conductor of both heat and electricity. As it conducts electricity, so it is used to prepare wires.

39. Ⓑ

LED can perform both at high and low voltage and two ends of LED have different lengths.

40. Ⓓ

Honey is denser than water and it is bad conductor of electricity.

41. Ⓓ

Coal contains carbon, high amount of sulpher and nitrogen containing compounds and burning of which huge amount of carbon oxides, sulpher oxides and nitrogen oxides are generated. That huge amount of the aforesaid oxides mix with water and cause severe acid rain. On the other hand, burning of CNG, LPG, diesel, petrol does not produce that amount of pollutants.

42. Ⓒ

Carbonization is a slow chemical change where dead vegetation turn into coal.

43. ©

Charcoal burns in air and carbon dioxide gas is produced and heat is released.

44. Ⓐ

Unburnt carbon particles cause the black colour of smoke

45. ©

Woolen blanket instantly disconnects the flow of air to the burning body and for the reason the person can be saved readily.

46. Ⓓ

To conduct electric current, the condition is the solution must have ions. But glucose solution cannot produce ions hence it cannot conduct electric current.

47. Ⓑ

Tap water contains various ionic compounds like magnesium carbonate, sodium chloride, calcium carbonate, iron (II) carbonate, magnesium chloride, etc. Hence, it can conduct electric current to a great extent.

48. Ⓑ

When a wire conducts electric current then a magnetic field is developed around it. Now, if a compass is placed in that field then the needle starts to deflect.

49. Ⓓ

Light emitting diode.

50. Ⓑ

Platinum is a very good electrode and is used for various electrolytic processes.

Mathematics

51. ©

S.P. = ₹1470, p% = $\frac{50}{3}$%

$\therefore$ C.P. = ₹ $\frac{1470 \times 100}{(100 + \frac{50}{2})}$

= ₹ $\frac{\cancel{1470}^{21} \times \cancel{100}^{20} \times 3}{\cancel{350}_{5}}$ = ₹1260

52. Ⓐ

C.P. = ₹(1200 + 200) = ₹1400

S.P. = ₹1680

∴ Profit = ₹(1680 – 1400) = ₹280

∴ Profit% $= \frac{280}{1400} \times 100\% = 20\%$

53. Ⓐ

$21952 = 15625\left(1+\frac{r}{100}\right)^3$

$\Rightarrow \frac{21952}{15625} = \left(1+\frac{r}{100}\right)^3$

$\Rightarrow \left(\frac{28}{25}\right)^3 = \left(1+\frac{r}{100}\right)^3$

$\Rightarrow \frac{28}{25} = 1+\frac{r}{100}$

$\Rightarrow \frac{r}{100} = \frac{3}{25}$

$\Rightarrow r = 12$

∴ rate of interest = 12% p.a.

54. Ⓓ

Let the sum be ₹x

$\therefore 12100 = x\left(1+\frac{10}{100}\right)^2$

$\Rightarrow 12100 = x \times \left(\frac{11}{10}\right)^2$

$\Rightarrow 12100 = x \times \frac{|2|}{100}$

$\Rightarrow x = 10000$

∴ The sum = ₹10000

55. Ⓑ

Number of diagonals in a heptagon

$= \frac{7(7-3)}{2} = \frac{7 \times \cancel{4}^{2}}{\cancel{2}} = 14$

56. Ⓑ

Each interior angle = 150°

∴ each exterior angle = (180° – 150°) = 30°.

∴ Number of sides $= \frac{350^\circ}{30^\circ} = 12$

57. Ⓐ

S = 4, D = 2

∴ S : D = 4 : 2 = 2 : 1

58. Ⓒ

C.P. = ₹500, S.P. = ₹600

∴ profit = ₹(600 – 500) = ₹100

∴ profit % $= \frac{\cancel{100}}{\cancel{500}} \times \cancel{100}^{20}\% = 20\%$

(A) is true.

(R) : Profit % $= \frac{\text{Profit}}{\text{S.P.}} \times 100\%$ false

59. Ⓑ

S.P. = ₹300, C.P. = ₹250 ∴ profit = ₹(300 – 250) = ₹50

S.P. = ₹200, C.P. = ₹250 ∴ loss = ₹(250 – 200) = ₹50

∴ (A) is true

(R) : C.P. = ₹$\frac{(300+200)}{2}$ = ₹250

∴ (R) is true

(R) is not the correct explanation of (A).

60. Ⓐ

Population in the year 2024

$= 20000\left(1+\frac{3}{100}\right)^2$

$= 20000 \times \frac{103}{100} \times \frac{103}{100}$

= 21218

61. Ⓑ

Population in the year 2025

$$= 20000\left(1+\frac{10}{100}\right)^3$$

$$= 20000\times\frac{11}{10}\times\frac{11}{10}\times\frac{11}{10}$$

$$= 26620$$

62. Ⓓ

Population in 2 years

$$= 10000\left(1+\frac{6}{100}\right)^2$$

$$= 10000\times\frac{53}{50}\times\frac{53}{50}$$

$$= 11236$$

63. Ⓒ

A polygon has at least 3 sides.

64. Ⓑ

$S = 4, A = 4, V = 4, D = 2$

$\therefore\ S - A + V - D = 4 - 4 + 4 - 2 = 2$

65. Ⓐ

Adjacent sides of PQ are QR and PS.

66. Ⓐ

$$a+\frac{1}{a}=2 \Rightarrow a^2+\frac{1}{a^2}=2 \Rightarrow a^4+\frac{1}{a^4}=2$$

$$\therefore\ a^2+\frac{1}{a^2}=a^4+\frac{1}{a^4}$$

67. Ⓐ

$$x+\frac{5}{3}=\frac{3x}{5}+\frac{17}{3}$$

$$\Rightarrow\ x-\frac{3x}{5}=\frac{17}{3}-\frac{5}{3}$$

$\Rightarrow \frac{2x}{5} = 4$

$\Rightarrow x = 10$

68. Ⓑ

1 or 6

69. Ⓐ

$392 = 2 \times 2 \times 2 \times 7 \times 7$

$\therefore$ 7 should be multiplied to obtain perfect cube.

70. Ⓓ

Additive inverse of $-\frac{2}{3} = \frac{2}{3}$

$\therefore$ Product $= -\frac{2}{3} \times \frac{2}{3} = -\frac{4}{9}$

71. Ⓓ

Let each equal angle be $x°$.

$\therefore 3x° + 75° = 360°$

$\Rightarrow 3x° = 285°$

$\Rightarrow x° = 95°$

$\therefore$ each equal angle = 95°

$\therefore$ (A) is false.

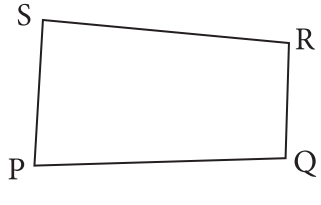
(R) is true.

72. Ⓐ

Opposite angle of $\angle P = \angle R$

$\therefore$ (A) is true

(R) is true



73. Ⓐ

Perimeter of playground = 5 × 50 m

= 250 m

74. Ⓑ

Each interior angle of the hexagon

$$= 180° - \frac{360°}{6} = 180° - 60°$$
$$= 120°$$

75. Ⓒ

Number of diagonals for playground

$$= \frac{5(5-3)}{2} = 5 \times \frac{2}{2} = 5$$

Biology

76. Ⓒ

Improved water quality and reduced soil erosion.

Plants slow down the speed of flowing water increasing its percolation through the soil. Roots of plants hold the soil firmly, reducing soil erosion.

77. Ⓐ

Conservationists and policy makers.

78. Ⓑ

A food web shows multiple interconnected food chains in an ecosystem.

79. Ⓒ

Improvement in ecosystem balance.

80. Ⓑ

Sunlight and water.

Non living components of ecosystem.

81. Ⓒ

Biodiversity

Flora and fauna refers to the plants and animals of a habitat, respectively, whereas, ecosystem includes biotic and abiotic components of a habitat.

82. Ⓑ

Flora

83. Ⓑ

IUCN

84. Ⓑ

Both A and R are correct but R is not the correct explanation of A.

85. Ⓐ

Both A and R are correct and R is the correct explanation of A.

As trees hold the soil firmly, hence deforestation can expose the soil to floods.

86. Ⓓ

All

87. Ⓐ

Arctic Tern

88. Ⓒ

Both A and B

89. Ⓐ

Birds

90. Ⓒ

Siberian crane

91. Ⓒ

To improve aeration and water absorption.

92. Ⓓ

Hemp

Hemp is commercially used to extract fibres from making fabrics.

93. Ⓑ

Flesh

94. Ⓓ

All

95. ⓓ

Earthworms

96. ⓓ

All of the above

97. ⓑ

Both A and R are true but R is not the correct explanation of A.

98. ⓐ

Madhya Pradesh

99. ⓐ

Transition zone

Outermost zone of the biosphere reserve

100. ⓒ

Core zone

Biodiversity is strictly left undisturbed.