Monthly Progressive Test

Class: VIII

Subject: PCMB

Test Booklet No.: MPT04 (G)   Test Date: | 2 | 4 | 0 | 7 | 2 | 0 | 2 | 4 |

Time: 180 mins   Full Marks: 200

Solutions (Set-G)

Physics

1. Ⓐ

    As $P = F/A$

2. Ⓒ

    As $\rho \propto$ depth of water

3. Ⓑ

    Mercury has highest density, $P \propto$ density of liquid.

4. Ⓐ

    $P \propto \dfrac{1}{A}$

5. Ⓒ

    $P \propto$ depth of liquid

6. Ⓐ

    Parchute → Pressure provides upthrust

7. Ⓑ

    Outside pressure is lower than blood pressure.

8. Ⓐ

    $P \propto \dfrac{1}{A}$

9. Ⓑ

    $P \propto \dfrac{1}{A}$

10. Ⓐ

Atmospheric pressure

11. Ⓒ

Pressure provides upthrust

12. Ⓓ

$P \propto \dfrac{1}{A}$

13. Ⓐ

A : true:

R : $P \propto h$ (height) of air column

14. Ⓑ

$P = F/A \qquad P(\uparrow) \ \text{ as } \ A(\downarrow)$

15. Ⓒ

$P \propto$ depth of liquid

16. Ⓓ

$N = m(g - a)$ where a is also 10 m/s^2

17. Ⓑ

Similar poles repel each other.

18. Ⓓ

Mascular force

19. Ⓐ

$m = 19.6/9.8 = 2$ kg

20. Ⓒ

$mv - mu = F \cdot t = 5 \times 3 = 15$

21. Ⓑ

to increase pressure

22. Ⓓ

N/m^2, pascal, dyne/cm^2

23. Ⓑ

1 kilo-pascal = 1000 Pa

24. Ⓒ

As $P = F/A$

25. Ⓑ

As pressure acts in all direction

Chemistry

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26. Ⓓ

For proper combustion, very much necessary conditions are the presence of combustible substances and attainment of its ignition temperature. Presence of the supporter of combustion like oxygen is another important factor.

27. Ⓒ

Carbon dioxide is the fire extinguisher and nitrogen is a very stable molecule which does not help to support combustion. Oxygen is the most important which is the support of combustion.

28. Ⓓ

Petrol, diesel, alcohol all have low ignition temperature and hence they are inflammable substances.

29. Ⓒ

The hottest part of the candle flame is the outermost zone as the combustible substances receive the maximum amount of oxygen here.

30. Ⓓ

Fire can be extinguished by removing all the combustible substance from the area, then cutting off the supporter of burning from the area and then adding of those substances which can bring down the ignition temperature.

31. Ⓒ

The equation for incomplete combustion of carbon is

$$2C + O_2 \xrightarrow{\Delta} 2CO$$

Carbon monoxide is a poisonous gas and immediately starts suffocation and high amount of it inside human body can cause death.

32. Ⓓ

Coal has various sulfur and nitrogen continuing substances along with carbon. Thus on burning it releases huge amount of carbon, sulphur, nitrogeneous oxides. These oxides mix with water and form various acidic solutions and this is the preliminary theory behind the acid rain.

33. Ⓒ

Water cools the surface of the burnt body by removing the extra heat from the system but water is not used to extinguish fire at the petrochemical industries, electrical industries, metal industries, etc.

34. Ⓓ

The correct equation is $2Mg + O_2 \xrightarrow{\Delta} 2MgO$

Magnesium ribbon burns with a white flame as magnesium oxide (MgO) is white.

35. Ⓐ

Hydrogen is a gaseous fuel and hence it has the lowest ignition temperature. Now, the correct order of ignition temperature values of the given species is : Cement > Newspaper > Petrol > Hydrogen

36. Ⓒ

Water cools the surface of the burnt body by removing the extra heat from the system and thus ignition temperature of the body decreases sharply.

37. Ⓐ

Calorific value is defined as the amount of heat released at the time of complete combustion of a unit mass of a fuel. Higher calorific value is the indication of a good fuel. Now the general order of calorific value is gaseous fuel > liquid fuel > solid fuel. So, the correct order of calorific value of the fuels given in the question is LPG > Petrol > Diesel > Wood

38. Ⓓ

Carbon dioxide is responsible for the global warming.

39. Ⓓ

Outermost zone of a flame receives the highest amount of oxygen and hence temperature of this zone is the highest which causes the complete combustion in the system.

40. Ⓐ

For a fuel, ignition temperature is associated with the start of burning and calorific value is associated with result of the burning. Now, low ignition temperature means burning is easy and high calorific value indicates the good quality fuel having a brilliant output.

41. Ⓒ

Fossil fuel is received from nature and they are formed due to various chemical reactions. Hence they will end after a certain period.

42. Ⓐ

The main components of producer gas is carbon monoxide and nitrogen.

43. Ⓑ

A body starts burning when it receives the ignition temperature.

44. Ⓐ

Wax is made up of carbon and hydrogen. So, on complete burning i.e. with excess supply of oxygen, carbon dioxide and water vapour are the products

45. Ⓐ

Coal is formed due to carbonization and it is slow process. Now, more time is given then the percentage of carbon increases. Hence the correct process is Wood—Peat—Lignite—Bituminus coal—Anthracite coal.

46. Ⓓ

Goldsmiths use the outer zone of the flame to melt the metals and due to supply of less amount of oxygen, the middle zone faces partial combustion.

47. Ⓒ

A flame is the zone of combustion when a fuel vaporises during burning. The amount of vapourizable substances are less in case of dry grass and hence it does not burn in flame.

48. Ⓓ

Petrol, LPG, alcohol all have low ignition temperature and hence they are inflammable substances.

49. Ⓒ

Cutting of trees is not responsible for forset fire.

50. Ⓑ

In case of combustion, the fuel suffers the chemical reaction with the supporters of burning and hence it is a chemical change.

Mathematics

51. Ⓐ

$$(a+b)(a^2+b^2)(a^4+b^4) = \frac{(a-b)(a+b)}{(a-b)}(a^2+b^2)(a^4+b^4)$$

$$= \frac{(a^2-b^2)(a^2+b^2)(a^4+b^4)}{(a-b)} = \frac{(a^4-b^4)(a^4+b^4)}{(a-b)} = \frac{a^8-b^8}{(a-b)}$$

52. Ⓐ

$$a+\frac{1}{a}=2 \quad \Rightarrow a^2+1=2a \quad \Rightarrow a^2-2a+1=0 \quad \Rightarrow (a-1)^2=0 \quad \Rightarrow a=1$$

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

53. Ⓑ

$$a^2-4b^2=(a+2b)(a-2b)$$

54. Ⓓ

$$a^2-b^2+ca-cb=(a+b)(a-b)+c(a-b)=(a-b)(a+b+c)$$

55. Ⓑ

$$0.24x-0.08=0.4x+10 \quad \Rightarrow 0.24x-0.4x=10+0.08 \quad \Rightarrow -0.16x=10.08$$

$$x=\frac{-10.08}{0.16}=-63$$

56. Ⓐ

$$x+\frac{5}{3}=\frac{3}{5}x+\frac{17}{3} \quad \Rightarrow x-\frac{3}{5}x=\frac{17}{3}-\frac{5}{3} \quad \Rightarrow \frac{2x}{5}=\frac{12}{3} \quad \therefore x=10$$

57. Ⓑ

Half of 1 percent $=\frac{1}{2}\times\frac{1}{100}=\frac{1}{200}=0.005$

58. Ⓒ

(A): $x^2-5^2=(x+5)(x-5) \rightarrow$ True

(R): $a^2+b^2=(a+b)(a-b) \rightarrow$ False

59. Ⓓ

(A): ₹100 $\xrightarrow{\text{30\% increase}}$ ₹130. Now, ₹130 $\xrightarrow{\text{30\% decrease}}$ ₹91. So, (A) is false.

(R): True

60. Ⓓ

$$x\times x=169 \quad \Rightarrow x^2=169 \quad \Rightarrow x=13$$

61. Ⓑ

Area $= 14\times15 \text{ cm}^2 = 210 \text{ cm}^2$

62. Ⓐ

Length of Ribbon $= 4\times13 \text{ cm} = 52 \text{ cm}$

63. Ⓑ

$$\frac{n}{n+15}=\frac{4}{9} \quad \Rightarrow 9n=4n+60 \quad \Rightarrow 5n=60 \quad \Rightarrow n=12$$

$$\therefore \frac{120}{n}=\frac{120}{12}=10$$

64. Ⓓ

$$\frac{x^3 - 1}{x - 1} = \frac{(x-1)(x^2 + x + 1)}{(x-1)} = x^2 + x + 1. \qquad \text{So, remainder} = 0.$$

65. Ⓓ

$x^3 - x = x(x^2 - 1) = x(x + 1)(x - 1)$

66. Ⓑ

0

67. Ⓑ

$x^{a-b} \times x^{b-c} \times x^{c-a} = x^{a-b+b-c+c-a} = x^0 = 1$

68. Ⓒ

$\sqrt[3]{x}$

69. Ⓐ

3.43×10^6

70. Ⓑ

$3 + 4 + x + 6 = 13 + x$

If $x = 2$ $13 + 2 = 15$ which is divisible by 3.

71. Ⓐ

(A) : True $3x - 4 = 5$ $\Rightarrow 3x = 9$ $\Rightarrow x = 3$

(B) : True

72. Ⓐ

$x + 10m = 50m$ $\Rightarrow x = (50 - 10)m = 40m$

73. Ⓒ

$(10 \times 10)m^2 = 100m^2$

74. Ⓒ

$y + 10m = 40m$

$y = (40 - 10)m = 30m$

75. Ⓑ

$$14.28\% \text{ of } 777 = \frac{14.28}{100} \times 777 = \frac{11095.56}{100} = 110.9556 \approx 111$$

Biology

76. Ⓐ

   Rhizobium

   Symbiotic association with leguminous plants

77. Ⓑ

   Yeast

78. Ⓐ

   Bacteria

   Lactobacillus

79. Ⓐ

   Bacteria

80. Ⓒ

   Protozoa

81. Ⓑ

   Penicillin

82. Ⓑ

   Malaria

   Transmitted by bite of mosquitoes.

83. Ⓒ

   Pasteurization

84. Ⓒ

   A is true but R is false.

85. Ⓒ

   A is true but R is false.

86. Ⓓ

   All

87. Ⓒ

   Both A and B

88. Ⓐ

   Reducing the moisture content of food

   Dry environment discourages the growth of microbes.

89. Ⓓ

Canning

90. Ⓓ

All

91. Ⓒ

Monsoon

92. Ⓓ

Earthworms

93. Ⓑ

Harvested crops

94. Ⓓ

All of the above

95. Ⓒ

Dairy products
All are derived from milk

96. Ⓑ

Mushroom
Mushroom is a fungus

97. Ⓐ

Unicellular

98. Ⓓ

Measles
It is a viral disease

99. Ⓒ

A is true but R is false
All algae can perform photosynthesis.

100. Ⓓ

All

All can be transmitted from one person to another.