# Monthly Progressive Test (Solution)

## Class: VIII (G)

## Subject: PCMB

Academic Excellence Programme TECHNO ACE

Test Booklet No.: MPT07 Test Date: 22112024

## Physics

1. Ⓑ

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

2. Ⓓ

The required separation is one wavelength.

3. Ⓐ

Speed of sound in gas $\propto \sqrt{\text{Temperature (in Kelvin)}}$

4. Ⓐ

As refractive index $= \frac{3\times10^8 \text{ (m/s)}}{\text{speed of light in the medium}}$

5. Ⓒ

The lens in human eye is a convex lens.

6. Ⓐ

Myopia affects the far-point of eye.

7. Ⓐ

8. Ⓑ

Sound can travel through air. Frequency of sound be in audible range.

9. Ⓐ

10. Ⓑ

Speed of light is $3 \times 10^8$ m/s in air whereas speed of sound in air is 332 m/s (nearly).

11. Ⓑ

In wet air speed of sound is greater than that of dry air.

12. Ⓐ



Cont.. 2

Sound requires elastic medium to travel through.

**13.** Ⓐ

**14.** Ⓒ

Radio wave can travel through vacuum.

**15.** Ⓒ

Frying pan will vibrate.

**16.** Ⓑ

Speed = frequency × wavelength = 1 (Hz) × 1 (m) = 1 m/s

**17.** Ⓒ

Larynx

**18.** Ⓐ

As pressure = $h \times \rho \times g$

**19.** Ⓑ

As speed = frequency × wavelength

**20.** Ⓑ

**21.** Ⓐ

$3 \times 10^8$ = frequency $\times$ 600 $\times 10^{-9}$

$f = \frac{3}{6} \times 10^{15} = 5 \times 10^{14}$ Hz

**22.** Ⓒ

Wavelength of yellow light is 600 nm.

**23.** Ⓑ

As $i = 90° - 30° = 60°$

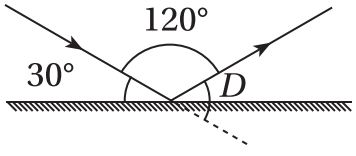
$r = i = 60°$ (law of reflection)

**24.** Ⓒ

Speed of light in air is $3 \times 10^8$ m/s

**25.** Ⓑ

Angle of deviation = 180° – 120° = 60° = $D$ a



## Chemistry

**26. ©**

Arsenic is a metalloid. Iron is a metal. Mercury is a liquid metal. Krypton is a inert gas.

**27. Ⓐ**

In case of rusting, the metal gets coated with its oxide.

$$4Fe + 3O_2 + 2xH_2O \longrightarrow 2\,Fe_2O_3 \,.\, xH_2O$$

(Rust)

(Hydrated ferric oxide)

**28. ©**

Nichrome is an alloy of nickel and chromium.

**29. ©**

Liquid non-metal is bromine. Mercury is liquid metal. Nitrogen is non-metallic gas. Iodine is non-metallic solid.

**30. Ⓑ**

The highest percentage of nitrogen gas is present in the air.

**31. Ⓑ**

Helium gas is used for gas ballons as it is the 2nd lightest gas.

**32. ©**

Chromium is used in electroplating to make objects appear shining, as it has a shiny appearence, it does not corrode and it resists scratches.

**33. Ⓑ**

Good conductors of electricity are the substance through which electric current passes very easily.

**34. ©**

When a bulb glows, is impact of heatting effect of current.

**35. Ⓐ**

If a compass is placed near to the current conducting wire, then the needle starts to deflect.

**36. Ⓓ**

Electric current can generate magnetic effect, chemical effect and heating effect.

**37. Ⓓ**

**Assertion :** only solid materials conduct electricity – wrong.
**Reason :** There are non-conducting solid materials also-correct.

**38. Ⓑ**

**Assertion :** LED is used instead of bulb to form a circuit. This is correct
**Reason :** LED has two terminals having different lengths. This is also correct but not the correct explanation of Assertion.

**39. Ⓑ**

Circuit is used o check whether current is passing or not.

**40. Ⓑ**

An example of an insulaor is rubber.

**41. Ⓐ**

Water is the most commonly used liquid which is decompose by the process of electrolysis.

**42. Ⓒ**

Electroplating is based on the principles of electrolysis, in which superior metal is coated over imperior metal. Rusting is the oxidation of iron is presence of moisture.
$4\,Fe + 3O_2 + 2xH_2O \longrightarrow 2\,Fe_2O_3.\,xH_2O$ (Rust)

**43. Ⓐ**

Dilute sugar solution is the poorest conductor of electricity. Dilute sulphuric acid, sodium hydroxide & calcium chloride solution are strong electrolyte.

**44. Ⓓ**

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.

**45. Ⓒ**

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

**46. Ⓒ**

Ethyl alcohol is a non-electrolyte.

**47. Ⓑ**

Merrcury is the metallic liquid.

**48. Ⓒ**

Brass is he alloy of copper and zinc.

**49. ©**

**Assertion :** Metals has the property dactility, scnority. This is correct
**Reason :** Iodine is a metal. This is wrong. Iodine is a non-metal. Thus, answer is C.

**50. Ⓐ**

Since the bulbs of tester glows brightly for liquid 'X'. So liquid 'X' is better conductor than liquid 'Y', as it glows very dimly.

## Mathematics

**51. Ⓑ**

Speed = 90 km/h = $90 \times \frac{5}{18}\,\text{m/s} = 25\,\text{m/s}.$

Distance covered to clear the platform = 450 m.

$\therefore$ Time taken = $\frac{\cancel{450}^{18}}{\cancel{25}}$ seconds = 18 seconds

**52. Ⓐ**

| Weight (in g) | No. of sheets |
|---|---|
| 40 | 12 |
| 1000 | x |

Here, direct proportion

$\therefore \frac{x}{12} = \frac{1000}{40} \Rightarrow x = \frac{100\cancel{0} \times \cancel{12}^{3}}{\cancel{40}} = 300$

**53. ©**

A can do in 1 day $\frac{1}{10}$ part.

B can do in 1 day $\frac{1}{20}$ part.

A, B and C together can do in 1 day $\frac{1}{5}$ part.

$\therefore$ C can do alone in 1 day $\left(\frac{1}{5} - \frac{1}{10} - \frac{1}{20}\right)$ part

$= \left(\frac{4-2-1}{20}\right)$ part.

$= \frac{1}{20}$ part.



Cont.. 6

$\therefore$ C can finish the whole work in $\frac{1}{\frac{1}{20}}$ days

= 20 days.

**54. ©**

The pump can fill in 1 hour $\frac{1}{2}$ part of the tank.

Due to leak in the tank, it can fill in 1 hour $\frac{3}{7}$ part of the tank.

$\therefore$ The leak can empty in 1 hour $\left(\frac{1}{2}-\frac{3}{7}\right)$ part

$= \left(\frac{7-6}{14}\right)$ part $= \frac{1}{14}$ part.

$\therefore$ The leak can empty the full tank in 14 hours.

**55. ©**

Area of trapezium $= \frac{1}{2}(6+10) \times \frac{3}{2}$ sq.ft.

$= \frac{1}{\cancel{2}} \times \cancel{16}^{8} \times \frac{3}{2}$ sq.ft

$= 12$ sq.ft.

**56. ©**

Prisms and Pyramids are polyhedrons.

**57. ©**

$6a^2 = a^3 \Rightarrow a = 6$

$\therefore$ the side length of the cube = 6 units.

**58. Ⓐ**

$E + 2 = F + V$

$\Rightarrow E + 2 = 7 + 10 \Rightarrow E = 15$

$\therefore$ Assertion is true

Reason is also true and reason is the correct explanation of Assertion.

**59. Ⓐ**

1 cubic metre $= 100 \times 100 \times 100$ cm$^3$

Area = 6 hectares $= 6 \times 10000$ m$^2$

$= 6 \times 10000 \times 100 \times 100$ cm$^2$

$\therefore$ Thickness of the gold $= \frac{\cancel{100} \times \cancel{100} \times \cancel{100}}{6 \times \cancel{100} \times \cancel{100} \times \cancel{100} \times 100}$ cm

$= \frac{1}{600}$ cm = 0.0017 cm

$\therefore$ Assertion is true

Reason is also true and reason is the correct explanation of assertion.

**60. Ⓑ**

Area of the park = $\frac{1}{2} \times (70 + 50) \times 30$ m$^2$

$= \frac{1}{2} \times 120 \times 30$ m$^2$

$= 1800$ m$^2$

**61. Ⓐ**

Cost to landscape the park

= ₹ 1800 × 5

= ₹ 9000

**62. Ⓓ**

Perimeter of the flower bed

$= 2 \times (20 + 10)$ m

= 60 m

**63. Ⓑ**

Area of trapezium ABCD

$= \frac{1}{2} \times (a + b) \times h$ sq. units.

**64. Ⓐ**

Number of vertices of a pyramid whose base is a polygon of n-sides = n + 1.

**65. Ⓐ**

Volume of a cube

$= a^3$

Surface area = $6a^2$

$\therefore \left(\sqrt{\frac{\text{Surface area}}{6}}\right)^3 = \left(\sqrt{\frac{6a^2}{6}}\right)^3$

$= a^3$

**66. Ⓓ**

$\frac{x+1}{2x+3} = \frac{3}{8} \Rightarrow 8x + 8 = 6x + 9$

$\Rightarrow 2x = 1$

$\Rightarrow x = \frac{1}{2}$

**67. Ⓑ**

Number of diagonals in a heptagon

$= \frac{7(7-3)}{2} = 14$

**68. Ⓐ**

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

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

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

$= \frac{a^8-b^8}{a-b}$

**69. Ⓐ**

7y 8x 3

Sum of digits = 7 + y + 8 + x + 3

= 18 + x + y which is

divisible by 9 for the least value of x + y = 0.

**70. Ⓒ**

$\sqrt[3]{389017} = 73$

**71. Ⓐ**

$6a^2 = \frac{243}{8}\ m^2$

$a^2 = \frac{\cancel{243}^{81}}{\cancel{6}_{2} \times 8} = \frac{81}{16}$

$\therefore a = \frac{9}{4}\ m$

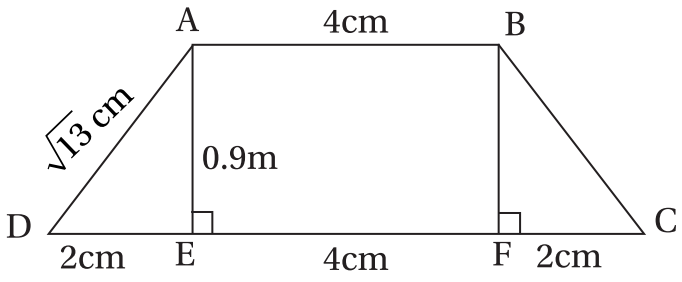
$\therefore$ Volume of the cube $= \frac{729}{64} m^3$

$= 11\frac{25}{64} m^3$

**72. Ⓐ**

A triangular prism has 9 edges.

**73. Ⓓ**




AE = 3 cm ⟵ 8 cm ⟶

$\therefore$ The area of the trapezium = $\frac{1}{2} \times (8 + 4) \times 3 \text{ cm}^2$

$= \frac{1}{\cancel{2}} \times \cancel{12}^{6} \times 3 \text{ cm}^2$

$= 18 \text{ cm}^2$

**74. Ⓑ**

A can do in 1 day $\frac{5}{11}$ part.

B can do in 1 day $\frac{6}{11}$ part.

$\therefore$ A can do the whole work in $\frac{11}{5}$ days

B can do the whole work in $\frac{11}{6}$ days

$\therefore$ Ratio of number of days

$= \frac{11}{5} : \frac{11}{6} \quad = 6 : 5$

**75. Ⓓ**

Length of train = 100 m.

Speed of train = 30 km/h

$= \cancel{30}^{5} \times \frac{5}{\cancel{18}_{3}} \text{ m/s}$

$= \frac{25}{3} \text{ m/s}$

$\therefore$ Time required = $\frac{100}{\frac{25}{3}}$ seconds

$= \cancel{100}^{4} \times \frac{3}{\cancel{25}}$ seconds

= 12 seconds

## Biology

**76.** Ⓐ

Hydra

**77.** Ⓐ

Sperm duct

Its a part of the male reproductive system

**78.** Ⓐ

Zygote

Zygote is the product of fusion between the male and female gametes

**79.** Ⓐ

Sperm

**80.** Ⓐ

Fallopian tube

**81.** Ⓐ

One

One from either of the two ovaries, each month

**82.** Ⓓ

Dolphin

Dolphin is a mammal, hence viviparous.

**83.** Ⓒ

A is true but R is false

In asexual reproduction, one or many offsprings are produced depending on the mode of reproduction or type of organism.

**84.** Ⓒ

A is true but R is False

The male gamete swims to reach the stationary female gamete

**85.** Ⓐ

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

The testes require a temperature lower than the normal body temperature required for the production of viable sperms.

**86.** Ⓑ

A is ovary; B is egg

**87.** Ⓐ

Fallopian tube

**88.** Ⓓ

Uterus

**89.** Ⓒ

Cervix

**90.** Ⓑ

Sea horse

**91.** Ⓓ

All of these

**92.** Ⓐ

Madhya Pradesh

**93.** Ⓓ

All of these

**94.** Ⓐ

Edible fishes

**95.** Ⓐ

Unicellular

**96.** Ⓐ

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

Birds do not give birth to young ones, but produce eggs which hatch out into young ones.

97. ©

A is true but R is false

The placenta develops after implantation.

98. Ⓓ

All of these

99. Ⓑ

Epididymis

100. Ⓐ

Hormones