Monthly Progressive Test (Solution)

Class: VIII (S)

Subject: PCMB

Academic Excellence Programme TECHNO ACE

Test Booklet No.: MPT07 Test Date: 22112024

Physics

1. Ⓑ
   Crest to crest separation is called time period.
2. Ⓓ
   In this case crest to crest separation is called wavelength.
3. Ⓒ
   In decibel (dB)
4. Ⓒ
   Lens in human eye is convex lens.
5. Ⓒ
   Pupil of eye.
6. Ⓐ
   An eye-defect which affects the far-point is myopia.
7. Ⓐ
   Frequency of light source.
8. Ⓑ
   There is range of frequency for audible sound.
9. Ⓐ
   Frequency is in inaudible range.
10. Ⓑ
    Speed of light in air 3×10^8 m/s.
    Speed of sound in air 332 m/s.
11. Ⓑ
    Speed of sound in wet air is greater than through dry air.

Cont.. 2

12. Ⓐ

As $v = f \times \lambda$ where f is called frequency of sound wave and λ is called wavelength of sound wave

13. Ⓑ

$332 = f \times \frac{10}{100}$; $f = 3320$ Hz $= 3.3$ kilo cycle per s

14. Ⓐ

As frequency of sound is the frequency of vibrating source.

15. Ⓒ

Transverse elastic wave can pass through metal (solid medium) only.

16. Ⓒ

Radio wave can pass through vacuum.

17. Ⓒ

The frying pan will vibrate.

18. Ⓑ

As pressure $\propto$ depth

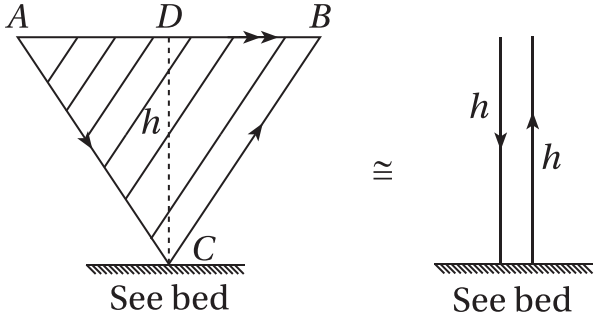
19. Ⓑ

In hydrostatic paradox, pressure of liquid depends on depth not on the amount of liquid in the different shaped liquid.

20. Ⓓ

Sound requires elastic medium to pass through.

21. Ⓓ



$AB = 100$ m $V_w = 1500$ ms^{-1}

$h = 3$ km $f = 30$ kHz

Nearly

$$t = \frac{2h}{v_w} = \frac{2 \times 3000}{1500} = 4 \text{ s}$$

22. ©

$1500 = 30 \times 1000 \times \lambda$

$$\lambda = \frac{1}{20} \text{ m} = 5 \text{ cm}$$

23. Ⓑ

$$n \times \frac{5}{100} = 2 \times 3000 \qquad [n\lambda = 2h]$$

$n = 6000 \times 20 = 120000$

24. Ⓐ

$$\frac{360^\circ}{72} = 5 \quad \text{(Asymmetric)}$$

25. Ⓑ

$$v = \sqrt{\frac{\gamma p}{D}}$$

$$pv = \frac{m}{M}RT$$

$$\frac{P}{D} = \frac{RT}{M}$$ $M \rightarrow$ molar mass of gas.

$$\therefore \ v \text{ (speed of sound in gas)} = \sqrt{\frac{rRT}{M}}$$

$$350 = \sqrt{\frac{1.4 \times 8.31 \times T}{\frac{32}{1000}}}$$

Squaring both sides, we get

$T = 337$ kelvin

$T = 273 + t^\circ \text{ C} = 273$

$t^\circ\text{C} = 337.5 - 273 = 64^\circ\text{C}$

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. Ⓓ

Sugar solutions being non-electrolyte will not glow the bulb.

31. Ⓓ

An electric current can produce chemical heating and megnetic effect.

32. Ⓑ

Alloy is a solution of solid-solid.

33. Ⓒ

LED glows at low electric supply.

34. Ⓑ

Tin cans used for string food is made by electroplating of iron by tin.

35. Ⓑ

Assertion : A bulb glows due to heating effect of current. This is correct.
Reason : Bulb is used in a circuit to detect the current flow. This is also correct. But it is not the correct explanation of assertion. Thus answer is B.

36. Ⓒ

Assertion : In case of large iron structures zinc coating is done instead of chromium coating. This is correct.
Reason : Zinc is costlier than chromium. This is wrong. Thus, the answer is 'C'.

37. Ⓐ

Assertion : Aqueous solution of calcium chloride is a good conductor of electricity. This is correct.
Reason : Both calcium cation and chloride anion are responsible for electricity conduction. This is also correct and it is the correct explanation of Assertion. Thus, the answer is A.

38. Ⓑ

The full form of LED is light emitting diode.

39. Ⓐ

To construct the railway signals only LED is used.

40. Ⓑ

Filament is present in only bulb.

41. Ⓐ

Assertion : When electrodes are placed inside acidified water and electricity is passed through it then two colourless gases hydrogen and oxygen are obtained. This is true.

Reason : Acidified water is electrolysed when current is passed through. This is correct and also correct explanation of Assertion.

42. Ⓐ

Since in Bhoojho's experiment the bulb glows more brightly means higher current is flowing the circuit in set up A.

43. Ⓒ

During electroplating of copper, aqueous solution of copper sulphate is used.

44. Ⓓ

During electroplating of copper, the role of the aqueous solution of the salt is electrolyte.

45. Ⓑ

In case of LED, the shorter terminal is connected with the negative terminal of the battery while longer terminal is connected with the positive terminal of battery.

46. Ⓒ

Nichrome is an alloy of Nickel + chromium. Brass is an alloy of Cu + Zn.

47. Ⓒ

Assertion : Metals react with oxygen form metallic oxides. Metallic oxides are basic and amphoteric oxides. This is correct.

Reason : Amphoteric oxide reacts with acid only. This is wrong. Thus, the answer is 'C'.

48. Ⓑ

Here both assertion and reason are correct but reason is not the correct explanation of Assertion. Thus, the corrct options is 'B'.

49. Ⓓ

Neon, Argon, Krypton all are inert gas as they do not react easily.

50. Ⓒ

The process by which a chemical compound conducts electricity and decompose to give new compound in its aqueous solution is called electrolysis.

Mathematics

51. Ⓑ

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

$\therefore$ 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.

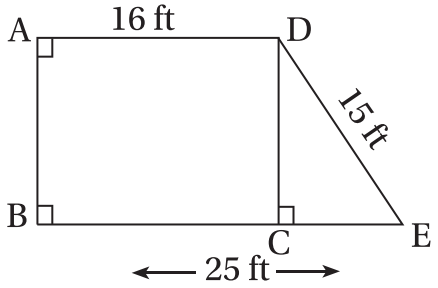
Due to leak in the tank, it can fill in 1 hour $\frac{3}{7}$ part of the tank.

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

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

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

55. ©



$$CD = \sqrt{225-81} \text{ ft.}$$
$$= 12 \text{ ft.}$$

Area of trapegium $= \frac{1}{2} \times (16+25) \times 12$ sq. ft.

$= 41 \times 6$ sq. ft.

$= 246$ sq. ft.

56. ©

A cube has 6 faces.

57. Ⓐ

Let radi i are x units and 2x units.

Also, heights are 2y units and 3y units.

$\therefore$ ratio of their volumes $= \frac{\pi \times x^2 \times 2y}{\pi \times 4x^2 \times 3y}$

$$= \frac{1}{6} = 1:6$$

58. Ⓓ

$10 + 15 = 25, \quad 20 + 2 = 22$

$\therefore$ F + V $\neq$ E + 2

$\therefore$ Assertion is false, but reason is true

59. Ⓓ

Dimensions of the plywood will be 5m × 5m.

$\therefore$ Area of the plywood = 25 m^2

$\therefore$ Assertion is false, but reason is true.

60. Ⓐ

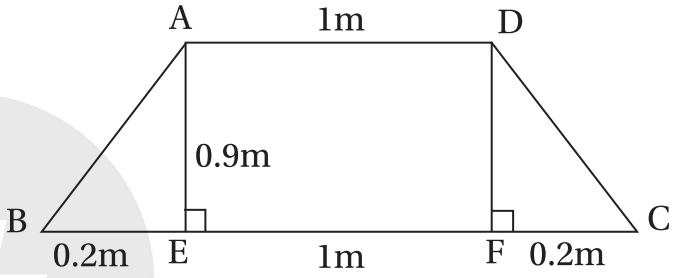
$$\text{Area of top surface} = \frac{1}{2} \times (1.4 + 1) \times 0.9 \text{ m}^2$$
$$= \frac{1}{2} \times 2.4 \times 0.9 \text{ m}^2$$
$$= 1.2 \times 0.9 \text{ m}^2$$
$$= 1.08 \text{ m}^2$$

61. Ⓑ

Cost of painting the top surface of the table
$= ₹20 \times 1.08 = ₹21.60$

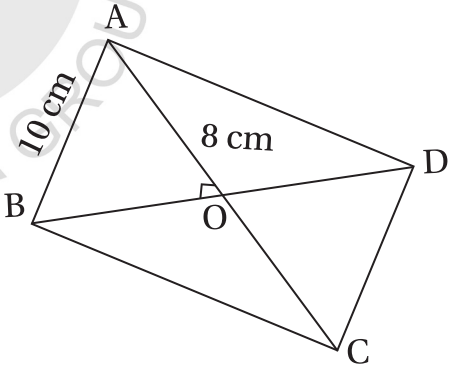
62. Ⓐ

$$AB = \sqrt{(0.9)^2 + (0.2)^2} \text{ m}$$
$$= \sqrt{0.81 + 0.04} \text{ m}$$
$$= \sqrt{0.85} \text{ m}$$
$$= 0.92 \text{ m} \simeq 1 \text{ m.}$$



63. Ⓑ

$$OB = \sqrt{100 - 64} \text{ cm}$$
$$= 6 \text{ cm}$$
$$\therefore BD = 12 \text{ cm}$$
$$\therefore \text{Area} = \frac{1}{2} \times 12 \times 16 \text{ cm}^2$$
$$= 96 \text{ cm}^2$$



64. Ⓐ

Icosahedron has 20 faces.

65. Ⓑ

Dimensions of the cuboid "AEP"
$= 6 \text{ cm} \times 2 \text{ cm} \times 2 \text{ cm.}$
$\therefore$ Total surface area $= 2 (6 \times 2 + 6 \times 2 + 2 \times 2) \text{ cm}^2$
$= 2 (12 + 12 + 4) \text{ cm}^2$
$= 56 \text{ cm}^2$

66. Ⓓ

$\angle ADB = \angle ABD = 25^\circ$
$\therefore \angle A = 180^\circ - 50^\circ = 130^\circ$
$\angle CDB = \angle CBD = 35^\circ$

$\therefore \angle C = 180^\circ - 70^\circ = 110^\circ$
$\therefore \angle A - \angle C = 130^\circ - 110^\circ$
$\Rightarrow 2x = 20^\circ$
$\Rightarrow x = 10^\circ$.

67. ©

$\frac{n(n-3)}{2} = 9 \Rightarrow n(n-3) = 18 = 6 \times 3$
$\therefore n = 6$

68. ©

$242x^2 - 162b^2$
$= 2(121x^2 - 81b^2)$
$= 2\{(11x)^2 - (9b)^2\}$
$= 2(11x + 9b)(11x - 9b)$

69. Ⓐ

$\sqrt[3]{\frac{343 \times 125}{0.064}} = \frac{7 \times 5}{0.4} = \frac{7 \times 5 \times \cancel{10}^{5}}{\cancel{4}_{2}} = \frac{175}{2} = 87.5$

70. Ⓓ

$(n-2) \times 180^\circ : (5-2) \times 180^\circ = 4 : 1$
$\Rightarrow \frac{n-2}{3} = \frac{4}{1} \Rightarrow n - 2 = 12 \Rightarrow n = 14$

71. ©

A pentagonal prism has 15 edges.

72. Ⓐ

A square prism is also called either cube or cuboid.

73. Ⓓ

Area of rhombus = 3^{12} cm^2
One diagonal = 3^7 cm.
$\therefore$ Other diagonal = $\frac{2 \times 3^{12}}{3^7}$ cm
$= 2 \times 3^5$ cm
$= 2 \times 243$ cm
$= 486$ cm.

74. Ⓑ

No. of men	No. of days
180	290

120	x

Here, inverse proportion

$\therefore \frac{x}{290} = \frac{180}{120} \Rightarrow x = \frac{\cancel{18}^{3}\cancel{0} \times \cancel{290}^{145}}{\cancel{12}_{2}\cancel{0}} = 435$

$\therefore$ 435 days.

75. ⓓ

When three taps are opened together, then they will fill in 1 minute $\left(\frac{1}{6}+\frac{1}{12}-\frac{1}{8}\right)$ part

$= \left(\frac{4+2-3}{24}\right)$ part $= \frac{1}{8}$ part.

$\therefore$ They will take to fill the empty cistern $\left(1 \div \frac{1}{8}\right)$ minutes = 8 minutes.

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. Ⓒ

Metamorphosis

Major transformation process from tadpole to adult stage.

81. Ⓒ

Exact copies of their parents

Only one parent is involved, hence almost no variation in off springs.

82. Ⓐ

Urethra

Hence also called the urinogenital duct. The semen and urine, both are released through it.

83. Ⓒ

A is true but R is false

Unicellular organisms are made up of only one cell.

84. Ⓑ

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

The process mentioned in A leads to that in R. Hence A is not explained by R.

85. Ⓓ

A is false but R is true

86. Ⓒ

Has a pointed head and a long tail

Structure of a sperm

87. Ⓓ

All statements about the gonads are correct

88. Ⓐ

Epididymis

89. Ⓓ

Secretion of accessory reproductive glands + sperms.

90. Ⓐ

It has mitochondria

Mitochondria provides energy to the sperms for its motility.

91. Ⓓ

Small pox

92. Ⓑ

Wheat

Winter crop

93. Ⓑ

Community

94. Ⓒ

Crop rotation

95. Ⓐ

Unicellular fungi

96. Ⓓ

Vas deferens - Menstruation

Vas deferens is a part of the male reproductive system, whereas menstruation is a process occurring in the female reproductive system.

97. Ⓐ

The urethra in females serve to carry both sperms and urine.

In females, urethra carries only urine, sperms are not produced by the ovaries. In makes, within carries both sperms and wine.

98. Ⓑ

Cytoplasm

It is the matrix of the cell found between the cell membrane and nucleus.

99. Ⓓ

WBC

WBCs can squeeze themselves out of capillaries to reach the germs.

100. Ⓒ

Plastids

Chlorophyll containing plastids are chloroplasts found in the leaves.