

VIVEKANANDA P.U. COLLEGE
A unit of Vivekananda Vidyavardhaka Sangha, Puttur (R.)
Nehru Nagar, Puttur – 574203



MEDHA-2026

Answers

Part-A

1. Ans: A

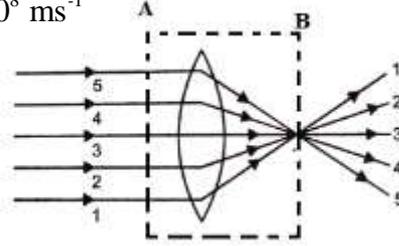
ಮಾಧ್ಯಮದ ವಕ್ರೀಭವನ ಸೂಚ್ಯಂಕ (Refractive index of the medium), $n = \frac{\sin i}{\sin r} = \frac{\sin 45}{\sin 30}$

$$n = \frac{\sin i}{\sin r} = \frac{1/\sqrt{2}}{1/2} = \frac{2}{\sqrt{2}} = \frac{\sqrt{2} \times \sqrt{2}}{\sqrt{2}} = \sqrt{2} = 1.414$$

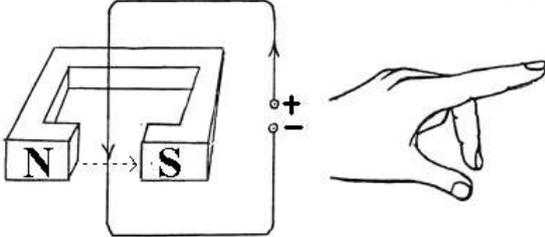
ಮಾಧ್ಯಮದಲ್ಲಿ ಬೆಳಕಿನ ವೇಗ, Speed of light in the medium is given by, $n = \frac{c}{v}$

$$\Rightarrow v = \frac{c}{n} = \frac{3 \times 10^8}{1.414} = 2.12 \times 10^8 \text{ ms}^{-1}$$

2. Ans: D



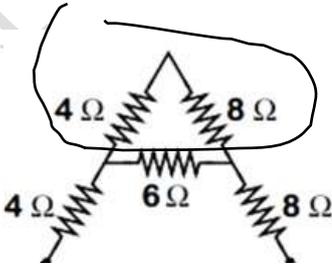
3. Ans: C



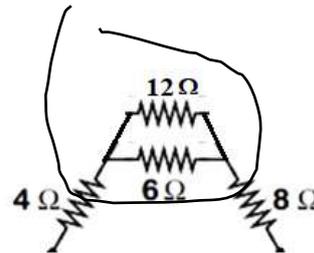
4. Ans: C

$$8+4=12\Omega$$

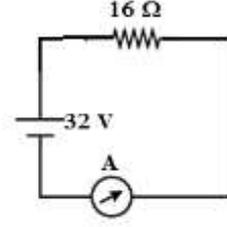
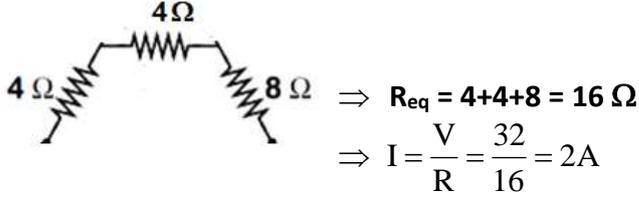
$$R_p = \frac{R_1 R_2}{R_1 + R_2} = \frac{12 \times 6}{12 + 6} = 4\Omega$$



⇒



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5. Ans: B

Image of same size is produced only by convex lens when the object is at $2f$.

Hence $2f=20cm$ and $f=10cm$

ವಸ್ತುವಿನಷ್ಟೇ ಗಾತ್ರದ ಪ್ರತಿಬಿಂಬವನ್ನು ಫೀನ ಮಸೂರವೊಂದೇ ಮಾಡಬಲ್ಲದು. ಫೀನ ಮಸೂರದಿಂದ $20cm$ ದೂರದಲ್ಲಿ ವಸ್ತುವನ್ನಿಟ್ಟಾಗ ಅಷ್ಟೇ ಗಾತ್ರದ ಪ್ರತಿಬಿಂಬವು $20cm$ ದೂರದಲ್ಲಿ ಮಸೂರದ ಇನ್ನೊಂದು ಪಾರ್ಶ್ವದಲ್ಲಿ ಉಂಟಾಗುತ್ತದೆ.

$2f=20cm$ and $f=10cm$

6. Ans: B

$$I+3+2 = 10 \Rightarrow I = 5A$$

7. Ans: C

8. Ans: B

$$I = \frac{V}{R} = \frac{12}{30+6} = \frac{1}{3}A$$

ವೋಲ್ಟ್ ಮೀಟರ್ ಸೂಚಿಸುವ ವಿಭಾವಂತರ ,

$$\text{Voltage across } 6\Omega \text{ is, } V = IR = \frac{1}{3} \times 6 = 2V$$

9. Ans: A

$$\text{Answer: Formula: } \frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

Given: $u=-12cm$, $f = -3cm$. $h=+10cm$ $v=?$

$$\frac{1}{-3} = \frac{1}{v} - \frac{1}{-12} \Rightarrow \frac{1}{-3} = \frac{1}{v} + \frac{1}{12} \Rightarrow -\frac{1}{3} - \frac{1}{12} = \frac{1}{v} \Rightarrow \frac{-4-1}{12} = \frac{1}{v}$$

$$\Rightarrow \frac{-5}{12} = \frac{1}{v} \Rightarrow v = -\frac{12}{5} = -2.4cm$$

10. Ans: B

$$I = \frac{V}{R} = \frac{Q}{t} \Rightarrow \frac{12}{4} = \frac{Q}{1} \Rightarrow Q = 3C$$

11. Answer: Option D-Blue-ನೀಲಿ

12. Answer: Option D – Silver-ಬೆಳ್ಳಿ

13. Answer: Option C - Scattering of light -ಬೆಳಕಿನ ಚದುರುವಿಕೆ

14. Answer: Option A - Atomic - ಪರಮಾಣು ಶಕ್ತಿ ವಿದ್ಯುತ್

15. Answer: Option-C - Photoelectric effect- ದ್ಯುತಿ ವಿದ್ಯುತ್ ಪರಿಣಾಮ

16. Ans: C

Silver is less reactive than copper, hence cannot displace copper from its salt solution.

ಬೆಳ್ಳಿ ತಾಮ್ರಕ್ಕಿಂತ ಕಡಿಮೆ ಪ್ರತಿಕ್ರಿಯಾತ್ಮಕವಾಗಿದೆ. ಆದ್ದರಿಂದ ತಾಮ್ರವನ್ನು ಅದರ ಉಪ್ಪಿನ ದ್ರಾವಣದಿಂದ

ಸ್ಥಳಾಂತರಿಸಲಾಗುವುದಿಲ್ಲ

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NEHRU NAGAR, PUTTUR-574203 : PHONE: 08251 237455

17. **Ans: B**
 $\text{Ca} + 2\text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$
 Calcium hydroxide is basic in nature which turns phenolphthalein solution pink.
 ಕ್ಯಾಲ್ಸಿಯಮ್ ಹೈಡ್ರಾಕ್ಸೈಡ್ ಪ್ರತ್ಯಾಮ್ಲವಾಗಿದೆ. ಇದು ಫಿನಾಲ್ಫಥಲೀನ್ ದ್ರಾವಣವನ್ನು ಗುಲಾಬಿ ಬಣ್ಣಕ್ಕೆ ತಿರುಗಿಸುತ್ತದೆ.
18. **Ans: B**
 $(\text{CH}_3\text{COO})_2\text{Pb} + 2\text{KI} \longrightarrow 2\text{CH}_3\text{COOK} + \text{PbI}_2$
 [lead iodide, yellow precipitate]
 $(\text{CH}_3\text{COO})_2\text{Pb} + 2\text{KI} \longrightarrow 2\text{CH}_3\text{COOK} + \text{PbI}_2$
 [ಸೀಸದ ಅಯೋಡೈಡ್, ಹಳದಿ ಅವಕ್ಷೇಪ]
19. **Ans: C**
20. **Ans: C**
 Number of neutrons = $[A - Z] = \text{Mass number} - \text{Atomic Number}$
 ನ್ಯೂಟ್ರಾನ್ ಗಳ ಸಂಖ್ಯೆ = $[A - Z] = \text{ದ್ರವ್ಯರಾಶಿ} - \text{ಪರಮಾಣು ಸಂಖ್ಯೆ}$
 $133 - 55 = 78$
 $132 - 54 = 78$
21. **Ans: D**
 The atomic mass is the total number of Protons and Neutrons present in the Nucleus of an atom. They are collectively called Nucleons.
 ಪರಮಾಣು ದ್ರವ್ಯರಾಶಿಯು ಪರಮಾಣುವಿನ ನ್ಯೂಕ್ಲಿಯಸ್‌ನಲ್ಲಿರುವ ಪ್ರೋಟಾನ್‌ಗಳು ಮತ್ತು ನ್ಯೂಟ್ರಾನ್‌ಗಳ ಒಟ್ಟು ಸಂಖ್ಯೆಯಾಗಿದೆ. ಅವುಗಳನ್ನು ಒಟ್ಟಾಗಿ ನ್ಯೂಕ್ಲಿಯೋನ್ ಎಂದು ಕರೆಯಲಾಗುತ್ತದೆ.
22. **Ans: B**
 The solution with P^{H} more than 7 are basic in nature hence solution with P^{H} 8.6 has less concentration of H^+ ions and more concentration of OH^- ions
 P^{H} 7 ಕ್ಕಿಂತ ಹೆಚ್ಚಿದ್ದರೆ ಅದು ಪ್ರತ್ಯಾಮ್ಲವಾಗುತ್ತದೆ. ಆದ್ದರಿಂದ P^{H} 8.6ರೊಂದಿಗಿನ ಪರಿಹಾರವು H^+ ಅಯಾನುಗಳ ಕಡಿಮೆ ಸಾಂದ್ರತೆಯನ್ನು ಹೊಂದಿರುತ್ತದೆ ಮತ್ತು OH^- ಅಯಾನುಗಳ ಹೆಚ್ಚಿನ ಸಾಂದ್ರತೆಯನ್ನು ಹೊಂದಿರುತ್ತದೆ.
23. **Ans: B**
 H_2 is oxidized to H^+ , while Cl_2 is reduced to Cl^-
 H_2 ಅನ್ನು H^+ ಗೆ ಆಕ್ಸಿಡೀಕರಿಸಲಾಗುತ್ತದೆ, ಆದರೆ Cl_2 ಅನ್ನು Cl^- ಗೆ ಇಳಿಸಲಾಗುತ್ತದೆ.
24. **Ans: B**
 Solder is an alloy of 50% lead and 50% tin
 ಬೆಸುಗೆಯು 50% ಸೀಸ ಮತ್ತು 50% ತವರದ ಮಿಶ್ರಲೋಹವಾಗಿದೆ
25. **Ans: C**
 N_2 is a diatomic molecule. It contains two atoms of Nitrogen.
 N_2 ಒಂದು ಡಯಾಟಮಿಕ್ ಅಣುವಾಗಿದೆ. ಇದು ಸಾರಜನಕದ ಎರಡು ಪರಮಾಣುಗಳನ್ನು ಹೊಂದಿರುತ್ತದೆ.
26. **Answer: Option D- Poly Vinyl Chloride-ಪೋಲಿ ವಿನಾಯಿಲ್ ಕ್ಲೋರೈಡ್**
27. **Answer: Option D- Carbon- ಕಾರ್ಬನ್**
28. **Answer: Option A-Nitrogen-ಸಾರಜನಕ**
29. **Answer: Option D-Silicon-ಸಿಲಿಕಾನ್**
30. **Answer: Option C-Mercury-ಪಾದರಸ**
31. **Ans: A**
 $a=20$ $d=-3$ 8th term = $20+(8-1)(-3)=-1<0$. First negative term.
32. **Ans: B**
 Since $\frac{AB}{AC} = \frac{BD}{CD}$ AD is bisector of $\angle BAC$ and $\angle BAD = 30^\circ$.

$\angle ADC = 180^\circ - (30^\circ + 80^\circ) = 70^\circ$ therefore $\angle ADB = 180^\circ - 70^\circ = 110^\circ$ and $\angle ABD = 180^\circ - (30^\circ + 110^\circ) = 40^\circ$

33. Ans: A

P-2, Q-1, R-4, S-3

34. Ans: D

Area of the shaded portion = $\frac{1}{2}\pi R^2 - \frac{1}{2}\pi r^2 = \frac{1}{2}\pi(5^2 - 4^2) = 4.5\pi$ sq.units

35. Ans: C

Unit digit is x and tens digit is y . Then $x = 3y$ Also $x+10y+36=y+10x \Rightarrow 9x - 9y = 36$
Solving both the equations $27y-9y=36$ ie $18y=36$. ie $y=2$ ie. $x=6$. Therefore the required number is 26

36. Ans: B

$$x = \sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}} \Rightarrow x = \sqrt{6 + x} \Rightarrow x^2 = 6 + x \Rightarrow$$

$x^2 - x - 6 = 0$ solving the quadratic equation we get $x=3$ or $x=-2$. $x=3$ is the answer

37. Ans: D

$$\sin A + \sin^2 A = 1 \Rightarrow \sin A = 1 - \sin^2 A \Rightarrow \sin A = \cos^2 A \Rightarrow$$

$$\cos^2 A + \cos^4 A = \sin A + \sin^2 A = 1$$

38. Ans: C : BP= distance of B from x-axis-distance of P from x-axis =5-3=2 units

39. Ans: D

240 and 2400 are not perfect squares. So that two options are eliminated. 1600 is divisible by 16 and 20 but not by 24. Therefore 1600 is also eliminated. So 3600 is the answer.

40. Ans: B

$$a^3 = 2744 = 2^3 \times 7^3 \Rightarrow a = 14\text{cm. S.A} = 6a^2 = 6(196) = 1176\text{cm}^3$$

41. Ans: C

11 does not divide 3825. Therefore 11 is not a prime factor.

42. Ans: B

$$2x^3 + x^2 - 13x + 6 \text{ then } \alpha\beta\gamma = -\frac{d}{a} = -\frac{6}{2} = -3$$

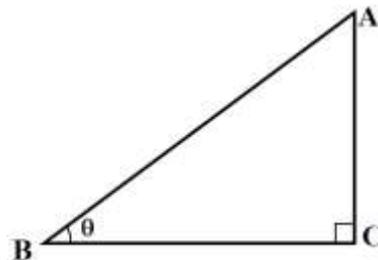
43. Ans: C

Let height of pole be h metres and length of shadow be also h metre.

Then we form the right angled triangle and

$$\tan \theta = \frac{AC}{BC} = \frac{h}{h} = 1$$

Therefore $\theta = 45^\circ$



44. Ans: A

Number of sample points =36. If the sum is greater than 6 and less than 9 means we get the ordered pairs (1,6),(2,5),(2,6),(3,4),(3,5),(4,3),(4,4),(5,2),(5,3),(6,1),(6,2).

$$\text{Probability} = \frac{11}{36}$$

45. Ans: C

$\sin(\alpha + \beta) = 1$ and $\cos(\alpha - \beta) = 1 \Rightarrow \alpha + \beta = 90^\circ$ and $\alpha - \beta = 0^\circ$ solving the two equation $2\alpha = 90^\circ \Rightarrow \alpha = 45^\circ$ and $\beta = 45^\circ$

46. Ans: A

47. Ans: C

48. Ans: B

49. Ans: B

50. Ans: A
 51. Ans: B
 52. Ans: D
 53. Ans: B
 54. Ans: A
 55. Ans: A
 56. Answer B- Cancer - ಕ್ಯಾನ್ಸರ್
 57. Answer: B- Starch-ಪಿಷ್ಟ
 58. Answer-C- Chloroplast- ಕ್ಲೋರೋಪ್ಲಾಸ್ಟ್
 59. Answer A- Fahrenheit -ಫೇರೆನ್ಹೀಟ್
 60. Answer: Option C

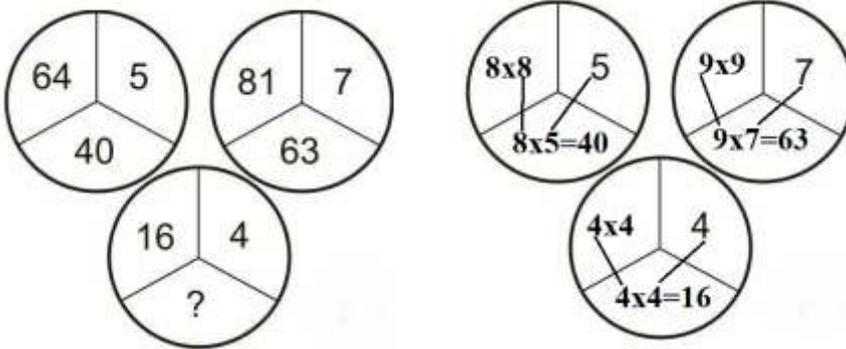
Part-B

61. Ans: A
 62. Ans: A
 63. Ans: A
 64. Ans: C
 65. Ans: D
 66. Ans: A
 67. Ans: B

Let the number of cows and men be x
 ದನಗಳ ಮತ್ತು ಜನಗಳ ಸಂಖ್ಯೆ x ಎಂದಿರಲಿ

$$X(2) + x(4) = 24 \Rightarrow 6x = 24 \Rightarrow x = 4$$

68. Ans: A



69. Ans: D

$$\text{Number of girls} = \frac{25}{100} \times 800 = 200$$

$$\text{Number of Boys} = 800 - 200 = 600$$

$$\text{Number of boys who were absent} = \frac{12}{100} \times 600 = 72$$

$$\text{Number of girls who were absent} = \frac{18}{100} \times 200 = 36$$

$$\text{Total number of absentees} = 36 + 72 = 108$$

$$\text{Number of students attended school} = 800 - 108 = 692$$

70. Ans: D

71. Ans: C

W be the work done.

Work done by A in a day = $\frac{W}{15}$

Work done by B in a day = $\frac{W}{10}$

If n number of days are taken by them (while working together) to complete the same work W, then

$$W = n \left(\frac{W}{15} + \frac{W}{10} \right) \Rightarrow W = n \left(\frac{25W}{150} \right) \Rightarrow 1 = n \left(\frac{25}{150} \right) \Rightarrow n=6 \text{ days}$$

72. Ans: B

Number of beats made in in 12 hours is = $1+2+3+\dots+12$

$$\frac{n(n+1)}{2} = \frac{12(12+1)}{2} = 6 \times 13 = 78$$

In a day this repeats twice. Hence total beats = $78 \times 2 = 156$

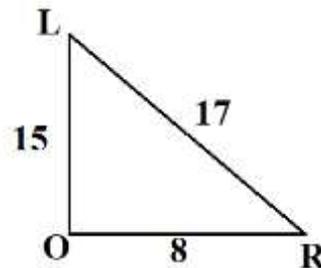
73. Ans: B

Train has to travel a total distance = $250+550 = 800\text{m}$

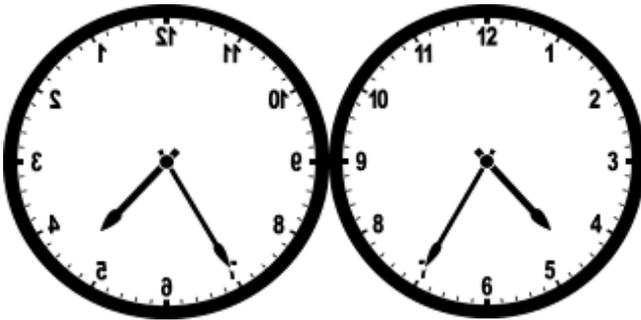
$$\text{Time taken, } t = \frac{\text{dis tan ce}}{\text{velocity}} = \frac{800}{10} = 80\text{sec}$$

74. Ans: C

$$LR = \sqrt{15^2 + 8^2} = \sqrt{289} = 17\text{miles}$$



75. Ans: A



76. Ans: B

77. Ans: A

78. Ans: B

79. Ans: C

80. Ans: C

81. Ans: D

82. Ans: A

83. Ans: A

84. Ans: B

85. Ans: B

86. Ans: A

87. Ans: B

88. Ans: C

89. Ans: C

90. Ans: D

Part-C

91. Ans: C

92. Ans: C

93. Ans: D

94. Ans: A

95. Ans: B

96. Ans: B

97. Ans: C

98. Ans: B

99. Ans: B

100. Ans: C