

05/10/2025

Code-D



Aakash
Medical | IIT-JEE | Foundations

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MM : 120

ICSE AIATS for Class-X (2025-26) T02D

Time : 180 Min.

PHYSICS

- | | |
|---------|---------|
| 1. (4) | 14. (4) |
| 2. (1) | 15. (3) |
| 3. (3) | 16. (3) |
| 4. (3) | 17. (1) |
| 5. (2) | 18. (2) |
| 6. (2) | 19. (2) |
| 7. (3) | 20. (4) |
| 8. (4) | 21. (3) |
| 9. (4) | 22. (1) |
| 10. (1) | 23. (2) |
| 11. (3) | 24. (2) |
| 12. (3) | 25. (1) |
| 13. (2) | |

CHEMISTRY

- | | |
|---------|---------|
| 26. (1) | 39. (3) |
| 27. (2) | 40. (3) |
| 28. (3) | 41. (2) |
| 29. (4) | 42. (2) |
| 30. (2) | 43. (4) |
| 31. (2) | 44. (3) |
| 32. (3) | 45. (3) |
| 33. (1) | 46. (3) |
| 34. (3) | 47. (4) |
| 35. (3) | 48. (3) |
| 36. (4) | 49. (4) |

37. (4)

50. (3)

38. (2)

BIOLOGY

51. (4)

64. (4)

52. (4)

65. (2)

53. (2)

66. (1)

54. (1)

67. (3)

55. (3)

68. (1)

56. (1)

69. (4)

57. (2)

70. (4)

58. (1)

71. (4)

59. (3)

72. (2)

60. (1)

73. (2)

61. (1)

74. (1)

62. (1)

75. (1)

63. (4)

MATHEMATICS

76. (3)

89. (3)

77. (2)

90. (2)

78. (1)

91. (3)

79. (3)

92. (4)

80. (1)

93. (1)

81. (3)

94. (1)

82. (4)

95. (2)

83. (3)

96. (2)

84. (1)

97. (4)

85. (4)

98. (3)

86. (3)

99. (4)

87. (4)

100. (3)

88. (4)

MENTAL ABILITY

101. (3)

102. (3)

103. (1)

104. (2)

105. (4)

106. (1)

107. (4)

108. (3)

109. (4)

110. (1)

111. (3)

112. (2)

113. (2)

114. (3)

115. (4)

116. (2)

117. (4)

118. (2)

119. (2)

120. (1)



Hints and Solutions

PHYSICS

(1) Answer : (4)

Solution:

$$\delta_{\min} = 2i - A$$

$$\therefore i = \frac{\delta_{\min} + A}{2} = \frac{60^\circ + 60^\circ}{2} = 60^\circ$$

$$r = \frac{A}{2} = 30^\circ$$

$$1 \times \sin i = \mu \times \sin r$$

$$1 \times \sin 60^\circ = \mu \sin 30^\circ$$

$$\Rightarrow \mu = \sqrt{3}$$

$$\mu = \frac{c}{v}$$

$$\therefore \frac{c}{v} = \sqrt{3}$$

$$\Rightarrow v = \frac{3 \times 10^8}{\sqrt{3}} = 1.73 \times 10^8 \text{ m/s}$$

(2) Answer : (1)

(3) Answer : (3)

Solution:

Motion of the stone under gravity

$$s = ut + \frac{1}{2}at^2$$

$$s = \frac{1}{2} \times 10 \times t_1^2$$

$$s = 5t_1^2 \dots (i)$$

Distance covered by sound

$$s = v \times t_2$$

$$s = 360t_2 \dots (ii)$$

Equating equations (i) and (ii)

$$360t_2 = 5t_1^2$$

$$360(6.5 - t_1) = 5t_1^2$$

$$[\because t_1 + t_2 = 6.5]$$

$$t_1^2 + 72t_1 - 468 = 0$$

$$\text{or } t_1^2 + 78t_1 - 6t_1 - 468 = 0$$

$$\Rightarrow t_1 = 6 \text{ s}$$

From equation (i)

$$s = 5 \times 6^2$$

$$= 180 \text{ m}$$

(4) Answer : (3)

(5) Answer : (2)

(6) Answer : (2)

Solution:Observed speed of bird by fish = Speed of fish + Refractive index of water \times Actual speed of bird

$$5 = 1 + \frac{4}{3}(v_b)$$

$$v_b = (5-1) \times \frac{3}{4}$$

$$v_b = 3 \text{ m/s}$$

(7) Answer : (3)

(8) Answer : (4)

Solution:

$$\frac{1}{f_1} + \frac{1}{f_2} = \frac{1}{f}$$

$$\frac{1}{20} + \frac{1}{f_2} = \frac{1}{80}$$

$$\Rightarrow \frac{1}{f_2} = -\frac{3}{80}$$

$$P = \frac{100}{f_2} = -\frac{300}{80} = -3.75 \text{ D}$$

(9) Answer : (4)

Solution:

High pitched sound have high shrillness

(10) Answer : (1)

Solution:

$$n = \frac{3 \times 10^{10}}{2 \times 10^{10}} = \frac{3}{2}$$

$$\Delta t = \left(1 - \frac{1}{n}\right)t$$

$$= \left(1 - \frac{2}{3}\right)4.5$$

$$= \frac{1}{3} \times 4.5$$

$$= 1.5 \text{ cm}$$

(11) Answer : (3)

Solution:

$$m = -3 = \frac{v}{u}, v = -3u$$

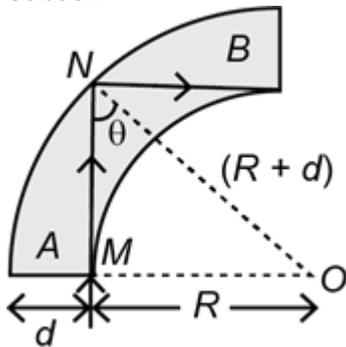
$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$$

$$\frac{1}{24} = \frac{1}{-3u} - \frac{1}{u}$$

$$\Rightarrow u = -32 \text{ cm}$$

(12) Answer : (3)

Solution:



Light enters at A will emerges at B if angle θ is greater than critical angle of the medium used

$$\sin \theta \geq \left(\frac{1}{\mu}\right) \dots (i)$$

$$ON = \text{width} + \text{radius} = R + d$$

$$OM = \text{radius} = R$$

$$\sin \theta = \frac{OM}{ON} = \frac{R}{R+d}$$

From figure,

$$\frac{1}{\mu} \leq \frac{R}{R+d}$$

$$\frac{d}{R} \leq \mu - 1$$

$$\therefore \left(\frac{d}{R}\right)_{\max} = \frac{5}{4} - 1 = \frac{1}{4}$$

(13) Answer : (2)

(14) Answer : (4)

Solution:

$$i + e = A + \delta$$

$$45^\circ + e = 45^\circ + 45^\circ$$

$$e = 45^\circ$$

$$\therefore r_1 = r_2$$

$$A = r_1 + r_2$$

$$r_1 = r_2 = \frac{45^\circ}{2} = 22.5^\circ$$

$$\Rightarrow \mu \sin r_1 = \sin i$$

$$\mu = \frac{\sin 45^\circ}{\sin(22.5^\circ)} = \frac{1}{\sqrt{2} \times 0.38} = 1.86$$

(15) Answer : (3)

Solution:

$$l_2 = \frac{f_1 l_1}{f_2} = \frac{260 \times 90}{1560} = 15 \text{ cm}$$

(16) Answer : (3)

(17) Answer : (1)

Solution:

$$2\lambda + \frac{\lambda}{2} = 20 \text{ cm}$$

$$\frac{5\lambda}{2} = 20$$

$$\lambda = 8 \text{ cm}$$

$$\therefore v = \frac{\lambda}{T}$$

$$T = \frac{8 \times 10^{-2}}{320}$$

$$T = 2.5 \times 10^{-4} \text{ s}$$

(18) Answer : (2)

(19) Answer : (2)

Solution:

$$\text{Intensity} \propto \frac{1}{(\text{distance})^2}$$

$$\frac{I_1}{I_2} = \left(\frac{r_2}{r_1}\right)^2 = \left(\frac{7}{4}\right)^2$$

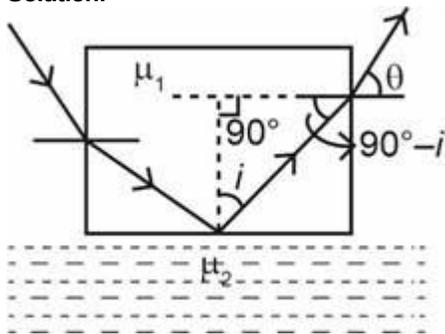
$$\frac{I_1}{I_2} = \frac{49}{16}$$

(20) Answer : (4)

(21) Answer : (3)

(22) Answer : (1)

Solution:



$$\sin i > \frac{\mu_2}{\mu_1}$$

$$\mu_1 \sin(90^\circ - i) = \sin \theta$$

$$1 - \sin^2 i = \frac{\sin^2 \theta}{\mu_1^2}$$

$$\Rightarrow \sin \theta < \sqrt{\mu_1^2 - \mu_2^2}$$

(23) Answer : (2)

(24) Answer : (2)

Solution:


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$$v = \frac{2d_1}{5}$$

$$v = \frac{2(d_1 - 310)}{3}$$

$$d_1 = 775 \text{ m}$$

$$v = \frac{775 \times 2}{5} = 310 \text{ m/s}$$

(25) Answer : (1)

CHEMISTRY

(26) Answer : (1)

(27) Answer : (2)

(28) Answer : (3)

(29) Answer : (4)

(30) Answer : (2)

(31) Answer : (2)

(32) Answer : (3)

(33) Answer : (1)

(34) Answer : (3)

Solution:

Ammonium sulphate : $(\text{NH}_4)_2\text{SO}_4 = (14 + 4) \times 2 + 32 + 16 \times 4 = 132 \text{ u}$

(35) Answer : (3)

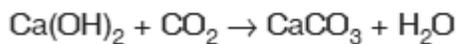
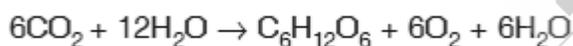
(36) Answer : (4)

(37) Answer : (4)

(38) Answer : (2)

Solution:

Photosynthesis:



(39) Answer : (3)

(40) Answer : (3)

(41) Answer : (2)

Solution:

Precipitation of $\text{Ca}(\text{OH})_2$ does not occur in presence of NH_4OH

(42) Answer : (2)

(43) Answer : (4)

(44) Answer : (3)

(45) Answer : (3)

(46) Answer : (3)

Solution:

$$\text{No. of moles (n) of the gas} = \frac{v(\text{in mL})}{22400}$$

$$= \frac{75}{22400}$$

$$= 3.35 \times 10^{-3} \text{ moles}$$

$$\text{No. of molecules of the gas} = n \times N_A$$

$$= 2.01 \times 10^{21}$$

$$\text{Molecular mass of the gas} = \frac{\text{Given mass}}{\text{No. of moles}}$$

$$= \frac{0.147}{3.35 \times 10^{-3}}$$

$$= 43.9 \approx 44 \text{ u}$$

$$\text{Molecular mass of CO}_2 = \text{Atomic mass of carbon} + 2 (\text{atomic mass of oxygen})$$

$$= 12 + 2(16)$$

$$= 44 \text{ u}$$

(47) Answer : (4)

Solution:

| Element | Percentage composition | Atomic Mass | Atomic ratio | Simplest ratio |
|---------|------------------------|-------------|------------------------|---|
| N | 26 | 14 | $\frac{26}{14} = 1.85$ | $\frac{1.85}{1.85} = 1$ $\Rightarrow 1 \times 2 = 2$ |
| O | 74 | 16 | $\frac{74}{16} = 4.62$ | $\frac{4.62}{1.85} = 2.49$ $\Rightarrow 2.49 \times 2 = 5$ |

Empirical formula = N₂O₅

(48) Answer : (3)

(49) Answer : (4)

(50) Answer : (3)

BIOLOGY

(51) Answer : (4)

(52) Answer : (4)

(53) Answer : (2)

(54) Answer : (1)

(55) Answer : (3)

(56) Answer : (1)

(57) Answer : (2)

(58) Answer : (1)

(59) Answer : (3)

(60) Answer : (1)

(61) Answer : (1)

(62) Answer : (1)

(63) Answer : (4)

(64) Answer : (4)

(65) Answer : (2)

(66) Answer : (1)

(67) Answer : (3)

(68) Answer : (1)

(69) Answer : (4)

(70) Answer : (4)

(71) Answer : (4)

(72) Answer : (2)

(73) Answer : (2)

(74) Answer : (1)

(75) Answer : (1)

MATHEMATICS

(76) Answer : (3)

(77) Answer : (2)

(78) Answer : (1)

(79) Answer : (3)

(80) Answer : (1)

(81) Answer : (3)

(82) Answer : (4)

(83) Answer : (3)

(84) Answer : (1)

(85) Answer : (4)

(86) Answer : (3)

(87) Answer : (4)

Solution:

$$\begin{bmatrix} a & -2 \\ 4 & 7 \end{bmatrix} + \begin{bmatrix} -5 \times -8 & -5 \times 9 \\ -5 \times 3 & -5 \times b \end{bmatrix} = \begin{bmatrix} 11 & -47 \\ -11 & 0 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} a & -2 \\ 4 & 7 \end{bmatrix} + \begin{bmatrix} 40 & -45 \\ -15 & -5b \end{bmatrix} = \begin{bmatrix} 11 & -47 \\ -11 & 0 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} a+40 & -47 \\ -11 & 7-5b \end{bmatrix} = \begin{bmatrix} 11 & -47 \\ -11 & 0 \end{bmatrix}$$

$$\Rightarrow a+40=11 \text{ and } 7-5b=0$$

$$\Rightarrow a=-29 \text{ and } b=\frac{7}{5}$$

$$\therefore a+b = -\frac{138}{5}$$

(88) Answer : (4)

Solution:

$$A+B = \begin{bmatrix} 2 & 3 \\ 5 & -7 \end{bmatrix} + \begin{bmatrix} 0 & -2 \\ 1 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} 2+0 & 3+(-2) \\ 5+1 & -7+0 \end{bmatrix}$$

$$= \begin{bmatrix} 2 & 1 \\ 6 & -7 \end{bmatrix}$$

(89) Answer : (3)

Solution:

Since, there are 3 rows and 3 columns in the given matrix

\therefore Order of A is 3×3

(90) Answer : (2)

(91) Answer : (3)

(92) Answer : (4)

(93) Answer : (1)

(94) Answer : (1)

(95) Answer : (2)

Solution:

$$\text{Distance} = \left| \frac{3 \times 3 - 4 \times (-4) + 5}{\sqrt{9+16}} \right|$$

$$= \left| \frac{9+16+5}{5} \right|$$

$$= 6 \text{ units}$$

(96) Answer : (2)

(97) Answer : (4)

(98) Answer : (3)

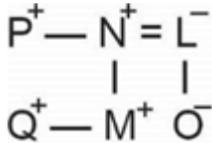
(99) Answer : (4)

(100) Answer : (3)

MENTAL ABILITY

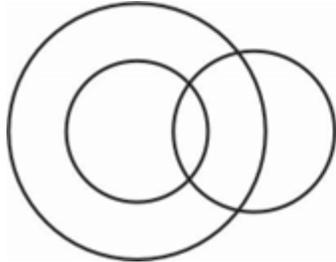
(101) Answer : (3)

Solution:



(102) Answer : (3)

Solution:



→ All daughter-in-law are daughters and both be poet

(103) Answer : (1)

Solution:

Rajya Sabha and Lok Sabha are part of Parliament.

(104) Answer : (2)

Solution:

$$15 \times 8 \div 6 + 12 - 4 \Rightarrow 28 \text{ (by using BODMAS)}$$

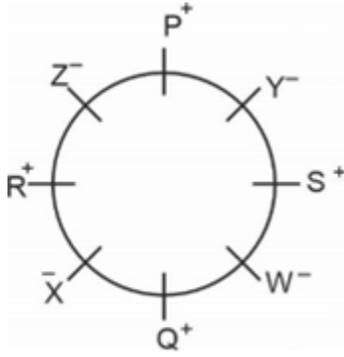
(105) Answer : (4)

Solution:

$$5 \div 4 = 1.25$$

(106) Answer : (1)

Solution:



(107) Answer : (4)

Solution:

$$2019 + 11 \text{ years} \Rightarrow 2030$$

(108) Answer : (3)

Solution:

$$\theta = \frac{11}{2}m - 30h$$

Here it is given that $\theta = 0$ and $h = 6$

$$\frac{11}{2}m = 30h$$

$$11m = 60h \Rightarrow m = \frac{60 \times 6}{11}$$

$$m = \frac{360}{11} = 32\frac{8}{11} \text{ min}$$

The two hands of the clock are together at $32\frac{8}{11}$ minutes past 6, between 6 and 7 O'clock.

(109) Answer : (4)

Solution:

By counting

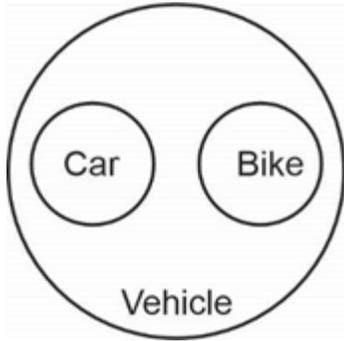
(110) Answer : (1)

Solution:

$$18 + 5 + 22 = 45$$

(111) Answer : (3)

Solution:



(112) Answer : (2)

Solution:

$$(19)^2 + (10)^3 = 1361$$

(113) Answer : (2)

Solution:

$$c + e = c + g$$

$$e = g$$

(114) Answer : (3)

Solution:

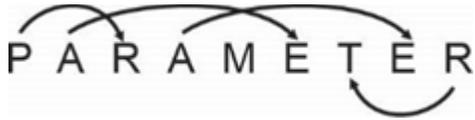
$$12 \text{ N}$$

$$A 4 \text{ F}$$

(115) Answer : (4)

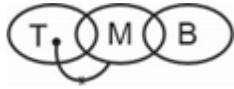
Solution:


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(116) Answer : (2)

Solution:



(117) Answer : (4)

Solution:

| NAME | Year | Age |
|--------|------|-----|
| Banshi | 1939 | 68 |
| Mohan | 1944 | 63 |
| Vikas | 1956 | 51 |
| Jeevan | 1957 | 50 |
| Lalit | 1973 | 34 |
| Ganga | 1982 | 25 |
| Piyush | 1986 | 21 |
| Rajat | 1990 | 17 |

(118) Answer : (2)

Solution:

22 21 20 19 18 17
E A C D/B F D/B

(119) Answer : (2)

Solution:

$$12 \div 3 \times 4 - 3 \times 3 + 1 = 8$$

$$\frac{12}{3} \times 4 - 9 + 1$$

$$16 - 9 + 1$$

$$8 = 8$$

(120) Answer : (1)

Solution:

17th April 1901 \Rightarrow (1600 + 300) years + 1st January to 17th April 1901

1600 years have – 0 odd days

300 years have – 1 odd days

The number of odd days from 1st January to 17th April 1901 is (31 + 28 + 31 + 17) days

108 days = 2 odd days

\therefore Total numbers of odd days = 1 + 2 = 3

So 17th April 1901 is Wednesday.

