



# Aakash

Medical | IIT-JEE | Foundations

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MM : 120

CBSE AIATS for Class-IX (2025-26) T05A

Time : 180 Min.

## PHYSICS

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

## CHEMISTRY

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

37. (2)

38. (3)

50. (2)

**BIOLOGY**

51. (2)

52. (4)

53. (2)

54. (3)

55. (1)

56. (2)

57. (3)

58. (3)

59. (2)

60. (4)

61. (4)

62. (2)

63. (1)

64. (4)

65. (3)

66. (3)

67. (1)

68. (2)

69. (1)

70. (4)

71. (2)

72. (2)

73. (4)

74. (3)

75. (3)

**MATHEMATICS**

76. (1)

77. (3)

78. (4)

79. (1)

80. (4)

81. (4)

82. (4)

83. (2)

84. (2)

85. (3)

86. (3)

87. (4)

88. (2)

89. (3)

90. (2)

91. (3)

92. (4)

93. (4)

94. (1)

95. (4)

96. (1)

97. (1)

98. (3)

99. (3)

100. (3)

MENTAL ABILITY

- 101. (1)
- 102. (3)
- 103. (4)
- 104. (4)
- 105. (1)
- 106. (3)
- 107. (2)
- 108. (1)
- 109. (2)
- 110. (3)

- 111. (1)
- 112. (2)
- 113. (4)
- 114. (2)
- 115. (1)
- 116. (4)
- 117. (4)
- 118. (2)
- 119. (2)
- 120. (1)



## Hints and Solutions

## PHYSICS

(1) Answer : (4)

Solution:

$$v = u - at$$

 At maximum displacement,  $v = 0$ 

$$\Rightarrow u = at$$

$$v^2 - u^2 = -2as$$

$$-u^2 = -2as$$

$$\therefore a^2 t^2 = 2as$$

$$a \times 25 = 40$$

$$a = \frac{40}{25} \text{ m/s}^2$$

The body will return to its initial position with the same speed with which it has started.

$$\therefore u = at$$

$$= \frac{40}{25} \times 5$$

$$= 8 \text{ m/s}$$

(2) Answer : (3)

Solution:

$$F = \frac{Gm_1m_2}{r^2}$$

 $\therefore F$  is maximum when  $m_1m_2$  is maximum.

$$\text{Now, } 4m_1m_2 = (m_1 + m_2)^2 - (m_1 - m_2)^2$$

 Clearly,  $m_1m_2$  will be maximum if  $(m_1 - m_2) = 0$ 

$$\Rightarrow m_1 = m_2$$

$$\therefore \frac{m_1}{m_2} = 1$$

(3) Answer : (4)

Solution:

$$v_e = \sqrt{2gR} = 11.2 \text{ km/s}$$

$$v'_e = \sqrt{2 \times (2g) \times (8R)} = 4\sqrt{2gR} = 4 \times 11.2 = 44.8 \text{ km/s}$$

(4) Answer : (4)

Solution:

Weight of lead in water = 100 g

 Density of lead =  $11 \text{ g cm}^{-3}$ 

$$11 = \frac{W}{W-100}$$

$$11W - W = 1100$$

$$W = 110 \text{ g}$$

(5) Answer : (3)

Solution:

$$v = 1000 \text{ Hz}$$

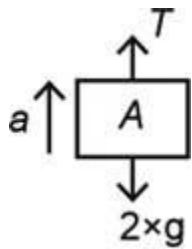
$$t = 10 \text{ s}$$

$$\nu = \frac{\text{Number of waves}}{t}$$

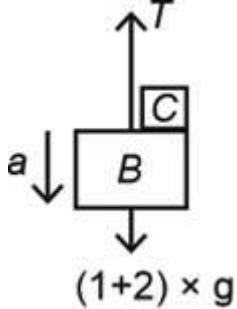
$$\therefore \text{Number of waves} = 1000 \times 10$$

(6) Answer : (3)

Solution:



$$T - 2 \times g = 2 \times a \dots\dots\dots (i)$$



$$3g - T = 3 \times a \dots\dots\dots (ii)$$

$$a = \frac{g}{5} = 2 \text{ m/s}^2$$

Velocity of block B at 2 s is

$$v = u + at$$

$$v = 0 + 2 \times 2$$

$$v = 4 \text{ m/s}$$

$$s = s_1 + s_2$$

$$= \frac{1}{2}at_1^2 + vt_2 = \frac{1}{2} \times 2 \times 2^2 + 4 \times 1$$

$$= 8 \text{ m}$$

(7) Answer : (3)

**Solution:**

Taking centre of sphere as frame of reference

Initial total energy =  $mgR$

After it slides down,

Potential energy =  $mgR \sin \theta$

[height =  $R \sin \theta$ ]

Kinetic energy =  $\frac{1}{2}mv^2$

By conservation of energy

$$mgR = mgR \sin \theta + \frac{1}{2}mv^2$$

$$\Rightarrow v = \sqrt{2gR(1 - \sin \theta)}$$

(8) Answer : (2)

**Solution:**

Since,  $I \propto \frac{1}{r^2}$

Therefore,

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

$$\Rightarrow \frac{I_1}{I_2} = \left(\frac{100}{10}\right)^2$$

$$\therefore \frac{I_1}{I_2} = \frac{100}{1}$$

(9) Answer : (3)

**Solution:**

$$KE_1 = KE_2$$

$$\frac{1}{2} \times 2 \times v_1^2 = \frac{1}{2} \times 4 \times v_2^2$$

$$\left[\frac{v_1}{v_2}\right]^2 = \frac{4}{2} = 2$$

$$\frac{v_1}{v_2} = \frac{\sqrt{2}}{1}$$



(10) Answer : (2)

(11) Answer : (3)

**Solution:**

Case-I

$$F = k_1 x_1$$

$$x_1 = \frac{F}{k_1}$$

Case-II

$$x_2 = \frac{F}{k_2}$$

$$\because k_1 > k_2$$

$$\Rightarrow x_2 > x_1$$

More work is done in case of second spring.

(12) Answer : (3)

**Solution:**

Intensity  $\propto$  (Amplitude)<sup>2</sup>

$$\frac{I'}{I} = \left(\frac{A'}{A}\right)^2$$

$$I' = I \left(\frac{A'}{A}\right)^2$$

$$= I \left(\frac{0.25}{0.5}\right)^2$$

$$I' = \frac{I}{4}$$

(13) Answer : (2)

(14) Answer : (4)

(15) Answer : (1)

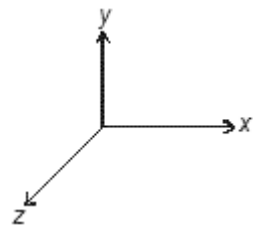
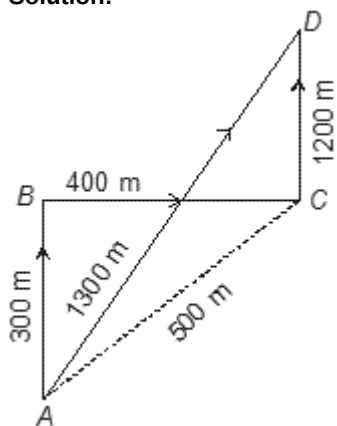
(16) Answer : (1)

(17) Answer : (2)

(18) Answer : (3)

(19) Answer : (4)

**Solution:**



$$AC = \sqrt{AB^2 + BC^2} = \sqrt{300^2 + 400^2} = 500$$

$$\text{Displacement } AD = \sqrt{AC^2 + CD^2}$$

$$= \sqrt{500^2 + 200^2}$$

  
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$$= 1300 \text{ m}$$

(20) Answer : (1)

(21) Answer : (2)

(22) Answer : (3)

**Solution:**

$$a = \frac{v-u}{t} = \frac{50-10}{10}$$

$$= \frac{40}{10} = 4 \text{ ms}^{-2}$$

$$F = m \cdot a$$

$$m = \frac{F}{a} = \frac{10}{4}$$

$$= 2.5 \text{ kg}$$

(23) Answer : (3)

(24) Answer : (2)

**Solution:**

$$\frac{1}{2} m v_{\max}^2 = \frac{1}{2} kx^2$$

$$\frac{1}{2} \times 4 \times v_{\max}^2 = \frac{1}{2} \times 1600 \times (12 \times 10^{-2})^2$$

$$v_{\max} = 2.4 \text{ m/s}$$

$$\Rightarrow \text{Momentum} = mv = 4 \times 2.4 = 9.6 \text{ kg m/s}$$

(25) Answer : (3)

(26) Answer : (1)

(27) Answer : (3)

(28) Answer : (4)

(29) Answer : (3)

(30) Answer : (3)

(31) Answer : (3)

(32) Answer : (2)

(33) Answer : (3)

(34) Answer : (1)

(35) Answer : (4)

(36) Answer : (2)

**Solution:**

The cathode rays constitute negatively charged particles called electrons

(37) Answer : (2)

(38) Answer : (3)

(39) Answer : (2)

(40) Answer : (1)

**Solution:**

Calculation : Total number of electrons in one molecule of  $\text{CO}_2 = 6 + 2 \times 8 = 22$

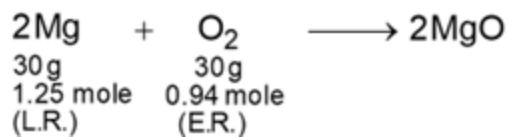
Atoms of helium present in its 2 g =  $\frac{2}{4} \times 22 = 11$

(41) Answer : (3)

**Solution:**

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- (i) 2 moles Mg = 2 mole MgO  
 1.25 moles Mg = 1.25 moles MgO = 50 g of MgO
- (ii) 2 moles Mg = 1 mole of O<sub>2</sub>  
 1.25 moles Mg = 0.625 mole of O<sub>2</sub> = 20 g of O<sub>2</sub>  
 Left O<sub>2</sub> = 30 – 20 = 10 g

(42) Answer : (4)

(43) Answer : (1)

(44) Answer : (1)

**Solution:**

Extra close brace or missing open brace

Difference in mass number of  ${}_{92}^{238}\text{U}$

and  ${}_{90}^{230}\text{X}$

= 238 – 230

= 8

(45) Answer : (3)

(46) Answer : (2)

**Solution:**

Composition of a compound is fixed.

(47) Answer : (4)

(48) Answer : (4)

(49) Answer : (4)

**Solution:**

$$n_{\text{N}_2} = \frac{8}{28} \times 6.022 \times 10^{23} = 1.720 \times 10^{23}$$

$$n_{\text{CO}_2} = 0.2 \times 6.022 \times 10^{23} = 1.204 \times 10^{23}$$

$$n_{\text{H}_2\text{O}} = \frac{1.2}{18} \times 6.022 \times 10^{23} = 0.401 \times 10^{23}$$

$$n_{\text{NaOH}} = \frac{20}{40} \times 6.022 \times 10^{23} = 3.011 \times 10^{23}$$

(50) Answer : (2)

**Solution:**

Concentration of solution after dividing into five equal parts is 50% (w/w) but weight of each solution is 200 g. Each part contains 100 g of salt and 100 g water.

Concentration of solution D formed after mixing solutions A, B and C will be

$$= \frac{(150+100+100)}{(250+250+300)} \times 100$$

$$= 43.75\%$$

BIOLOGY

(51) Answer : (2)

(52) Answer : (4)

(53) Answer : (2)

(54) Answer : (3)

**Solution:**

Cuboidal epithelium is present in the ducts of salivary glands.

(55) Answer : (1)

(56) Answer : (2)

(57) Answer : (3)

(58) Answer : (3)

**Solution:**

White blood cell can change its shape.

(59) Answer : (2)

(60) Answer : (4)

(61) Answer : (4)

(62) Answer : (2)

(63) Answer : (1)

(64) Answer : (4)

(65) Answer : (3)

(66) Answer : (3)

**Solution:**

Ligament is elastic in nature and connects a bone with another bone.

(67) Answer : (1)

**Solution:**

Conduction of materials in phloem is bidirectional.

(68) Answer : (2)

(69) Answer : (1)

**Solution:**

The depicted figure is of cardiac tissue.

(70) Answer : (4)

(71) Answer : (2)

(72) Answer : (2)

(73) Answer : (4)

**Solution:**

Both the statements are correct.

(74) Answer : (3)

(75) Answer : (3)

MATHEMATICS

(76) Answer : (1)

(77) Answer : (3)

(78) Answer : (4)

(79) Answer : (1)

(80) Answer : (4)

(81) Answer : (4)

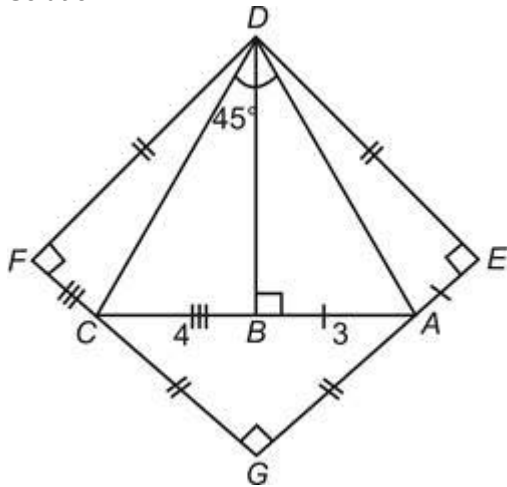
(82) Answer : (4)

(83) Answer : (2)

(84) Answer : (2)

(85) Answer : (3)

Solution:



$\triangle AED \cong \triangle ABD$  [By RHS congruence]  
 and  $\triangle CFD \cong \triangle CBD$  [By RHS congruence]

Extend EA and FC to intersect at G

$$\Rightarrow \angle ADE + \angle CDF = \angle ADB + \angle CDB = 45^\circ$$

$$\therefore \angle EDF = 45^\circ + 45^\circ = 90^\circ$$

$$\Rightarrow \angle EGF = 90^\circ$$

and  $DF = DB = DE$

$\Rightarrow$  EDFG is a square

$$\Rightarrow AG^2 + CG^2 = AC^2 = 49$$

$$\Rightarrow (GE - AE)^2 + (GF - CF)^2 = 49$$

$$\Rightarrow (BD - 3)^2 + (BD - 4)^2 = 49 \quad [\because BD = DE = DF = GE = GF]$$

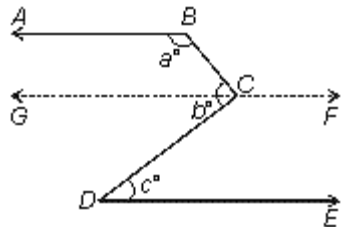
$$\Rightarrow BD^2 - 7BD - 12 = 0$$

$$\Rightarrow BD = \frac{7 + \sqrt{97}}{2} \text{ cm}$$

$$\therefore \text{ar}(\triangle ADC) = \frac{1}{2} \times \left( \frac{7 + \sqrt{97}}{2} \right) \times 7 = \frac{7}{4} (7 + \sqrt{97}) \text{ cm}^2$$

(86) Answer : (3)

Solution:



Construct  $GF \parallel AB$ ,

$$\therefore \angle ABC + \angle BCG = 180^\circ \quad \dots(i) \quad [\text{Co-interior angles}]$$

$\Rightarrow GF \parallel DE$

$$\angle DCG = \angle EDC \quad \dots(ii) \quad [\text{Alternate angles}]$$

Adding equation (i) and (ii),

$$\angle ABC + \angle BCG + \angle DCG = 180^\circ + \angle EDC$$

$$\angle ABC + \angle BCD = 180^\circ + \angle EDC$$

$$a^\circ + b^\circ = 180^\circ + c^\circ$$

$$\therefore a^\circ + b^\circ - c^\circ = 180^\circ$$

(87) Answer : (4)

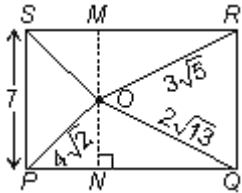
(88) Answer : (2)

(89) Answer : (3)

(90) Answer : (2)

Solution:

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Draw  $MN \parallel PS \parallel QR$

$\therefore MN = PS = 7$  cm

Let  $OM = x$  cm

$\Rightarrow ON = (7 - x)$  cm

$\because NQRM$  is also a rectangle.

$\therefore NQ = MR$  and  $NM = QR$

$$\Rightarrow \sqrt{OQ^2 - ON^2} = \sqrt{OR^2 - OM^2}$$

$$52 - (7 - x)^2 = 45 - x^2$$

$$52 - 49 + 14x = 45$$

$$14x = 42$$

$$x = 3$$

$$\Rightarrow OM = 3$$
 cm

We know that,

$$OP^2 + OR^2 = OQ^2 + OS^2$$

$$OS^2 = OP^2 + OR^2 - OQ^2$$

$$= 32 + 45 - 52$$

$$= 25$$

$$\Rightarrow OS = 5$$
 cm

In  $\triangle OMS$ ,

$$MS^2 = OS^2 - OM^2$$

$$= 25 - 9$$

$$= 16$$

$$MS = 4$$
 cm

In  $\triangle ORM$

$$MR^2 = OR^2 - OM^2$$

$$= 45 - 9 = 36$$

$$\Rightarrow MR = 6$$
 cm

Hence, length of  $RS = 4 + 6$

$$= 10$$
 cm

(91) Answer : (3)

**Solution:**

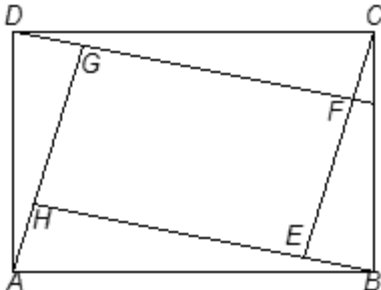
Let the side of square  $EFGH$  be  $x$  cm

$$\angle DGA = 90^\circ$$

$$BE = 2$$
 cm

$$DG = AH = 2$$
 cm

In  $\triangle DGA$



$$AD^2 = DG^2 + GA^2$$

$$\Rightarrow (2\sqrt{17})^2 = (2)^2 + (x+2)^2$$

$$\Rightarrow x^2 + 4x - 60 = 0$$

$$\Rightarrow x = 6$$

$\therefore$  Side of  $EFGH$  is 6 cm

$\therefore$  Area of  $EFGH$  is  $36$  cm<sup>2</sup>

  
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(92) Answer : (4)

(93) Answer : (4)

(94) Answer : (1)

**Solution:**

$$\triangle ABC \cong \triangle ADC$$

$$\therefore BC = CD$$

(95) Answer : (4)

(96) Answer : (1)

**Solution:**

Let  $V_O$  and  $V_F$  be the original volume and volume after change of the cone respectively.

$$V_O = \frac{1}{3}\pi r^2 h$$

$$V_F = \frac{1}{3}\pi (4r)^2 \cdot \left(\frac{h}{8}\right)$$

$$= \frac{2}{3}\pi r^2 h$$

$$\Rightarrow \frac{V_F - V_O}{V_O} = \frac{\frac{\pi r^2 h}{3}}{\frac{\pi r^2 h}{3}} = 1 : 1$$

(97) Answer : (1)

(98) Answer : (3)

(99) Answer : (3)

(100) Answer : (3)

MENTAL ABILITY

(101) Answer : (1)

**Solution:**

Difference of 136.

(102) Answer : (3)

**Solution:**

azbycxdwefugt

(103) Answer : (4)

**Solution:**

Letter + 2 + 3 + 4 / Letter + 2 / Letter + 1 + 2 + 3 ...

(104) Answer : (4)

**Solution:**

J 4M5B 6 | J 4M5B 6 | J 4M5 B 6

(105) Answer : (1)

**Solution:**

– means  $\times$ ,  $\times$  means  $-$ ,  $\div$  means  $+$  and  $+$  mean  $\div$

$$400 \div 20 \times 4 + 16 - 14 = 82$$

(106) Answer : (3)

**Solution:**

P A L E  
L E A P

P O S H  
S H O P

(107) Answer : (2)

**Solution:**

$$ab : (a \times b)^b$$

(108) Answer : (1)

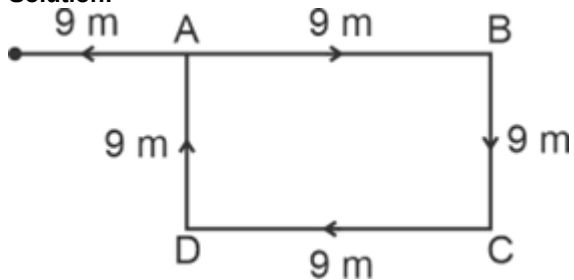
Solution:

$$2 @ 3 = 2 \times 5^2 = 50$$

$$50 \$ 49 = 3 \times (50^2 - 49^2) = 3 \times 99 = 297$$

(109) Answer : (2)

Solution:



(110) Answer : (3)

Solution:

Sum of positional value written in reverse.

(111) Answer : (1)

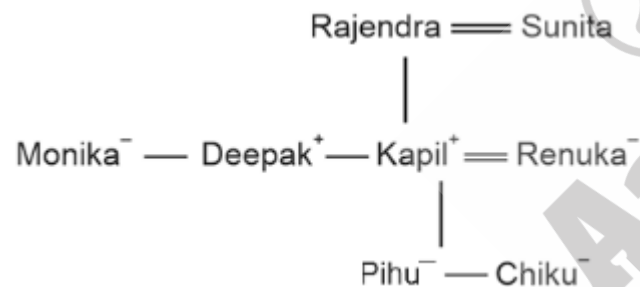
Solution:

F	O	U	N	D	A	T	I	O	N
+1	+1	+1	+1	+1	+1	+1	+1	+1	+1
G	P	V	O	E	B	U	J	P	O

In reverse order.

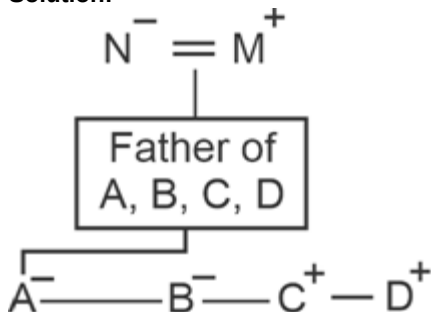
(112) Answer : (2)

Solution:



(113) Answer : (4)

Solution:



(114) Answer : (2)

Solution:

$$\theta = 30H - \frac{11}{2}M$$

(115) Answer : (1)

Solution:

There 4 odd days between 6<sup>th</sup> March 2005 and 6<sup>th</sup> March 2008.

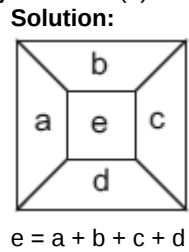
(116) Answer : (4)

**Solution:**  
Flip vertically

(117) Answer : (4)

**Solution:**  
Flip horizontally

(118) Answer : (2)



(119) Answer : (2)

**Solution:**  
By counting, we get,  $3 + 3 + 3 + 3 = 12$

(120) Answer : (1)

**Solution:**  
By counting

