30/11/2025

Code-D

Aakash
Medical | IIT-JEE | Foundations

Corporate Office : AESL, 3rd Floor, Incuspaze Campus-2, Plot No. 13, Sector-18, Udyog Vihar, Gurugram, Haryana - 122015, ***Ph.***+91-1244168300

MM : 120

ICSE AIATS for Class-X (2025-26) T03D

Time : 180 Min.

PHYSICS

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2. (4)
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4. (2)
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6. (1)
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20. (2)
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23. (1)
24. (4)
25. (2)

CHEMISTRY

26. (4)
27. (3)
28. (4)
29. (4)
30. (2)
31. (4)
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37. (1)
38. (1)
50. (4)

BIOLOGY

51. (1)
52. (4)
53. (1)
54. (1)
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MATHEMATICS

76. (1)
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95. (2)
96. (1)
97. (4)
98. (3)
99. (1)
100. (1)

MENTAL ABILITY

101. (1)
102. (2)
103. (1)
104. (3)
105. (1)
106. (4)
107. (2)
108. (3)
109. (1)
110. (4)
111. (3)
112. (4)
113. (4)
114. (3)
115. (3)
116. (2)
117. (4)
118. (4)
119. (2)
120. (4)

Hints and Solutions

PHYSICS

(1) **Answer :** (2)
Solution:
Intensity ∝ (Amplitude)^2
$\frac{I}{I'} = \left(\frac{A}{A'}\right)^2$
$I' = I\left(\frac{A'}{A}\right)^2$
= $I\left(\frac{0.25}{0.5}\right)^2$
$I' = \frac{I}{4} = 25\%$ of I

(2) **Answer :** (4)
Solution:
Distance between two consecutive crests = Wavelength (λ) = 2 m
$f = \frac{50}{2.5} = 20$ Hz
$v = f \times \lambda = 20 \times 2 = 40$ m/s

(3) **Answer :** (2)

(4) **Answer :** (2)
Solution:
Time (t) $= \frac{\text{Distance}}{\text{Speed}}$
$t = \frac{675}{30\times10^{-2}\times750}$
t = 3 s

(5) **Answer :** (2)
Solution:
Net resistance between point O and Q is
$\frac{1}{R_{net}\left(OQ\right)} = \frac{1}{1+1} + \frac{1}{2+2} + \frac{1}{x}$
$= \frac{2x+x+4}{4x}$
$R_{net}\left(OQ\right) = \frac{4x}{3x+4}$
$R_{net}\left(PQ\right) = 3 + \frac{4x}{3x+4}$
$x = 3 + \frac{4x}{3x+4}$
$3x^2 - 9x - 12 = 0$
$x = 4\ \Omega$

(6) **Answer :** (1)

(7) **Answer :** (2)
Solution:
Frequency of infrasonic sound should be less than 20 Hz
$v = f\lambda$
340 = 20 × λ
λ = 17 m
The wavelength for infrasonic sound should be greater than 17 m

(8) **Answer :** (3)
Solution:
$\frac{V_S}{V_P} = \frac{N_S}{N_P}$

$\frac{4400}{220} = \frac{N_S}{N_P}$

$\frac{N_P}{N_S} = \frac{1}{20}$, *NP* : *NS* = 1 : 20

(9) **Answer :** (3)
Solution:
Wavelength of *A* is smaller than wavelength of *B* and speed of sound wave in a medium remain constant. So pitch of *A* is higher than *B*

(10) **Answer :** (4)
Solution:
The current I_1 and I_2 in *A* and *C*. The magnetic field of I_1 and I_2 are opposite and equal.

(11) **Answer :** (4)
Solution:
$I = I_1 + I_2 + I_3$
= 4.8 + 10.2 + 3.5
= 18.5 A

(12) **Answer :** (3)

(13) **Answer :** (4)

(14) **Answer :** (2)
Solution:
e = *Blv*, will remain same as effective length remains same between *x* and *y*.
Current decreases with increase in resistance for same induced emf.

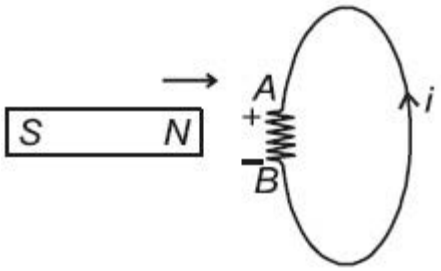
(15) **Answer :** (2)

(16) **Answer :** (4)
Solution:
$f_1 l_1 = f_2 l_2$
l_2 = 50 cm

(17) **Answer :** (3)
Solution:
3λ = 9 cm
λ = 3 cm

(18) **Answer :** (2)

(19) **Answer :** (3)
Solution:



i = induced current

(20) **Answer :** (2)
Solution:
Total power expended
$\frac{1}{P} = \frac{1}{200} + \frac{1}{200}$
$\Rightarrow P = 100\,W$

(21) **Answer :** (2)
Solution:

$i = \frac{q}{T} = qf$

$= 10 \times 10^{-6} \times 5 \times 10^{2}$

$= 50 \times 10^{-4} A$

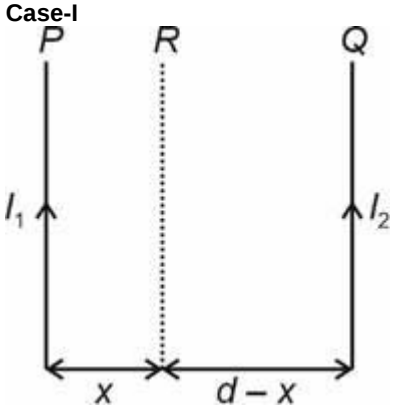
$B = \frac{\mu_0 I}{2r} = \frac{4\pi \times 10^{-7} \times 50 \times 10^{-4}}{2 \times 5 \times 10^{-10}}$

$= \frac{2\pi \times 10^{-10}}{10^{-10}}$

$= 2\pi \text{ tesla}$

(22) Answer : (1)

(23) Answer : (1)
Solution:
Case-I



$\frac{\mu_0 I_1 I}{2\pi x} - \frac{\mu_0 I_2 I}{2\pi (d - x)} = 0$

$\Rightarrow \frac{I_1}{x} - \frac{I_2}{d - x} = 0$

$\Rightarrow x = \frac{I_1}{(I_1 + I_2)} d$

(24) Answer : (4)
Solution:
Answer (D)

… [1 Mark]

(25) Answer : (2)

CHEMISTRY

(26) Answer : (4)

(27) Answer : (3)

(28) Answer : (4)

(29) Answer : (4)

(30) Answer : (2)
Solution:
Mass of 6.022×10^{23} atoms of gold = 197 g
Mass of 1 atom of gold = $\frac{197}{6.022 \times 10^{23}}$
$= 32.71 \times 10^{-23}$ g
or 3.271×10^{-22} g

(31) Answer : (4)

(32) Answer : (4)

(33) **Answer :** (2)

(34) **Answer :** (4)
Solution:
.

(35) **Answer :** (1)

(36) **Answer :** (4)

(37) **Answer :** (1)

(38) **Answer :** (1)
Solution:
$2Pb(NO_3)_2(s) \rightarrow 2PbO(s) + 4NO_2(g) + O_2(g)$

No. of moles of $Pb(NO_3)_2 = \frac{\text{Given mass}}{\text{Molar mass}}$

$= \frac{350}{331}$

= 1.06 moles

2 moles of $Pb(NO_3)_2$ produce 4 moles of NO_2

1.06 moles of $Pb(NO_3)_2$ produce $\frac{4}{2} \times 1.06$ moles of NO_2

= 2.12 moles of NO_2

2.12 moles of NO_2 = 2.12 × 46

= 97.5 g

(39) **Answer :** (1)
Solution:
5 mole $CaCO_3$ contains 15 mole O-atoms
5 mole CaO contains 5 mole O-atoms
6.25 mole MgO contains 6.25 mole O-atoms
5 mole CH_3COOH contains 10 mole O-atoms

(40) **Answer :** (3)
Solution:
Molecular mass of limestone ($CaCO_3$)
= Atomic mass of Ca + Atomic mass of C + 3 × Atomic mass of O
= 40 + 12 + 3 × 16 = 100 u
∴ Percentage of calcium

$= \frac{\text{Atomic mass of calcium}}{\text{Molecular mass of } CaCO_3} \times 100$

$= \frac{40}{100} \times 100 = 40\%$

(41) **Answer :** (2)
Solution:
Diatomic molecules (x) = N_2, O_2, Cl_2
Triatomic molecules (y) = CO_2, O_3

(42) **Answer :** (4)

(43) **Answer :** (2)

(44) **Answer :** (3)

(45) **Answer :** (3)

(46) **Answer :** (3)

(47) **Answer :** (4)

(48) **Answer :** (4)
Solution:
Number of moles of $Ca(NO_3)_2$ = 0.1 mole
Amount of CaO formed = 2.8 g
Volume of O_2 released at STP = 1.12 L

(49) **Answer :** (4)
Solution:
Equal number of moles occupy same volume at S.T.P.

Number of moles $= \frac{\text{Given mass}}{\text{Molecular mass}}$

Number of moles of $CO_2 = \frac{100}{44} = 2.27$ moles

Number of moles of $C_2H_2 = \frac{60}{26} = 2.3$ moles

Number of moles of $H_2 = \frac{10}{2} = 5$ moles

Number of moles of $NH_3 = \frac{60}{17} = 3.52$ moles

Number of moles of $SO_2 = \frac{145}{64} = 2.27$ moles

Number of moles of $NO_2 = \frac{105}{46} = 2.28$ moles

(50) **Answer :** (4)

BIOLOGY

(51) **Answer :** (1)
Solution:
Abscisic acid acts as a growth inhibiting hormone.

(52) **Answer :** (4)

(53) **Answer :** (1)

(54) **Answer :** (1)
Solution:
Malpighian corpuscle comprises of glomerulus and Bowman's capsule.

(55) **Answer :** (4)

(56) **Answer :** (2)
Solution:
The act of voiding urine is called micturition.

(57) **Answer :** (1)

(58) **Answer :** (4)

(59) **Answer :** (2)
Solution:
Here, **P** is the Ureter

(60) **Answer :** (3)

(61) **Answer :** (4)
Solution:
Hydra possesses a simple nervous system to coordinate its activities

(62) **Answer :** (3)
Solution:
Labelled part **'X'** is Bowman's capsule.

(63) **Answer :** (4)

(64) **Answer :** (2)

(65) **Answer :** (4)
Solution:
Oliguria is a condition of scanty urine

(66) **Answer :** (4)

(67) **Answer :** (3)

(68) **Answer :** (4)

(69) **Answer :** (3)

(70) **Answer :** (1)
Solution:
Labelled part **'Q'** is the Eustachian tube

(71) **Answer :** (1)

(72) **Answer :** (4)

(73) **Answer :** (2)

(74) **Answer :** (4)

(75) **Answer :** (3)
Solution:
(i) Gibberellin
(ii) Ethylene
(iii) Auxin
(iv) cytokinin and
(v) cytokinin

MATHEMATICS

(76) **Answer :** (1)

(77) **Answer :** (2)

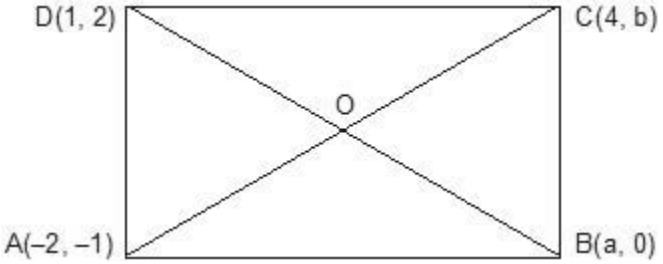
(78) **Answer :** (4)

(79) **Answer :** (3)

(80) **Answer :** (4)

(81) **Answer :** (3)
Solution:
$12x - 6y + 7 = 0$
[Let m_1 be the slope of this equation]
$\Rightarrow 12x + 7 = 6y$
$\Rightarrow y = 2x + \frac{7}{6}$
$\therefore y = m_1x + C_1$
$\Rightarrow m_1 = 2$ ...(i)
Also, $4x + ky + 2 = 0$
[Let m_2 be the slope of this equation]
$\Rightarrow ky = -4x - 2$
$\Rightarrow y = \frac{-4x}{k} - \frac{2}{k}$
$\therefore y = m_2x + c_2$
$\Rightarrow m_2 = \frac{-4}{k}$
Since, the given lines are perpendicular
$\therefore m_1m_2 = -1$
$2 \times \frac{-4}{k} = -1$
$\Rightarrow k = 8$

(82) **Answer :** (2)
Solution:



O is the mid-point of AC and BD

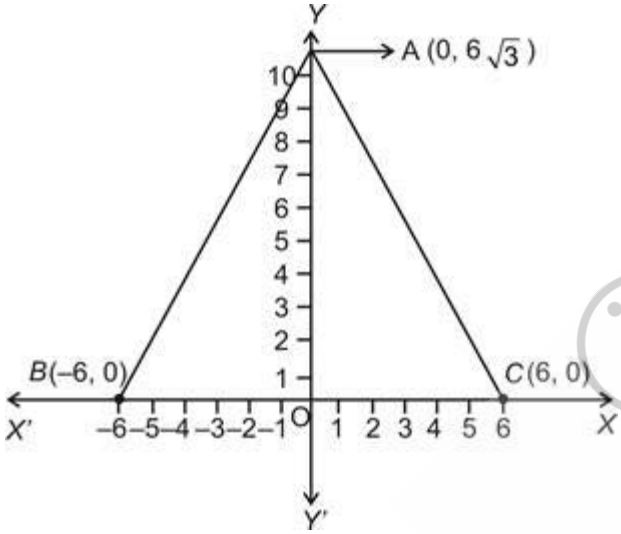
Coordinates of point O are $\left(\frac{1+a}{2}, \frac{2+0}{2}\right)$

Now, $\frac{1+a}{2} = 1$and $1 = \frac{-1+b}{2}$

$\Rightarrow a = 1$.

(83) Answer : (3)

Solution:



AO ⊥*BC* and bisects *BC*

⇒ *AO* = $\frac{\sqrt{3}}{2} \times BC$ = $\frac{\sqrt{3}}{2}$ × 12 = $6\sqrt{3}$ units

∴ Coordinates of third vertex *A* = (0, 6 $\sqrt{3}$)

⇒ Equation of required line is

y = $6\sqrt{3}$

y – $6\sqrt{3}$ = 0

(84) Answer : (3)

Solution:

$\Delta MNL \sim \Delta KNJ$

⇒ $\frac{MN}{KN} = \frac{NL}{NJ}$ ...(i)

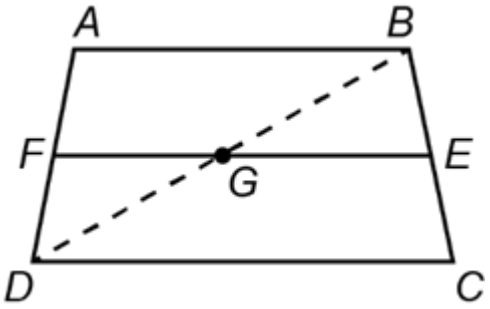
⇒ $\frac{MK}{KN} = \frac{LJ}{NJ}$ ...(ii) [Adding 1 both sides]

⇒ $\frac{MK}{JL} = \frac{MN}{NL}$ [From (i) and (ii)]

⇒ *MK* × *NL* = *MN* × *JL*

(85) Answer : (2)

Solution:

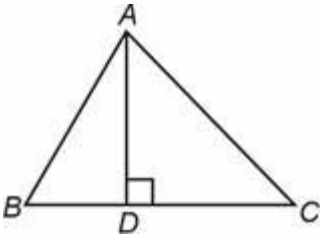


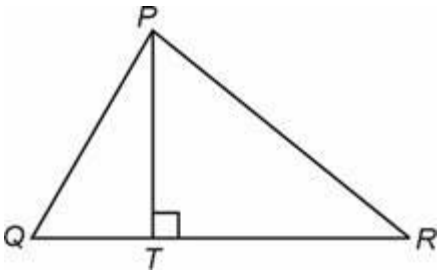
Here, *EF* || *BA* || *CD*.
In Δ*ABD*,
∴ *FG* || *AB*
⇒ $\frac{DF}{AD} = \frac{FG}{AB}$
⇒ $\frac{4}{7} = \frac{FG}{AB}$
⇒ $FG = \frac{4AB}{7}$ …(i)
In Δ*BDC*, *GE* || *DC*
∴ $\frac{GE}{DC} = \frac{BE}{BC}$
⇒ $\frac{GE}{DC} = \frac{AF}{AD}$ [$\because \frac{BE}{EC} = \frac{AF}{DF}$ as *EF* || *BA* || *CD*]
⇒ $GE = \frac{3DC}{7}$
⇒ $GE = \frac{15AB}{7}$ [$\because$ *DC* = 5*AB*] …(ii)
Adding (i) and (ii), we get
$FG + GE = \frac{4AB}{7} + \frac{15AB}{7}$
⇒ $FE = \frac{19AB}{7}$
⇒ $\frac{EF}{AB} = \frac{19}{7}$

(86) Answer : (4)
Solution:
Δ*ABC* ~ Δ*PQR*
∴ $\frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \left(\frac{BC}{QR}\right)^2$
$= \left(\frac{15}{27}\right)^2$
$= \frac{25}{81}$

(87) Answer : (3)
Solution:
In Δ*PQR* and Δ*XYZ*,
$\frac{PQ}{YZ} = \frac{QR}{XY} = \frac{PR}{XZ}$ [Given]
∴ Δ*PQR* ~ Δ*ZYX*

(88) Answer : (1)
Solution:





Given : $\frac{AD}{PT} = \frac{2}{5}$

Now,

$\frac{\text{ar}(ABC)}{\text{ar}(PQR)} = \frac{\frac{1}{2} \times BC \times AD}{\frac{1}{2} \times QR \times PT}$

$\Rightarrow \frac{\text{ar}(ABC)}{\text{ar}(PQR)} = \frac{2}{5} \times \frac{BC}{QR}$

$\Rightarrow \frac{BC^2}{QR^2} = \frac{2}{5} \times \frac{BC}{QR}$

$\therefore \frac{BC}{QR} = \frac{2}{5}$

$\frac{\text{ar}(ABC)}{\text{ar}(PQR)} = \left(\frac{BC}{QR}\right)^2 = \left(\frac{2}{5}\right)^2 = \frac{4}{25}$

(89) Answer : (1)

(90) Answer : (4)

(91) Answer : (4)

(92) Answer : (3)
Solution:
For the given figure,
$\angle AOB = \angle ADB + \angle AFB$
$\therefore \angle AFB = 110° - 30° = 80°$

(93) Answer : (2)

(94) Answer : (1)
Solution:
$PD \times PC = PA \times PB$
$5 \times PC = 4 \times (9 - 4)$
$PC = \frac{5 \times 4}{5}$
$\Rightarrow \text{PC} = 4 \text{ cm}$

(95) Answer : (2)

(96) Answer : (1)

(97) Answer : (4)

(98) Answer : (3)

(99) Answer : (1)

(100) Answer : (1)

MENTAL ABILITY

(101) Answer : (1)
Solution:
Product of consecutive prime N
$2 \times 3, 3 \times 5, 5 \times 7, 7 \times 11, 11 \times 13, 13 \times 17 = 221$

(102) Answer : (2)

Solution:
XY<u>Z</u> | X<u>X</u>YZ | X<u>Y</u>YZ | XYZ<u>Z</u>

(103) Answer : (1)
Solution:
B, D, F, J, P ⇒(2, 4, 6, 10, 16) ⇒ Sum of letter's position to get next letter.
B, C, E, G, K ⇒(2, 3, 5, 7, 11) ⇒ Letter's at prime position
A, B, I, P, Y ⇒(1, 4, 9, 16, 25) ⇒ Letter at square position.

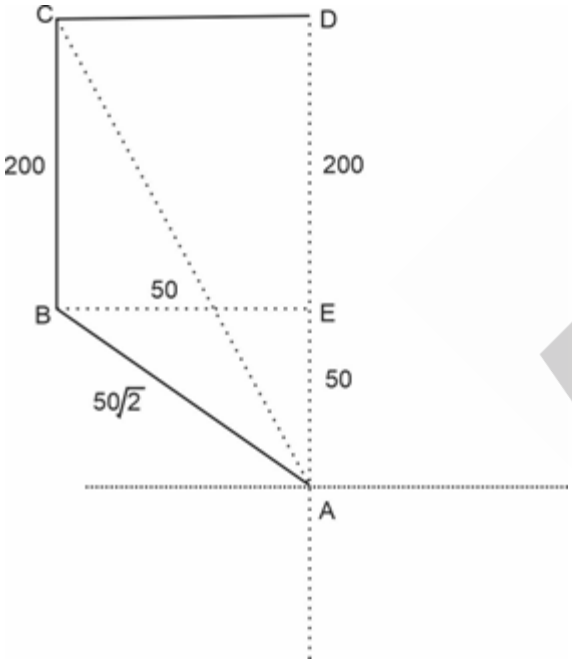
(104) Answer : (3)
Solution:
Net number is sum of positions of alphabets like position of A = 1 and position of I = 9.
So, next number is 1 + 9 = 10

(105) Answer : (1)
Solution:
Each symbol changes position according to the corresponding figure, but rotation is specific for each individual symbol.

(106) Answer : (4)
Solution:
abc : $(a \times b)^c$

(107) Answer : (2)
Solution:
First two letter's position at difference of 2, last two letters at a difference of 4.

(108) Answer : (3)
Solution:

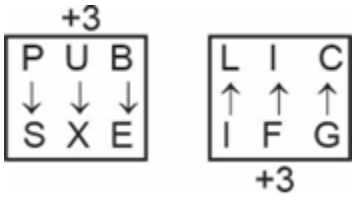


$AC = \sqrt{(250)^2 + (50)^2}$

$AC = 50\sqrt{26}\ \text{m}$

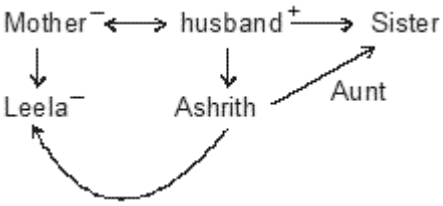
(109) Answer : (1)
Solution:
$27 \times (3)^2 = 27 \times 9 = 243$
$5 \times (4)^2 = 5 \times 16 = 80$
$\therefore 9 \times (8)^2 = 9 \times 64 = 576$

(110) Answer : (4)
Solution:

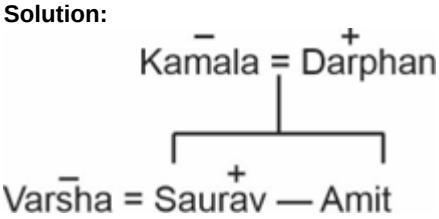


(111) Answer : (3)
Solution:
Letter having same position value in reverse order.

(112) Answer : (4)
Solution:

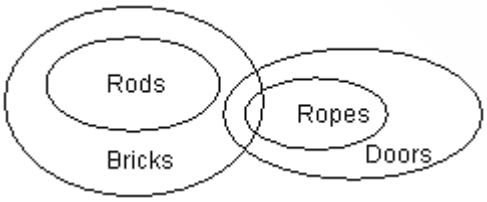


(113) Answer : (4)
Solution:



(114) Answer : (3)
Solution:
By observation

(115) Answer : (3)
Solution:



(116) Answer : (2)
Solution:
5 × 12 ÷ 3 + 6 – 6 = 20

(117) Answer : (4)
Solution:
Use $\theta = 30\,\mathrm{H} - \frac{11}{2}\mathrm{M}$

(118) Answer : (4)
Solution:
30^{th} Jan → 2003 → Non leap year.
Total days between = 1 + 28 + 2 = 31
31 ÷ 7 = 3
Thursday + 3 = Sunday
February and March month have the same calendars if the year is a non leap year.

(119) Answer : (2)
Solution:
By observation

(120) Answer : (4)
Solution: