30/11/2025

Code-C

Aakash
Medical | IIT-JEE | Foundations

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MM : 120

ICSE AIATS for Class-IX (2025-26) T03C

Time : 180 Min.

PHYSICS

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CHEMISTRY

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BIOLOGY

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MATHEMATICS

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MENTAL ABILITY

101. (4)
102. (3)
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104. (3)
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106. (2)
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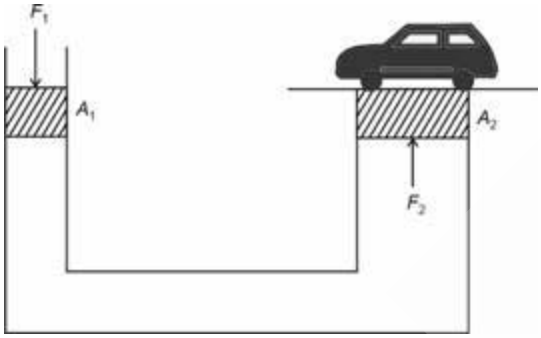
114. (3)
115. (4)
116. (2)
117. (3)
118. (1)
119. (2)
120. (3)

Hints and Solutions

PHYSICS

(1) **Answer :** (4)
Solution:
Let V and V' be the volumes of the piece of cork and the lump of metal respectively. As the combination of the piece of cork and the lump of metal just float in water, i.e.,
$Mg + M'g$ = weight of water displaced
$\Rightarrow V \times 300 \times g + 0.024 \times g = (V + V') \times 10^3 \times g$
$\Rightarrow 300V + 0.024 = \left(V + \frac{0.024}{8\times10^3}\right) \times 10^3$
$\Rightarrow 300V + 0.024 = 1000V + 0.003$
$\Rightarrow V = \frac{0.021}{700} = 3 \times 10^{-5}$ m^3
$\therefore m = V\rho$
$= 3 \times 10^{-5} \times 300$
$= 9 \times 10^{-3}$ kg
$= 9$ g

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



$\frac{F_1}{A_1} = \frac{F_2}{A_2}$
$F_1 = \frac{F_2 \times A_1}{A_2} = \frac{1440\times9.8\times\pi\left(4\times10^{-2}\right)^2}{\pi\left(16\times10^{-2}\right)^2}$
$\Rightarrow F_1 = 882$ N

(3) **Answer :** (3)
Solution:
Coefficient of linear expansion $= \frac{1}{2} \times \beta$
$\alpha = 1.2 \times 10^{-5}$ K^{-1} or 1.2×10^{-5} °C^{-1}
$L_t = L(1 + \alpha\Delta t)$
$\frac{20.0048}{20} = 1 + \left(1.2 \times 10^{-5}\Delta t\right)$
$\frac{20.0048-20}{20} = \Delta t \times 1.2 \times 10^{-5}$
$\Delta t = \frac{0.0048\times10^5}{24} = 20\ ^\circ\text{C}$

(4) **Answer :** (4)
Solution:
As, calorific value = $\frac{Q}{x}$
$= \frac{546\times10^3}{0.1}$
$= 5.46 \times 10^6$ J/kg

(5) **Answer :** (4)

(6) **Answer :** (3)
Solution:
$\Delta l = l \times \alpha \times \Delta T$
$\alpha = \frac{\Delta l}{l \Delta T}$
= $\frac{5.7 \times 10^{-4}}{1.5 \times 20}$
$\alpha = 1.9 \times 10^{-5}\ K^{-1}$

(7) **Answer :** (3)
Solution:
$S = \frac{Q}{A \times t}$
$1.45 \times 10^3 = \frac{Q}{1 \times 3600}$
$\Rightarrow Q = 5220 \times 10^3\ J = 5.22 \times 10^3\ kJ$

(8) **Answer :** (3)
Solution:
$P_H = \rho g (H + 15)$
$P_{H/2} = \frac{2}{3} P_H$
$\rho g \left(\frac{H}{2} + 15\right) = \frac{2}{3} \rho g (H + 15)$
$H = 30$ m

(9) **Answer :** (3)
Solution:
Let x kg of mass can be placed on block
$\left[\frac{500}{1000} + x\right] g = \frac{500}{1000} \times \frac{1}{750} \times 1000 \times g$
$\frac{1}{2} + x = \frac{2}{3}$
$x = \frac{2}{3} - \frac{1}{2} = \frac{1}{6}$ kg

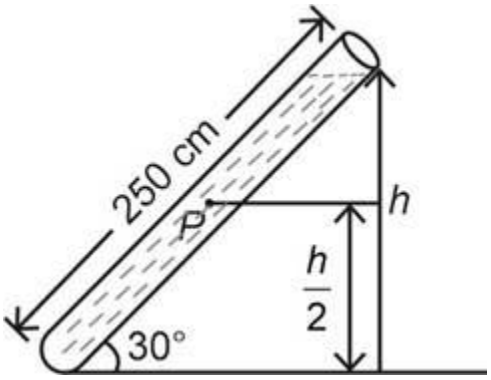
(10) **Answer :** (3)
Solution:
Volume of object = $\frac{M}{D}$
Increase in height of water in tank due to displaced volume of water = $Ah' = \frac{M}{D}$
$h' = \frac{M}{AD}$
So net height of water in tank after removing the object = $H - \frac{M}{AD}$

(11) **Answer :** (1)
Solution:
Mass of stone = 16.2 g, weight in air = 16.2 gf
$(F_{up})_L$ = 16.2 – 12
$(F_{up})_L$ = 4.2 gf = weight of displaced liquid
$(F_{up})_W$ = 16.2 – 10.8
$(F_{up})_W$ = 5.4 gf = weight of displaced water
Although, the volume of displaced liquid and water is same, the ratio of weights of displaced water and liquid gives us relative density
Relative density of liquid $= \frac{4.2}{5.4} = 0.777 \approx 0.78$

(12) **Answer :** (1)
Solution:
When wood piece is totally submerged, then
$f_B = V \times \rho_l \times g$
= 300 × 1.2 × g
= 360 gf
Weight of wood piece, $W = V \times \rho_w \times g$
= 300 × 0.9 × g
= 270 gf
∴ Force required to keep the wood totally submerged,
= $f_B - W$
= 360 – 270

= 90 gf

(13) **Answer :** (2)
Solution:



$\sin 30^\circ = \frac{h}{250}$

$\Rightarrow\ h = \frac{1}{2} \times 250 = 125$ cm

Now, Liquid pressure at point(P) = $\rho g \times \frac{h}{2}$

= $1.2 \times 10^3 \times 10 \times \frac{125}{2} \times 10^{-2}$

= 7.5 × 10^3 Pa

(14) **Answer :** (2)

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

(16) **Answer :** (1)

(17) **Answer :** (4)

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

(19) **Answer :** (2)
Solution:
Density of liquid = relative density of liquid × density of water at 4°C
Density = 2.4 × 10^3 kg/m^3

(20) **Answer :** (2)
Solution:

$\therefore\ P = \frac{F}{A}$

F = 12000 × $(20 \times 10^{-2})^2$
F = 480 N

(21) **Answer :** (3)

(22) **Answer :** (4)
Solution:

$\frac{C}{5} = \frac{F-32}{9}$

$\Rightarrow\ \frac{25}{5} = \frac{F-32}{9}$

⇒ F = 77° F

(23) **Answer :** (3)

(24) **Answer :** (3)

(25) **Answer :** (2)

CHEMISTRY

(26) **Answer :** (3)

(27) **Answer :** (4)

(28) **Answer :** (2)

(29) **Answer :** (4)

(30) **Answer :** (3)

(31) **Answer :** (3)

(32) **Answer :** (4)

(33) **Answer :** (3)

(34) **Answer :** (1)

(35) **Answer :** (4)

(36) **Answer :** (1)

(37) **Answer :** (2)

(38) **Answer :** (1)

(39) **Answer :** (2)

(40) **Answer :** (4)
Solution:
$BeCl_2$ and BF_3 are hypovalent
PCl_5 and SF_6 are hypervalent

(41) **Answer :** (4)

(42) **Answer :** (3)

(43) **Answer :** (4)

(44) **Answer :** (4)

(45) **Answer :** (1)
Solution:
A = Nitrogen
B = Oxygen
C = Carbon

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

(47) **Answer :** (1)
Solution:
Reactivity of elements in Modern Periodic Table first decreases upto group 14 and then increases.

(48) **Answer :** (3)
Solution:
Number of nucleons = Number of protons + Number of neutrons
Bohr's model is applicable only to single electron system, hence it is not applicable to Be^{+2} system.

(49) **Answer :** (4)
Solution:
A : B : C = 16 : 12 : 24
= 4 : 3 : 6

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

BIOLOGY

(51) **Answer :** (3)

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

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

(54) **Answer :** (1)

(55) **Answer :** (1)

(56) **Answer :** (2)

(57) **Answer :** (2)

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

(59) **Answer :** (3)

(60) **Answer :** (4)

(61) **Answer :** (1)

(62) **Answer :** (4)

(63) **Answer :** (1)

(64) **Answer :** (4)

(65) **Answer :** (4)

(66) **Answer :** (3)

(67) **Answer :** (1)

(68) **Answer :** (2)

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

(70) **Answer :** (1)

(71) **Answer :** (3)

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

(73) **Answer :** (3)

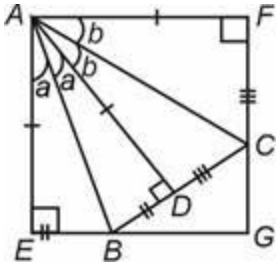
(74) **Answer :** (2)

(75) **Answer :** (1)

MATHEMATICS

(76) **Answer :** (4)

Solution:



Extend *EB* and *FC* to intersect at *G*.

Now,

$\Delta ABD \cong \Delta ABE$

$\Rightarrow AD = AE$ and $\angle EAB = \angle DAB = a$ (say)

Also,

$\Delta ADC \cong \Delta AFC$

$\Rightarrow AD = AF$ and $\angle DAC = \angle FAC = b$ (say)

$\therefore \angle BAC = a + b = 45°$

$\Rightarrow 2a + 2b = 90°$

$\Rightarrow \angle EAF = 90°$

$\therefore AFGE$ is a square

Let $AE = EG = GF = AF =$ 'x' cm

Now, $BG = x - BE = x - BD = (x - 3)$ cm
Similarly,
$CG = x - CF = x - CD = (x - 10)$ cm
$\therefore$ In ΔBCG,
$(x - 3)^2 + (x - 10)^2 = 13^2$
$\therefore x = 15$ or $x = -2$ (not possible)
$\therefore AD = AE = x$ cm = 15 cm

$AB = \sqrt{AD^2 + BD^2} = \sqrt{15^2 + 3^2} = 3\sqrt{26}$ cm

$AC = \sqrt{AD^2 + CD^2} = \sqrt{15^2 + 10^2} = 5\sqrt{13}$ cm

But,

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

$= \frac{1}{2} \times 13 \times 15$

$= \frac{195}{2}$ cm^2

$\therefore$ Option (4) is incorrect statement.

(77) **Answer :** (3)

(78) **Answer :** (1)

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

(80) **Answer :** (2)

(81) **Answer :** (3)

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

(83) **Answer :** (2)

(84) **Answer :** (1)

(85) **Answer :** (1)

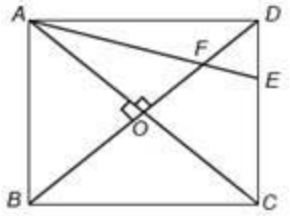
(86) **Answer :** (3)

(87) **Answer :** (2)

(88) **Answer :** (1)

(89) **Answer :** (2)

(90) **Answer :** (4)
Solution:
In right ΔAOF, $\angle OFA = 90° - \angle OAF$
$\Rightarrow \angle DFE = \angle OFA = 90° - \angle OAF$ [Vertically opposite angles]



$\Rightarrow \angle AEC = \angle DFE + \angle FDE$ [Exterior angle property]
$\Rightarrow \angle AEC = 90° - \angle OAF + \angle OBC$ [$\angle OBC = \angle ODC$ ($\because BC = CD$]
Now, $\angle AEC + \angle EAC - \angle CBD = 90° - \angle OAF + \angle OBC + \angle EAC - \angle OBC = 90°$

(91) **Answer :** (3)
Solution:
$PQ = \frac{1}{2}(AB + DC)$
$= \frac{1}{2}(8 + 6) = 7$ cm

(92) **Answer :** (4)
Solution:
$\angle DXA = \angle XCY$ [Corresponding angles]
$\therefore \angle DXA = 38°$

(93) **Answer :** (4)

(94) **Answer :** (2)

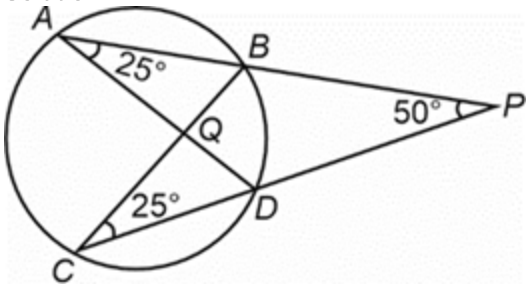
(95) **Answer :** (2)

(96) **Answer :** (1)

(97) **Answer :** (4)
Solution:
Join *RT*, Now, in quadrilateral *PQRT*
$\angle T = 180° - 130° = 50°$
Now, in ΔPRT, $\angle R = 90°$
[Angle subtended by a diameter *i.e.*, *PT* on the circle]
$\therefore \quad \angle P = 180° - \angle R - \angle T$
$= 180° - 90° - 50° = 40°$

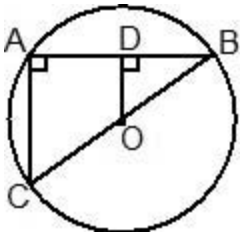
(98) **Answer :** (2)

(99) **Answer :** (2)
Solution:



$\angle ABC = 25° + 50° = 75°$ and $\angle AQC = \angle ABC + \angle PAD$
$= 75° + 25° = 100°$

(100) **Answer :** (1)
Solution:



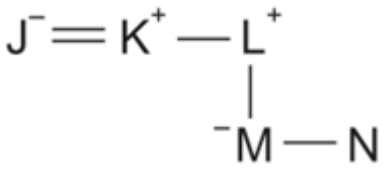
$\angle CAB = 90°$ [Angle in semi-circle]
In $\triangle ABC$
OD || AC, BO = OC, so by converse of mid-point theorem AD = BD
$\Rightarrow$ CA = 2OD [By mid-point theorem]

MENTAL ABILITY

(101) **Answer :** (4)
Solution:
Difference of 9^2, 10^2, 11^2, 12^2 and 13^2.

(102) **Answer :** (3)
Solution:
Letter +2, +3, +4, +5 / Letter –2, –3, –4, –5

(103) **Answer :** (4)
Solution:



(104) Answer : (3)
Solution:
Total strength = 26 + 30 – 1 = 55

(105) Answer : (3)
Solution:
P-Red, Q-Yellow, R-White, S-Pink, T-Green

(106) Answer : (2)
Solution:
Stars found in space

(107) Answer : (4)
Solution:
By observation

(108) Answer : (3)
Solution:
Flip horizontally

(109) Answer : (2)
Solution:
Row wise, 35^2, 45^2 then 55^2 - 3025

(110) Answer : (2)
Solution:
Answer (2)
A z | B y | C x | D w | E v | F u

(111) Answer : (2)
Solution:
THINKING

GNIKNIHT

(112) Answer : (4)
Solution:
Position of stars is different in option (4).

(113) Answer : (4)
Solution:
7654823
8765934
3456789

(114) Answer : (3)
Solution:
ab : $(a + b)^3 – 1$

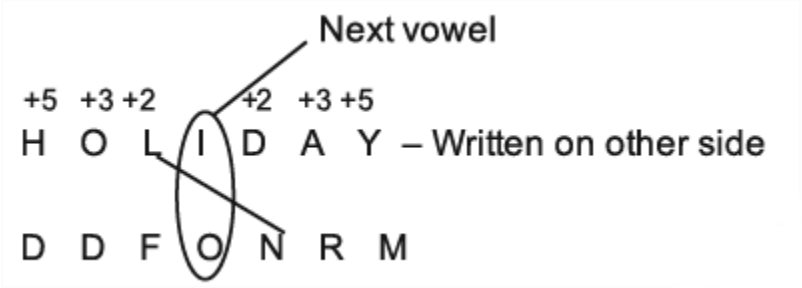
(115) Answer : (4)
Solution:
By observation

(116) Answer : (2)
Solution:
Add 4 odd days

(117) Answer : (3)
Solution:
By counting

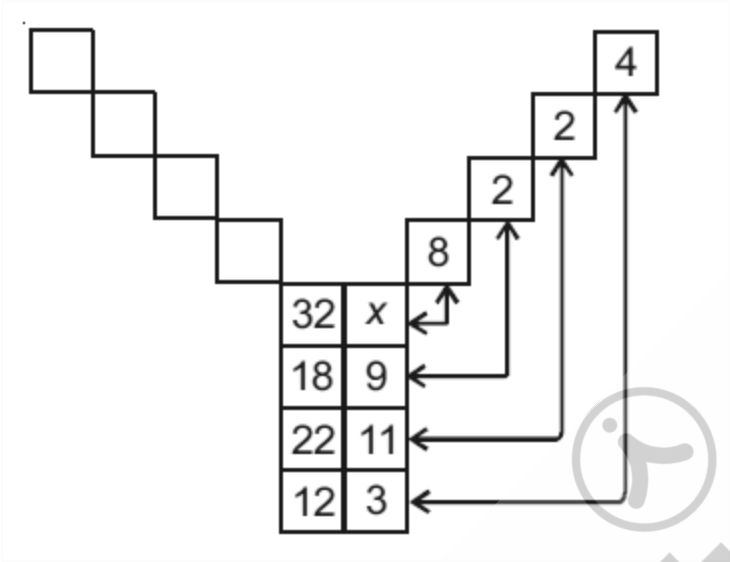
(118) Answer : (1)

Solution:



(119) Answer : (2)

Solution:



$4 \times 3 = 12$
$2 \times 11 = 22$
$2 \times 9 = 18$
$8 \times X = 32$
$X = 4$

(120) Answer : (3)

Solution:

Person	Game	Color
A	Hockey	Yellow
B	Football	Blue
C	Cricket	Red
D	Volley Ball	Black