

IIT/AIIMS SCREENING TEST - 15-03-2026

PHYSICS + CHEMISTRY + MATHEMATICS

SECTION -A (PHYSICS)

1. If the unit of force is 100N, unit of length is 10m and unit of time is 100s, what is the unit of mass in this system of units?

- 1) 10^3 kg 2) 10^4 kg 3) 10^5 kg 4) 10^6 kg

Ans.3

2. Study following statements:-

- i) Displacement is independent of the choice of origin of the axis
- ii) Displacement may or may not be equal to the distance travelled
- iii) When a particle returns to its starting point, its displacement is not zero
- iv) Displacement does not tell the nature of the actual motion of a particle between the points

Which of the above statements are correct?

- 1) Statements i, ii and iii 2) Statements ii, iii and iv
3) Statements i, ii and iv 4) Statements i, iii and iv

Ans. 3

3. The numerical ratio of displacement to distance is

- 1) always less than one 2) always more than one
3) always equal to one 4) equal to or less than one

Ans. 4

4. Motion under gravity near the surface of the earth is an example of

- 1) uniform motion 2) uniformly accelerated motion
3) non-uniformly accelerated motion 4) motion with uniform velocity

Ans. 2

5. A passenger getting down from a moving bus falls in the direction of the motion of the bus. This is an example for

- 1) second law of motion 2) third law of motion
3) inertia of rest 4) inertia of motion

Ans. 4

6. An object is thrown vertically upwards. At its maximum height, which of the following quantity becomes zero?

- 1) Momentum 2) Potential energy 3) Acceleration 4) Force

Ans. 1

7. Which one of the following is not a conservative force

- 1) Gravitational force
2) Electrostatic force between two charges
3) Magnetic force between two bar magnets
4) Frictional force

Ans. 4

8. Two bodies of mass 1 kg and 4kg are moving with equal kinetic energies. The ratio of their linear momentum is

- 1) 1 : 2 2) 2 : 1 3) 4 : 1 4) 1 : 4

Ans. 1

9. Weight of a body

- 1) increases with height 2) increases with depth
3) is maximum on the surface of earth 4) is minimum on the surface of earth

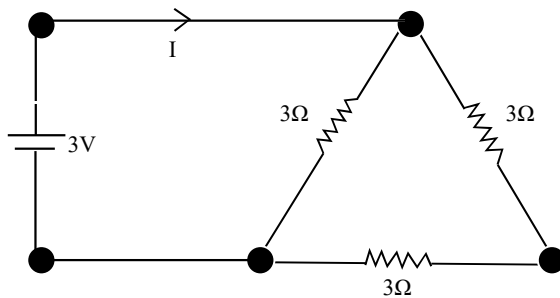
Ans. 3

10. The wavelength of a sound wave whose frequency is 220 Hz and the speed is 440 m/s in the given medium is

- 1) 10 m 2) 2m 3) 0.2 m 4) None of these

Ans. 2

11. A 3 volt battery with negligible internal resistance is connected in a circuit as shown in the figure. The current I , in the circuit will be



- 1) $\frac{1}{3}$ A 2) 1A 3) 1.5 A 4) 2A

Ans. 3

12. What does an electric charge in uniform motion produce?

- 1) An electric field only
- 2) A magnetic field only
- 3) Neither electric nor magnetic field
- 4) Both electric and magnetic fields

Ans. 4

13. Sound with frequency less than 20 Hz is called

- 1) Infrasonic
- 2) Ultrasonic
- 3) Audible
- 4) Shock waves

Ans. 1

14. A convex mirror of focal length f forms an image which is $\frac{1}{n}$ times the object. The distance of the object from the mirror is

- 1) $(n-1)f$
- 2) $\left(\frac{n-1}{n}\right)f$
- 3) $\left(\frac{n+1}{n}\right)f$
- 4) $(n+1)f$

Ans. 1

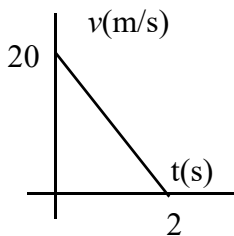
15. When light travels from air to glass, which of the following properties does not change?

- 1) Frequency
- 2) Velocity
- 3) Velocity and frequency
- 4) Wavelength

Ans. 1

SECTION -B (PHYSICS)

16. Velocity-time graph of a particle of mass 2kg moving in a straight line is as shown in figure. Magnitude of work done by all the forces on the particle in joule is



Ans. 400 $W = \text{Change in KC} = \frac{mV^2}{2} - \frac{mu^2}{2} = 0 - \frac{2}{2} \times 20^2 = -400 \text{ J}$

17. Two wires have the same length. But area of cross-section of one is 4 times that of the other. If the resistance of thinner wire be 200Ω , the resistance of the thicker wire in ohm is

Ans. 50

18. Three equal resistors connected in series across a source of emf together dissipate 10W of power. If the same resistors are connected in parallel across the same source of emf, the power dissipated in watt will be

Ans. 90

19. A particle of mass 0.3 kg is subjected to a force $F = Kx^2$ with $K = 15 \text{ N/m}^2$, what will be its acceleration in m/s^2 , when it is released from a point $x = 20 \text{ cm}$

Ans. 2 $a = \frac{F}{m} = \frac{Kx^2}{m} = \frac{15}{0.3} \times 400 \times 10^{-4} = 2$

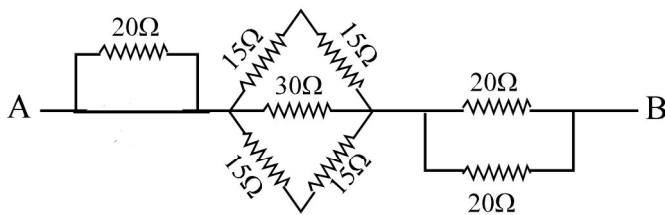
20. Potential difference applied across a conductor of resistance 50Ω is 200 V. The current through the resistance in ampere is

Ans. 4

21. A person stands in front of a plane mirror at a distance of 2.5 m from it. What is the distance between the person and his image in m

Ans. 5

22. Find equivalent resistance between A and B in ohm



Ans. 20

23. A ray of light is incident on a plane mirror at an angle of incidence 60° . The angle between the directions of incident ray and reflected ray in degree is

Ans. 60°

24. Initial and final velocity of a particle moving with uniform acceleration is 10 m/s and 20 m/s respectively. The average velocity of motion in m/s is

Ans. 15

25. A particle of mass 2kg starts from rest has a velocity 10 m/s after 2s. The average force acting on the particle in newton is

Ans. 10 $F = ma = m \left[\frac{v-u}{t} \right] = \frac{2(10-0)}{2} = 10 \text{ N}$

SECTION -A (CHEMISTRY)

26. An element X has electronic configuration 2, 8, 1 and another element Y has electronic configuration 2, 8, 7. They form a compound Z. The property not exhibited by Z is

- 1) It has high melting point
- 2) It is a good conductor of electricity in its pure solid state
- 3) It breaks into pieces when beaten with hammer
- 4) It is soluble in water

Ans. 2 The compound Z is NaCl an ionic compound

27. An element X reacts with dilute sulphuric acid as well as aqueous sodium hydroxide to produce salt and H_2 gas. Hence it may be concluded that

- i) X is an electropositive element
- ii) Oxide of X shows basic nature
- iii) Oxide of X shows acidic nature
- iv) X is an electronegative element

Chose the correct answer from options given below

- 1) i, ii and iii only 2) iv, i and iii only 3) iii, iv and i only 4) ii, iii and iv only

Ans. 1 X is a metal that reacts with both acid and alkali, its oxide is amphoteric (eg Zn)

28. The formula of oxide of a metal (M) is MO. The formula of its nitride will be

- 1) M_2N_3 2) MN 3) M_2N 4) M_3N_2

Ans. 4 Valency of metal is 2 formula of its nitride is M_3N_2

29. A solution is a homogeneous mixture of two or more substances. Which of the following is a solution?

- 1) Milk 2) Smoke 3) Cheese 4) Tincture of iodine

Ans. 4 Tincture iodine is a solution of I_2 (solid) in alcohol (liquid) .

30. The turmeric solution will turn red by an aqueous solution of

- 1) Potassium acetate 2) Copper sulphate
- 3) Sodium sulphate 4) Ferric chloride

Ans. 1 Potassium acetate is the salt of strong base and weak acid, its solution is basic

31. Hydrogen gas is not liberated when

- 1) Zinc react with dilute sulphuric acid
- 2) Copper react with dilute sulphuric acid
- 3) Zinc react with aqueous sodium hydroxide
- 4) Sodium metal react with cold water

Ans. 2 Copper do not liberate H₂ from dilute acids

32. Two elements A and B contain 13 and 8 protons respectively. If the number of neutrons in them happen to be 14 and 8 respectively. The formula unit mass for the compound between A and B would be

- 1) 43 u 2) 75 u 3) 102 u 4) 112 u

Ans. 3 A = Aluminium ; B = Oxygen

Compound is Al₂O₃

Formula unit mass (27 × 2) + (3 × 16) = 102

33. When a solution obtained by dissolving sodium sulphate in water is mixed with another solution obtained by dissolving Barium Chloride in water, a precipitate is formed. The precipitate formed is

- 1) Barium hydroxide 2) Barium sulphate
- 3) Sodium chloride 4) Sulphuric acid

Ans. 2 The precipitate is BaSO₄

38. Aqueous solutions of which among the following do not conduct electricity?

- 1) Common salt 2) Vinegar 3) Caustic soda 4) Cane sugar

Ans. 4 Cane sugar is not an ionic compound

39. When exposed to air silver articles become black after sometime. This is because of formation of a coating of

- 1) Silver carbonate 2) Silver iodide 3) Silver sulphide 4) Silver nitrate

Ans. 3 Tarnishing of silver is due to formation of Ag_2S

40. Formula of functional group of alcohols is

- 1) $-\text{CHO}$ 2) $>\text{C}=\text{O}$ 3) $-\text{OH}$ 4) $-\text{COOH}$

Ans. 3 Functional group of alcohols is $-\text{OH}$

SECTION -B (CHEMISTRY)

41. Percentage of oxygen (by mass) in Aluminium sulphate is (nearest integer)

Ans. 56 % of oxygen is $\text{Al}_2(\text{SO}_4)_3 = \frac{12 \times 16}{342} \times 100 = 56.14\%$

42. How many of the following are metals?

- i) Calcium (Ca)
- ii) Gallium (Ga)
- iii) Iodine (I)
- iv) Carbon (graphite, C)
- v) Lead (Pb)
- vi) Sulphur (S)
- vii) Hydrogen (H)

Ans. 3 I, C, S, and H are non metals

43. Maximum number of electrons that can be accommodated in L shell of an atom is

Ans. 8 Number of electrons in K shell = 2, L shell = 8

44. How many oxides among the following exhibit acidic character ie react with bases to form salt?

- i) Calcium oxide (CaO)
- ii) Carbon dioxide (CO₂)
- iii) Zinc oxide (ZnO)
- iv) Sulphur dioxide (SO₂)
- v) Aluminium oxide (Al₂O₃)
- vi) Potassium oxide (K₂O)

Ans. 4 CaO and K₂O are basic
ZnO and Al₂O₃ are amphoteric
SO₂ and CO₂ are acidic
Both acidic oxides and amphoteric oxides react with bases to form salts

45. At 298 K aqueous solutions of how many substances among the following are acidic (ie pH < 7)?

- i) Sodium chloride (NaCl)
- ii) Ammonium chloride (NH₄Cl)
- iii) Sodium acetate (CH₃COONa)
- iv) Sodium carbonate (Na₂CO₃)
- v) Potassium sulphate (K₂SO₄)

Ans. 1 Salts of weak base and strong acid are acidic in aqueous solution. Eg: NH₄Cl

46. Consider the balanced chemical equation $x\text{Fe}(\text{s}) + y\text{H}_2\text{O}(\text{g}) \longrightarrow p\text{Fe}_3\text{O}_4(\text{s}) + q\text{H}_2(\text{g})$ where x, y, p and q are co-efficients in balanced equations. The value of q is

Ans. 4 The balanced equation is $3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$

47. The number of metal atoms present in one formula unit of sodium zincate is

Ans. 3 Sodium zincate is Na₂ZnO₂

48. Sodium hydrogen carbonate on heating produce sodium carbonate, water and a colourless gas. The molecular mass of the gas produced is u (Given atomic mass of Na = 23u, C=12u, H=1u, O=16u)

Ans. 44 The gas produced is CO₂ Mol.mass of CO₂ = 12 + 16 + 16 = 44 u

49. How many of the following are alkali metals?

- i) Iron (Fe)
- ii) Copper (Cu)
- iii) Sodium (Na)
- iv) Cobalt (Co)
- v) Silver (Au)
- vi) Lithium (Li)
- vii) Potassium (K)
- viii) Cadmium (Cd)
- ix) Gold (Au)
- x) Platinum (Pt)

Ans. 3 Li, Na and K are alkali metals

50. How many different concentrated acids are mixed together to form aqua regia?

Ans. 2 Aqua regia is a freshly prepared mixture of concentrated hydrochloric acid and concentrated nitric acid in the ratio 3 : 1

SECTION -A (MATHEMATICS)5

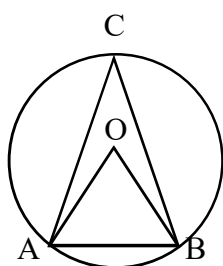
51. Which of the following is the smallest prime number?

- 1) 0 2) 1 3) 2 4) 3

Ans. 3

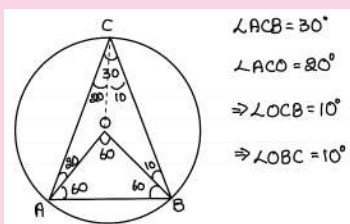
52. In the given figure O is the centre of the circle, if ΔABO is equilateral and if

$\angle OAC = 20^\circ$ then $\angle OBC =$



- 1) 10° 2) 20° 3) 30° 4) 45°

Ans. 1



53. Which number should be added to the polynomial $x^2 - 6x + 1$ to make it the square of a first degree polynomial

1) 9

2) 3

3) 8

4) -9

Ans. 3

$$\begin{aligned}x^2 - 6x + 1 + 8 &= x^2 - 6x + 9 \\ &= (x - 3)^2\end{aligned}$$

54. If $x - \frac{1}{x} = 6$ then $x^2 + \frac{1}{x^2} =$

1) 8

2) 4

3) 2

4) 38

Ans. 4

$$\begin{aligned}(x - \frac{1}{x})^2 &= 36 \\ x^2 - 2 + \frac{1}{x^2} &= 36 \\ x^2 + \frac{1}{x^2} &= 38\end{aligned}$$

55. For what value of k , the pair of equations $3x - 6y + 5 = 0$, $5x + 2ky - 16 = 0$ has no solution

1) 5

2) -5

3) 4

4) -4

Ans. 2

$$\begin{aligned}\frac{a_1}{a_2} &= \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \\ \frac{3}{5} &= \frac{-6}{2k} \\ k &= \frac{-6 \times 5}{3 \times 2} = -5\end{aligned}$$

56. In a triangle ABC, $\angle A = 3\angle B = 2(\angle C + \angle B)$ then $\angle B =$

1) 110°

2) 120°

3) 40°

4) 102°

Ans. 3

$$\begin{aligned}\angle A + \angle B + \angle C &= 180 \\ 3\angle B + \angle B + \frac{\angle B}{2} &= 180 \\ 9\angle B &= 360 \\ \angle B &= 40^\circ\end{aligned}$$

57. Difference between the sum of single digit composite numbers and single digit prime numbers is

1) 8

2) 9

3) 10

4) 11

Ans. 3

$$\begin{aligned}\text{Single digit composite numbers: } &4, 6, 8, 9 && \text{Sum} = 17 \\ \text{Sum} &= 27 \\ \text{Single digit prime numbers: } &2, 3, 5, 7 && \text{Difference} = 27 - 17 = 10\end{aligned}$$

58. If the first terms of an arithmetic progression is 3 and its common difference is 4 then its 10th term is

1) 35

2) 37

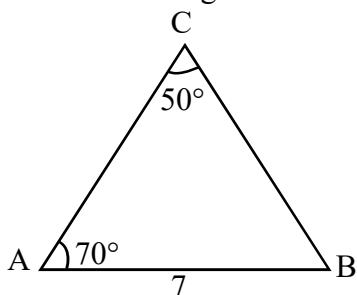
3) 38

4) 39

Ans. 4

$$\begin{aligned}a &= 3 & d &= 4 & a_{10} &= a + 9d \\ & & & & &= 3 + 9 \times 4 \\ & & & & &= 39\end{aligned}$$

59. What is the length of the smallest side of the following triangle.



1) 7

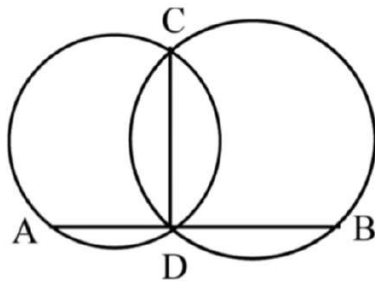
2) $7\sqrt{2}$

3) $7\sqrt{2} + 1$

4) $7\sqrt{2} - 1$

Ans. 1

60. Two circles of radii 3cm and 4cm intersect at C and D as in the figure. If AB is perpendicular to CD and DB is 2cm more than AD then length of AB is



- 1) 10 2) 14 3) 16 4) 18

Ans. 2

$$\sqrt{36 - x^2} = \sqrt{64 - (x+2)^2}$$

$$36 - x^2 = 64 - (x^2 + 4x + 4)$$

$$36 - x^2 = 64 - x^2 - 4x - 4$$

$$4x = 60 - 36 = 24$$

$$\underline{x = 6}$$

$$AB = x + x + 2 = 2x + 2 = \underline{14}$$

61. If $\sin A = \frac{1}{2}$ then $\cos 2A$ can be

- 1) $\frac{1}{2}$ 2) $\frac{\sqrt{3}}{2}$ 3) 1 4) 0

61. 1

$$\sin A = \frac{1}{2} \Rightarrow A = 30^\circ$$

$$\Rightarrow 2A = 60^\circ$$

$$\Rightarrow \cos 2A = \cos 60 = \frac{1}{2}$$

62. The value of $99^2 - 98^2$ is

1) 196

2) 197

3) 198

4) 199

Ans. 2

$$\begin{aligned} 99^2 - 98^2 &= (99+98)(99-98) \\ &= 197 \times 1 \\ &= 197 \end{aligned}$$

63. In $\triangle ABC$, D is a point on BC such that $AD \perp BC$. Then $AC^2 - 2BC \times CD =$

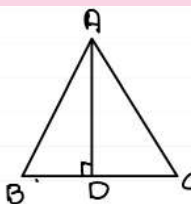
1) $AB^2 - BC^2$

2) $AC^2 + BC^2$

3) $AB^2 - AC^2$

4) BC^2

Ans. 1



$$\begin{aligned} AB^2 - BD^2 &= AC^2 - CD^2 \\ AB^2 - (BC - CD)^2 &= AC^2 - CD^2 \\ AB^2 - BC^2 + 2BC \cdot CD - \cancel{CD^2} &= AC^2 - \cancel{CD^2} \\ AB^2 - BC^2 &= AC^2 - 2BC \cdot CD \end{aligned}$$

64. If one of the angles of a rhombus is 60° then the ratio of the lengths of diagonals is

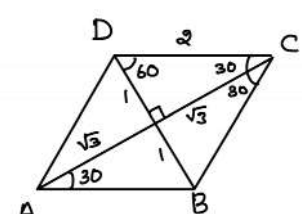
1) 1 : 1

2) $1 : \sqrt{2}$

3) $\sqrt{3} : 2$

4) $\sqrt{3} : 1$

Ans. 4



$$\begin{aligned} AC : BD &= 2\sqrt{3} : 2 \\ &= \sqrt{3} : 1 \end{aligned}$$

65. If $360 = 2^a \times 3^b \times 5^c$ then the remainder obtained when 2026 is divided by $a + b + c$

1) 0

2) 1

3) 3

4) 4

Ans. 4

$$360 = 2^3 \times 3^2 \times 5^1$$

$$a + b + c = 6$$

Ans: 6

SECTION -B (MATHEMATICS)

66. Find the value of k if $x + 1$ is a factor of the polynomial $3x^2 + 4x + k$

Ans. 1

$$P(x) = 3x^2 + 4x + k$$

$$P(-1) = 0 \Rightarrow 3(-1)^2 + 4(-1) + k = 0$$

$$\Rightarrow 3 - 4 + k = 0$$

$$\Rightarrow -1 + k = 0$$

$$\Rightarrow \underline{k = 1}$$

67. Number of two digit natural numbers which are divisible by 7 is

Ans. 13

$$a = 14 \quad \text{last term} = 98 \quad d = 7$$

$$\text{number of terms} = \frac{98 - 14}{7} + 1$$

$$= \frac{84}{7} + 1 = 12 + 1 = \underline{\underline{13}}$$

68. The last digit (unit digit) of $27^5 - 35^{15}$

Ans. 2

<u>unit digit</u>	
$7^1 \Rightarrow 7$	27^5 has unit digit 7
$7^2 \Rightarrow 9$	35^{15} has unit digit 5
$7^3 \Rightarrow 3$	Ans = $7 - 5$
$7^4 \Rightarrow 1$	= <u>2</u>
$7^5 \Rightarrow 7$	

69. If $2^x = 8^{y-1}$ and $9^y = 3^{x-6}$ then the value of $x + y$ is

Ans. 33

$2^x = 2^{3(y-1)}$	$3^{2y} = 3^{x-6}$	$\textcircled{1} - \textcircled{2} \Rightarrow -y + 9 = 0$
		$y = 9$
$x = 3y - 3$	$2y = x - 6$	$x = 3y - 3$
		$= 24$
$x - 3y + 3 = 0$	$x - 2y - 6 = 0$	
$\hookrightarrow \textcircled{1}$	$\hookrightarrow \textcircled{2}$	$x + y = \underline{33}$

70. If α and β are roots of $x^2 - 3x + 2 = 0$ then $\alpha^2 + \beta^2$ is

Ans. 5

$\alpha + \beta = 3$	$\alpha\beta = 2$
$(\alpha + \beta)^2 = \alpha^2 + \beta^2 + 2\alpha\beta$	
$9 = \alpha^2 + \beta^2 + 2 \times 2$	
$\alpha^2 + \beta^2 = 9 - 4$	
$= 5$	

71. $\sin^2 57^\circ + \cos^2 57^\circ =$

71. 1

72. If 17, x, 23 are in arithmetic progression then $2x - 1$ is

$$\begin{aligned} 2x &= 17 + 23 \\ &= 40 \\ x &= 20 \\ 2x - 1 &= 40 - 1 = 39 \end{aligned}$$

73. The value of $(7 + \sqrt{7})^2 + (7 - \sqrt{7})^2$ is

$$\begin{aligned} (a+b)^2 + (a-b)^2 &= 2(a^2 + b^2) \\ &= 2(49 + 7) \\ &= 2 \times 56 \\ &= 112 \end{aligned}$$

74. If $(x - 1)$ and $(x + 1)$ are factors of the polynomial $x^3 + ax^2 + bx - 4$, then $a + b$ is

$$\begin{aligned} x=1 &\Rightarrow 1 + a + b - 4 = 0 \Rightarrow a + b = 3 \\ x=-1 &\Rightarrow -1 + a - b - 4 = 0 \Rightarrow a - b = 5 \\ 2a &= 8 \Rightarrow a = 4 \\ b &= -1 \end{aligned}$$

75. Sum of the smallest and the largest two digit prime numbers is

$$11 + 97 = 108$$

P + C + M : - Key with Hints

1	3	26	2	51	3
2	3	27	1	52	1
3	4	28	4	53	3
4	2	29	4	54	4
5	4	30	1	55	2
6	1	31	2	56	3
7	4	32	3	57	3
8	1	33	2	58	4
9	3	34	4	59	1
10	2	35	4	60	2
11	3	36	3	61	1
12	4	37	4	62	2
13	1	38	4	63	1
14	1	39	3	64	4
15	1	40	3	65	4
16	400	41	56	66	1
17	50	42	3	67	13
18	90	43	8	68	2
19	2	44	4	69	33
20	4	45	1	70	5
21	5	46	4	71	1
22	20	47	3	72	39
23	60°	48	44	73	112
24	15	49	3	74	3
25	10	50	2	75	108

P + C + M : - Key with Hints**B**

1	4	26	1	51	2
2	1	27	2	52	3
3	4	28	3	53	3
4	1	29	2	54	4
5	1	30	4	55	1
6	1	31	3	56	4
7	1	32	3	57	4
8	3	33	2	58	3
9	3	34	1	59	1
10	4	35	4	60	3
11	2	36	4	61	4
12	3	37	4	62	1
13	2	38	4	63	2
14	3	39	3	64	1
15	4	40	4	65	2
16	2	41	4	66	33
17	4	42	1	67	5
18	60°	43	44	68	112
19	15	44	3	69	3
20	10	45	2	70	108
21	400	46	56	71	1
22	50	47	3	72	13
23	90	48	8	73	2
24	5	49	4	74	1
25	20	50	3	75	39

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

BIOLOGY

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