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# SCIENCE APTITUDE TEST CLASS - 6 SOLUTIONS

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## Physics

**Q.1** A gap is not a measured as part of the length each time the ruler is shifted. Hence, the measured length becomes less than the actual length.

**Correct Answer:** B

**Q.2** Both travel for the same time. Since Cyclist Q covers a greater distance (2.5 km), it has the greater speed.

**Correct Answer:** C

**Q.3** If the left end of magnet 1 is North pole then right end is south pole and it Will attract the North pole of second magnet. The right end of second magnet is South pole which repels the same pole of the third. Which means left end is south and right end of the third magnet is North. The right end attracts the south pole of the fourth (i.e. the left end) and therefore the right end is North.

**Correct Answer:** A

**Q.4**  $^{\circ}\text{C} = (102 - 32) \times \frac{5}{9} = 38.9^{\circ}\text{C} \sim 39^{\circ}\text{C}.$

[using the formula  $\frac{C - 0}{100} = \frac{F - 32}{180}$  or  $C = (F - 32) \times \frac{5}{9}$ ]

**Correct Answer:** B

**Q.5** Mercury is the closest planet to the Sun, so it completes one revolution in the shortest time.

**Correct Answer:** C

**Q.6** After moving, the student is 1 m from the mirror. The image is 1 m behind the mirror.  
Distance between them = 2 m.

**Correct Answer:** B

**Q.7** Mechanical energy from your hand is converted into electrical energy by the generator, which is then converted into light energy by the bulb.

**Correct Answer:** B

**Q.8** Forward movement =  $40 + 25 = 65$  m  
Backward movement =  $10 + 15 = 25$  m  
Displacement =  $65 - 25 = 40$  m forward.

**Correct Answer:** C

**Q.9** Another magnet having its poles marked as North pole and South pole. North pole will repel North pole and south pole will repel south pole. Repulsion is the sure test of identifying a magnet.

**Correct Answer:** A

**Q.10** Black surfaces absorb more heat, while shiny silver surfaces reflect most of it.  
Hence, the black box becomes hotter

**Correct Answer:** C

## Chemistry

**Q.11** Sugar is a solid, and acetone is a liquid. Both solids and liquids have a definite volume. However, only solids have a definite shape (so option a is incorrect for acetone), and only gases fill the entire container (so option c is incorrect for both).

**Correct Answer:** B

**Q.12** When a solid metal like iron is heated, its particles gain kinetic energy and vibrate more, causing them to move slightly further apart. This results in the expansion of the metal. This property is often used by blacksmiths to fit iron rims onto wooden wheels.

**Correct Answer:** B

**Q.13** Enamel (the outer covering of teeth) and bone are both naturally occurring, hard substances found in the human body. Wood is hard but not as hard as enamel/bone, while silk, plastic, don't fit the "natural hard substances" category perfectly together (plastic is man-made; silk is soft).

**Correct Answer: A**

**Q.14** While evaporation can separate salt from water, it is a slow process because it relies on the natural escape of water vapor. Distillation speeds up this process by boiling the water, turning it into steam rapidly, and then condensing the steam back into liquid water, leaving the salt behind. It is a faster method.

**Correct Answer: C**

**Q.15** Desirable: We want seeds to grow into plants.

Natural: It happens in nature without human intervention.

Irreversible: A seed that has germinated into a plant cannot turn back into a seed.

(Note: Rotting of fruit is natural and irreversible, but it is undesirable. Inflating a balloon is reversible. Melting butter is reversible.)

**Correct Answer: D**

**Q.16** Assertion (A) is true: Nitrogen makes up about 78% of Earth's atmosphere, making it the largest component.

Reason (R) is true: Argon makes up about 0.93% of the atmosphere, making it the third most abundant gas after Nitrogen and Oxygen.

However, the fact that Argon is the third most abundant gas does not explain why Nitrogen is the largest component. Therefore, R is not the correct explanation for A.

**Correct Answer: B**

**Q.17** Chlorination is the process of adding chlorine or chlorine compounds to water to kill bacteria, viruses, and other microorganisms. Sedimentation and filtration remove physical impurities, and aeration removes dissolved gases, but they do not effectively kill microorganisms.

**Correct Answer: D**

**Q.18** Marine (sea) water has a very high concentration of dissolved salts. It is unfit for drinking, agriculture, and most industrial uses unless it undergoes expensive desalination. This high salt content is the primary reason it cannot be used directly.

**Correct Answer: B**

**Q.19** Petrol and water are two immiscible liquids (they do not mix) and have different densities (petrol is lighter and floats on water). A separating funnel is the standard laboratory equipment used to separate immiscible liquids based on their density. Distillation could also work, but a separating funnel is the simpler and more direct method for this specific pair.

**Correct Answer: C**

**Q.20** Rubber is an elastic material that can stretch significantly and return to its original shape. It is also strong and waterproof. These properties make it ideal for making tyres (which need to withstand friction and absorb shock) and balloons (which need to stretch when inflated).

**Correct Answer: C**

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## Mathematics

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**Q.21** 1st square = 4 matchsticks

Every next square adds only 3 (since 1 is shared)

So for 6 squares:

$$= 4 + (5 \times 3)$$

$$= 4 + 15 = 19 \text{ matchsticks}$$

**Correct Answer: D**

**Q.22** Vertically opposite angles

**Correct Answer: B**

**Q.23** 9999 is a 4-digit palindrome and its digit sum = 36 (divisible by 9), so 9999 is the largest 4-digit palindrome divisible by 9.

**Correct Answer: D**

**Q.24** One Million is written as 1,000,000.

To find the number of hundreds, divide by 100:

$$1,000,000 \div 100 = 10,000.$$

**Correct Answer: B**

**Q.25** <sup>246</sup>

⇒ Sum of digits:  $2+4+6=12$ , divisible by 3

**Correct Answer: B**

**Q.26** 1008 is divisible by both 14 and 18

**Correct Answer: D**

**Q.27**  $12=2^2 \times 3$

$$18=2 \times 3^2$$

$$\text{HCF}(12, 18) = 2 \times 3 = 6$$

**Correct Answer: C**

**Q.28** \* Bar graphs represent discrete categories (e.g., choices, brands) with separated bars.

\* Histograms represent continuous data.

\* Pie charts represent circular data.

\* Line graphs represent line/trend data.

**Correct Answer: B**

**Q.29** Breadth =  $\frac{\text{Perimeter}}{2} - \text{length}$

$$= \frac{40}{2} - 12 = 20 - 12 = 8 \text{ cm}$$

**Correct Answer: B**

**Q.30** Area of square =  $25 \times 25 = 625 \text{ m}^2$

$$\text{Total Cost} = 625 \times 20.01 = \text{Rs } 12,506.25$$

**Correct Answer: D**

**Q.31**  $\frac{2}{3}$  and  $\frac{4}{6}$

**Correct Answer: A**

**Q.32**  $\frac{1}{16} > \frac{1}{17} > \frac{1}{19} > \frac{1}{25}$

**Correct Answer: D**

**Q.33** ⇒ A line segment joining two points on the circle

**Correct Answer: A**

**Q.34:** (b) 2

**Correct Answer: B**

**Q.35** (d) Infinite

**Correct Answer: D**

**Q.36** (d) 4 ( $90^\circ$ ,  $180^\circ$ ,  $270^\circ$ ,  $360^\circ$ )

**Correct Answer: D**

**Q.37**  $(-4) + (-3) = -4 - 3$

$$= -(4+3) = -7$$

**Correct Answer: A**

Q.38 = 2+3+5+7+11 = 28

Correct Answer: D

Q.39  $(5+5+2) = 12$

Correct Answer: C

Q.40 New length ( $\ell'$ ) =  $2\ell$

New breadth ( $b'$ ) =  $\frac{b}{2}$

$A = \ell' \times b'$

$= 2\ell \times \frac{b}{2} = \ell b$

Area remains same

Correct Answer: C

Q.41  $\Rightarrow$  Fibonacci sequence

$\Rightarrow 8 + 13 = 21$

$\Rightarrow 13 + 21 = 34$

Correct Answer: A

Q.42 (c) Equal

Correct Answer: C

Q.43 135 (Sum=9 divisible by 3, ends with 5)

Correct Answer: A

Q.44  $2^3 \times 3^2$

Correct Answer: B

Q.45 Area =  $s \times s$

$64 = s^2$

$s = \sqrt{64}$

$s = 8 \text{ cm}$

$P = 4s = 4 \times 8 = 32 \text{ cm}$

Correct Answer: C

Q.46  $-15 + 4 \times (-3)$

$= -15 - 12 = -27$

Correct Answer: B

Q.47  $\Rightarrow 12 \times \frac{7}{7}$

Correct Answer: B

Q.48  $\Rightarrow$  Formula:  $\frac{n(n+1)}{2} = 15 \times \frac{16}{2} = 120$

Correct Answer: B

Q.49  $\Rightarrow 180^\circ - 35^\circ = 145^\circ$

Correct Answer: B

Q.50  $\Rightarrow 9,999 - 1,000 = 8,999$

Correct Answer: A



## Biology

**Q.51** Plants that grow really tall and have hard, thick, brown, and woody stems with branches starting higher up are called trees.

**Correct Answer:** C

**Q.52** The monocot plants have parallel venation and a fibrous root system, while dicot plants have reticulate venation and a taproot system.

**Correct Answer:** C

**Q.53** The hot desert camels have long legs and wide hooves for sand, deodars are conical to shed snow, fish are streamlined for water, and cold desert camels have long hair for warmth.

**Correct Answer:** A

**Q.54** Banana, grass, and wheat are mentioned as having parallel venation, whereas hibiscus is specifically mentioned as having reticulate venation.

**Correct Answer:** D

**Q.55** Reproduction is the process of producing new ones of one's own kind, which is necessary for the continuity of life.

**Correct Answer:** C

**Q.56** For most seeds, like bean seeds, light is not essential for germination, though it is needed for later growth. However, air and water are listed as essential requirements.

**Correct Answer:** B

**Q.57** According to the life cycle descriptions, tadpoles belong to frogs, adult mosquito belongs to an insecta, seeds are the start for plants like the bean, and pupae are a stage for insects like the silk moth or mosquito.

**Correct Answer:** D

**Q.58** As ants move, they leave a smell (chemical trail) on the ground. Other ants follow this smell to reach the food.

**Correct Answer:** B

**Q.59** Taste and smell work together. When the nose is blocked, it becomes harder to identify the full flavour of food.

**Correct Answer:** A

**Q.60** Plants need water, sunlight, air, and nutrients to stay healthy. Lack of proper care can cause leaves to turn yellow and the plant to become weak.

**Correct Answer:** A

## Mental Ability

**Q.61** Pattern : -2, -4, -6, -8, -10, -12

$$68 - 2 = 66$$

$$66 - 4 = 62$$

$$62 - 6 = 56$$

$$56 - 8 = 48$$

$$48 - 10 = 38$$

$$38 - 12 = 26$$

**Correct Answer:** B

**Q.62**  $A+2 = C$                        $Z-2 = X$   
 $C+2 = E$                        $X-2 = V$   
 $E+2 = G$                        $V-2 = T$   
 $G+2 = I$                        $T-2 = R$   
 $I+2 = K$                        $R-2 = P$

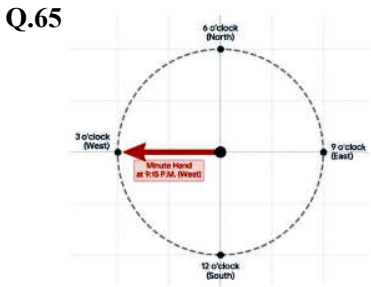
**Correct Answer:** C

**Q.63** (c) 3

**Correct Answer:** C

**Q.64**  $15-10=5 \times 5=25$   
 $25-5=20 \times 5=100$   
 $35-15=20 \times 5=100$

**Correct Answer:** B



**Correct Answer:** D

**Q.66** (B)

**Correct Answer:** B

**Q.67** In all other options both the numbers are prime.

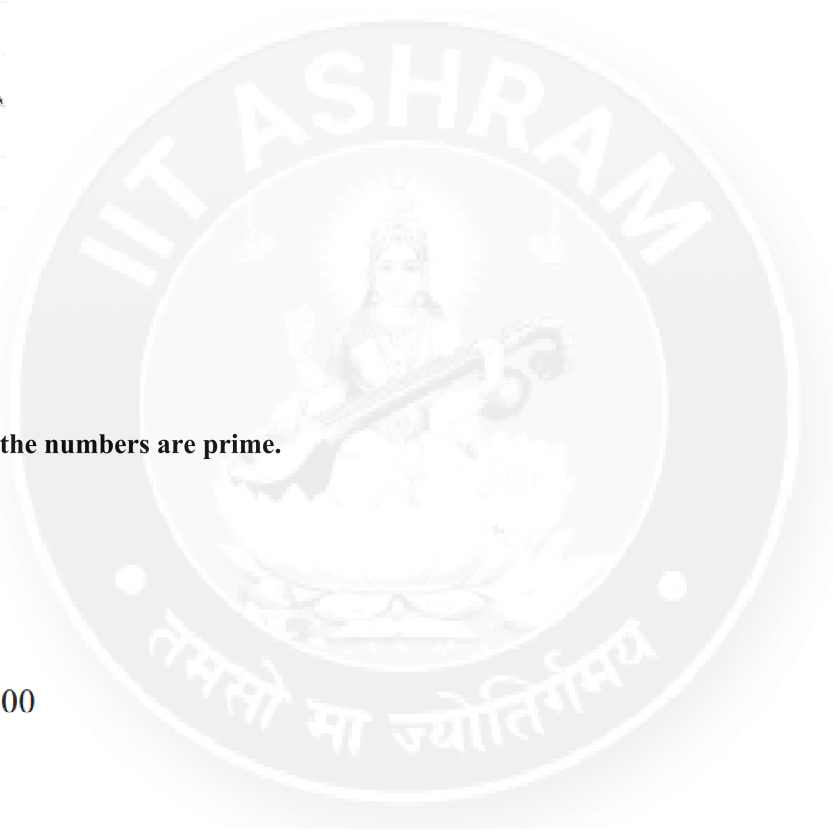
**Correct Answer:** B

**Q.68**  $A = 1, C = 3, E = 5$   
 $ACE = 1 \times 3 \times 5 = 15$   
 $B = 2, E = 5, T = 20$   
 $BET = 2 \times 5 \times 20 = 200$

**Correct Answer:** A

**Q.69**  $PK \rightarrow GT$ :  
 $P(16) - 9 = G(7)$   
 $K(11) + 9 = T(20)$   
 **$GT \rightarrow XC$ :**  
 $G(7) - 9 = -2 \rightarrow (26 - 2) = X(24)$   
 $T(20) + 9 = 29 \rightarrow (29 - 26) = C(3)$   
 **$XC \rightarrow OL$ :**  
 $X(24) - 9 = O(15)$   
 $C(3) + 9 = L(12)$   
 **$OL \rightarrow ?$  (Missing Term):**  
 $O(15) - 9 = F(6)$   
 $L(12) + 9 = U(21)$

**Correct Answer:** D



**Q.70**  $8 \times 1 - 2 = 6$

$6 \times 2 - 3 = 9$

$9 \times 3 - 4 = 23$

$23 \times 4 - 5 = 87$

$87 \times 5 - 6 = 429$

**Correct Answer:** D

**Q.71** Each day of the week is repeated after 7 days.

So, after 63 days, it will be Monday.

After 61 days, it will be Saturday.

**Correct Answer:** B

**Q.72** (B)



**Correct Answer:** B

**Q.73** • Pattern: The code value is a two-digit number whose individual digits sum up to the total number of letters in the given word.

- FRIEND has 6 letters. The digits of its code, 15, add up to 6 ( $1 + 5 = 6$ ).
- HELP has 4 letters. Therefore, the digits of its code must add up to 4.
- Looking at the options, only 22 satisfies this rule ( $2 + 2 = 4$ ).

**Correct Answer:** B

**Q.74** Each letter is shifted by +2 positions in the alphabet.

**Correct Answer:** A

**Q.75** The sequence follows  $n^2 + 1$ :

$\Rightarrow 1^2 + 1 = 2$

$\Rightarrow 2^2 + 1 = 5$

$\Rightarrow 3^2 + 1 = 10$

$\Rightarrow 4^2 + 1 = 17$

$\Rightarrow 5^2 + 1 = 26$

$\Rightarrow 6^2 + 1 = 37$

**Correct Answer:** B