KHOJ-2026
Hunt for Young Talents

CLASS VIII

Physics

Q.1 Let total distance = 2d. $\text{Time} = \frac{\text{distance}}{\text{speed}}$

Time for first half = d/30, time for second half = d/60.

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}} = \frac{2d}{\frac{d}{30} + \frac{d}{60}} = \frac{2d}{\frac{2d+d}{60}}$$

$$= \frac{2d \times 60}{3d} = 40 \text{ km/h}$$

Correct Answer: B

Q.2 Distance is the total path length covered = circumference of the circular track (non-zero). Displacement is the shortest straight-line distance between initial and final positions; since the body returns to the starting point, displacement = 0.

Correct Answer: C

Q.3 Distance = speed × time = v × t = 340 × 5 = 1700 m

Correct Answer: A

Q.4 The charged rod causes charges to redistribute between the two touching metal spheres.

When the spheres are separated while the rod is still nearby, one sphere retains a positive charge and the other retains a negative charge.

This process is called charging by induction.

Correct Answer: C

Q.5 Weight of cuboid = 60 N

Additional weight = 20 N

Total force = 60 + 20 = 80 N

For maximum pressure, the cuboid must rest on its smallest face.

Area = 20 cm × 10 cm

= 200 cm^2 = 0.02 m^2

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

$$P = \frac{80}{0.02} = 4000 \text{ Pa}$$

Correct Answer: A

Q.6 Pressure difference = 200 Pa

Area of roof = 80 m^2

Force = Pressure × Area

$F=200 \times 80$

$F=16,000N$

The upward force occurs because the air pressure inside the house is greater than the pressure above the roof.

Correct Answer: D

Q.7 When a plane mirror is rotated by angle θ, the reflected ray rotates by 2θ (for a fixed incident ray).

Rotation of reflected ray= $2 \times 10° = 20°$

Correct Answer: C

Q.8 A concave (diverging) lens forms a virtual, erect, and diminished image for a real object kept in rarer medium, regardless of object distance.

Correct Answer: B

Q.9 Nichrome has high resistivity, so it produces heat when electric current passes through it.

Its high melting point allows it to withstand high temperatures without melting.

It also resists oxidation at high temperatures, making it suitable for use as a heating element in electric heaters.

Correct Answer: B

Q.10 By the right-hand rule (or Ampere's law), the magnetic field direction depends on current direction. Reversing the current reverses the magnetic field direction (the magnitude of magnetic field remains the same).

Correct Answer: A

Chemistry

Q.11 The empty cup gets hot fast and catches fire. In the other cup, the water takes away the heat, so the paper never gets hot enough to burn.

Correct Answer: B

Q.12 The smell travels as tiny gas particles that move freely and spread through the air. The chips are solid, so their particles are packed tightly and stay in place.

Correct Answer: A

Q.13 Neutralization example:

$HCl + NaOH \rightarrow NaCl + H_2O + heat$

The reaction releases approximately 57 kJ per mole of water formed, causing the mixture to warm up noticeably.

Correct Answer: C

Q.14 Turmeric remains yellow in acidic and neutral solutions but undergoes a distinct chemical color change to deep red when exposed to basic (alkaline) solutions.

Correct Answer: A

Q.15 When sodium and chlorine combine, a chemical change takes place and a new substance, sodium chloride, is formed. A compound has properties completely different from the elements it is made of

Correct Answer: B

Q.16 A molecule is a stable particle formed when two or more atoms join together, like O_2 or H_2O.

Correct Answer: D

Q.17 Coke is a tough, porous, and almost pure form of carbon obtained from coal. It is widely used in metallurgical processes to reduce metal oxides to pure metals.

Correct Answer: B

Q.18 Phosphorus is a highly reactive non-metal that catches fire instantly if exposed to air. To cut off its contact with atmospheric oxygen, it is stored completely submerged in water.

Correct Answer: C

Q.19 The solid that dissolves (sugar) is the solute, and the liquid that dissolves it (water) is the solvent.

Correct Answer: D

Q.20 Reactivity with water decreases down the reactivity series. Sodium is highly reactive (reacts with cold water). Magnesium reacts with hot water. Iron only reacts with steam. Copper is placed below hydrogen in the reactivity series and does not react with water at all.

Correct Answer: A

Mathematics

Q.21 Using distributive property: $(-15)\times8+(-15)\times2 = -15\times(8+2) = -15\times10 = -150$.

Correct Answer: B

Q.22 1 Rupee = 100 Paise. 7 Paise = 0.07 Rupees. Total = 7 + 0.07 = 7.07.

Correct Answer: B

Q.23 $2x - 3 = 7 \Rightarrow 2x = 10 \Rightarrow x = 5$

Correct Answer: C

Q.24 $3x + 2x = 180^\circ \Rightarrow 5x = 180^\circ \Rightarrow x = 36^\circ$. Larger angle $= 3 \times 36^\circ = 108^\circ$.

Correct Answer: B

Q.25 Exterior angle is equal to the sum of opposite interior angles. $\angle ACD = 50^\circ+60^\circ = 110^\circ$.

Correct Answer: A

Q.26 Profit = 400 - 375 = 25. Profit % $= \left(\frac{25}{375}\right)\times 100 = \frac{100}{15} = \frac{20}{3} = 6\frac{2}{3}\%$

Correct Answer: B

Q.27 $\frac{3^2\times3^4}{3^3} = \frac{3^6}{3^3} = 3^3 = 27.$

Correct Answer: B

Q.28 $(3x^2 + 4x - 6) - (2x^2 - 5x + 7) = 3x^2 + 4x - 6 - 2x^2 + 5x - 7 = x^2 + 9x - 13$

Correct Answer: B

Q.29 Let breath of rectangle = b, length be = b + 5

Perimeter of rectangle = 2 (l + b) = 50

2((b + 5) + b) = 50 $\Rightarrow$ 4b + 10 = 50 $\Rightarrow$ 4b = 40 $\Rightarrow$ b = 10 cm.

Length = 15 cm.

$\Rightarrow$ Area = 15 × 10 = 150 cm^2

Correct Answer: C

Q.30 Sum of two sides must be strictly greater than third side.

3 + 5 > PR $\Rightarrow$ 8 > PR. Cannot be 8 cm

Correct Answer: D

Q.31 Multiplicative inverse of $\frac{-13}{19}$ is $\frac{19}{-13}$, conventionally written as $\frac{-19}{13}$.

Correct Answer: C

Q.32 Let the interior and exterior angles be 7x and 2x respectively

Since they form a linear pair:

$7x + 2x = 180^0 \Rightarrow 9x = 180^0 \Rightarrow x = 20^0$.

The exterior angle is $2(20^0) = 40^0$.

Number of sides of the polygon $(n) = \frac{360^0}{\text{Exterior Angle}} = \frac{360^0}{40^0} = 9$

Correct Answer: B

Q.33 $\frac{n(n-3)}{2} = 54 \Rightarrow n^2 - 3n - 108 = 0 \Rightarrow (n - 12)(n + 9) = 0 \Rightarrow n = 12$. Sum = (12 - 2) × $180^0 = 1800^0$.

Correct Answer: C

Q.34 Letthe original price of commodity is Rs P

P × 1.20 × 0.85 = 408 $\Rightarrow$ P × 1.02 = 408 $\Rightarrow$ P = 400

Correct Answer: B

Q.35 $(x+y)(x-y) = x^2-y^2$

$$\Rightarrow \left(\frac{p^2+q^2}{p^2-q^2}\right)^2 - \left(\frac{2pq}{p^2-q^2}\right)^2 = \frac{\left(p^2+q^2\right)^2 - (2pq)^2}{\left(p^2-q^2\right)^2}$$

$$\Rightarrow \frac{p^4+q^4+2p^2q^2-4p^2q^2}{\left(p^2-q^2\right)^2} = \frac{p^4-2p^2q^2+q^4}{\left(p^2-q^2\right)^2}$$

$$\Rightarrow \frac{\left(p^2-q^2\right)^2}{\left(p^2-q^2\right)^2} = 1.$$

Correct Answer: C

Q.36 $\frac{1}{4} = \frac{2}{8}$ and $\frac{1}{2} = \frac{4}{8}$. The number between them is $\frac{3}{8}$.

Correct Answer: B

Q.37 Let the no. be x and x + 15

$x + (x + 15) = 95 \Rightarrow 2x = 80 \Rightarrow x = 40$

$\therefore$ The no is 40 and 55

Correct Answer: A

Q.38 Adjacent angles of a parallelogram are supplementary. $x+x = 180^0$

$\Rightarrow x = 90^0$.

Correct Answer: C

Q.39 $\left(\frac{120^\circ}{360^\circ}\right) \times 540^\circ = \frac{1}{3} \times 540 = 180$ marks.

Correct Answer: C

Q.40

Prime numbers on a die are 2, 3, 5. Probability $\frac{3}{6} = \frac{1}{2}$

Correct Answer: C

Q.41 $252 = 2^2 \times 3^2 \times 7$. To make it a perfect square, multiply by 7.

Correct Answer: C

Q.42 $\sqrt{\frac{729}{100}} = \frac{27}{10} = 2.7$

Correct Answer: B

Q.43 $3087 = 3^2 \times 7^3$. To make a perfect cube, multiply by one more 3

Correct Answer: A

Q.44 $13824 = 2^9 \times 3^3$. Cube root $= 2^3 \times 3 = 24$.

Correct Answer: B

Q.45 Diagonals bisect at 90^0 forming right triangles with legs 8 and 6. Hypotenuse

$= \sqrt{8^2 + 6^2} = 10$ cm

Correct Answer: C

Q.46 Sum $= (6 - 2) \times 180^0 = 720^\circ$.

Correct Answer: B

Q.47 $3(m - 1) - 2(m - 2) = 6 \Rightarrow 3m - 3 - 2m + 4 = 6 \Rightarrow m + 1 = 6 \Rightarrow m = 5$.

Correct Answer: C

Q.48 Let the numerator be x. Then the denominator is x + 8

Original number $= \frac{x}{x+8}$.

According to the condition: $\frac{x+17}{(x+8)-1} = \frac{3}{2}$

$\frac{x+17}{x+7} = \frac{3}{2}$

Cross multiplying: $2(x + 17) = 3(x + 7)$

$2x + 34 = 3x + 21$

$3x - 2x = 34 - 21 \Rightarrow x = 13$

Numerator = 13, Denominator = 13 + 8 = 21.

Therefore, the original rational number is $= \frac{13}{21}$.

Correct Answer: D

Q.49 The largest 4-digit number is 9999

Largest 4-digit perfect square number is $99^2 = 9801$.

Correct Answer: B

Q.50 $4x + 5x = 180^\circ \Rightarrow 9x = 180^\circ \Rightarrow x = 20^\circ$.

$\Rightarrow$ Smaller angle $= 4 \times 20^\circ = 80^\circ$

Correct Answer: B

Biology

Q.51 Chemical fertilizers do not provide organic matter (humus) to the soil and can actually harm or decrease beneficial soil microbes over time, unlike organic manure.

Correct Answer: B

Q.52 The drip system delivers water drop-by-drop directly to the root zone of plants, minimizing evaporation and water wastage, making it ideal for water-scarce regions.

Correct Answer: A

Q.53 Hepatitis A is a viral liver infection. Tuberculosis, cholera, and typhoid are all caused by different types of bacteria.

Correct Answer: B

Q.54 Sir Alexander Fleming accidentally discovered the first true antibiotic, Penicillin, in 1928 when he noticed a mold contaminating his bacterial culture plates.

Correct Answer: A

Q.55 Endemic species are unique to a specific geographic location (like an island or country) and are not naturally found anywhere else in the world.

Correct Answer: B

Q.56 The embryo develops into a foetus, which is the developmental stage where all major body parts (head, limbs, eyes, etc.) become clearly identifiable.

Correct Answer: C

Q.57 Goitre is characterized by an abnormal swelling of the thyroid gland, often caused by a deficiency of iodine in the diet.

Correct Answer: B

Q.58 The pistil (female part) consists of the stigma, style, and ovary. The filament is a male reproductive structure that supports the anther.

Correct Answer: C

Q.59 "Anaerobic" means without air or oxygen. This process breaks down glucose to release energy entirely in the absence of oxygen.

Correct Answer: D

Q.60 A hinge joint allows movement primarily back and forth along a single plane, much like a door hinge. In the human body, key examples include the elbow and the knee. The diagram illustrates two bones joined together to allow bending and straightening in one direction, characteristic of a hinge mechanism.

Correct Answer: A

Mental Ability

Q.61 The logic follows a sequence of increasing prime or odd number differences.

$\Rightarrow 3 + 3 = 6$

$\Rightarrow 6 + 5 = 11$

$\Rightarrow 11 + 7 = 18$

$\Rightarrow 18 + 9 = 27$

The next difference will be 11. So, $27 + 11 = 38$.

Correct Answer: C

Q.62 Each letter in the word is shifted forward by 3 positions in the English alphabet.

R (+3) → U, O (+3) → R, A (+3) → D, D (+3) → G.

Applying the same to "SWAN":

S (+3) → V, W (+3) → Z, A (+3) → D, N (+3) → Q

Correct Answer: A

Q.63 Apple, Mango, and Orange are fruits that grow on trees above the ground. Potato is a modified stem (tuber) that grows underground.

Correct Answer: C

Q.64 The "grandfather's only son" is the man's father. The "daughter of my grandfather's only son" is the daughter of the man's father, which makes her the man's sister.

Correct Answer: B

Q.65 Starts and goes 10 m North. Turns right (facing East) and goes 10 m. Turns right again (facing South) and goes 10 m. The North and South movements of 10 m cancel each other out. He is exactly 10 m to the East of his starting point.

Correct Answer: C

Q.66 Substitute the symbols:

$\Rightarrow$ Original: $10 \times 5 \div 3 - 2 + 3$

$\Rightarrow$ New: $10 \div 5 + 3 \times 2 - 3$

$\Rightarrow$ Apply BODMAS: $= 2 + 3 \times 2 - 3 = 2 + 6 - 3 = 5$.

Correct Answer: A

Q.67 Total students = (Rank from top) + (Rank from bottom) -1

Total = 9 + 38 - 1 = 47 - 1 = 46.

Correct Answer: B

Q.68 The word "MANTLE" contains the letter 'L', which is not present in the original word "MEASUREMENT".

Correct Answer: B

Q.69 The series represents the squares of consecutive natural numbers starting from 2: $2^2 = 4$, $3^2 = 9$, $4^2 = 16$, $5^2 = 25$, $6^2 = 36$. The next term will be $7^2 = 49$.

Correct Answer: C

Q.70 Angle = $|30H - 5.5M|$ where H = 3 and M = 30.

$= |30(3) - 5.5(30)| = |90 - 165| = |-75| = 75^\circ$.

Correct Answer: B

Q.71 A Publisher is responsible for financing and releasing a Book. Similarly, a Producer is responsible for financing and releasing a Film.

Correct Answer: C

Q.72 C and D are opposite. A is between B and C. D is between E and F. Because we don't know the exact placement of B relative to E and F, the person sitting exactly opposite A could be either E or F

Correct Answer: D

Q.73 "786" = "study very hard", "958" = "hard work pays". Common word "hard" = 8. "645" = "study and work". Common word "study" = 6. In "786", if 8 is 'hard' and 6 is 'study', then 7 must be "very".

Correct Answer: C

Q.74 All Cats $\rightarrow$ Dogs. Some Dogs $\rightarrow$ Birds. There is no direct overlapping circle guaranteed between Cats and Birds.

Correct Answer: D

Q.75 First Letter (shifts backward by 2): Z, X, V, T $\rightarrow$ R.

Last Letter (shifts forward by 3): A, D, G, J $\rightarrow$ M.

Number logic: $1 \times 1 + 1 = 2$; $2 \times 2 + 2 = 6$; $6 \times 3 + 3 = 21$; $21 \times 4 + 4 = 88$. Combined result: R88M.

Correct Answer: A