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UDAAN

A QUEST FOR SCIENCE ASPIRANTS

SCIENCE APTITUDE TEST

CLASS - 7

SOLUTIONS

EXAM DATE : 21.12.25

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PART - I : MENTAL ABILITY

1.

Sol. (a) 60

Find the pattern of differences:

	Term	Number Difference
1	5	–
2	6	+1
3	10	+4
4	19	+9
5	35	+16

Differences are:

$1^2, 2^2, 3^2, 4^2$

Next difference:

$5^2 = 25$

Next term:

35 + 25 = 60

2.

Sol. (b) Hospital

Teacher works in School

Doctor works in Hospital

3.

Sol: (a) AMTSRE

Observe the pattern:

TRAINS $\rightarrow$ RTIASN

Swap letters in pairs:

T R $\rightarrow$ R T

A I $\rightarrow$ I A

N S $\rightarrow$ S N

Apply same to MASTER:

M A $\rightarrow$ A M

S T $\rightarrow$ T S

E R $\rightarrow$ R E

So code becomes:

AMTSRE

4.

Sol. (c) Pressure: Barometer

5.

Sol. (a) 9- If the child is 5th from either end, there are 4 children on each side of him, making a total of 4 + 4 + 1 = 9 children.

6.

Sol. (d) Groundnut

7.

Sol. (d) 

8.

Sol. (b) By observection

9.

Sol. (a) Planet

Moon is a Satellite

Earth is a Planet

10.

Sol. (b) Brass

Brass is a alloy.

11.

Sol. (d) USA

Bihar is state of India. Florida is a state of USA.

12.

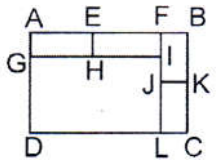
Sol. (b) 124

$124 \neq 5^3$

13.

Sol. (d) The figure is labelled as shown :

Simplest rectangles are AEHG, EFIH, FBKJ, JKCL and GILD. i.e. there are 5 such rectangles. The rectangles composed of two components each are AFIG and FBCL. Thus, there are 2 such rectangles. Only one rectangles, namely AFLD is composed of 3 components and only one rectangle, namely ABCD is composed of 5 components. Thus, there are 5 + 2 + 1 = 9 rectangles in the figure.



14.

Sol.(d) The word TEMPERAMENT contains all the letters of the word TESTER except S. So, the word TESTER cannot be formed.

15.

Sol.(b) The first, the second, the fourth, the fifth and sixth letters of the word CONTRACT are C, O, T, R and A respectively. The meaningful word will be ACTOR and T will be the required letter.

PART - II : MATHEMATICS

1.

Sol. (b) 2

First bracket:

16 - 5 + (2 - 7) = 11 - 5 = 6

Second bracket:

(3 - 4) = -1

7 - (-1) = 8

12-8=4

Now : 6 - 4 = 2

2.

Sol. (a) 11

Follow BODMAS:

16 ÷ 4 = 4

4 × 3 = 12

7 of (-3) = -21

Now:

25 + 12 - 5 - 21 = 11

3.

Sol. (b) Negative

Example : (-3) + (-5) = -8

Sum is negative

4.

Sol. (d) 9 P.M.

Total fall required:

10 - (-8) = 18°C

Time:

18 ÷ 2 = 9 hours

12 noon + 9 hours = 9 P.M.

5.

Sol. (a)

2548 metres

Distance descended:

500 × 7 = 3500 m

Remaining height:

6048 - 3500 = 2548 m

6.

Sol. (c) 66 min

Total distance:

14 + 250 = 264 m

Time:

264 ÷ 4 = 66 minutes

7.

Sol. (d) Not defined

Integers go endlessly negative:

...-5,-4,-3,-2,-1,0,1

So no smallest integer

8.

Sol. (c) 3°C

8-11=-3°C

9.

Sol. (c) (-50) ÷ 5 = (-10)

Multiplication:

(-5) × (-10) = 50

Equivalent division:

50 ÷ (-5) = (-10)

10.

Sol. (b) Is smaller than -3

11.

Sol. (b) -1

$$\frac{1}{-1} = -1$$

12.

Sol. (c) $\frac{2}{5}$

Total used fraction: $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

Remaining: $1 - \frac{3}{5} = \frac{2}{5}$

13.

Sol. (c) Greater than 1.5

Convert to improper fractions: $\frac{43}{6} \div \frac{11}{3}$

$= \frac{43}{22} \approx 1.95$

14.

Sol. (b) 6.03 < 6.13 < 6.19 < 6.201

15.

Sol. (c) 76

3024.8 ÷ 39.8 = 76

16.

Sol. (b) $\frac{49}{51}$

Largest value when a = 50, b = 1

$\frac{49}{51}$

17.

Sol. (c) $\frac{9}{4}$m

$27 \div 12 \Rightarrow \frac{9}{4}$m

18.

Sol. (d) -52

Let the number be x

$\frac{3}{13} \times x = -12$

$x = -12 \times \frac{13}{3}$

x = -52

19.

Sol. (a) $\frac{12}{17}$

Firs add: $\frac{2}{3} = \frac{8}{12}, \frac{3}{4} = \frac{9}{12}$

$\frac{8}{12} + \frac{9}{12} = \frac{17}{12}$

Multiplicative inverse = reciprocal $\frac{12}{17}$

20.

Sol. (d) 4.5

$(17)^{3.5} \times (17)^{4.5} = 17^8$

21.

Sol. (b) $2° \times 3° \times 4°$

$2° \times 3° \times 4°$

$1 \times 1 \times 1 = 1$

22.

Sol. (b) $45\frac{5}{11}\%$

Find % of runs made by running between wickets.**

Runs from boundaries:

3 fours = $3 \times 4 = 12$

8 sixes = $8 \times 6 = 48$

Total boundary runs:

12 + 48 = 60

110 -60 = 50

$= \frac{50}{110} \times 100 = \frac{500}{11} = 45\frac{5}{11}\%$

23.

Sol. (a) $8\frac{1}{3}\%$

Increase: 65000 - 60000 = 5000

Increase % = $\frac{5000}{60000}\times 100 = 8\frac{1}{3}\%$

24.

Sol. (b) $5\frac{5}{11}\%$

Cost price: 4700 + 800 = 5500

Gain: 5800 - 5500 = 300

Gain %: $\frac{300}{5500}\times 100 = 5\frac{5}{11}\%$

25.

Sol. (d) 6%

Simple interest:

SI=15500-12500=3000

Formula: $SI = \frac{PRT}{100}$

$3000 = \frac{12500\times R\times 4}{100}$

R=6%

26.

Sol. (b) $\frac{2}{3}x^5y^3z^4$

$=(-xyz^2)\ (-2yx^2z)\left(\frac{1}{3}x^2yz\right) = \frac{2}{3}x^5y^3z^4$

27.

Sol. (a) x + 2y + 5

5 - (3x + 2y) - 3 (x - y) + 7x + y

Remove brackets:

5 - 3x - 2y - 3x + 3y + 7x + y

Combine like terms: = 5 + x + 2y

28.

Sol. (a) 0

Expand:

ab - ac + bc - ab + ca - bc

Everything cancels: = 0

29.

Sol. (a) 4

$\Rightarrow$ 5x - 6 = 4x - 2

$\Rightarrow$ 5x - 4x = -2 + 6

$\Rightarrow$ x = 4

30.

Sol. (a) 154 cm^2

Diameter = 14 cm

Radius = 7 cm

Area $=\pi r^2 = \frac{22}{7}\times 7^2 = 154\ cm^2$

PART - III : PHYSICS & CHEMISTRY

1.

Sol. (a) m/s

Speed tells us how much distance an object covers in one second.

Speed = distance/time → SI units: metre/second.

Therefore the SI unit of speed is m/s (metre per second).

2.

Sol. (b) A force that opposes motion

Friction always acts opposite to the direction of motion.

Example: A ball rolling on the ground slows down because friction opposes its motion.

3.

Sol. (c) A pendulum moving to and from

Periodic motion is motion that repeats after equal intervals of time.

A pendulum swings back and forth regularly, so its motion is periodic.

4.

Sol. (b) 298 K

Convert 25°C to Kelvin

K = °C + 273

25 + 273 = 298 K

5.

Sol. (c) Produces its own light

Luminous objects give out their own light, like the Sun, candle flame, and bulb.

Non-luminous objects (mirror, moon, chair) Don't produce light; they only reflect it.

6.

Sol. (b) Earth revolving around sun is example of circular motion and fan blade rotating is example of rotational motion.

7.

Sol. (c) Both north and south poles

A bar magnet has both north and south poles

Every magnet has two poles - North & South.

Even if you cut a magnet into pieces, each piece will still have both poles.

8.

Sol. (a) 0.75 h

Convert 45 minutes to hours

45 min = 45 ÷ 60 = 0.75 h

9.

Sol. (b) Force

Force can:

→ Start motion

→ Stop motion

→ Change speed

→ Change direction

So to change the state of motion, a force must act on the object.

10.

Sol. (b) Heat

When two surfaces rub against each other, friction produces heat energy.

Example:

→ Rubbing hands together makes them warm

→ Tyres heat up while moving

This heat is produced because friction converts kinetic energy into heat energy.

11.

Sol. (d) Atoms of different elements have same chemical properties

Atoms of different elements have different properties (chemical & physical).

12.

Sol. (b) Salt solution

Salt + water $\rightarrow$ mixture.

Two substances physically mixed, not chemically combined $\rightarrow$ mixture.

13.

Sol. (d) Al

First letter capital,

Second letter small. So aluminium = Al, not AL or al.

14.

Sol. (b) Base

Soap solution feels slippery and turns red litmus $\rightarrow$ blue, which is a property of bases. Therefore, soap is basic in nature.

15.

Sol. (b) Evaporation

Water evaporates, salt remains.

16.

Sol. (a) Physical change

No new substance formed.

17.

Sol. (a) $CaCl_2$

$CaCl_2$ = neutral salt

18.

Sol. (b) 7

pH7 = neutral

19.

Sol. (b) Calcium & magnesium salts

This hardness is caused mainly by the presence of calcium (Ca^{2+}) and magnesium (Mg^{2+}) salts.

Common salts causing hardness:

Calcium bicarbonate – $Ca(HCO_3)_2$

Magnesium bicarbonate – $Mg(HCO_3)_2$

Calcium sulphate ,and Chlorides– $CaSO_4$, $CaCl_2$

Magnesium sulphate, chloride s – $MgSO_4$, $MgCl_2$

20.

Sol. (b) Neutral

Red stays red & blue stays blue $\rightarrow$ Neutral solution (like water).

PART - IV : BIOLOGY

1.

Sol. (b) Artery

Arteries have thick, elastic walls to withstand the high pressure of blood pumped from the heart.

2.

Sol. (c) Chlamydomonas

Chlamydomonas is a unicellular autotroph because it contains chlorophyll and makes its own food by photosynthesis.

3.

Sol. (b) Transport water and minerals

Xylem carries water and dissolved minerals from roots to all parts of the plant.

4.

Sol. (d) Metabolism

Urea is formed in the liver as a result of protein metabolism.

5.

Sol. (b) Amoeba

Amoeba reproduces by binary fission where one cell divides into two identical cells.

6.

Sol. (c) Vitamin A

Deficiency of Vitamin A causes night blindness.

7.

Sol. (b) Anaerobic respiration

Yeast respires without oxygen and produces alcohol and carbon dioxide.

8.

Sol. (c) Help in clotting of blood

Platelets help in formation of blood clots to stop bleeding.

9.

Sol. (b) Peristalsis

Food moves in the oesophagus by wave-like muscular movement called peristalsis.

10.

Sol. (b) Liver

The liver secretes bile but does not produce digestive enzymes.