



"Where working hard is a habit"

IIT ASHRAM

JEE MAIN || JEE ADVANCED || MEDICAL || FOUNDATION

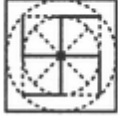
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UDAAN (2020) ANSWER KEY AND SOLUTION CLASS - 7

Mental Ability		Mathematics		Physics & Chemistry		Biology	
Q. No.	Ans	Q. No.	Ans	Q. No.	Ans	Q. No.	Ans
1	C	1	B	1	D	1	A
2	A	2	A	2	A	2	C
3	B	3	C	3	B	3	A
4	C	4	B	4	C	4	A
5	A	5	C	5	C	5	D
6	A	6	C	6	A	6	D
7	A	7	C	7	B	7	C
8	D	8	C	8	A	8	C
9	B	9	B	9	C	9	A
10	C	10	A	10	D	10	A
11	C	11	D	11	A	11	A
12	C	12	C	12	C	12	A
				13	A		
				14	A		
				15	B		
				16	D		
				17	D		
				18	D		
				19	B		
				20	A		
				21	D		
				22	B		
				23	C		
				24	A		

PART - I
MENTAL ABILITY

1. (c) by observation



2. (a) by observation

3. (b) by observation

4. (c) Colour of blood is 'red' and red is called white hence, the answer is 'white'.

5. (a)

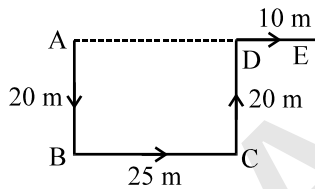
$$15 \times 2 - 3 = 27$$

$$31 \times 2 - 6 = 56$$

$$? \times 2 - 9 = 81$$

$$? = 45$$

6. (a)



The movements of Raj are as shown in figure\ Raj's distance from starting point A

$$= AE = (AD + DE)$$

$$= (BC + DE) = (25 + 10) \text{ m} = 35 \text{ m}$$

So, E is to the East of A

7. (a) $4^2 + 3^2 = 25$

$$2^2 + 7^2 = 53$$

$$5^2 + 1^2 = 26$$

8. (d) Because 'S' is not included in given word.

9. (b)

K	U	M	A	R	}	+1
↓+1	↓+1	↓+1	↓+1			
L	V	N	B	S		

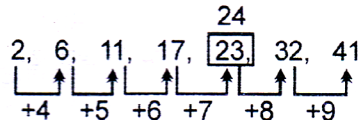
E	M	O	T	I	O	N	A	L
↓+1	↓+1	↓+1	↓+1	↓+1	↓+1	↓+1	↓+1	↓+1
F	N	P	U	J	P	O	B	N

10. (c)

$3 \quad 8 \quad 9 \rightarrow$ run very fast
 $9 \quad 6 \quad \triangle 4 \rightarrow$ \triangle come back fast
 $\triangle 4 \quad 8 \quad 7 \rightarrow$ run and \triangle come
 $4 \Rightarrow$ Come

11. (c)

12. (c) This series consists of increasing numbers. The pattern is +4, +5, +6, +7, +8, +9,



The fifth term is not following the same rule. Hence, 23 is the wrong term and should be replaced by 24.

PART - II MATHEMATICS

1. (B)

$$50\frac{3}{5} - 48\frac{1}{3} = \frac{253}{5} - \frac{145}{3}$$

$$= \frac{253 \times 3}{5 \times 3} - \frac{145 \times 5}{3 \times 5} = \frac{759 - 725}{15} = \frac{34}{15} = 2\frac{4}{15} = 2\frac{4}{15}m$$

2. (A)

$$\frac{9x+7}{2} - \left[x - \left(\frac{x-2}{7} \right) \right] = 36 \quad \Rightarrow \quad \frac{7 \times (9x+7)}{7 \times 2} - \frac{x \times 14}{1 \times 14} + \frac{2(x-2)}{2 \times 7} = 36$$

$$\frac{7 \times (9x+7) - 14x + 2(x-2)}{14} = 36 \quad \Rightarrow \quad \frac{63x + 49 - 14x + 2x - 4}{14} = 36$$

$$\frac{63x - 14x + 2x + 49 - 4}{14} = 36 \quad \Rightarrow \quad 51x + 45 = 36 \times 14$$

$$51x + 45 = 504 \quad \Rightarrow \quad 51x = 504 - 45$$

$$51x = 459 \quad \Rightarrow \quad x = \frac{459}{51} = 9$$

3. (C)

$$\left[\left(\frac{1}{4} \right)^2 - \left(\frac{1}{4} \right)^3 \right] \times 2^6 \quad \Rightarrow \quad \left[\frac{1 \times 4}{16 \times 4} - \frac{1}{64} \right] \times 2^6$$

$$\Rightarrow \left[\frac{4-1}{64} \right] \times 2^6 = \frac{3}{64} \times 2^6 = \frac{3}{64} \times 64 = 3$$

3

4. (B)

$$\frac{2^{2001} + 2^{1999}}{2^{2000} - 2^{1998}} = \frac{2^{1999+2} + 2^{1999}}{2^{1998+2} - 2^{1998}} \Rightarrow = \frac{2^{1999} \times 2^2 + 2^{1999} \times 1}{2^{1998} \times 2^2 - 2^{1998} \times 1}$$

$$\frac{2^{1999}(2^2 + 1)}{2^{1998}(2^2 - 1)} = \frac{2 \times 5}{3} \Rightarrow = \frac{10}{3}$$

5. (C)

Diagonal of the square = diameter of circle

$$28 = 2r \Rightarrow r = 14 \text{ cm}$$

Area of square = Area of a circle

$$\frac{(\text{diagonal})^2}{2} : \frac{\pi d^2}{4} \Rightarrow \frac{d^2}{2} : \frac{\pi d^2}{4} \Rightarrow \frac{1}{2} : \frac{\pi}{4}$$

$$(\because \text{diameter} = \text{diagonal}) \Rightarrow 2 : \pi \Rightarrow 14 : 22 \Rightarrow 7 : 11$$

6. (C) a - (iii), b - (iv), c - (ii), d - (i)
 (A) Space - (iii) Lines, planes
 (B) Plane - (iv) Flat surface
 (C) Intersecting line - (ii) One point
 (D) Collinear points - (i) Same line

7. (C)

$$\because AB = AC \quad \text{So } \angle B = \angle ACV = x \quad \{\text{Angle oppo. to equal sides are equal}\}$$

$$x + x + 40 = 180^\circ \text{ (L.P)}$$

$$2x = 180 - 40$$

$$2x = 140$$

$$x = 70^\circ$$

$$70^\circ$$

8. (C)

$$p = 4, q = 3, x = 3, y = 8, b = x \times y$$

$$\because a = p^2$$

$$\therefore a = 4^3$$

$$\text{Now } \frac{a}{b} \times c = 1 \Rightarrow \frac{4^3}{x \times y} \times c = 1 \Rightarrow \frac{4^3}{3 \times 8} \times c = 1 \Rightarrow \frac{64}{3 \times 8} \times c = 1$$

$$\boxed{C = \frac{3}{8}}$$

9. (B) $\boxed{P = 60}$ $\{\because AE = AD\}$

$\therefore z + 35 = 60$ [Ext. angle prop.]

$\boxed{z = 25}$

$\therefore 60 + p + y = 180$ (A.S.P)

$60 + p + y = 180$

$\boxed{y = 60}$

$\therefore x + (180 - 130) = p$ [Ext. angle prop]

$x + 50 = 60$

$\boxed{x = 10}$

10. (A)

$\therefore x=20, y=100, z=40$

$AB = 2x + 20 = 2 \times 20 + 20 = 60$

$BC = \frac{3y}{5} = \frac{3 \times 100}{5} = 60$

$AC = 3z - 20 = 3 \times 40 - 20 = 100$

$\therefore AB = BC$, So Δ is isosceles Δ .

11. (D)

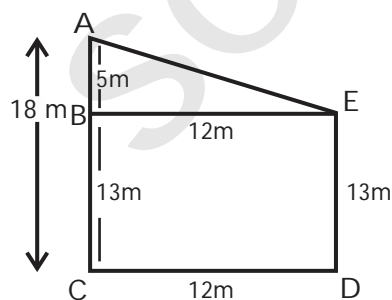
$15 : 30 :: 30 : y$

$15 \times y = 30 \times 30$

$y = \frac{30 \times 30}{15}$

$\boxed{y = 60}$

12. (C)



$AE = \sqrt{5^2 + 12^2}$

$AE = \sqrt{25 + 144}$

$AE = \sqrt{169}$

$\boxed{AE = 13m}$

PART - III
PHYSICS/CHEMISTRY

1. (d) Density of kerosene is 810 Kg/m^3 and density of water is 1000 Kg/m^3 . So kerosene floats on water
2. (a)
3. (b) Speed is $3 \times 10^8 \text{ m/s}$
4. (c)
5. (c) Rate of change of velocity is called acceleration.
6. (a)
7. (b) 126 m, 80 m
8. (a)
9. (c) Mass is independent of temperature.
10. (d)
11. (a)
12. (c)
13. The structural formula of a chemical compound is a graphic representation of the molecular structure, showing how the atoms are arranged.
14. A change in which new substance is formed called chemical change.
15. Non-metals have tendency to gain electrons & form anion.
16. Magnesium hydroxide $\text{Mg}(\text{OH})_2$, is used as antacid.
17. On heating water changes into water vapour.
18. Ion is not a basic component of an atom.
19. Positively charged ion is known as cation.
20. Brass is an alloy of copper and zinc.
21. Chemical formula of Vinegar is CH_3COOH . It is also known as acetic acid or ethanoic acid.
22. Anthrax is an infection caused by the bacterium *Bacillus anthracis*. Historically, inhalational anthrax was called woolsorter's disease because it was an occupational hazard for people who sorted wool.
23. A particle could be anything. All matters are made up tiny particles.
24. Substances that have pH more than 7 are basic in nature.

PART - IV

BIOLOGY

1. (a) Pancreatic juice and gastric juice contains enzymes like trypsinogen and pepsinogen respectively. Bile is the liquid secreted by liver which helps in proper digestion and absorption but it does not contain any enzyme.
2. (c) A chick hatching from an egg is a simple act of reproduction not response to stimuli.
3. (a) Eucalyptus trees absorb all surplus waste water rapidly and release pure water vapour into the atmosphere. Hence, they should be planted along all sewage ponds.
4. (a) Due to the scarcity of water in desert area the urine will be excreted in small amount which will remove all the waste and hence it will be concentrated.
5. (d) The breakdown of carbohydrates starts in the mouth with the action of saliva which has amylases that help in the conversion of carbohydrates in simple sugars.
6. (d) Frogs have the ability to respire from lungs as well as the skin where as humans only respire through lungs, cockroach through trachea and earthworm through moist skin.
7. (c) Coleus has variegated leaves i.e having more than one color.
8. (c) A suture is a type of fibrous joint which occurs only in the skull and interlocks the bones.
9. (a) A submerged hydrophyte is a plant which stays under water and is still able to perform all the necessary life processes. Hydrilla, a native to Africa or Europe is found underwater and hence is a submerged hydrophyte.
10. (a) Generally artery carries oxygen rich blood whereas veins carry carbon-di-oxide rich blood. But this is opposite in case of pulmonary artery which carries carbon-di-oxide rich blood and pulmonary vein carries oxygen rich blood.
11. (a)
12. (a)