KHOJ-2019
ANSWER KEY WITH SOLUTION
CLASS - 7

PART - I		PART - II		PART - III			
Q. No.	Answer	Q. No.	Answer	Q. No.	Answers	Q. No.	Answers
1	B	1	C	1	B	31	B
2	C	2	A	2	B	32	B
3	B	3	A	3	A	33	D
4	A	4	D	4	C	34	B
5	B	5	C	5	D		
6	B	6	C	6	D		
7	C	7	A	7	B		
8	B	8	C	8	D		
9	D	9	C	9	C		PART - IV
10	C	10	C	10	B	1	B
11	C	11	A	11	B	2	A
12	B	12	D	12	A	3	B
13	C	13	A	13	B	4	B
14	B	14	B	14	C	5	B
15	A	15	A	15	D	6	B
16	A	16	D	16	C	7	B
17	C	17	B	17	B	8	B
18	B	18	D	18	C	9	C
19	C	19	C	19	D	10	B
20	B	20	A	20	C	11	A
		21	B	21	D	12	A
		22	D	22	D	13	A
		23	A	23	C	14	A
		24	B	24	A	15	C
		25	C	25	C	16	D
		26	B	26	A		
		27	D	27	A		
		28	C	28	C		
		29	A	29	C		
		30	D	30	B		

PART - I

1.

Sol. (b)

1st characters : $H \xrightarrow{-1} G \xrightarrow{-1} F \xrightarrow{-1} E \xrightarrow{-1} D$

Middle characters : $4 \xrightarrow{+2} 6 \xrightarrow{+3} 9 \xrightarrow{+4} 13 \xrightarrow{+5} 18$

3rd characters : $J \xrightarrow{+2} L \xrightarrow{+2} N \xrightarrow{+2} P \xrightarrow{+2} R$

2.

Sol. (c)

The correct pattern is × 2, × 4, × 2, × 4.....

So, 250 is wrong that must be replace by 128 × 2 = 256.

3.

Sol. (b)

Sum of digits in each number is 20.

4.

Sol. (a)

de pa lit → she has come --- (i)

se ma la → move there fast -----(ii)

de ma nik → she keep fast -----(iii)

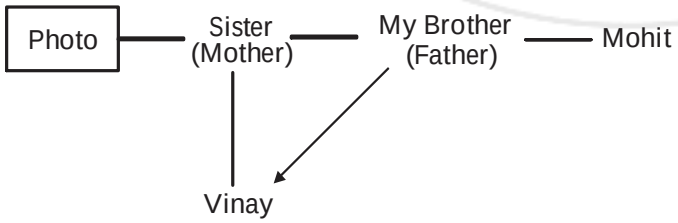
from (i) and (iii) de → she

from (ii) and (iii) ma → fast

so 'keep's code is 'nik'

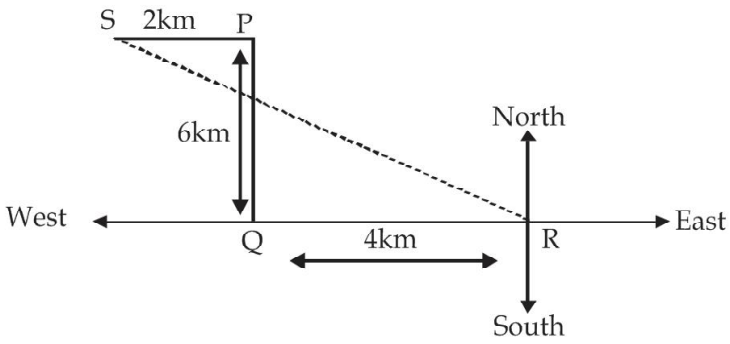
5.

Sol. (b)



6.

Sol. (b)



7.

Sol. (c)

By observation

8.

Sol. (b)

The sum of the two numbers in the upper part is 7 times the number in the lower part.

So missing number = (89 + 16) ÷ 7 = 15

9.

Sol. (d)

Number in lower cell = (2 x number in upper cell) + 1

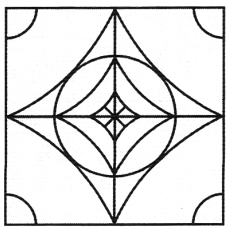
10.

Sol. (c)

Total candidate = 13 + 1 + 12 = 26

11.

Sol. (c)



12.

Sol. (b)

By observation

13.

Sol. (c) In fig

a column containing 5 cubes = 9 × 5 = 45

7 column containg 4 cubes = 7 × 4 = 28

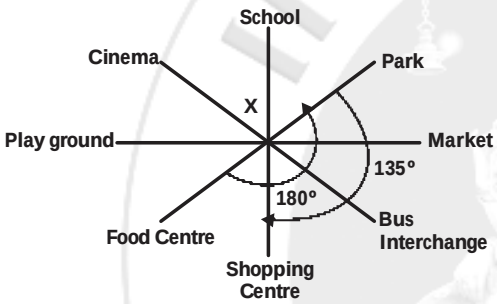
5 column containing 3 cubes = 5 × 3 = 15

1 column contain 1 cube = 1

Total cubes = 45 + 25 + 15 + 1 = 89 cubes

14.

Sol. (b)



So, she will face towards the shopping centre.

15.

Sol. (a) New expression is,

$6 \times 5 + 5 \div 3 - 6$

$= 6 \times 5 + \frac{5}{3} - 6 = 30 + \frac{5}{3} - 6 \quad = \frac{90 + 5 - 18}{3} = \frac{77}{3} = 25\frac{2}{3}$

16.

Sol. (a)

Number of cubes in pattern 1 = 5 = 4 × 1 + 1 (pattern 4n + 1)

Number of cubes in pattern 2 = 9 = 4 × 2 + 1

Number of cubes in pattern 3 = 13 = 4 × 3 + 1

Similarly, number of cubes in pattern 25 = 4 × 25 + 1 = 101

17.

Sol. (c)

correct equation 4 + 6 × 2 = 16

18.

Sol. (b)

D	H	F	M	T	R	V
1	5	7	9	0	2	8

19.

Sol. (c)

K	H	V	L	R	D	P
6	5	8	3	2	1	4

20.

Sol. (b)

By Observation

PART - II

1.

Sol. (c)

greatest number = 876431

smallest number = 134678

2.

Sol. (a)

Distance covered in 1 hr = 30 km

Distance covered in 5 hr = 30 × 5 = 150 km

3.

Sol. (a)

1st part = $\frac{7}{9}\times 63 = 49$, 2nd part = $\frac{2}{9}\times 63 = 14$

4.

Sol. (d)

$$\frac{2x}{1+\frac{1}{1+\frac{x}{1-x}}} = 1 \Rightarrow \frac{2x}{1+\frac{1}{\frac{1-x+x}{1-x}}} = 1 \Rightarrow \frac{2x}{1+1-x} = 1$$

$$\Rightarrow \frac{2x}{2-x} = 1 \Rightarrow 2x = 2 - x \Rightarrow 3x = 2 \Rightarrow x = 2/3$$

5.

Sol. (c)

Let the amount with nephew = x

$\therefore$ amount with daughter = 4x

$\therefore$ amount with son = 5x

$\therefore$ Total amount recieved by 2 nephews = 2x

$\therefore$ Total amount recieved by 4 daughters = 4 × 4x = 16 x

$\therefore$ Total amount recieved by 5 sons = 5 × 5x = 25x

$\Rightarrow$ 8600 = 2x + 16x + 25 x $\Rightarrow$ 8600 = 43x $\Rightarrow$ $x = \frac{8600}{43} = 200$

$\therefore$ Amount recieved by each daughter = 4 × 200 = 800

6.

Sol. (c)

P – {– 4 – (2 – 8 ÷ 4)} = 8

P – { – 4 – (2 – 2)} = 8

P – { –4} = 8

P + 4 = 8

P = 4

7.

Sol. (a)

ab = 20

5 × 4 = 20

a = 5, b = 4

2a – 3b = – 2

2(5) – 3(4) = –2

10 – 12 = – 2

– 2 = – 2

Hence values of a and b are 5 & 4 respectively

Now

$4a^2 + 9b^2 \Rightarrow 4(5)^2 + 9(4)^2 \Rightarrow 100 + 144 = 244$

8.

Sol. (c)

$x : y = 3 : 4$

$x = 3a, y = 4a$

Now, $\left(\frac{6}{7}+\frac{y-x}{y+x}\right) \Rightarrow \frac{6}{7}+\left(\frac{4a-3a}{4a+3a}\right) \Rightarrow \frac{6}{7}+\left(\frac{a}{7a}\right) \Rightarrow \frac{6}{7}+\frac{1}{7}=1$

9.

Sol. (c)

$$\frac{7a+5b-2c}{4a+b+c} \Rightarrow \frac{7\times7+5\times3-2\times2}{4\times7+3+2} \Rightarrow \frac{60}{33}=\frac{20}{11}$$

10.

Sol. (c)

Pattern = 3n + 4

n = 1 $\Rightarrow$ 3 (1) + 4 = 7

n = 2 $\Rightarrow$ 3(2) + 4 = 10

n = 3 $\Rightarrow$ 3(3) + 4 = 13

$\therefore$ Pattern = 7, 10, 13, ...

11.

Sol. (a)

$x = p^n$

$y = q^m$

$m = 2^4 = 16$

$n = 4^2 = 16$

$z = 8 (m + n) = 8 (16 + 16) = 256$

Now xyz

$= p^n . q^m . 256$

$= 256\ p^{16}\ q^{16}$

$\therefore$ numerical coefficient of xyz = 256

12.

Sol. (d)

$2^m = 8 = 2^3$, $3^n = 81 = 3^4$ $4^r = 1024 = 4^5$

$\therefore$ $m = 3$ $\therefore$ $n = 4$ $\therefore$ $r = 5$

Now $3x^m + 4y^n + 5z^r$

$= 3x^3 + 4y^4 + 5z^5$

13. (a)

s = side = 56 m

Area of shaded portion = Area of square – Area of 4 circles $= s^2 - 4 \times \pi r^2$

$$= 3136 - 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = 3136 - 154 = 2982 \text{ m}^2$$

14. (b)

Area of shaded portion = Area of two rectangles = Area of ABCD + Area of EFGH

$= L \times B + l \times b = 8 \times 2 + 5 \times 2 = 26 \text{ cm}^2$

15. (a)

Given side of the square = 20 cm $\Rightarrow$ S = 20 cm

In triangle EBC, base = b = 20 cm and height = h = 20 cm.

$\therefore$ Area of the shaded region = Area of the square ABCD – Area of the triangle EBC

$$= S^2 - \frac{1}{2} \times b \times h = (20)^2 - \frac{1}{2} \times 20 \times 20 = 400 - 200 = 200 \text{ cm}^2$$

16. (d)

Let the consecutive even numbers be x, x + 2

$$\frac{2}{5}(x+2) - \frac{1}{3}(x) = 2 \Rightarrow \frac{6(x+2) - 5x}{15} = 2 \Rightarrow \frac{6x + 12 - 5x}{15} = 2 \Rightarrow x + 12 = 30$$

$\Rightarrow$ x = 18, numbers are x, x + 2 $\Rightarrow$ 18, 20

17. (b)

Given Son's age is 4 years and mother's age is 30 years.

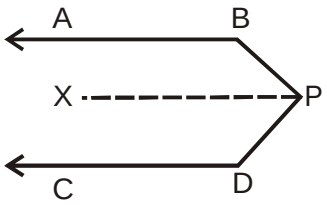
After x years Son's age is (4 + x) years.

After x years Mother's age is (30 + x) years.

$\Rightarrow$ 3(4 + x) = 30 + x $\Rightarrow$ 12 + 3x = 30 + x $\Rightarrow$ 2x = 18 $\Rightarrow$ x = 9

18. (d)

Draw PX||AB||CD



$\angle ABP + \angle BPX = 180°$ .....(1) (Sum of cointerior angles = 180^0)

$\angle CDP + \angle DPX = 180°$ ..... (2) (Sum of cointerior angles = 180°)

Now, Adding (1) and (2)

$\angle ABP + \angle BPX + \angle DPX + \angle CDP = 360°$

$\Rightarrow \angle ABP + \angle BPD + \angle CDP = 360^0$ $(\because \angle BPX + \angle DPX = \angle BPD)$

19. (c)

$63.9805 = 6 \times 10 + 3 \times 1 + 9 \times \frac{1}{10} + 8 \times \frac{1}{100} + 5 \times \frac{1}{10000}$

$\therefore$ $A = 10, B = 1, C = \frac{1}{10}, D = 100, E = \frac{1}{10000}$

$\therefore$ $4A + 7B + 6C + D + 3E \Rightarrow 4 \times 10 + 7 + 1 + 6 \times \frac{1}{10} + 100 + 3 \times \frac{1}{10000} = 147.6003$

20. (a)

21. (b)

Given $\frac{x}{2} = \frac{y}{3} = k$ and $x + y = 90°$

$x = 2k$, $y = 3k \Rightarrow 2k + 3k = 90° \Rightarrow 5k = 90° \Rightarrow k = 18°$

$\therefore$ Angles are $x = 2 \times 18^o = 36°$ and $y = 3 \times 18^o = 54°$

22. (d)

Since AB||CD, we have $\angle ABC = \angle BCD$

$\Rightarrow y° + 25° = 75° \Rightarrow y° = 50°$.

Since CD||EF, we have $x° + 25° = 180° \Rightarrow x° = 155°$

$\therefore x° + y° = 205°$.

23. (a)

Area of trapezium $= \frac{1}{2}(48 + 40) \times 14 = 616 \text{ cm}^2$

$\therefore \pi r^2 = 616 \text{cm}^2$

$\frac{22}{7} \times r^2 = 616 \text{cm}^2$

$r = 14$ cm

24. (b)

Sum of $\frac{5}{12}$ and $\frac{-17}{24}$ is

$\frac{5}{12} + \left(\frac{-17}{24}\right) = \frac{5}{12} - \frac{17}{24} = \frac{-7}{24}$

Product of $\frac{2}{5}$ and $\frac{7}{4}$ is $\frac{2}{5}\times\frac{7}{4}=\frac{7}{10}$

According to questions, we have $\frac{-7}{24}\div\frac{7}{10}=\frac{-5}{12}$

25.

Sol. (c)

R	:	S	:	T
0.01	:	0.11	:	
		2.2	:	I

0.01 × 2.2	:	0.11 × 2.2	:	0.11 × 1
0.022	:	0.242	:	0.110
22	:	242	:	110
1	:	11	:	5

26. (b)

$\left(\sqrt{3}\right)^{n}=729$

$3^{\frac{n}{2}}=3^{6} \Rightarrow n = 12$

$(n)^{\frac{3}{2}}=12^{\frac{3}{2}}=24\sqrt{3}$

27. (d)

$x = 999 + \frac{1}{7}+999+\frac{2}{7}+999+\frac{3}{7}+999+\frac{4}{7}+999+\frac{5}{7}+999+\frac{6}{7}$

$= 6\times999+\frac{1}{7}+\frac{6}{7}+\frac{2}{7}+\frac{5}{7}+\frac{3}{7}+\frac{4}{7}$

$= 6 \times 999 + 3 \Rightarrow x = 5997$

28. (c)

Let the C.P. of the article be Rs. a.

According to questions,

S.P. on 8% profit – S.P. on 12% loss = Rs.50.80

$$\Rightarrow \frac{a\times(100+8)}{100}-\frac{a\times(100-12)}{100}=\text{Rs.}50.80$$

$$\Rightarrow 108a-88a=5080\Rightarrow a=\frac{5080}{20}=254 \qquad \therefore \quad \text{C.P. of the article = Rs. 254}$$

29. (a)

$$=\left(\frac{25}{100}\times\frac{50}{100}\times\frac{100}{100}\right)\div\left(25\times100\times\frac{50}{100}\times100\right)=\frac{1}{4}\times\frac{1}{2}\times1\times\frac{1}{25\times100\times50}=\frac{1}{10000}\times\frac{1}{100}=0.0001\%$$

30. (d)

$7^x = 4^2y, \quad 4^x = 7^2\ y$

$$\Rightarrow \frac{7^x}{4^x}=\frac{4^2}{7^2} \qquad \Rightarrow x=-2, \quad y=\frac{1}{784} \qquad \Rightarrow \quad y-x=\frac{1}{784}+2=\frac{1569}{784}$$

PART - III

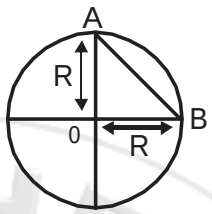
1.

Sol. (b)

Time period = $\frac{8}{24} = \frac{1}{3}$ second

2.

Sol. (b)



Hence $AB^2 = R^2 + R^2$

AB = $\sqrt{2R^2}$ = $AB = \sqrt{2}R$

3.

Sol. (a)

Electric current is rate of flow of charges.

4.

Sol. (c)

Ammeter is used for measuring electric current

5.

Sol. (d)

K.E. = $\frac{1}{2}mv^2$

$KE = \frac{1}{2}m(2v)^2 = 4 \times \frac{1}{2}mv^2$

So its becomes 4 times

6.

Sol. (d)

P.E = Mgh

so for 30kg and height 7m it will be maximum p.e. = 30 × 9.8 × 7

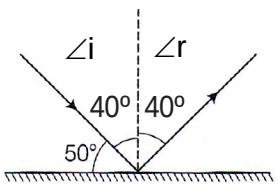
7.

Sol. (b)

The C.G.S unit of energy is Erg.

8.

Sol. (d)



$\angle i = \angle r = 40^o$ Angle of devition = 180^0 - 2 i = 180^0 - 80^0 = 100^0

9.

Sol. (c) As the four bodies are identical the equilibrium temperature is the average of the temperature that is $t = \frac{t_1 + t_2 + t_3 + t_4}{4} = \frac{6 + 10 + 20 + 32}{4} = 17^oC$

10.

Sol. (b)

$$\text{time} = \frac{\text{distance}}{\text{speed}} = \frac{2\pi r}{2\pi} = \frac{2\pi(1)}{2\pi} = 1\,\text{second}$$

11.

Sol. (b)

$$\text{Speed} = \frac{\text{distance}}{\text{Time}} = \frac{54000}{5400}\frac{m}{s} = 10\ m/s$$

12.

Sol. Higher the slope in distance time graph. Higher the speed. so car P have higher slope. So it has maximum speed.

13.

Sol. (b)

Given mass of water = 250g

change in temperature $\Delta t = 67^oC - 27^oC = 40^oC$

Specific heat capacity of water = 1 cal g^{-1} $^oC^{-1}$

Hence $Q = ms\Delta t$

$= 250 \times 1 \times 40 \Rightarrow 10{,}000$ cal.

14.

Sol. (c)

The number of images formed

$n = \frac{360}{\theta} - 1 \qquad = \frac{360}{45} - 1 \qquad = 8 - 1 = 7$

15.

Sol. (d)

The horizontal portion of graph, where temperature is constant represents change of state

16.

Sol. (c)

It was concluded by H.C. oersted

17.

Sol. (b)

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{6960 - 6700}{13} = 20\,km/hr$$

18.

Sol. (c)

X is solid as it is incompressible, Y is liquid as it possesses selective diffusibility and Z is gas.

19.

Sol. (d)

Mixture of water and alcohol is homogenous but not all liquid - liquid mixtures are homogeneous.

20.

Sol. (c)

Saw dust and water can be separated only by filtration.

21.

Sol. (d)

Sulphur is poor conductor of electricity as it is a non-metal.

22.

Sol. (d)

Ca^{1-} does not has 8 electrons in outermost shell. Atomic number of Ca is 2,8,8,2 so Ca^{1-} would have 3 electrons in it's outermost shell.

23.

Sol. (c)

crystallization is the process to obtain the purest form of a substance by cooling the hot saturated solution.

24.

Sol. (a)

Zinc is more reactive than hydrogen, so zinc can liberate hydrogen gas from a dilute acid.

25.

Sol. (c)

Silk fibre is obtained from the cocoon of silk worm.

26.

Sol. (a)

Bases which are soluble in water called alkali. So all alkalis are bases but not all bases are alkali.

27.

Sol. (a)

In exothermic reaction, heat is evolved and in endothermic reaction heat is absorbed.

28.

Sol. (c)

When acid reacts with base, it produces salt and water. Such reaction is called neutralisation reaction.

29.

Sol. (c)

Phenolphthalein is colorless in acidic and neutral solution.

30.

Sol. (b)

KOH is also known as caustic potash.

31.

Sol. (b)

Plaster of Paris (POP) is used to make statues.

32.

Sol. (b)

The process by which a solid directly changes to gaseous state on heating is known as sublimation.

33.

Sol. (d)

Silkworm secretes protein, which form cocoon.

34.

Sol. (b)

Atomic number of phosphorous is 15. Its electronic configuration is 2, 8, 5.

PART - IV

1.

Sol. (b) Rumen is part of stomach in Herbivore

2.

Sol. (a) Oxygen is used in this process

3.

Sol. (b) It carries deoxygentated blood

4.

Sol. (b) Arteries are thick walled

5.

Sol. (a) Ascent of sap is name given to the process

6.

Sol. (b) He is known as father of biology

7.

Sol. (b) Pepsin breakdown proteins

8.

Sol. (b) A, D, E, K are fat soluble vitmains

9.

Sol. (c) 38 ATP are formed in aerobic respiration

10.

Sol. (b) Since it carries oxygen and CO_2

11.

Sol. (a) Systolic 120 & diastolic 80 mm of Hg

12.

Sol. (a) Sparrow dosent feed on meat

13.

Sol. (a) It is insectivorous plant

14.

Sol. (a) Thick fur acts as insulator for cold

15.

Sol. (c) Since show is also white

16.

Sol. (d) 71% of earth is covered with water