

# RBE SSC CGL 2024 Live Test - 11 Aug, 2024

Q. 1

Kalyani is mother-in-law of Veena who is sister-in-law of Ashok. Dheeraj is father of Sudeep, the only brother of Ashok. How is Kalyani related to Ashok?

- a) Father's son
- b) Brother
- c) Mother
- d) Brother's wife

Here,

(+) = Male, (-) = Female

(=) = Husband and wife

(-) = Brother and sister

Explanation:

$\begin{array}{c} \text{Kalyani } (-) = \text{Dheeraj } (-) \\ | \\ \text{Ashok } (+) - \text{Sudeep } (+?) = \text{Veena } (-) \end{array}$

Kalyani is mother of Ashok

Q. 2

Select the correct combination of mathematical signs to replace the \* signs and balance the given equation.

$$57 * 4 * 3 * 36 * 12 * 100$$

- a)  $\times, -, +, \div, =$  X
- b)  $\times, \div, +, -, =$  ✓
- c)  $\div, -, \times, +, =$  X
- d)  $\div, -, +, \times, =$  X

$$57 \times 4 \div 3 + 36 - 12 = 100$$

$$57 \times 4 \times \frac{1}{3} + 36 - 12 = 100$$

$$19 \times 4 + 36 - 12 = 100$$

$$76 + 36 - 12 = 100$$

$$112 - 12 = 100$$

$$100 = 100$$

$$\text{LHS} = \text{RHS}$$

Explanation:

Q. 3

Select the option that represents the letters that, when placed from left to right in the blanks below, will complete the letter-series.

P\_O\_P\_\_O\_C\_P\_C\_

- a) CCPOCC X
- b) CCPAPO X
- c) CPCOOC X
- d) CCPCOP ✓

Explanation:

P C O C P / P C O C P / P C O C P

Hence, CCPCOP is the correct answer.

Q. 4

Select the correct mirror image of the given combination when the mirror is placed at MN as shown.



- a) b Y e A F t L ✗
- b) L f E A y q ✗
- c) P F 4 9 y d ✗
- d) b Y e A F t L ✓

The correct mirror image will be:

**b Y e A F t L**

Explanation:

Q. 5

Select the option that represents the correct order of the given words as they would appear in an English dictionary?

1. Epitaxy
2. Episode
3. Epigene
4. Epitome
5. Epilogue
6. Epimerase

- a) 3, 2, 4, 6, 5, 1 ✗
- b) 3, 5, 6, 2, 1, 4 ✓
- c) 5, 2, 6, 4, 3, 1 ✗
- d) 2, 4, 5, 6, 3, 1 ✗

Explanation:

The correct order according to English dictionary will be: **3, 5, 6, 2, 1, 4**

**Q. 6**

Select the option that is related to the third word in the same way as the second word is related to the first word.

(The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word)

Melt : Liquid :: Freeze : ?

- a) Ice 
- b) Solid 
- c) Condense 
- d) Crystal 

**Explanation:**

The relationship between the words "Melt" and "Liquid" is that melting is the process that turns a solid into a liquid. Similarly, freezing is the process that turns a liquid into a solid.

Therefore, the correct answer is: Freeze : Solid

Q. 7

In a certain code language, 'MASTER' is written as '86' and 'ANGER' is written as '90'. How will 'TYPIST' be written in that language?

- a) 109 X
- b) 53 ✓
- c) 55 X
- d) 108 X

$$\begin{array}{ccccccc}
 & M & A & S & T & E & R \\
 & 13 & 1 & 19 & 20 & 5 & 18 \\
 & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 & 14 & 26 & 8 & 7 & 22 & 9 \text{ (opposites)} \\
 = & 14 + 26 + 8 + 7 + 22 + 9 \\
 = & 86
 \end{array}$$

$$\begin{array}{ccccc}
 & A & N & G & E & R \\
 & 1 & 14 & 7 & 5 & 18 \\
 & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 & 26 & 13 & 20 & 22 & 9 \\
 = & 26 + 13 + 20 + 22 + 9 \\
 = & 90
 \end{array}$$

Explanation:

$$\begin{array}{ccccccc}
 & T & Y & P & I & S & T \\
 & 20 & 25 & 16 & 9 & 19 & 20 \\
 & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\
 & 7 & 2 & 11 & 18 & 8 & 7 \\
 = & 7 + 2 + 11 + 18 + 8 + 7 \\
 = & 53
 \end{array}$$

**Q. 8**

Select the option that is related to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

MIRACLE :OFTXEIG :: GLAMOUR : ?

- a) ICIJQST X
- b) ICIJQST X
- c) IJCKQST X
- d) IICJQRT ✓

M I R A C L E  
+2 -3 +2 -3 +2 -3 +2  
O F T X E I G

**Explanation:**

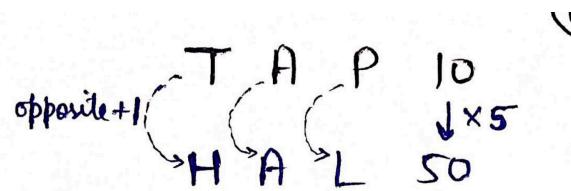
G L A M O U R  
+2 -3 +2 -3 +2 -3 +2  
I I C J Q R T

Q. 9

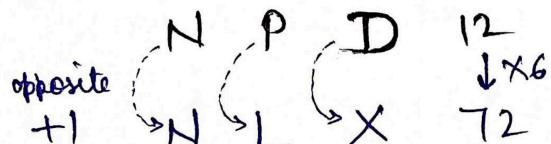
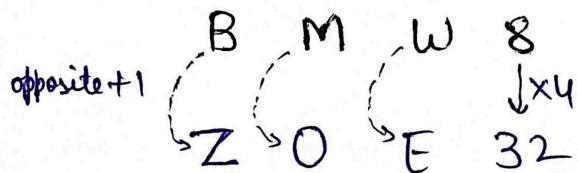
Select the option that is related to the fifth term in the same way as the second term is related to the first term and the fourth term is related to the third term.

TAP10 : HAL50 :: BMW8 : ZOE32 :: NPD12 : ?

- a) MLX72 X
- b) NLX72 ✓
- c) NLX60 X
- d) MLX60 X



Explanation:



Q. 10

In CREATIVE, Find out how many such pairs of letters are there each of which has as many letters between them in the word as in the English alphabet.

- a) One
- b) Three
- c) Two
- d) Four

Explanation:

There are 3 pairs of letters .

Q. 11

Which of the following numbers will replace the question mark (?) in the given series?

37, 39, 42, 47, ?, 65, 78, 95

- a) 53
- b) 57
- c) 54
- d) 55

Explanation:

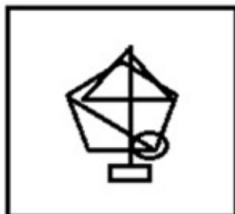
$$\begin{aligned} ? &= 47 + 7 \\ &= 54 \end{aligned}$$

Q. 12

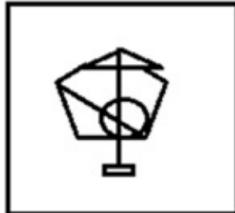
Select the option figure which is embedded in the given figure as its part (rotation is NOT allowed).



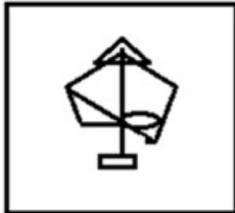
a)



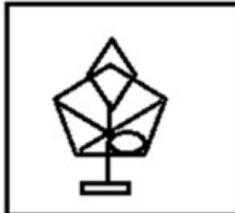
b)



c)



d)



The correct answer will be:



Explanation:

Q. 13

In a certain code language, 'all kings are beautiful' is coded as '42 63 mo lue' and 'all queens are beautiful' is coded as 'mo lue 63 36'. How is 'kings' coded in the given language?

- a) 42 ✓
- b) 24 ✗
- c) 63 ✗
- d) lue ✗

Explanation:

All [kings] are beautiful  
" " " "  
[42] 63 mo lue  
" " "  
queens  
36

Kings is coded as 42

Q. 14

Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(4, 60, 8)

(7, 65, 6)

a) (9, 60, 4) X

b) (5, 55, 6) ✓

c) (3, 35, 5) X

d) (8, 70, 7) X

$$(4, 60, 8)$$

$$(8+4) \times 5 = 60$$

$$(7, 65, 6)$$

$$(7+6) \times 5 = 65$$

$$(5, 55, 5)$$

$$(5+5) \times 5 = 55$$

Explanation:

Q. 15

Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)  
(8, 9, 153)

(6, 12, 186)

a) (8, 7, 119) X

b) (9, 7, 139) ✓

c) (5, 9, 110) X

d) (7, 9, 146) X

$$(8, 9, 153)$$

$$\Rightarrow (8)^2 + (9)^2 + 8$$

$$= 153$$

$$(6, 12, 186)$$

$$\Rightarrow (6)^2 + (12)^2 + 6$$

$$= 186$$

$$(9, 7, 139)$$

$$(9)^2 + (7)^2 + 9$$

$$= 139$$

Explanation:

Q. 16

In this question, three statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follows/follow from the statements.

Statements:

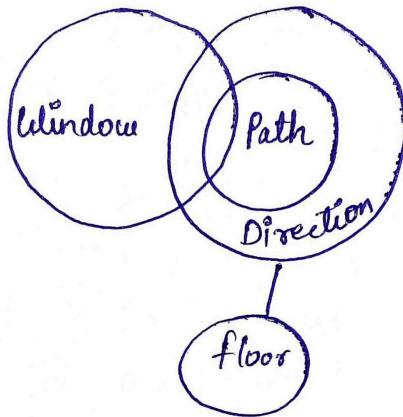
- I. Some windows are paths.
- II. All paths are directions.
- III. No direction is a floor.

Conclusions:

- I. No floor is a path.
- II. Some windows are directions.

- a) Only conclusion II follows X
- b) Both conclusions I and II follow ✓
- c) Only conclusion I follows X
- d) Neither conclusion I nor II follows X

Explanation:



According to given statements,  
Both conclusions I & II follows.

**Q. 17**

Two different position of the same dice are shown, having letters B, C, D, E, F and G written on its faces are shown.



Which letter is on the face opposite to the face having E on it?

- a) D
- b) G
- c) B
- d) F

**Explanation:**

The correct answer is F.

Q. 18

In this question, three statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follows/follow from the statements.

Statements:

Some peas are potatoes.

All potatoes are onions.

All peas are vegetables.

Conclusions:

I. Some peas are onions.

II. Some potatoes are vegetables.

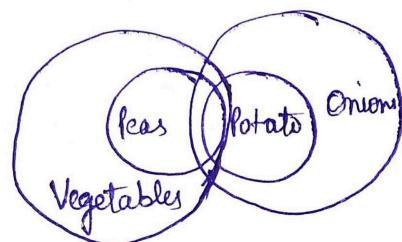
a) Neither conclusion I nor II follows. X

b) Both conclusions I and II follow. ✓

c) Only conclusion II follows. X

d) Only conclusion I follows. X

Explanation:



According to given statements,  
Both conclusions I & II follows

Q. 19

Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

(9, 3, 27)

(5, 4, 26)

a) (6, 3, 18) X

b) (8, 5, 42) X

c) (7, 4, 30) ✓

d) (10, 3, 39) X

$$(9, 3, 27)$$

$$\begin{aligned} &= (9 \times 2) + (3)^2 \\ &= 18 + 9 \rightarrow 27 \end{aligned}$$

$$(5, 4, 26)$$

$$\begin{aligned} &= (5 \times 2) + (4)^2 \\ &= 10 + 16 \rightarrow 26 \end{aligned}$$

$$(7, 4, 30)$$

$$\begin{aligned} &= (7 \times 2) + (4)^2 \\ &= 14 + 16 \rightarrow 30 \end{aligned}$$

**Explanation:**

Q. 20

Which of the following numbers will replace the question mark (?) in the given series?

0.04, 0.12, 0.42, 1.68, 2.08, 10.4, ?

- a) 10.9 ✓
- b) 12.9 ✗
- c) 11.8 ✗
- d) 12.3 ✗

Explanation:

$$\begin{array}{ccccccccc} 0.04, & 0.12, & 0.42, & 1.68, & 2.08, & 10.4, & ? \\ \downarrow \times 3 & \downarrow +0.3 & \downarrow \times 4 & \downarrow +0.4 & \downarrow \times 5 & \downarrow +0.5 & \downarrow \\ & & & & & & \end{array}$$

$$\begin{aligned} ? &= 10.4 + 0.5 \\ &= 10.9 \end{aligned}$$

Q. 21

'A+B' means 'A is the father of B'

'A-B' means 'A is the wife of B'

'AxB' means 'A is the brother of B'

'A÷B' means 'A is the daughter of B'

If 'R÷P+L×O-J', then how is P related to J?

a) Son-in-law b) Wife's father c) Son d) Father 

Here,

 $(+)$  = Male,  $(-)$  = female $(=)$  = Husband and wife $(-)$  = Brother and sister

Explanation:

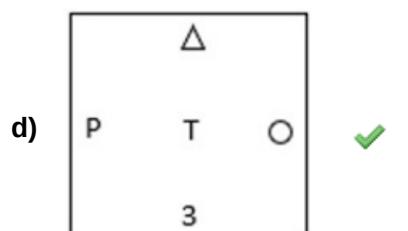
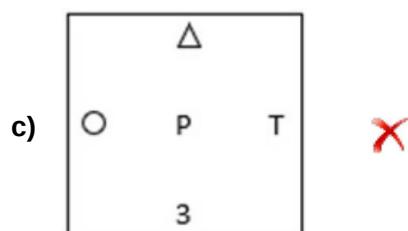
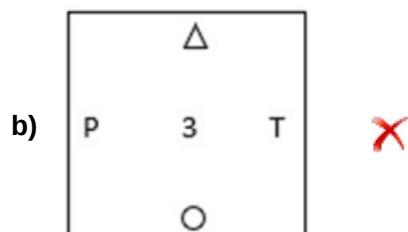
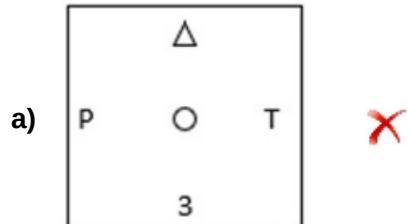
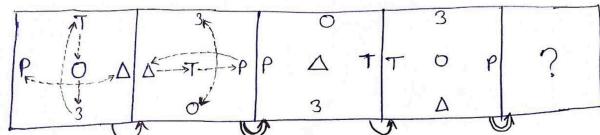
$$\begin{array}{r}
 p (+) \\
 | \\
 R (-) - L (+) - O (-) = J (+)
 \end{array}$$

P is wife's father of J

Q. 22

Select the figure from the options that can replace the question mark (?) and complete the given pattern.

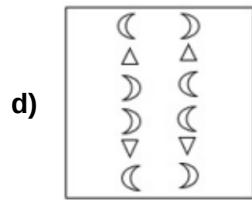
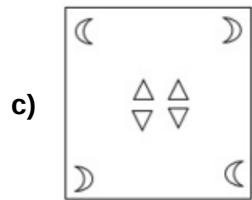
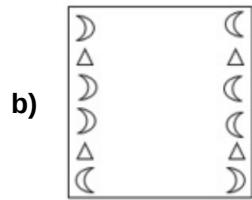
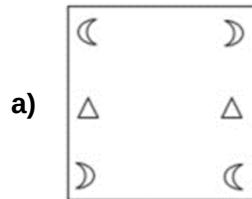
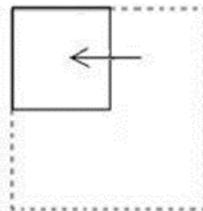
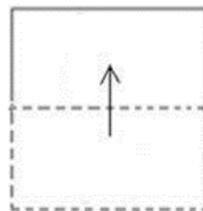
T	3	O	3	
P	O	Δ	Δ	T
3	O		3	Δ

**Explanation:**

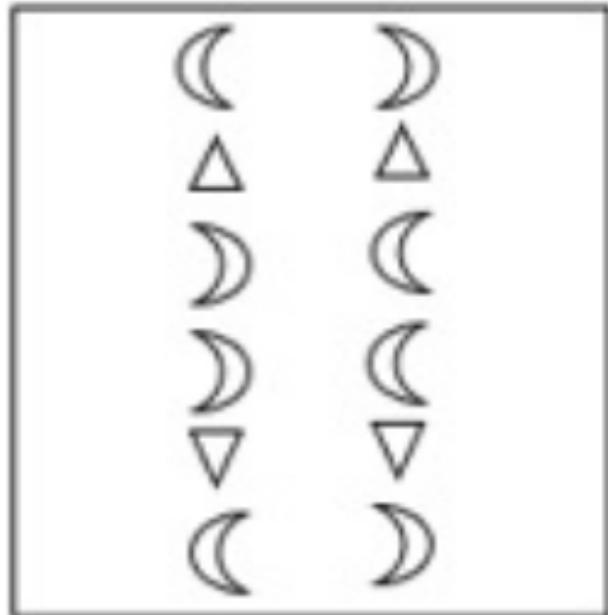
$$? = \begin{array}{|c|} \hline \Delta \\ \hline P & T & O \\ \hline 3 \\ \hline \end{array}$$

Q. 23

A paper is folded and cut as shown below. How will it appear when unfolded?



The correct answer is d:



**Explanation:**

**Q. 24**

Select the option that is related to the third term in the same way as the second term is related to the first term and the sixth term is related to the fifth term.

$8 : 3095 :: 9 : 5560 :: 10 : ?$

- a) 9899 
- b) 8999 
- c) 9898 
- d) 8899 

$$8 : 3095$$

$$\begin{aligned}&= (8)^4 - 1001 \\&= 4096 - 1001 \\&= 3095\end{aligned}$$

$$9 : 5560$$

$$\begin{aligned}\text{Explanation: } &= (9)^4 - 1001 \\&= 6561 - 1001 \\&= 5650\end{aligned}$$

$$10 : ?$$

$$\begin{aligned}&= (10)^4 - 1001 \\&= 10000 - 1001 \\&= 8999\end{aligned}$$

Q. 25

Select the figure that will replace the question mark (?) in the following figure series.



- a) X
- b) X
- c) X
- d) ✓

The correct answer will be:



Explanation:

Q. 26

If  $\sec 6\theta = \operatorname{cosec} (2\theta + 18^\circ)$ , find  $\tan 5\theta$ .

- a) 2 X
- b) 1 ✓
- c) -1 X
- d) 0 X

Explanation:

$$6\theta + 2\theta + 18^\circ = 90^\circ$$

$$8\theta = 72^\circ$$

$$\theta = 9^\circ$$

$$\tan 5\theta = \tan 45^\circ$$

2 1

Q. 27

**Simplify the given expression.**

$$\frac{(3\frac{4}{7} + 5\frac{3}{7}) \div \frac{9}{7}}{3\frac{1}{9} \div \left\{ \frac{2}{9} + \left( \frac{8}{9} \div \frac{2}{3} \right) \right\}}$$

- a)  $\frac{3}{3}$  X
- b)  $\frac{5}{2}$  X
- c)  $\frac{7}{2}$  ✓
- d)  $\frac{9}{2}$  X

$$\frac{\left( 3\frac{4}{7} + 5\frac{3}{7} \right) \div \frac{9}{7}}{3\frac{1}{9} \div \left\{ \frac{2}{9} + \left( \frac{8}{9} \div \frac{2}{3} \right) \right\}}$$

$$\frac{\left( \frac{25}{7} + \frac{38}{7} \right) \div \frac{9}{7}}{\frac{28}{9} \div \left\{ \frac{2}{9} + \left( \frac{4}{3} \right) \right\}}$$

**Explanation:**

$$\frac{\frac{63}{7} \times \frac{7}{9}}{\frac{28}{9} \times \frac{9}{14}}$$

$$\Rightarrow \frac{7}{2} \quad (\text{Ans})$$

**Q. 28**

- If  $x^3 + y^3 + z^3 = \frac{3}{4}(1 + 4xyz)$  and  $a = x + y - z$ ,  $b = x - y + z$ ,  $c = -x + y + z$ , then find  $a^3 + b^3 + c^3 - 3abc$ ?
- a) 6 X
- b) 4 X
- c) 2 X
- d) 3 ✓

**Explanation:**

$$\begin{aligned}
 x^3 + y^3 + z^3 &= \frac{3}{4}(1 + 4xyz) \\
 x^3 + y^3 + z^3 - 3xyz &= \frac{3}{4} \\
 a - b &= (x+y-z) - (x-y+z) = 2(y-z) \\
 b - c &= (x-y+z) - (-x+y+z) = 2(x-y) \\
 c - a &= (-x+y+z) - (x+y-z) = 2(z-x) \\
 a+b+c &= (x+y-z) + (x-y+z) + (-x+y+z) \\
 &= x + y + z \\
 a^3 + b^3 + c^3 - 3abc &= \frac{1}{2}(a-b)^2 + (b-c)^2 + (c-a)^2 \\
 &= \frac{1}{2}(x+y+z)[4(y-z)^2 + 4(x-y)^2 + 4(z-x)^2] \\
 &= 4 \times \frac{1}{2}(x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2] \\
 &= 4 \times [x^3 + y^3 + z^3 - 3xyz] \\
 &= 4 \times \frac{3}{4} = \textcircled{3} \quad (\text{Ans})
 \end{aligned}$$

Q. 29

**Find the third proportion of  $(x^2 - y^2)$  and  $(x - y)$ ?**

- a)  $\frac{x-y}{x+y}$  ✓
- b)  $\frac{x+y}{x-y}$  ✗
- c)  $\frac{2xy}{x+y}$  ✗
- d)  $\frac{2xy}{x-y}$  ✗

Explanation:

$$\frac{x^2 - y^2}{x-y} = \frac{x-y}{K}$$

$$\frac{(x-y)(x+y)}{x-y} = \frac{x-y}{K}$$

$$K = \frac{x-y}{x+y} \quad (\text{Ans})$$

Q. 30

**Nitin generally reaches his office 20 min late, he reduces his speed by 37.5% and reaches office 50min late. In how much time does he need to complete his journey to reach office on time?**

- a) 20 min ✗
- b) 30 min ✓
- c) 35 min ✗
- d) 40 min ✗

Explanation:

$$\begin{array}{r} \text{Speed} \rightarrow 8 \quad 5 \\ \text{Time} \rightarrow 5 \quad 8 \\ \qquad\qquad\qquad \curvearrowleft \\ \qquad\qquad\qquad \times 10 \quad 3 \rightarrow 30 \text{ min} \\ \qquad\qquad\qquad 1 \rightarrow 10 \text{ min} \\ \qquad\qquad\qquad 50 \text{ min} \end{array}$$

usual time  $= 50 \text{ min} - 20 \text{ min}$   
 $= 30 \text{ min} \quad (\text{Ans})$

**Q. 31**

The following table shows the number of teachers in four colleges (male and female) and the percentage of trained teachers among them.

Colleges	Male		Female	
	No. of Teachers	% of Trained Teachers	No. of Teachers	% of Trained Teachers
A	225	44	175	40
B	250	30	128	25
C	290	55	100	45
D	350	60	150	30

What is the total number of non-trained male teachers in college A and non-trained female teachers in college B?

- a) 224
- b) 222
- c) 230
- d) 228

Total number of non-trained male teachers in college A = 225

$\times 56\% = 126$

**Explanation:**

Total number of non-trained female teachers in college B = 128

$\times 75\% = 96$

Total number of non-trained male teachers in college A and non-trained female teachers in college B =  $126 + 96 = 222$

Q. 32

Sanjana can row a boat at 12km/h in the still water. It takes her thrice as long to row up a certain distance as to row down the same distance in the river. What is the rate of the stream (in km/h)?

- a) 3
- b) 4
- c) 6
- d) 8

$$\begin{array}{ll} D & U \\ T \rightarrow 1 & 3 \\ S \rightarrow 3 & 1 \end{array}$$

Explanation:

$$\frac{12+y}{12-y} = \frac{3}{1}$$

9y = 24  
 $y = 6 \text{ Km/hr (Ans)}$

Q. 33

If the average of n consecutive number is 27, find the average of N + 6 consecutive number?

- a) 27
- b) 28
- c) 29
- d) 30

Explanation:

$$\text{Let, } N = \\ 1, 2, 3, 4, 5, \dots, 53$$

$$\text{Average} = \frac{1+53}{2} = 27$$

$$\underline{N+6} \rightarrow$$

$$1, 2, 3, \dots, 53, 54, 55, 56, 57, 58, 59$$

$$\text{Average} = \frac{1+59}{2} = 30 \text{ (Ans)}$$

Q. 34

A certain amount doubles itself in 4 years in simple interest. In how much time it would become 11 times of itself?

- a) 20 years
- b) 30 years
- c) 40 years
- d) 60 years

Explanation:

$$SI = P \times \frac{R}{100} \times t$$

$$P = P \times \frac{R}{100} \times 4 \Rightarrow R = 25\%$$

$$10P = P \times \frac{25}{100} \times t$$

$$t = 40 \text{ years (Ans)}$$

Q. 35

By selling 60 note books, Vicky loses an amount equal to the SP of 5 notebooks.

What is his loss %?

- a) 7.14% X
- b) 7.7% ✓
- c) 6.66% X
- d) 8.33% X

Explanation:

$$\begin{aligned} \text{loss} &= CP - SP \\ 5SP &= 60 CP - 60 SP \\ 65SP &= 60 CP \\ \frac{SP}{CP} &= \frac{12}{13} \\ \text{loss \%} &= \frac{1}{13} \times 100 = 7.7\% \end{aligned}$$

Q. 36

The following table gives the information of number of students from various schools playing various games: (one student play one game only)

Game/School	A	B	C	D	E
Cricket	100	150	200	300	200
Tennis	200	220	210	210	230
Football	150	170	130	150	150
Basket ball	180	170	150	130	120
Badminton	100	150	120	130	150

The difference between the total number of students playing cricket from all the schools and the total number of students playing Tennis from all the schools is:

- a) 150
- b) 120
- c) 100
- d) 80

Explanation:

Total number of students playing cricket from all the schools =  $100 + 150 + 200 + 300 + 200 = 950$

Total number of students playing Tennis from all the schools =  $200 + 220 + 210 + 210 + 230 = 1070$

Difference between the total number of students playing cricket from all the schools and the total number of students playing Tennis from all the schools =

$$1070 - 950 = 120$$

Q. 37

Anam and Bikash invest in a business in the ratio 5 : 3. If in a particular month, Anam gets ₹4,640 as profit, the total profit is:

- a) ₹7,324
- b) ₹7,844
- c) ₹7,424
- d) ₹7,454

Explanation:

**Q. 38**

If  $x + \frac{1}{x} = \sqrt{3}$ , find  $x^{31} + x^{32} + x^{33} + x^{37} + x^{38} + x^{39}$ ?

- a) 1 X
- b) -1 X
- c) 2 X
- d) 0 ✓

**Explanation:**

$$\begin{aligned}
 x + \frac{1}{x} &= \sqrt{3} \\
 \Rightarrow x^{31} + x^{37} + x^{32} + x^{38} + x^{33} + x^{39} &= \\
 \Rightarrow x^{31}(1+x^6) + x^{32}(1+x^6) + x^{33}(1+x^6) &= \\
 \Rightarrow x^{31}(1-1) + x^{32}(1-1) + x^{33}(1-1) &= \\
 \Rightarrow 0 & \quad (\text{Ans})
 \end{aligned}$$

**Q. 39**

Three Partners Neil, Nitin and Mukesh started their business with ₹60,000, 54,000 and 66,000. After 3 months Neil left the business while 6 months after Neil left, Nitin also left the business. What would be the ratio of profit after the end of the year?

- a) 10 : 27 : 44 ✓
- b) 5 : 27 : 44 X
- c) 10 : 9 : 44 X
- d) 10 : 27 : 22 X

**Explanation:**

$$\begin{aligned}
 \text{Neil : Nitin : Mukesh} \\
 10 \times 3 : 9 \times 9 : 11 \times 12 \\
 10 : 27 : 44
 \end{aligned}$$

**Q. 40**

$$(a^2 - b^2) \sin x + 2ab \cos x = a^2 + b^2, \text{ find } \cot x ?$$

a)  $\frac{a^2+b^2}{a^2-b^2}$  X

b)  $\frac{2ab}{a^2-b^2}$  ✓

c)  $\frac{a^2-b^2}{a^2+b^2}$  X

d)  $\frac{2ab}{a^2+b^2}$  X

**Explanation:**

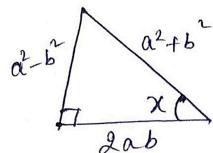
$$(a^2 - b^2) \sin x + 2ab \cos x = a^2 + b^2,$$

$$\left(\frac{a^2-b^2}{a^2+b^2}\right) \sin x + \left(\frac{2ab}{a^2+b^2}\right) \cos x = 1$$

(Comparing it with  $\sin^2 x + \cos^2 x = 1$ )

$$\therefore \sin x = \frac{a^2-b^2}{a^2+b^2} ; \cos x = \frac{2ab}{a^2+b^2}$$

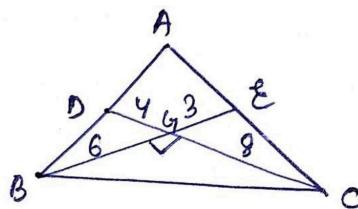
$$\therefore \cot x = \frac{2ab}{a^2-b^2}$$



Q. 41

If 12 cm and 9 cm are length of median of triangle which are perpendicular to each other, find the area of that triangle?

- a)  $27 \text{ cm}^2$  X
- b)  $36 \text{ cm}^2$  X
- c)  $54 \text{ cm}^2$  X
- d)  $72 \text{ cm}^2$  ✓



$$\frac{GC}{GD} = \frac{2}{1}$$

$$3 \rightarrow 12 \Rightarrow 1 \rightarrow 4$$

$$GC = 8 \text{ cm}; GD = 4 \text{ cm}$$

Similarly,

$$BG = 6 \text{ cm}; GE = 3 \text{ cm}$$

$$\begin{aligned} \text{Area of } \triangle BGC &= \frac{1}{2} \times 6 \times 8 \\ &= 24 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of } \triangle ABC &= 24 \times 3 \\ &= 72 \text{ cm}^2 \end{aligned}$$

**Explanation:**

Q. 42

A and B working together can complete the work in  $x$  days. Working alone, A takes  $9 + x$  days and B takes  $16 + x$  days to complete the same work. A works for 5 days, the remaining work will be completed by B alone in?

- a)  $21 \frac{1}{3}$  ✓
- b)  $24 \frac{2}{3}$  ✗
- c)  $18 \frac{5}{3}$  ✗
- d)  $20 \frac{4}{3}$  ✗

Explanation:

$$A \rightarrow 9 + x$$

$$B \rightarrow 16 + x$$

$$A+B \rightarrow x$$

$$x = \sqrt{16 \times 9} = 12$$

$$\begin{matrix} 4 - A - 21 \\ 3 - B - 28 \end{matrix} > 84$$

Remaining work

$$\Rightarrow 84 - 20 = 64$$

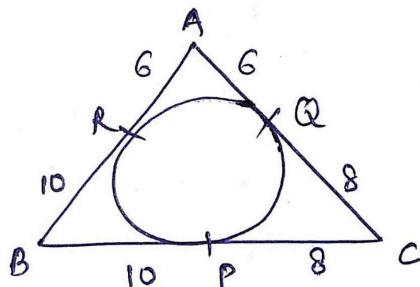
Time taken by B

$$\Rightarrow \frac{64}{3} \Rightarrow 21 \frac{1}{3} \text{ (Ans)}$$

Q. 43

A circle is inscribed in a triangle ABC in which the point R, P and Q touch the side AB, BC and AC respectively. If  $AQ = 6 \text{ cm}$ ,  $PC = 8 \text{ cm}$  and  $BR = 10 \text{ cm}$ . Find the perimeter of  $\triangle ABC$ .

- a) 24 X
- b) 48 ✓
- c) 60 X
- d) 72 X

**Explanation:**

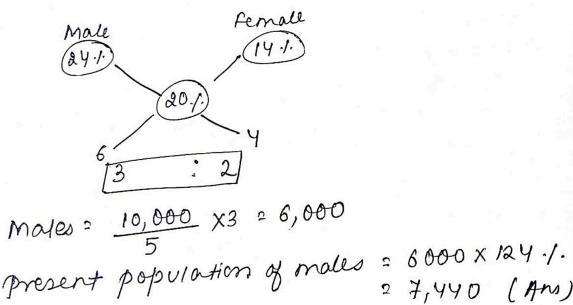
$$\begin{aligned}
 AR &= AR = 6 \text{ cm} \\
 PC &= QC = 8 \text{ cm} \\
 BR &= BP = 10 \text{ cm} \\
 \text{Perimeter} &= 2(6+8+10) \\
 &= 2 \times 24 = 48 \text{ cm}
 \end{aligned}$$

**Q. 44**

The population of a village was 10,000. If the males and females are increased by 24% and 14% respectively. Then population will become 12,000 after 1 year. Find the no. of males at present.

- a) 6000 X
- b) 6552 X
- c) 7240 X
- d) 7440 ✓

$$\% \text{ population increase} = \frac{12,000 - 10,000}{10,000} \times 100 \\ = 20\%$$

**Explanation:****Q. 45**

If  $x + \frac{1}{x} = 1$ , find  $x^{67} + \frac{1}{x^{67}}$  ?

- a) 0 X
- b) 1 ✓
- c) -1 X
- d) 2 X

**Explanation:**

$$x + \frac{1}{x} = 1 \Rightarrow x^3 = -1$$

$$\Rightarrow x^{67} + \frac{1}{x^{67}} = (x^3)^{22} \cdot x + \frac{1}{(x^3)^{22} \cdot x}$$

$$\Rightarrow x + \frac{1}{x} = 1 \text{ (Ans)}$$

Q. 46

The perimeter of triangle ABC is 27 cm and its side BC is 9 cm. AD is the bisector of  $\angle BAC$ . While I is the incentre. AI : ID is equal:-

- a) 1 : 2 X
- b) 2 : 1 ✓
- c) 4 : 1 X
- d) 1 : 4 X

Explanation:

$$\begin{aligned} AB + BC + CA &= 27 \text{ cm} \\ AB + BC &= 27 - 9 = 18 \text{ cm} \end{aligned}$$

$$\frac{AI}{ID} = \frac{AB + BC}{BC} = \frac{18}{9} = \frac{2}{1}$$

$$\therefore AI : ID = 2 : 1 \text{ (Ans)}$$

Q. 47

If  $35\sec\theta - 29\tan\theta = 8\sqrt{10}$ , then find  $35\tan\theta - 29\sec\theta = ?$

- a) 8 X
- b) 12 X
- c) 16 ✓
- d) 20 X

Explanation:

$$35 \sec\theta - 29 \tan\theta = 8\sqrt{10}$$

$$35 \tan\theta - 29 \sec\theta = n$$

$$(35)^2 - (29)^2 = (8\sqrt{10})^2 - (n)^2$$

$$n^2 = 256$$

$$n = 16 \text{ (Ans)}$$

$$\left( \because a \sec x - b \tan x = m \right.$$

$$a \tan x - b \sec x = n$$

$$\Rightarrow a^2 - b^2 = m^2 - n^2 \quad \left. \right)$$

**Q. 48**

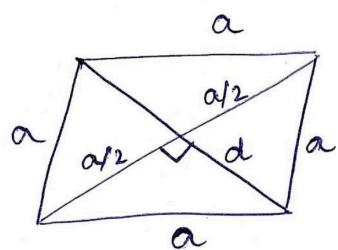
If one diagonal of a rhombus is equal to its side, then the diagonals of the rhombus are in the ratio of:

- a)  $\sqrt{3} : \sqrt{6}$  X

b)  $\sqrt{2} : 1$  X

c)  $\sqrt{2} : \sqrt{3}$  X

d)  $1 : \sqrt{3}$  ✓



let other diagonal = d

$$a^2 = \alpha^2/4 + d^2$$

$$\Rightarrow \frac{3}{4}a^2 > d^2 \Rightarrow d^2 < \frac{\sqrt{3}a}{2}$$

$$a_2 : \sqrt{3} / 2 \quad a$$

$$1 : \sqrt{3} \quad \text{Ans}$$

## Explanation:

Q. 49

When 1062, 1134 and 1182 are divided by the greatest no. x, the remainder is same.

Find x.

a) 48



b) 96



c) 24



d) 36



Explanation:

$$\begin{aligned} 1134 - 1062 &= 72 \\ 1182 - 1134 &= 24 \\ \text{HCF}(72, 24) &= 24 \\ x &= 24 \quad (\text{Ans}) \end{aligned}$$

Q. 50

The length of the largest possible rod that can be placed in a cubical room is  $56\sqrt{3}$ m. The surface area (in  $\text{m}^2$ ) of the largest possible sphere that fit within the cubical room is: [Use  $\pi = \frac{22}{7}$ ]

a) 7431



b) 8118



c) 8712



d) 9856



Explanation:

largest rod that can be fit  
in a cubical room is along  
its diagonal.

$$\sqrt{3}a = 56\sqrt{3} \Rightarrow a = 56$$

$$4\pi r^2 = 4 \times \frac{22}{7} \times \frac{56}{2} \times \frac{56}{2}$$

$$\Rightarrow 9856 \text{ m}^2 \quad (\text{Ans})$$

**Q. 51****Where is the National Dope Testing Laboratory located?**

- a) Mumbai 
- b) Punjab 
- c) Bangalore 
- d) New Delhi 

**Explanation:**

The correct answer is d: New Delhi

The National Dope Testing Laboratory (NDTL) is a premier scientific institute under the Ministry of Youth Affairs and Sports, Government of India. It is accredited by the World Anti-Doping Agency (WADA) and serves as the primary laboratory for conducting anti-doping tests in India.

Q. 52

**Which of the following movements started in Bengal?**

- a) Arya Samaj
- b) Prarthana Samaj
- c) Ramakrishna Mission
- d) Satyashodhak Samaj

The correct answer is c: Ramakrishna Mission

**Ramakrishna Mission:**

- **Founding:** The Ramakrishna Mission was founded by Swami Vivekananda in 1897 in Kolkata (formerly Calcutta), Bengal.
- **Purpose:** The mission aims to spread the teachings of Sri Ramakrishna Paramahansa, focusing on spiritual development, social service, education, and cultural activities.
- **Activities:** The mission runs schools, colleges, hospitals, and rural development programs, promoting values of selflessness and service to humanity.

**Arya Samaj:**

- **Founding:** Founded by Swami Dayananda Saraswati in 1875 in Bombay (now Mumbai), Maharashtra.
- **Purpose:** Aimed at reforming Hinduism by returning to the teachings of the Vedas, rejecting idol worship, and promoting social reforms like women's education and caste abolition.

**Explanation:****Prarthana Samaj:**

- **Founding:** Established in 1867 in Bombay (now Mumbai), Maharashtra, by Dr. Atmaram Pandurang with the help of Mahadev Govind Ranade and others.
- **Purpose:** Focused on monotheism and social reforms, including the abolition of caste distinctions, and promotion of women's education and widow remarriage.

**Satyashodhak Samaj:**

- **Founding:** Founded by Jyotirao Phule in 1873 in Pune, Maharashtra.
- **Purpose:** Aimed at eliminating the caste system and promoting education and rights for the oppressed classes, particularly the lower castes and women.

**Q. 53**

Which of the following elements is most likely to form a compound with the formula  $MX_2$ , where M is a metal and X is a halogen?

- a) Potassium (K)
- b) Calcium (Ca)
- c) Aluminum (Al)
- d) Phosphorus (P)

**Explanation:**

The correct answer is b: Calcium (Ca)

Calcium, being in group 2 of the periodic table, commonly forms compounds with the formula  $MX_2$ , where M is a metal with a +2 oxidation state and X is a halogen with a -1 oxidation state. For example, calcium chloride ( $CaCl_2$ ).

**Q. 54**

Chhajju Khan is one of the founders of which family?

- a) Bhendi Bazaar Gharana
- b) Lucknow Gharana
- c) Mewati Gharana
- d) Agra Gharana

**Explanation:**

The correct answer is a: Bhendi Bazaar Gharana

Chhajju Khan is one of the founders of the Bhendi Bazaar Gharana. This gharana was established around 1890 by brothers Chhajju Khan, Nazir Khan, and Khadim Hussain Khan in the Bhendi Bazaar area of Mumbai. They migrated to Mumbai from Muradabad in Uttar Pradesh and trained under their father, Ustad Dilawar Hussain Khan.

**Q. 55****The northern part of which of the following is also known as Sahyadri?**

- a) Satpura Range 
- b) Vindhya Range 
- c) Western Ghat 
- d) Eastern Ghat 

**Explanation:**

The correct answer is c: Western Ghat

The northern part of the Western Ghats is also known as Sahyadri. The Western Ghats, a mountain range running parallel to the western coast of the Indian subcontinent, covers several states including Maharashtra, Karnataka, Kerala, Tamil Nadu, and Goa. The Sahyadri name is commonly used to refer to the northern part of the Western Ghats.

**Q. 56****What is the function of the Golgi apparatus in a cell?**

- a) Protein synthesis
- b) Energy production
- c) Packaging and modification of proteins
- d) DNA replication

The correct answer is c: Packaging and modification of proteins

**The Golgi apparatus**, also known as the Golgi complex or Golgi body, is an organelle found in eukaryotic cells. Its primary function is the modification, sorting, packaging, and transportation of proteins and lipids synthesized in the endoplasmic reticulum (ER). Newly synthesized proteins and lipids are transported from the ER to the Golgi apparatus in vesicles. Within the Golgi apparatus, these molecules undergo post-translational modifications such as glycosylation (addition of sugar molecules) and sorting into specific vesicles for transport to their final destinations.

**Explanation:**

The Golgi apparatus also plays a role in the synthesis of certain complex carbohydrates and the formation of lysosomes (organelles containing enzymes for intracellular digestion).

Options A, B, and D are incorrect:

- Protein synthesis (option A) primarily occurs on ribosomes, either free in the cytoplasm or attached to the endoplasmic reticulum.
- Energy production (option B) primarily occurs in mitochondria through cellular respiration.
- DNA replication (option D) occurs in the nucleus during the cell cycle, not in the Golgi apparatus.

**Q. 57****Which edict of Ashoka provides a description of his remorse after the Kalinga War?**

- a) Rock Edict XIII 
- b) Pillar Edict IV 
- c) Rock Edict XI 
- d) Minor Rock Edict I 

**Explanation:**

The correct answer is a: Rock Edict XIII

Rock Edict XIII of Ashoka provides a detailed account of his remorse after the Kalinga War. In this edict, Ashoka expresses his sorrow over the loss of life and suffering caused by the war, leading to his embrace of Buddhism and non-violence.

**Q. 58**

**Which Article of the Indian Constitution deals with the original jurisdiction of the Supreme Court?**

- a) Article 131 ✓
- b) Article 132 ✗
- c) Article 133 ✗
- d) Article 134 ✗

The correct answer is a: Article 131

### Article 131: Original Jurisdiction of the Supreme Court

- **Scope:** Article 131 of the Indian Constitution deals with the original jurisdiction of the Supreme Court. This means that certain types of cases can be directly filed in the Supreme Court without first going through lower courts.
- **Types of Cases:** The original jurisdiction covers disputes between:
  - The Government of India and one or more states
  - The Government of India and any state(s) on one side and one or more states on the other
  - Two or more states

These disputes must involve questions of law or fact on which the existence or extent of a legal right depends.

#### Other Articles:

### Article 132: Appellate Jurisdiction of Supreme Court in Constitutional Cases

- **Scope:** Article 132 pertains to the appellate jurisdiction of the Supreme Court in cases involving substantial questions of law as to the interpretation of the Constitution.
- **Conditions:** Appeals can be made to the Supreme Court from any judgment, decree, or final order of a High Court if the High Court certifies that the case involves a substantial question of law concerning the interpretation of the Constitution.

#### Explanation:

### Article 133: Appellate Jurisdiction of Supreme Court in Civil Cases

- **Scope:** Article 133 deals with the appellate jurisdiction of the Supreme Court in civil matters.
- **Conditions:** An appeal can be made to the Supreme Court from any judgment, decree, or final order in a civil proceeding of a High Court if the High Court certifies that the case involves a substantial question of law of general importance and that the said question needs to be decided by the Supreme Court.

### Article 134: Appellate Jurisdiction of Supreme Court in Criminal Cases

- **Scope:** Article 134 deals with the appellate jurisdiction of the Supreme Court in criminal cases.
- **Conditions:** An appeal can be made to the Supreme Court from any judgment, final order, or sentence in a criminal proceeding of a High Court:
  - If the High Court has, on appeal, reversed an order of acquittal and sentenced the accused to death.
  - If the High Court has withdrawn for trial before itself any case from any court subordinate to it and has in such trial convicted the accused and sentenced him to death.
  - If the High Court certifies that the case is a fit one for appeal to the Supreme Court.

Q. 59

**Which Indian film won the La Cinéfe Award at the 77th Cannes Film Festival?**

- a) The Disciple
- b) Masaan
- c) Sunflower
- d) Newton

**Explanation:**

The correct answer is c: Sunflower

The Indian film "**Sunflowers Were The First Ones To Know**" received the **La Cinéfe Award** for Best Short Film at the **77th Cannes Film Festival**. Directed by Chidananda S Naik, a student from the Film and Television Institute of India (FTII) in Pune, the film is based on a Kannada folk tale about an old woman who steals a rooster, plunging her village into perpetual darkness. The winner was awarded a prize of 15,000 euros. Another Indian film, "Bunnyhood", directed by Mansi Maheshwari, also received recognition in the La Cinefe competition.

Q. 60

**'Alarippu' is a dance piece from which of the following classical dances of India?**

- a) Odissi
- b) Kathakali
- c) Kathak
- d) Bharatnatyam

**Explanation:**

The correct answer is d: Bharatnatyam

'Alarippu' is a dance piece that belongs to the classical dance form of Bharatanatyam. The Alarippu is traditionally the first dance piece that Bharatanatyam dancers learn and perform. It is an invocation piece, symbolizing the offering of respects to both God, the guru, and the audience. This purely technical dance contains basic steps and focuses on rhythm, without abhinaya (expressive storytelling). The word "Alarippu" means flowering bud in Tamil.

Q. 61

The combined effect of mass and velocity is taken into account by a physical quantity called \_\_\_\_.

- a) impulse
- b) moment of force
- c) momentum
- d) Speed

The correct answer is c: momentum

- Momentum is a physical quantity defined as the product of an object's mass and velocity.
- It is given by the formula: Momentum( $p$ )= $\text{mass}(m) \times \text{velocity}(v)$

**Properties:** Momentum is a vector quantity, meaning it has both magnitude and direction. It is a measure of the motion of an object and is conserved in isolated systems (principle of conservation of momentum).

**Other Options:**

**(a) Impulse:**

- **Definition:** Impulse is a physical quantity that describes the effect of a force acting over a period of time.
- It is given by the formula: Impulse( $J$ )= $\text{force}(F) \times \text{time}(t)$ .

**Explanation:**

**(b) Moment of Force (Torque):**

- **Definition:** The moment of force, commonly known as torque, measures the rotational effect of a force applied to a point at a distance from the axis of rotation. It is given by the formula:
- $\text{Torque}(\tau) = \text{force}(F) \times \text{lever arm}(r)$

where the lever arm is the perpendicular distance from the axis of rotation to the line of action of the force.

**(d) Speed:**

- **Definition:** Speed is a scalar quantity that refers to how fast an object is moving. It is the magnitude of velocity and does not include direction.

**Q. 62**

**Which of the following rivers rises in the west of Rohtang Pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state?**

- a) Satluj
- b) Ravi
- c) Beas
- d) Chenab

**Explanation:**

The correct answer is b: Ravi

The Ravi River rises in the west of Rohtang Pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state. It's a trans-boundary river that eventually becomes an important tributary of the Indus, flowing through both India and Pakistan.

**Q. 63**

**"Kharchi Pooja" of Tripura is a Hindu festival in which \_\_\_\_\_ hindu gods including the earth are worshipped.**

- a) 8
- b) 12
- c) 14
- d) 16

**Explanation:**

The correct answer is c: 14

The Kharchi Puja in Tripura is a significant Hindu festival that involves the worship of fourteen gods. These gods, forming the dynasty deities of the Tripuri people, are revered during the festival. The word "Kharchi" is derived from "Khya," which means "Earth." The Puja is primarily performed to worship the Earth and cleanse the post-menstrual phase of Mother Earth. It lasts for seven consecutive days and includes rituals, offerings, and cultural programs.

**Q. 64**

- Which of the following Amendment Acts of the Constitution of India conferred statehood to Goa and formed a new union territory comprising of Daman and Diu?**
- a) 56th Amendment Act ✓
  - b) 23rd Amendment Act ✗
  - c) 67th Amendment Act ✗
  - d) 45th Amendment Act ✗

**Explanation:**

The correct answer is a: 56th Amendment Act

**The 56th Amendment Act of 1987** conferred statehood on Goa, making it the 25th state of India. This amendment also led to the formation of a new Union Territory comprising Daman and Diu.

**The 23rd Amendment Act of 1969** amended Article 334 of the Constitution to extend the reservation of seats for Scheduled Castes, Scheduled Tribes, and Anglo-Indians in the Lok Sabha and State Legislative Assemblies for another ten years.

**The 67th Amendment Act of 1990** extended President's Rule in the state of Punjab by another six months.

**The 45th Amendment Act of 1980** also dealt with the extension of the reservation of seats for Scheduled Castes, Scheduled Tribes, and Anglo-Indians in the Lok Sabha and State Legislative Assemblies. This amendment extended the period of reservation by ten years.

**Q. 65**

- The founders of the Vijayanagara Empire were feudatories of which of the following dynasties?**
- a) Chola ✗
  - b) Kakatiya ✓
  - c) Pandya ✗
  - d) Hoysala ✗

**Explanation:**

The correct answer is b: Kakatiya

The Vijayanagara Empire was founded by Harihara I and Bukka Raya I, who were feudatories of the Kakatiya dynasty before establishing their own powerful empire in 1336.

**Q. 66**

- The weather during the winter months in India is influenced by the distribution of surface pressure from \_\_\_\_\_.
- a) Central and western Asia ✓
  - b) Central and Southern Asia ✗
  - c) Western and Eastern Asia ✗
  - d) Central and Northern Asia ✗

**Explanation:**

The correct answer is a: Central and western Asia

During the winter months in India, the weather conditions are primarily influenced by the distribution of surface pressure in Central and Western Asia. Specifically, a high-pressure zone develops over Central Asia, and the surface winds blowing out of that region reach India in the form of a dry continental air mass. These winds come into contact with trade winds over northwestern India. The contact zone is not stable and sometimes shifts up to the middle Ganga valley, affecting the entire northwestern region of India. Additionally, the role of the Sub Tropical Westerly Jet Streams and Western Cyclonic Disturbances also contributes to winter weather patterns in India.

**Q. 67**

- According to the standard census definition, who of the following can be classified as a main worker in India?
- a) A person who works for at least 160 days. ✗
  - b) A person who works for at least 200 days. ✗
  - c) A person who works for at least 183 days. ✓
  - d) A person who works for at least 100 days. ✗

**Explanation:**

The correct answer is c: A person who works for at least 183 days.

A person who works for at least 183 days in a year for economic productivity is considered a "main worker" according to the Census of India.

**Q. 68**

**The Bardoli Satyagraha, led by Sardar Vallabhbhai Patel in 1928, was a successful protest against:**

- a) Tax hike imposed by the British ✓
- b) Land acquisition by the British ✗
- c) Salt Tax imposed by the British ✗
- d) Forest laws imposed by the British ✗

**Explanation:**

The correct answer is a: Tax hike imposed by the British

The Bardoli Satyagraha in 1928, led by Sardar Vallabhbhai Patel, was a successful protest against the tax hike imposed by the British on farmers in Bardoli, Gujarat. Patel's leadership and the unity of the farmers resulted in the withdrawal of the tax hike.

**Q. 69**

**Who became the First Indian Saint to receive USA's "Presidential Award"?**

- a) Acharya Prashant ✗
- b) Acharya Pramod Krishnam ✗
- c) Prasanna Acharya ✗
- d) Jain Acharya Lokesh ✓

**Explanation:**

The correct answer is d: Jain Acharya Lokesh

India's Jain spiritual leader Lokesh Muni also known as Jain Acharya Lokesh became the first Indian monk to be honored with the US President's Gold Volunteer Service award in recognition of his contribution to the public good and humanity. He received the award from senior Democratic Congressman Brad Sherman at the US Capitol. The citation, signed by President Joe Biden, commended Lokesh Muni for his service to the nation and humanity. The awardees are selected by AmeriCorps, an independent agency of the US government that engages millions of Americans in volunteer work programs across various sectors.

**Q. 70****National Income is compiled by -**

- a) Finance Commission
- b) India Statistical Institute
- c) National Development Council
- d) Central Statistical Organization

**Explanation:**

The correct answer is d: Central Statistical Organization

National income is compiled by the Central Statistical Organization (CSO) in India. The CSO is responsible for collecting and analyzing data related to economic activity, including gross domestic product (GDP) and gross national income (GNI). These statistics provide insights into the overall performance of the economy.

**Q. 71****Who was the India's flag bearer in Paris Olympics 2024?**

- a) PV Sindhu
- b) Neeraj Chopra
- c) Sharath Kamal
- d) Mithali Raj

**Explanation:**

The correct answer is c: Sharath Kamal

Veteran table tennis player Sharath Kamal, a two-time Commonwealth Games champion and Khel Ratna awardee, will proudly carry India's flag during the grand Opening Ceremony parade at the upcoming Paris 2024 Olympics. Additionally, legendary boxer Mary Kom has been appointed as the Chef de Mission for the Indian contingent in Paris.

**Q. 72****Which of the following is the primary sex organ in females?**

- a) Uterus
- b) Ovary
- c) Vagina
- d) Fallopian tube

The correct answer is b: Ovary

**Ovary:**

**Function:** The ovaries are the primary sex organs in females. They are responsible for producing ova (egg cells) and also secrete the female sex hormones estrogen and progesterone.

**Structure:** Females typically have two ovaries, located on either side of the uterus. These organs contain follicles that mature into eggs during the menstrual cycle.

**Reproductive Role:** The ovary releases an egg during ovulation, which can then be fertilized by a sperm cell in the fallopian tube, leading to pregnancy.

**Other Options:**

(a) **Uterus:**

**Function:** The uterus, or womb, is a secondary reproductive organ. It is the site where a fertilized egg implants and develops into a fetus during pregnancy.

**Explanation:**

**Structure:** The uterus is a muscular organ located in the pelvis. It has a thick lining called the endometrium, which is shed during menstruation if pregnancy does not occur.

(c) **Vagina:**

**Function:** The vagina is part of the female reproductive system that serves as the canal through which menstrual blood exits the body, sexual intercourse occurs, and a baby passes during childbirth.

**Structure:** It is a muscular tube that connects the external genitals to the cervix of the uterus.

(d) **Fallopian Tube:**

**Function:** The fallopian tubes are secondary reproductive organs that transport the egg from the ovary to the uterus. Fertilization of the egg by sperm typically occurs within the fallopian tubes.

**Structure:** Each woman has two fallopian tubes, one attached to each ovary. They have finger-like projections called fimbriae that help guide the egg from the ovary into the tube.

**Q. 73****The existence of isotopes was first suggested in 1913 by the radiochemist \_\_\_\_\_.**

- a) Frederick Soddy
- b) Carl D. Anderson
- c) Ernest Rutherford
- d) Joseph Priestley

**Explanation:**

The correct answer is a: Frederick Soddy

The existence of isotopes was first suggested in 1913 by the radiochemist Frederick Soddy. Isotopes are atoms of the same element with different masses due to varying numbers of neutrons. Soddy's work, along with Ernest Rutherford, significantly contributed to our understanding of radioactivity and the transmutation of elements.

**Q. 74****SRD Prasad was honored with Padma Shri in year 2023 for his contribution in \_\_\_\_\_ game.**

- a) Kalaripayattu
- b) Boat Race
- c) Sewal Sandai
- d) Jallikattu

**Explanation:**

The correct answer is a: Kalaripayattu

Kerala's Kalaripayattu Acharya SRD Prasad received the Padma Shri award in 2023 for his significant contributions to the field of sports. His expertise lies in Kalaripayattu, a traditional martial art form from Kerala.

**Q. 75**

**Who has recently been made the Chairman of National Commission for Scheduled Castes (NCSC)?**

- a) Harsh Mangala
- b) Kishor Makwana
- c) Iqbal Singh Lal
- d) Vinay Kumar

**Explanation:**

The correct answer is b: Kishor Makwana

Shri Kishor Makwana assumed the charge of Chairman of National Commission for Scheduled Castes (NCSC).

**Q. 76**

**Select the most appropriate synonym for the given word.**

**Erudite**

- a) Astute
- b) Ignorant
- c) Crude
- d) Naïve

The most appropriate synonym for "erudite" is: Astute

**Erudite:** Having or showing great knowledge or learning.

**Astute:** Having or showing an ability to accurately assess situations or people and turn this to one's advantage; shrewd.

**Explanation:**

**Ignorant:** Lacking knowledge, information, or awareness about something in particular.

**Crude:** In a natural or raw state; not yet processed or refined; also, lacking culture, refinement, or tact.

**Naïve:** Showing a lack of experience, wisdom, or judgment; innocent or unsophisticated.

Q. 77

Select the most appropriate option that can substitute the underlined segment in the given sentence.

**The number of student in the class is increasing each year.**

- a) student in the class was X
- b) students in the class is ✓
- c) students in the class are X
- d) students in the class were X

**Explanation:**

The most appropriate option that can substitute the underlined segment in the given sentence is: **students in the class is**

**The number of + plural noun + singular verb:** This construction uses a plural noun but takes a singular verb because the subject of the sentence is "the number," which is singular.

**students in the class is:**

"Students" is the correct plural form of "student."

"is" is the correct singular verb because the subject "the number" is singular.

So the corrected sentence is: **The number of students in the class is increasing each year.**

Q. 78

Select the most appropriate ANTONYM of the underlined word.

**His terse instructions were clear and to the point, leaving no room for confusion.**

- a) Concise X
- b) Brief X
- c) Verbose ✓
- d) Incisive X

**Explanation:**

The most appropriate antonym for "terse" in the given sentence is: **Verbose**

- **Terse:** Brief and concise, sometimes to the point of being blunt.
- **Concise:** Clear and succinct, using few words.
- **Brief:** Short in duration or length.
- **Verbose:** Excessively wordy or long-winded.
- **Incisive:** Sharp and effective in analysis or expression.

**Q. 79**

**Parts of a sentence are given below in jumbled order. Arrange the parts in the correct order to form a meaningful sentence.**

**P. consumers need to be aware and educated about their rights, responsibilities and protection mechanisms**

**Q. In addition, they help the consumers understand legislation and policy matters which would directly have a bearing on their rights and choices as consumers**

**R. Consumer Education and Protection are thus tools which empower and equip consumers to protect themselves from adverse market forces**

**S. In order to effectively deal with the onslaught of clever and deceptive market interests, marketing strategies and other problems**

**a) SPRQ**

**b) RPSQ**

**c) PQRS**

**d) SRQP**

**Explanation:**

The correct order to form a meaningful sentence is **SPRQ**:

**S. In order to effectively deal with the onslaught of clever and deceptive market interests, marketing strategies and other problems**

**P. consumers need to be aware and educated about their rights, responsibilities and protection mechanisms**

**R. Consumer Education and Protection are thus tools which empower and equip consumers to protect themselves from adverse market forces**

**Q. In addition, they help the consumers understand legislation and policy matters which would directly have a bearing on their rights and choices as consumers**

This sequence logically follows the flow of ideas from identifying the issue (S), stating the need for consumer awareness (P), explaining the role of Consumer Education and Protection (R), and finally highlighting additional benefits (Q).

**Q. 80**

The following sentence has been divided into four segments. Identify the segment that contains a grammatical error.

By the age of ten, he/ has already swam in all/ seven continents, achieving/ a remarkable feat for his age.

a) By the age of ten, he

b) has already swam in all

c) seven continents, achieving

d) a remarkable feat for his age.

**Explanation:**

The segment that contains a grammatical error is: **has already swam in all**

"Swum" is the past participle form of the verb "swim" and is used in the present perfect tense with "has" (he has swum).

"Swam" is the simple past tense form, which is incorrect here because the present perfect tense requires the past participle form ("swum").

Therefore, the corrected sentence would be: **By the age of ten, he has already swum in all seven continents, achieving a remarkable feat for his age.**

**Q. 81**

Select the most appropriate idiom for the following situation.

Explaining advanced science to someone uninterested in learning.

a) To bite the dust

b) To add fuel to the fire

c) To cast pearls before swine

d) To be on the last leg

The most appropriate idiom for the situation is: **To cast pearls before swine**

**Explanation:****Explanation:**

This idiom means to offer something valuable or worthwhile to someone who cannot appreciate or understand its value. In this case, explaining advanced science to someone who is uninterested is like casting pearls before swine, as the explanation is wasted on someone who does not value it.

**Q. 82****Identify and correct the INCORRECTLY spelt word in the given sentence.****The company's policy is to be very strict about employe conduct.****a) Employe****b) Conduct****c) Policy****d) Strict****Explanation:****The incorrectly spelled word in the sentence is: Employe****Corrected Sentence:** The company's policy is to be very strict about employee conduct.**Explanation:** "Employe" should be corrected to "employee" to match the correct spelling of the term referring to a person who works for the company.**Q. 83****Select the most appropriate synonym of the underlined word in the following sentence.****it is unfortunate that the court was so zealous about the reservation ceiling, that it rejected the State's argument on the existence of special circumstances.****a) Lukewarm****b) Energetic****c) Apathetic****d) Detached****Explanation:****The most appropriate synonym for "zealous" in the given sentence is: Energetic****Zealous:** Having or showing great energy or enthusiasm in pursuit of a cause or objective.**Energetic:** means having or showing a lot of energy and enthusiasm.**Lukewarm:** (Of a person, attitude, or action) unenthusiastic or indifferent.**Apathetic:** Showing or feeling no interest, enthusiasm, or concern.**Detached:** Impartial or uninvolved; showing an absence of emotional involvement.

**Q. 84****Select the most appropriate option to fill in the blank.****The teacher told us \_\_\_\_\_ our assignments by Friday.****a) to finish****b) finishing****c) finished****d) finish****Explanation:**

The most appropriate option to fill in the blank in the sentence "The teacher told us \_\_\_\_\_ our assignments by Friday" is: **to finish**

**to finish:** This option is correct because "to finish" is the infinitive form of the verb "finish," which is used after the verb "told" to indicate what action the teacher instructed the students to perform. In this case, the teacher instructed the students on what they need to do with their assignments.

**Q. 85****Select the most appropriate option that can substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.****They have been in Dubai since a week, but they are planning to return now.****a) from****b) in****c) for****d) No substitution required****Explanation:**

The correct option that can substitute the underlined segment "since" in the given sentence is: **"For"**

**"Since"** is used to indicate a specific point in time when something started. It is typically followed by a point in time (e.g., since Monday, since 2010).

**"For"** is used to indicate the duration of time for which an action or state has been going on. It shows how long something has lasted. Example: "They have been in Dubai for a week." (Duration of time)

**"From"** is used to indicate the starting point of an action or state. It can also indicate the origin or source of something. Example: "They have been in Dubai from Monday." (Starting point in time)

**"In"** is used to indicate a period of time during which an action or event occurs. It does not specify the starting point but rather the duration. Example: "They have been in Dubai in July." (Time period)

**Q. 86**

Parts of the following sentence have been given as options. Select the option that contains a grammatical error.

He must follows/ the rules and/ regulations of/ the organization.

- a) He must follows ✓
- b) the rules and ✗
- c) regulations of ✗
- d) the organization. ✗

**Explanation:**

The grammatically incorrect option is: **He must follows**

The correct form should be "He must follow" because "must" is followed by the base form of the verb ("follow") in English. Therefore, the correct sentence should read: "**He must follow the rules and regulations of the organization.**"

**Q. 87**

Select the sentence with the appropriate use of adverb.

- a) The dog barked loudly at the mail carrier. ✓
- b) The dog barked loud at the mail carrier. ✗
- c) The dog barked loudest at the mail carrier. ✗
- d) The dog barked in a loud manner at the mail carrier. ✗

**Explanation:**

The sentence with the appropriate use of adverb is: **The dog barked loudly at the mail carrier.**

In this sentence, "**loudly**" is an adverb modifying the verb "barked," indicating how the action (barking) was performed.

**Q. 88**

Select the option that expresses the following sentence in passive voice.

The artist painted a magnificent landscape on canvas.

a) A magnificent landscape were painted by the artist on canvas.

b) A magnificent landscape on canvas painted by the artist.

c) A magnificent landscape on canvas was painted by the artist.

d) No change required

**Explanation:**

The correct option that expresses the given sentence in passive voice is: **A magnificent landscape on canvas was painted by the artist.**

Active voice ---- Passive voice

**Subject + V2 + object ---- object + was/were + V3 + by + subject**

**Q. 89**

Select the most appropriate SYNONYM of the underlined word in the given sentence.

It suggested that the population living in remote or far-flung areas may require to be treated in a different way.

a) Secluded

b) Obscure

c) Exiled

d) Widespread

**Explanation:**

The most appropriate synonym for the underlined word "far-flung" in the given sentence is "**Widespread**"

- **Secluded:** This means being isolated or hidden away.
- **Obscure:** This means not well-known or unclear.
- **Exiled:** This means being forced to leave one's country or home.
- **Widespread:** This means existing or happening over a large area or among many people, which is the opposite of being distant or remote.

The most appropriate synonym is **Widespread**.

**Q. 90**

Select the option that can be used as a one-word substitute for the given group of words.

A short journey for pleasure.

a) Vagabond



b) Expatriate



c) Trip



d) Excursion

**Explanation:**

The one-word substitute for "a short journey for pleasure" is "**Excursion**."

**Vagabond:** Refers to a person who wanders from place to place without a fixed home, not a short pleasure journey.

**Expatriate:** A person who lives outside their native country.

**Trip:** A journey or excursion, especially for pleasure.

**Q. 91****Select the INCORRECTLY spelt word.****a) Concur****b) Precedence****c) Exaggerrate****d) Accommodate**

The INCORRECTLY spelt word is: Exaggerrate

**Explanation:**

- The correct spelling is "Exaggerate," with only two 'g's and one 'r.'

**Concur:**

- To agree or have the same opinion as someone else; to occur at the same time.

**Precedence:**

- The condition of being considered more important than someone or something else; priority.

**Exaggerate:**

- To describe something in a way that makes it seem more important or bigger than it really is.

**Accommodate:**

- **Meaning:** To provide space or make adjustments to fit a need; to help or assist someone.

**Q. 92****Select the appropriate word to fill in the blank:**

The new regulations will \_\_\_\_\_ significant changes to the way businesses operate.

**a) Incur****b) Impose****c) Abolish****d) Restrict**

The appropriate word to fill in the blank is:

**Impose****Explanation:**

- **Incur:** This means to become subject to something unwelcome or unpleasant, typically something like a cost or debt. It does not fit the context of introducing changes.
- **Impose:** This means to forcibly put in place or introduce something, such as regulations or changes. It fits the context of the sentence well, indicating that the new regulations will bring about or enforce significant changes.
- **Abolish:** This means to formally put an end to a system, practice, or institution. While related to removing or ending something, it does not fit the context of introducing new changes.
- **Restrict:** This means to limit or control something. Although it is related to changes, it does not fit the context of bringing about significant changes.

Thus, the correct answer is: **Impose**

**Q. 93**

Select the most appropriate one-word substitution for the given word.

A person who studies and collects stamps is called a:

- a) Philanthropist
- b) Philatelist
- c) Bibliophile
- d) Numismatist

**Explanation:**

- **Philanthropist:** This refers to someone who seeks to promote the welfare of others, typically through the donation of money or resources. It is not related to stamp collecting.
- **Philatelist:** This term specifically refers to someone who studies and collects stamps. It is the correct choice.
- **Bibliophile:** This term refers to a person who loves or collects books. It does not relate to stamp collecting.
- **Numismatist:** This refers to a person who studies or collects coins and currency. It is not related to stamp collecting.

Thus, the correct answer is: **Philatelist**

**Q. 94**

Choose the option with the grammatical error.

The committee have reached a decision about the upcoming event.

- a) The committee
- b) have reached
- c) a decision about
- d) the upcoming event

**Explanation:**

The option with the grammatical error is:

**have reached**

**Explanation:**

The subject "The committee" is a collective noun and is treated as singular. Therefore, the verb should be "has" instead of "have."

The corrected sentence should be: "**The committee has reached a decision about the upcoming event.**"

**Q. 95**

Select the most appropriate meaning of the given idiom.

**Break the ice**

a) To start a conversation in a social setting 

b) To physically break a layer of ice 

c) To end a difficult relationship 

d) To make a risky decision 

**Explanation:**

The most appropriate meaning of the idiom " Break the ice" is: To start a conversation in a social setting

"**Break the ice**" means to initiate conversation or interaction in a way that eases tension or discomfort in social situations.

**Q. 96**

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

To be successful in the field of consumer studies you need knowledge (1)

\_\_\_\_\_ consumer protection mechanisms and redressal agencies (2) \_\_\_\_\_

you also need soft skills like good communication and interpersonal skills,

empathetic and understanding attitude, (3) \_\_\_\_\_ a good listener, being

creative in developing programmes, advertisements, talks etc. for consumer

awareness. You (4) \_\_\_\_\_ writing skills for developing educational material

for consumer education, reporting consumer tests of consumer products and a (5)

\_\_\_\_\_ to help fellow consumers and public at large.

Select the most appropriate option to fill in blank number 1.

a) for 

b) to 

c) about 

d) of 

**Explanation:**

The most appropriate option for blank number 1 is: **about**

Given the context, "about" is the best choice because it clearly indicates that the knowledge required is concerning or regarding the subject of consumer protection mechanisms and redressal agencies. This preposition is widely used in such contexts to denote the subject matter of knowledge.

**Q. 97**

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

To be successful in the field of consumer studies you need knowledge (1) \_\_\_\_\_ consumer protection mechanisms and redressal agencies (2) \_\_\_\_\_

you also need soft skills like good communication and interpersonal skills, empathetic and understanding attitude, (3) \_\_\_\_\_ a good listener, being creative in developing programmes, advertisements, talks etc. for consumer awareness. You (4) \_\_\_\_\_ writing skills for developing educational material for consumer education, reporting consumer tests of consumer products and a (5) \_\_\_\_\_ to help fellow consumers and public at large.

Select the most appropriate option to fill in blank number 2.

- a) with
- b) but
- c) that
- d) which

The most appropriate option for blank number 2 is: but

The phrase "but" is used as a conjunction to indicate a contrast or exception between two clauses. In the context of the sentence:

The first part states that knowledge about consumer protection mechanisms and redressal agencies is essential.

**Explanation:**

The second part introduces additional requirements or skills needed for success in consumer studies.

By using "but" in blank number 2, the sentence structure implies that while knowledge about consumer protection mechanisms is crucial, it is not sufficient on its own. There are other essential soft skills and qualities (listed in the subsequent part of the sentence) that are equally necessary.

**Q. 98**

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

To be successful in the field of consumer studies you need knowledge (1)

\_\_\_\_\_ consumer protection mechanisms and redressal agencies (2) \_\_\_\_\_ you also need soft skills like good communication and interpersonal skills, empathetic and understanding attitude, (3) \_\_\_\_\_ a good listener, being creative in developing programmes, advertisements, talks etc. for consumer awareness. You (4) \_\_\_\_\_ writing skills for developing educational material for consumer education, reporting consumer tests of consumer products and a (5) \_\_\_\_\_ to help fellow consumers and public at large.

Select the most appropriate option to fill in blank number 3.

a) be



b) been



c) like



d) being



the most appropriate option to fill in blank number 3 is: **being**

**being:** This is the present participle form of the verb "be," which is used correctly to list additional skills (being a good listener, being creative) after mentioning the soft skills required.

**be:** This form is not appropriate here because it does not fit grammatically with the list format that follows.

**been:** This is the past participle form and does not fit grammatically in this context where present participle "being" is required.

**like:** This is a preposition that suggests similarity or comparison, which is not suitable in this context where a continuation of the list of skills is needed.

**Explanation:**

**Q. 99**

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

To be successful in the field of consumer studies you need knowledge (1)

\_\_\_\_\_ consumer protection mechanisms and redressal agencies (2) \_\_\_\_\_ you also need soft skills like good communication and interpersonal skills, empathetic and understanding attitude, (3) \_\_\_\_\_ a good listener, being creative in developing programmes, advertisements, talks etc. for consumer awareness. You (4) \_\_\_\_\_ writing skills for developing educational material for consumer education, reporting consumer tests of consumer products and a (5) \_\_\_\_\_ to help fellow consumers and public at large.

Select the most appropriate option to fill in blank number 4.

a) should have

b) would have

c) could have

d) might have

**Explanation:**

the most appropriate option to fill in blank number 4 is: **should have**

This choice effectively communicates that possessing writing skills is essential and recommended for developing educational material and reporting consumer tests in consumer studies.

**Q. 100**

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.  
To be successful in the field of consumer studies you need knowledge (1) \_\_\_\_\_ consumer protection mechanisms and redressal agencies (2) \_\_\_\_\_ you also need soft skills like good communication and interpersonal skills, empathetic and understanding attitude, (3) \_\_\_\_\_ a good listener, being creative in developing programmes, advertisements, talks etc. for consumer awareness. You (4) \_\_\_\_\_ writing skills for developing educational material for consumer education, reporting consumer tests of consumer products and a (5) \_\_\_\_\_ to help fellow consumers and public at large.

Select the most appropriate option to fill in blank number 5.

- a) willing
- b) willingness
- c) wilful
- d) wilfully

The most appropriate option to fill in blank number 5 in the given sentence is:  
**willingness**

**Willingness:** This is a noun that refers to the quality of being willing or ready to do something. It fits well in the context of describing the quality needed to help fellow consumers and the public at large.

**Explanation:**

**Willing:** This is an adjective that describes readiness or eagerness. It doesn't fit well in the context of describing a quality needed for assisting others.

**Wilful:** This adjective means deliberate or intentional, often with a negative connotation of stubbornness or disobedience. It is not appropriate in this context.

**Wilfully:** This is the adverb form of "wilful" and also carries a negative connotation of doing something deliberately or intentionally, which is not suitable here.