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Rajnish Bhatnagar

SSC CGL Pre

Solution

SCP-9I36046I4-E



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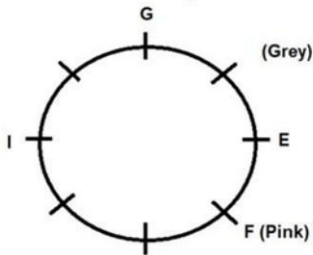
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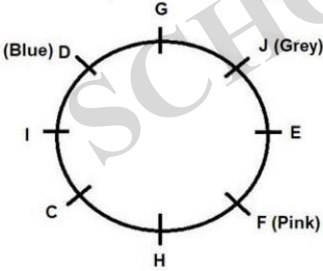
General Intelligence and Reasoning

1. Solution: B
1969 was not a leap year.
So, 261 (30 + 28 + 31 + 30 + 31 + 30 + 31 + 31 + 19)
days have passed till 19th September, 1969
The days of the week repeat itself after 7 days.
Number of odd days = 2
So, on 19th September, 1969 it will be Friday.

2. Solution: A
Clues:
1) I sits second to the right of G.
2) G sits immediate right of the one, who likes Grey.
3) Only one person sits between G and E.
4) F, who likes Pink, sits adjacent to E.
Inference:
From Clue 1 and 2, we get G sits 2nd to the left of I
and the one, who likes Grey, sits 3rd to the left of I.
From Clue 3, we get E sits 2nd to the left of G.
From Clue 4, we get F sits immediate left of E.



- Clues:
1) H sits immediate right of C.
2) The one, who likes Blue, sits second to the left of C.
3) J doesn't like Blue.
Inference:
From Clue 1, we get H sits immediate left of F and C
sits 2nd to the left of F.
From Clue 2, we get the one, who likes Blue, sits
immediate left of I.
From Clue 3, we get D likes Blue and J likes Grey.
Therefore, the final arrangement is given below:



So, among the persons given in the option, only I
doesn't like any colour.

3. Solution: C
We draw the following figure:
A diagram showing a path between points S1, S2, S3, S4, S5, and S6. S1 is at the top left, S2 is below it, S3 is to the right of S2, S4 is to the right of S3, S5 is below S4, and S6 is below S5. Distances are marked: S1 to S3 is 8km, S3 to S4 is 5km, S2 to S3 is 9km, S2 to S5 is 5km, S4 to S5 is 9km, and S5 to S6 is 8km.

4. Solution: B
I. 'one eight nine four' is coded as 'da, kw, st, qh'
II. 'four two nine' is coded as 'zw, kw, da'
III. 'nine one six' is coded as 'st, da, lv'
From statement I, II and III, 'nine' is coded as 'da'.
From statement I and II, 'four' is coded as 'kw'.
From statement I and III, 'one' is coded as 'st'.
From statement I alone, 'eight' is coded as 'qh'.
From statement II alone, 'two' is coded as 'zw'.
From statement III alone, 'six' is coded as 'lv'.
So, the word and their respective code are as follows:

Table with 2 rows and 7 columns. Row 1: Word, nine, four, one, eight, two, six. Row 2: Code, da, kw, st, qh, zw, lv.

- So, 'six two eight' is coded as 'lv, zw, qh'.
5. Solution: A
Given: 575 + 62 ÷ 8 × 19 - 23
Expression after interchanges,
575 ÷ 23 + 8 × 19 - 62
= 25 + 152 - 62
= 177 - 62
= 115
So, the value of the given expression after
interchanges is '115'.

6. Solution: C
The logic followed here is:
The letters are first replaced by their opposite letter.
After the replacement the consonants are replaced by
their immediate succeeding letter and the vowels are
replaced by their immediately preceding letter as per
the English alphabetical series.

Table with 2 rows and 6 columns. Row 1: A, F, R, A, I, D. Row 2: Z, U, I, Z, R, W. Row 3: +1, -1, -1, +1, +1, +1. Row 4: A, T, H, A, S, X.

So, 'AFRAID' is written as 'ATHASX'.
For 'PROMPT':

Table with 2 rows and 6 columns. Row 1: P, R, O, M, P, T. Row 2: K, I, L, N, K, G. Row 3: +1, -1, +1, +1, +1, +1. Row 4: L, H, M, O, L, H.

So, 'PROMPT' is written as 'LHMO LH'.
Similarly, for 'SEQUEL':

Table with 2 rows and 6 columns. Row 1: S, E, Q, U, E, L. Row 2: H, V, J, F, V, O. Row 3: +1, +1, +1, +1, +1, -1. Row 4: I, W, K, G, W, N.

- So, 'SEQUEL' is written as 'IWKGWN'.
7. Solution: A
The logic followed here is given below:
2147 - 116 = 2031
2031 - 232 = 1799
1799 - 464 = 1335
1335 - 928 = 407

8. Solution: A

The logic followed here is:

In each pair of form AB: CD

$CD = [(AB + 1) \times AB] \times 10$

In '11 :1320':

$= [(11 + 1) \times 11] \times 10$

$= [12 \times 11] \times 10$

$= 132 \times 10$

$= 1320$

In '15: 2400':

$= [(15 + 1) \times 15] \times 10$

$= [16 \times 15] \times 10$

$= 240 \times 10$

$= 2400$

Similarly, in '23: ?':

$= [(23 + 1) \times 23] \times 10$

$= [24 \times 23] \times 10$

$= 552 \times 10$

$= 5520$

So, '5520' will come in place of '?'.

9. Solution: D

The pattern followed here is:

In each of the given squares, there are six letters.

From the left end of the letter cluster, 1st and 2nd, 3rd and 4th and 5th and 6th are the opposite letters in the English alphabetical series. This pattern is followed in all the squares, except the square given in option 'D' as in this square the 5th and 6th letters are not opposite to each other in the English alphabetical series.

10. Solution: B

The logic followed here is:

In each row,

3rd number = 1st number + 2nd number

In Row 1,

1st number = 45, 2nd number = 54, 3rd number

$= (45 + 54) = 99$

In Row 3,

1st number = 67, 2nd number = 76, 3rd number

$= (67 + 76) = 143$

Similarly, in Row 2,

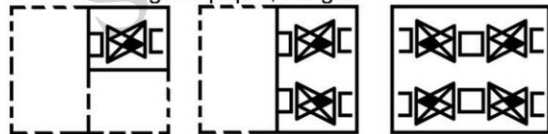
1st number = 29, 3rd number = 67, so, 2nd number

$= (67 - 29) = 38$

So, '38' will come in place of question mark.

11. Solution: B

After unfolding the paper, we get:



12. Solution: A

The first letter and the third letter in each letter cluster are replaced with the third preceding letter, as per English alphabetical order.

The second letter in each letter cluster is replaced with the third succeeding letter, as per English alphabetical order.

N - 3 = K, K - 3 = H, H - 3 = E, E - 3 = B, B - 3 = Y, Y - 3 = V

O + 3 = R, R + 3 = U, U + 3 = X, X + 3 = A, A + 3 = D, D + 3 = G

X - 3 = U, U - 3 = R, R - 3 = O, O - 3 = L, L - 3 = I, I - 3 = F

So, 'VGF' will replace the question mark in the given series.

13. Solution: A

The relationship in the given sets is: First number³ +

Third number³ = Second number

$7^3 + 6^3 = 343 + 216 = 559$

$8^3 + 5^3 = 512 + 125 = 637$

Similarly,

$9^3 + 8^3 = 729 + 512 = 1241$

14. Solution: C

The logic followed here is:

All the vowels are written first in the alphabetical order, then the consonants, whose positional value is odd number, are written as per the alphabetical order followed by the consonants, whose positional value is even number are written as per the alphabetical order.

As 'SCRUTINY' is coded as 'IUCSYNRT'

S [19]	C [3]	R [18]	U [20]	I [14]	N [25]	Y [25]
I	U	C	S	Y	N	R

Similarly,

'DOCUMENT' is coded as 'EOUCMDNT'

D [4]	O [3]	U [13]	E [14]	T [20]
E	O	U	C	M

15. Solution: A

(136, 48, 184)

$\Rightarrow 136 + 48 = 184$

(189, 37, 226)

$\Rightarrow 189 + 37 = 226$

(116, 62, 178) follows the same pattern.

(116, 62, 178)

$\Rightarrow 116 + 62 = 178$

16. Solution: C

When we write the symbol/number in clockwise direction from '4',

From position 1: 4 @ %

From position 3: 4 2 %

So, '@' will be on opposite face of the face having '2'.

17. Solution: D

In the above figure series, the 2nd figure is the mirror image of the 1st figure, similarly, the 4th figure is the mirror image of the 3rd figure. Therefore, the 6th figure must be the mirror image of the 5th figure.

Following figure is the complete figure:



The figure given in option 'd' will complete the given figure.

18. Solution: C

In all the given pairs,

2nd number = (sum of digits of 1st number) $\times$ (product of digits of 1st number)

In option 'a', '441: 144':

$= (4 + 4 + 1) \times (1 \times 4 \times 4)$

$= 9 \times 16$

$= 144$

In option 'b', '532: 300':

$= (5 + 3 + 2) \times (5 \times 3 \times 2)$

$= 10 \times 30$

$= 300$

In option 'c', '382: 480':

$= (3 + 8 + 2) \times (3 \times 8 \times 2)$

$= 13 \times 48$

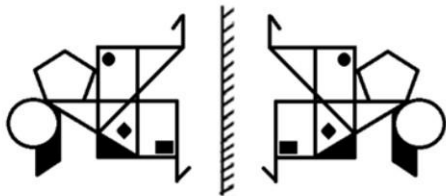
= 624 ≠ 480
In option 'd', '765: 3780':
= (7 + 6 + 5) × (7 × 6 × 5)
= 18 × 210
= 3780
So, '382: 480' is different.

19. **Solution: C**

Given series:
N _ _ L _ _ U _ _ M _ _ E _ _ S _ _ K _ _ E _ _
The complete series will be:
N M K L E U S / N M K L E U S / N M K L E U S
'M, K, E, S, N, K, L, U, N, M, L, U S' will complete the series.

20. **Solution: D**

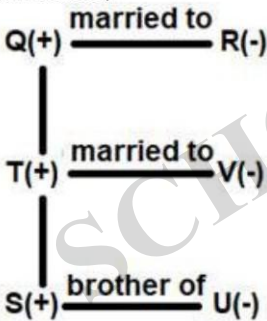
If mirror is placed to the right of the figure,



21. **Solution: A**

Clues:
1) Q is the grandfather of S.
2) T, who is married to V, is the only son of Q.
3) R is the mother in law of V.
4) U is the only daughter of V.

Inferences:
From clue 1 and clue 2, T, who is the son of Q, is the husband of V.
From clue 3, R is the wife of Q.
From clue 4, U is the sister of S and thus S is a male member.
The following family tree can be drawn from the given statements,



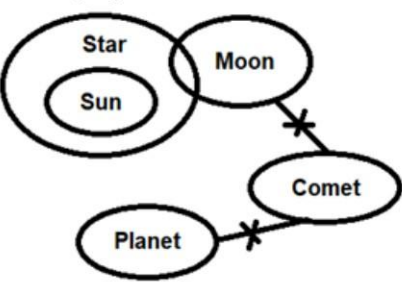
Thus, S is the grandson of R.

22. **Solution: C**

Amazon, Sundarbans and Tongass are the famous forests across the world.
Annapurna is the famous mountain.

23. **Solution: B**

Following figure can be formed:



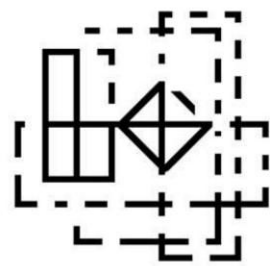
From the above figure, only conclusions II and IV follow.

24. **Solution: D**

The proper English dictionary sequence of the words will be:
5) Seniority, 2) Sensation, 1) Sensitive, 3) Sensitize, 4) Sentiment
'5 2 1 3 4' is the correct order in which they appear in an English dictionary.

25. **Solution: D**

The embedded figure is as follows,



Quantitative Aptitude

26. **Solution: A**

Let the number of goats in the farm = '12x'
Then, number of cows in the farm = (13/12) × 12x
= '13x'
Number of hens in the farm = 12x × (3/4) = '9x'
Average of the number of cows and hens in the farm
= (13x + 9x) ÷ 2 = 11x = 176
So, x = 176 ÷ 11 = 16
So, number of goats in the farm = 12x = 12 × 16
= 192

27. **Solution: C**

Number of students who scored less than or equal to 20 marks = 14
Number of students who scored 40 marks or more = 34
Required percentage = {(34 - 14)/34} × 100 ~ 58.82%

28. **Solution: A**

Area of a triangle whose vertices are (x₁, y₁), (x₂, y₂) and (x₃, y₃):
= (1/2) × |x₁(y₂ - y₃) + x₂(y₃ - y₁) + x₃(y₁ - y₂)|
Here, 'x₁' = 5, 'x₂' = 9, 'x₃' = 1, 'y₁' = 4, 'y₂' = 6 and 'y₃' = 5
Required area = (1/2) × |5 × (6 - 5) + 9 × (5 - 4) + 1 × (4 - 6)|
= (1/2) × |5 + 9 - 2|
= (1/2) × 12
= 6 square units

29. **Solution: D**

Data in ascending order = 24, 27, 28, 29, 30, 34, 37, 38, 39, 40
When 'n' (number of terms) is even,
Median = average of (n/2)th and [(n/2) + 1]th term
Here 'n' = 10
So, median = (1/2) × (5th term + 6th term)
= (1/2) × (30 + 34) = 32

30. **Solution: C**

Let the volume of the first cylinder be 'a' cm³, and volume of the second cylinder be 'b' cm³.
Let height of first cylinder be 'x' cm and radius of second cylinder be 'y' cm.
Let radius of first and second cylinder be 'r₁' cm and 'r₂' cm, respectively.
ATQ;

$$a = \pi \times (r_1)^2 \times x$$

$$\text{Or, } (r_1)^2 = (a/\pi x)$$

$$\text{Also, } b = \pi \times (r_2)^2 \times y$$

$$\text{Or, } (r_2)^2 = (b/\pi y)$$

$$\text{So, required ratio} = \sqrt{\frac{\frac{a}{\pi x}}{\frac{b}{\pi y}}} = \sqrt{ay} : \sqrt{bx}$$

31. **Solution: B**

Number of blue balls in the bag = $20 \times 0.25 = 5$
 So, number of orange balls in the bag = $20 - 5 - 8 = 13$

32. **Solution: A**

$$x + \frac{1}{x} = 6$$

Squaring both sides, we get

$$\left(x + \frac{1}{x}\right)^2 = 6^2$$

$$x^2 + \frac{1}{x^2} + 2 = 36$$

Subtracting 4 from both sides, we get

$$x^2 + \frac{1}{x^2} + 2 - 4 = 36 - 4$$

$$x^2 + \frac{1}{x^2} - 2 = 32$$

$$\left(x - \frac{1}{x}\right) = \sqrt{32} = 4\sqrt{2}$$

$$\left(x + \frac{1}{x}\right) \times \left(x - \frac{1}{x}\right) = 6 \times 4\sqrt{2}$$

$$x^2 - \frac{1}{x^2} = 24\sqrt{2}$$

33. **Solution: A**

We have,

$$\sin^2 34^\circ + \sin^2 56^\circ + \tan 30^\circ \times \sqrt{(1 + \cot^2 60^\circ)} \times (1/2) \times \sec^2 45^\circ$$

$$= \sin^2 34^\circ + \cos^2 (90 - 56)^\circ + \tan 30^\circ \times \sqrt{(\operatorname{cosec}^2 60^\circ)} \times (1/2) \times \sec^2 45^\circ$$

$$= (\sin^2 34^\circ + \cos^2 34^\circ) + \tan 30^\circ \times \operatorname{cosec} 60^\circ \times (1/2) \times \sec^2 45^\circ$$

$$= 1 + (1/\sqrt{3}) \times (2/\sqrt{3}) \times (1/2) \times (\sqrt{2})^2$$

$$= 1 + (2/3) \times (1/2) \times 2$$

$$= 1 + (2/3) \times (1/2) \times 2$$

$$= (5/3)$$

34. **Solution: D**

Let the sum borrowed be ₹'P'.
 We know that, $P = [x/(1 + (r/100))] + [x/(1 + (r/100))]^2$
 {where 'x' is each instalment and 'r' is rate of interest.}
 ATQ;
 $P = \{2904/1.1\} + \{2904/1.21\}$
 Or, $P = 5040$
 So, interest paid = $2904 \times 2 - 5040 = ₹768$

35. **Solution: C**

In organisation 'A', number of employees with more than 5 years of service = $1200 \times 0.15 = 180$
 In organisation 'B', number of employees with more than 5 years of service = $800 \times 0.3 = 240$
In organisation 'C', number of employees with more than 5 years of service = $1400 \times 0.22 = 308$
In organisation 'D', number of employees with more than 5 years of service = $1600 \times 0.2 = 320$
 In organisation 'E', number of employees with more than 5 years of service = $1080 \times 0.25 = 270$
 So, number of organisations where there are than 300 employees with more than 5 years of service = 2

36. **Solution: C**

Let the cost price of articles 'A' and 'B' be ₹'3x', and ₹'4x', respectively.
 ATQ:
 $'4x' \times 1.15 - '3x' \times 1.12 = 310$
 Or, $4.6x - 3.36x = 310$
 Or, $1.24x = 310$

$$\text{Or, 'x' = } 310 \div 1.24 = 250$$

Therefore, sum of cost price of the two articles = $7x = 7 \times 250 = ₹1,750$

37.

Solution: A

Number of diagonals in a polygon with 'n' sides = $n \times (n - 3) \div 2$

$$\text{So, } n \times (n - 3) \div 2 = 35$$

$$\text{Or, } n^2 - 3n - 70 = 0$$

$$\text{Or, } n^2 - 10n + 7n - 70 = 0$$

$$\text{Or, } n(n - 10) + 7(n - 10) = 0$$

$$\text{Or, } (n - 10)(n + 7) = 0$$

$$\text{So, 'n' = 10 or 'n' = -7}$$

But, number of sides cannot be negative. So, 'n' = 10

Each interior angle = $180 \times (n - 2) \div n$

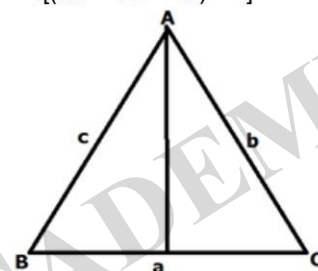
Therefore, each interior angle = $180 \times (10 - 2) \div 10 = 144^\circ$

38.

Solution: B

If ABC is a triangle such that AB = 'c', BC = 'a' and AC = 'b', then length of median from 'A':

$$= \sqrt{[(2b^2 + 2c^2 - a^2) \div 4]}$$



Here, AB = 8 cm, AC = 10 cm and BC = 12 cm

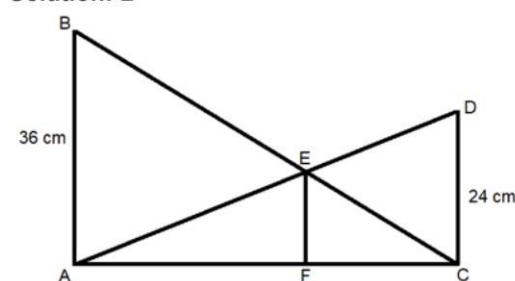
Therefore, required length of median = $\sqrt{[(2 \times 10^2 + 2 \times 8^2 - 12^2) \div 4]}$

$$= \sqrt{[(200 + 128 - 144) \div 4]}$$

$$= \sqrt{(184/4)} = \sqrt{46} \text{ cm}$$

39.

Solution: B



Since EF is perpendicular, $\triangle EFC$ and $\triangle EFA$ are both right angled triangles.

Now, in right triangles BAC and EFC, $\angle EFC$ and $\angle BAC$ are both 90° , whereas $\angle BCA$ is common.

So, triangles BAC and EFC are similar by AA.

Similarly, in right triangles DCA and EFA, $\angle DCA$ and $\angle EFA$ are 90° , whereas $\angle CAD$ is common.

So, triangles DCA and EFA are also similar.

$$\text{So, } (BA/EF) = (AC/FC)$$

$$\text{Or, } AC = \{(36 \times FC)/EF\} \dots\dots (I)$$

$$\text{Similarly, } (DC/EF) = (AC/AF)$$

$$\text{So, } AC = \{(24 \times AF)/EF\}$$

$$\text{So, } \{(36 \times FC)/EF\} = \{(24 \times AF)/EF\}$$

$$\text{Or, } (FC/AF) = (2/3)$$

$$\text{Let } FC = 2x$$

$$\text{So, } AF = 3x$$

$$\text{And } AC = 2x + 3x = 5x$$

Now, using equation (I), we have;

$$5x = \{(36 \times 2x)/EF\}$$

$$\text{Or, } EF = 36 \times 2x \div 5x = 14.4 \text{ cm}$$

- 40. Solution: B**
 $x^4 + (1/x^4) = 79$
 Or, $(x^2)^2 + (1/x^2)^2 + 2 - 2 = 79$
 Or, $[x^2 + (1/x^2)]^2 = 81$
 Or, $x^2 + (1/x^2) = \pm 9$
 But square of two numbers cannot be negative
 So, $x^2 + (1/x^2) = 9$
 On cubing both sides,
 We get, $[x^2 + (1/x^2)]^3 = 9^3$
 Using $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$
 $(x^2)^3 + (1/x^2)^3 + 3x^2(1/x^2) \times [x^2 + (1/x^2)] = 729$
 Or, $x^6 + (1/x^6) + 3 \times 9 = 729$
 So, $x^6 + (1/x^6) = 729 - 27 = 702$
- 41. Solution: A**
 Length of train 'A' = $24 \times 18 = 432$ metres
 Statement I:
 Required time = $(432 + 216) \div 24 = 27$ seconds
 Therefore, statement I is not true.
 Statement II:
 Required time = $(432 + 648) \div (24 + 12) = (1,080/36)$
 = 30 seconds
 Therefore, statement II is true.
- 42. Solution: B**
 $3(\operatorname{cosec}^2 40^\circ - \tan^2 50^\circ) + \cot^2 31^\circ \cot^2 59^\circ = 5k$
 Or, $3[\operatorname{cosec}^2 40^\circ - \tan^2 (90^\circ - 40^\circ)] + \cot^2 31^\circ \cot^2 (90^\circ - 31^\circ) = 5k$
 Using $\tan (90^\circ - A) = \cot A$ and $\cot (90^\circ - A) = \tan A$
 Or, $3(\operatorname{cosec}^2 40^\circ - \cot^2 40^\circ) + \cot^2 31^\circ \tan^2 31^\circ = 5k$
 Using $\operatorname{cosec}^2 A - \cot^2 A = 1$ and $\tan A \cot A = 1$
 Or, $3 + 1 = 5k$
 Or, $k = (4/5)$
 Required value = $(4/5) \times \sin 30^\circ \cos 60^\circ$
 = $(4/5) \times (1/2) \times (1/2) = (1/5)$
- 43. Solution: D**
 We know that the perpendicular from the centre of a circle to a chord, bisects the chord,
 So, $AE = EB = (10/2) = 5$ cm
 In $\triangle OEB$ right angled at E, using Pythagoras theorem
 $OE^2 + EB^2 = OB^2$
 Or, $OE^2 + 5^2 = 6^2$
 Or, $OE = \sqrt{36 - 25} = \sqrt{11}$ cm
 We know that the perpendicular from the centre of a circle to a chord, bisects the chord,
 So, $CF = FD = 2\sqrt{15} \div 2 = \sqrt{15}$ cm
 In $\triangle OFD$ right angled at F, using Pythagoras theorem
 $OF^2 + FD^2 = OD^2$
 Or, $OF^2 + (\sqrt{15})^2 = 6^2$
 Or, $OF = \sqrt{36 - 15} = \sqrt{21}$ cm
 So, $EF = EO + OF$
 $EF = (\sqrt{11} + \sqrt{21})$ cm
- 44. Solution: D**
 Sum of number of Kachoris and Vadas sold on Tuesday = $117 + 91 = 208$
 Sum of number of Kachoris and Vadas sold on Thursday = $68 + 132 = 200$
 So, required percentage = $(208/200) \times 100 = 104\%$
- 45. Solution: B**
 For a number to be divisible by 33, it must also be divisible by 3 and 11.
 A number is divisible by '3' only when the sum of digits of the number are also divisible by '3'.
 Sum of digits of the given number = $1 + 7 + 4 + y + 7 + x + 6 = 25 + x + y$
 Possible values of 'x + y' = 2, 5, 8, 11, 14 and 17.
 A number is divisible by 11 when the difference between sum of digits at alternate places is either zero or a multiple of '11'.
- Difference between sum of digits at alternate places = $6 + 7 + 4 + 1 - (x + y + 7) = 11 - (x + y)$
 So, $x + y = 11$
 Possible values of 'x' and 'y' = (2,9), (3,8), (4,7), (5,6)
 So, possible values of $(y - x) = 7, 5, 3, 1$
 So, maximum value of $y - x = 7$
- 46. Solution: A**
 Let the efficiency of a man be 'm' units/hour and the efficiency of a woman be 'n' units/hour
 Then, $24 \times m \times 5 = 21 \times n \times 8$
 Or, $m:n = 168:120 = 7:5$
 So, let the efficiency of a man and of a woman be 7 units/hour and 5 units/hour, respectively.
 Total work required to complete the task = $33 \times 7 \times 6 \times 15 = 20790$ units
 So, number of days taken by 14 women working 9 days to complete the same task = $20790 \div (14 \times 5 \times 9) = 20790 \div 630 = 33$
 So, required time taken = 33 days
- 47. Solution: C**
 Speed of the car = $84 \div (105/60) = 48$ km/h
 = $48 \times (5/18) = (40/3)$ m/s
 Relative speed of the bike w.r.t the car when travelling in the same direction = $120 \div 36$
 = $(10/3)$ m/s
 So, speed of bike = $(10/3) + (40/3) = (50/3)$ m/s
 Relative speed of the bike w.r.t the car when travelling in opposite directions = $(40/3) + (50/3) = 30$ m/s
 So, distance between the car and the bike 9 seconds before they meet = $30 \times 9 = 270$ metres
- 48. Solution: D**
 Let the total work be 132 units. {L.C.M of 33 and 12}
 Then, efficiency of 'A' alone = $132 \div 33 = 4$ units/day
 Combined efficiency of 'A' and 'B' = $132 \div 12 = 11$ units/day
 So, efficiency of 'B' alone = $11 - 4 = 7$ units/day
 Work completed by 'B' alone in 8 days = $7 \times 8 = 56$ units
 Remaining work = $132 - 56 = 76$ units
 So, efficiency of 'C' alone = $76 \div 15.2 = 5$ units/day
 Therefore, time taken by 'C' alone to complete the work = $132 \div 5 = 26.4$ days
- 49. Solution: B**
 Marked price of the bowl = $550 \times 1.38 = ₹759$
 Selling price of the bowl = $759 \times 0.9 = 683.1$
 = $683.1 - 56.1 = ₹627$
 So, percentage of profit earned = $\{(627 - 550)/550\} \times 100 = 14\%$
- 50. Solution: C**
 Let the initial income and expenditure of Aryan be ₹'20x' and ₹'8y' respectively.
 New income of Aryan = $1.25 \times 20x = ₹25x$
 New expenditure of Aryan = $1.125 \times 8y = ₹9y$
 ATQ:
 $20x - 8y = 9,600$ ----- (I)
 $25x - 9y = 16,800$ ----- (II)
 On solving, $5 \times$ equation (I) - $4 \times$ equation (II), we get,
 $5 \times (20x - 8y) - 4 \times (25x - 9y) = 5 \times 9,600 - 4 \times 16,800$
 Or, $100x - 40y - 100x + 36y = 48,000 - 67,200$
 Or, $4y = 19,200$
 Or, $y = 4,800$
 Therefore, increased expenditure = '9y' = $9 \times 4,800 = ₹43,200$

General Awareness

51. **Solution: D**
Constantine Tassoulas, former Speaker of the Greek Parliament, has been elected as the new President of Greece. He secured 160 votes in the 300-member Parliament, surpassing the required majority. He succeeds Katerina Sakellariopoulou, whose term ends in March.
52. **Solution: B**
President's Rule was imposed in Manipur after Chief Minister N Biren Singh resigned. The Ministry of Home Affairs issued the notification under Article 356 of the Constitution, based on a report from the Manipur Governor.
53. **Solution: A**
Vellayan Subbiah, Executive Vice-Chairman of Tube Investments of India (TII) and Chairman of Cholamandalam Investment and Finance Co Ltd. has been named the **EY World Entrepreneur of The Year 2024**.
He is the **fourth Indian** to receive this coveted award. Earlier, it was given to NR Narayana Murthy, Uday Kotak, and Kiran Majumdar Shaw.
India has become the only country among EY regions to win the global entrepreneurship award four times.
Hence, Option A is the correct answer.
54. **Solution: B**
Ubuntu is an open-source operating system (OS) based on the Debian GNU/Linux distribution. ... Ubuntu is primarily designed to be used on personal computers, although a server edition does also exist. Ubuntu is an African word that literally means "humanity to others."
55. **Solution: D**
Order of precedence of these awards is the Param Vir Chakra, the Ashoka Chakra, the Mahavir Chakra, the Kirti Chakra, the Vir Chakra and the Shaurya Chakra.
56. **Solution: C**
International Nurses Day is observed on 12th May. It is celebrated to honour the birth anniversary of Florence Nightingale and to thank all the nursing staff for their tireless efforts and their contributions.
57. **Solution: C**
The Pashtun tribe of Pakistan performs a traditional dance form called 'Waziri Dance'.
Waziristan, a region of Federally Administered Tribal Areas of Pakistan, is a large area and has a particular Pashtun culture.
58. **Solution: B**
Henry Moseley invented the atomic battery in 1912.
59. **Solution: B**
Status of horticulture in India:
· It contributes about 33% to the agriculture Gross Value Added (GVA).
· India ranks **2nd** in fruit and vegetable production in the world after China.
· The production in the country in 2022-23 is about 355.48 Million Tonnes.
· India's share in the global market is nearly 1% only.
Hence, Option B is the correct answer.
60. **Solution: C**
Khorasan was ruled by the Mongols. The Mongol Empire, under leaders like Genghis Khan and his successors, had significant influence over Khorasan.
Hence, Option C is the correct answer.
61. **Solution: A**
Photometer-It is used to measure the intensity of light.
Calipers-It is used to measure the dimension of an object.
Ammeter- It is used to measure the current.
62. **Solution: C**
Sir William Crookes discovered the element thallium and invented the radiometer, Plutonium was discovered by Enrico Fermi. He has been called the "architect of the nuclear age" and the "architect of the atomic bomb".
Germanium was discovered by Clemens Winkler. Beryllium was discovered by Louis Nicolas Vauquelin.
63. **Solution: A**
The radius of the atom is 10^{-10} , and the radius nucleus is 10-15 m. if a cricket ball represents a nucleus, then the radius of atom would be about 5 km.
64. **Solution: B**
Ground-level ozone (GLO) :
GLO is a secondary, short-lived pollutant formed in the atmosphere by a reaction between **oxides of nitrogen and volatile organic compounds (VOCs)** in the presence of sunlight.
Peak O₃ levels occur in the summer season.
Hence, Option B is the correct answer.
65. **Solution: A**
Junagarh Inscription:
It is located in Junagadh/Girnar in Gujarat. This rock inscription reveals the construction of an artificial reservoir/embankment called **Sudarshana Lake** under Mauryas by the provincial governor and brother-in-law of Chandragupta Maurya named Pushyagupta.
Hathigumpha Inscription:
It is located in Udayagiri hills near Bhubaneswar, Odisha. This is an autobiographical eulogy of **King Kharavela** who ruled in the coastal and eastern part of Odisha during the mid-first century BCE.
Heliodorus Inscription:
It is located in Besnagar, Vidisha district of Madhya Pradesh. It was commissioned by Indo-Greek Ambassador Heliodorus who is one of the earliest mentioned Indo-Greek converts to Hinduism. It is the first known inscription in India related to **Vaishnavism**.
Hence, Option A is the correct answer.
66. **Solution: D**
Four parathyroid glands are present on the back side of the thyroid gland in humans.
67. **Solution: C**
The xylem tissue transports water and minerals from the roots to the leaves whereas the phloem tissue transports food from the leaves to the other parts of the plant.
68. **Solution: B**
The Reserve Bank of India increases the Cash Reserve Ratio (CRR) to combat inflation and reduce liquid cash available to the banks. The following are the outcomes of higher CRR:
· Helps in controlling inflation by limiting the amount of cash available in the market i.e. reduction in money supply.
· **Higher interest rates.**
· Decrease the bank's profitability as banks do not earn interest on cash reserves kept with the RBI.
· Less funds are available to banks for lending.
Hence, Option B is the correct answer.

69. **Solution: A**

Copper Production	State
Ghatsila	Jharkhand
Dahej and Jhagadia	Gujarat
Khetri	Rajasthan
Tuticorin	Tamil Nadu

Hence, Option A is the correct answer.

70. **Solution: A**

Battle of Rewar:

It was fought between Arab invaders **Muhammad-bin-Qasim** and **Dahir**, the ruler of Sind. Dahir waited with a huge army of 50,000 swordmen, horsemen, and elephantry at a place called Rawar.

The battle took place on the left bank of the Indus River.

Dahir, the Punjab's Brahmin ruler, was killed in the battle. **Sind and Multan** were captured.

Hence, Option A is the correct answer.

71. **Solution: C**

The **Nifty 50** is a diversified 50 stock index accounting for **13 sectors** of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, index-based derivatives, and index funds.

Nifty 50 is owned and managed by **NSE Indices Limited** (formerly known as India Index Services & Products Limited) (NSE Indices). NSE Indices is India's specialized company focused on the index as a core product.

Hence, Option C is the correct answer.

72. **Solution: C**

National Programme for Civil Services Capacity Building (Mission Karmayogi) :

It was launched in 2020. It aims to create a competent civil service rooted in Indian ethos.

It has six key pillars including the **Policy Framework, Institutional Framework, Competency Framework, Digital Learning Framework (iGOT-Karmayogi)**, the **electronic Human Resource Management System (e-HRMS)**, and the **Monitoring and Evaluation Framework**.

Hence, Option C is the correct answer.

73. **Solution: B**

The Rajya Sabha does not vote on Demands for Grants. The Rajya Sabha can discuss the Annual Financial Statement, but it cannot vote on the Demands for Grants.

Demand for Grants is a form in which estimates of expenditure from Consolidated funds included in the budget are presented to the Lok Sabha.

DFGs are submitted in pursuance of Article 113 of the Constitution. Article 113 (iii) says No demand for a grant shall be made except on the recommendation of the President.

Once DFGs are approved (with or without modifications), they become part of the Appropriation Bill.

Bill once passed, allows the government to withdraw funds from the Consolidated Fund of India to meet its expenses and liability.

Hence, Option B is the correct answer.

74. **Solution: B**

Pyrocumulonimbus Cloud occurs when there is an **extremely hot wildfire and volcanic eruptions**. They can produce lightning, but they do not generate much rain. Not every wildfire leads to the creation of pyrocumulonimbus clouds. They look much darker

than typical clouds because of their large amounts of smoke and ash.

Hence, Option B is the correct answer.

75. **Solution: A**

The **Dogra dynasty** was a Hindu Rajput dynasty that ruled **Jammu and Kashmir** from 1846 to 1947.

Gulab Singh, a noble in the court of Maharaja Ranjit Singh, founded the dynasty.

Hari Singh was the last ruler of the Dogra dynasty. He ruled from 1925 until the state of Jammu and Kashmir acceded to India in 1947.

Hence, Option A is the correct answer.

English Language

76. **Solution: D**

The sentence is free from errors. Thus, D is the right answer.

77. **Solution: C**

DCBA is the correct sequence of sentences. D begins the paragraph by telling us that surfing began in Australia more than hundred years ago. C follows D to describe that since its introduction in the country, it has been a part of Australia's culture and business. B follows C to describe this commercial or business aspect of surfing in Australia: the sport leads a profit of at least \$2bn for the national economy. At last, A tells us that despite all these positives related to the sport, there is a risk because of waves that can threaten people's lives and legal protection against it should be provided to people. Thus, C is the right answer.

78. **Solution: D**

The sentence seeks to convey that there are 34 large or significant fires that are burning across the Western United states and are made severe by hot and windy conditions in many regions. The highlighted phrase has been correctly used in the sentence. Thus, D is the right answer.

A is incorrect as the singular verb INTENSIFIES has been used instead of the past participle form verb INTENSIFIED to fit in the passive voice structure (IS/AM/ARE + VERB 3 + BY).

B is incorrect as the base form verb ACCELERATE has been used instead of the past participle form verb ACCELERATED to fit in the passive voice structure (IS/AM/ARE + VERB 3 + BY).

C is incorrect as the preposition TO is used instead of the preposition BY to indicate the factors that intensify the fires: hot and windy conditions.

79. **Solution: B**

The sentence is in the simple present tense, and active voice. To change the subject to the passive voice, follow the below rules:

I. The subject HER FATHER will become the object. The object THE BICYCLE will change to the subject of the sentence.

II. The verb DOES NOT RIDE will be replaced by IS NOT RIDDEN, as the passive construction for the simple present tense is IS/ AM/ ARE + PAST PARTICIPLE.

III. The preposition BY will be added to the sentence, and HER FATHER will change to become its object. Thus, B is the right answer.

80. **Solution: B**

We need a noun to be modified by the indefinite article A. The sentence seeks to convey that recently,

Google introduced Gemini as a substitute for its voice assistant on Android phones. REPLACEMENT (substitute or a person or thing that takes the place of another) will fit here. Thus, B is the right answer.

The remaining words are contextually incorrect.

Realm - a kingdom. Reign - royal authority. Revere (verb) - to feel deep respect for someone or something.

81. **Solution: C**

The error is in part C of the sentence. Replace the singular pronoun OTHER with the plural pronoun OTHERS to be modified by the adjective MANY that refers to multiple people or things. Thus, C is the right answer.

82. **Solution: D**

RUN INTO (to experience something bad or unpleasant) will fit here as the sentence tells us that this is not the first time that she had faced a problem during her training session. Thus, D is the right answer.

Run on - to continue without stopping. Run with - to accept or start to use a particular idea or method. Run through - to be present in every part of something.

83. **Solution: C**

INCUMBENT means current or existing. The sentence talks about how the current health minister will resign soon. FORMER (previous) is its antonym. Thus, C is the right answer.

Eminent - famous and respected. Naive - showing a lack of experience. Vulnerable - weak and easy to hurt physically or emotionally.

84. **Solution: C**

The sentence is in the present continuous tense and passive voice. Follow the instructions below to change a sentence from passive to active voice:

I. The subject clause will become the object clause. The subject in the sentence, FOOD, will change to the object of the verb, the preposition BY will be omitted, and its object, A ROBOT, will become the subject and begin the sentence.

II. The present continuous passive voice construction IS BEING SERVED will be replaced by the present continuous active voice construction IS SERVING.

Thus, C is the right answer.

85. **Solution: A**

The error lies in A. We need the past participle verb RESTORED to complete the present perfect tense structure HAS + VERB. Thus, A is the right answer.

86. **Solution: D**

INDEMNITY refers to an amount of money paid to someone because of some damage or loss they have suffered. Thus, D is the right answer.

The meaning of other words are:

Mercenary - primarily concerned with making money at the expense of ethics. Peculation - the act of illegally taking or using public money. Peroration - the concluding part of a speech.

87. **Solution: A**

We need a word that gives the meaning of a fishing net, as the sentence talks about how the fishermen threw their net into the ocean to catch a large group of fish. SEINE (a fishing net) will fit here. Thus, A is the right answer.

The other options have different meanings:

Scene - the place where an incident in real life or fiction occurs or has occurred.

Seen - perceived with the eyes; discerned visually.

Serene - calm, peaceful, and untroubled.

88. **Solution: B**

The word LOUNGE means to lie, sit, or stand in a relaxed or lazy way. It is used in the sentence to convey that Jimmy does nothing except for relaxing in his apartment throughout the day. LAZE (to rest or relax) is its synonym. Thus, B is the right answer.

Amaze - to surprise someone greatly. Maze (noun) - a complicated network of paths and passages. Blaze (noun) - a strong fire.

89. **Solution: C**

RAMPANT means happening everywhere or widespread. UNCOMMON (not seen, happening, or experienced often) is its antonym. Thus, C is the right answer.

Inbound - travelling or going inward. Positive - a good or useful quality or aspect. Prolonged - continuing for a long time or longer than usual.

90. **Solution: D**

The incorrectly spelled word is EXUBERANT (full of energy, excitement and cheerfulness). Thus, D is the right answer.

Presumptive - based on probability. Epicentre - the central point of something. Tumult - a state of confusion or disorder.

91. **Solution: C**

The sentence tells us how nobody knew what job Carmen had because she was never seen working. The phrase mentioned in C correctly captures the idea. Thus, C is the right answer.

The highlighted phrase is incorrect. We need the indefinite article A instead of the indefinite article AN to modify the noun LIVING that starts with a consonant sound.

A is incorrect. We need the simple past tense verb PURSUED instead of the present participle verb PURSUING to fit in the past tense structure of the sentence.

B is incorrect. Omit HAD as the sentence is in simple past tense. Moreover, DID is followed by a base form verb and not a past participle verb.

92. **Solution: B**

The idiom TO MAKE NO BONES ABOUT means to be very sure and definite about something. Thus, B is the right answer.

93. **Solution: B**

EXCITEMENT refers to the state of feeling or showing happiness and enthusiasm. BOREDOM (the state of feeling tired and unhappy because something is not interesting) is its antonym. Thus, B is the right answer.

Restriction - the act of limiting the freedom of someone or something. Fear - an unpleasant emotion caused by being aware of danger. Chaos - a state of great disorder.

94. **Solution: D**

The correct spelling of the word is ACCOMPLISHMENT (the act of completing something successfully). Thus, D is the right answer.

Attainment - the act of achieving something. Menace - a danger or threat. Fortuitous - happening by chance rather than intention.

95. **Solution: B**

CBDA is the correct sequence of the sentences. C begins the passage by telling us how as per the Union minister, illegal mining, uncontrolled construction and unregulated commercial activity

worsened the disaster in Wayanad. B follows C to tell us how he blamed the state government for ignoring key aspects of the region before granting permission for such projects. D then tells us how the state government responded by telling how it did not grant approval for any such project except for one. A mentions the project: creation of a Tube Unidirectional Tunnel Road (2+2 Lane) with Four Lane Approach. Thus, B is the right answer.

96. **Solution: C**

"Hanker" means to strongly desire or crave something, which fits the idea of constantly wanting more. "Hoard" means to accumulate excessively, but it does not fit this context. "Waste" and "donate" are unrelated to the meaning of the sentence.

97. **Solution: B**

The sentence suggests that true richness comes from generosity. "Gives" is the best choice. "Takes" and "keeps" imply selfishness, which contradicts the message. "Earns" is not relevant in this context.

98. **Solution: B**

The sentence implies that generosity brings personal enrichment. "Enriched" is the correct word. "Impoverished" and "helpless" suggest a negative outcome, which contradicts the idea. "Isolated" does not fit either.

99. **Solution: C**

The sentence emphasizes the importance of mental well-being over material wealth. "Mind" fits perfectly. "Health" is important but does not match the phrasing. "Power" and "status" do not convey the intended meaning.

100. **Solution: B**

The phrase "come and go" is a common expression referring to the temporary nature of wealth. "Come" completes the phrase correctly. "Rise" and "fluctuate" do not fit well with "go." "Vanish" is too extreme for this context.

SCHOLARS ACADEMY