SSC CHSL Pre

Solution

SHP-91154238-E

General Intelligence and Reasoning

1. Solution: D
In all of the above options all are planet except for option 'D' i.e., Moon.
Hence, option d.

2. Solution: C
The logic followed here is as follows.
Second number = First number × (First number - 2)
In '19: 323',
= 19 × (19 - 2)
= 19 × 17
= 323
Similarly, in (26: ?)
= 26 × (26 - 2)
= 26 × 24
= 624
So, '624' is related to '26' in the same way as '323' is related to '19'.
Hence, option c.

3. Solution: D
The pattern followed here is as follows:
First, all the letters of the given word are changed to the 3rd succeeding letter as per English alphabetical series and then, the first half is arranged in the reverse order and the second half is arranged in the reverse order.
In 'MILTON',

M	I	L	T	O	N
P	L	O	W	R	Q
O	L	P	Q	R	W

So, 'MILTON' is coded as 'OLPQRW'.
In 'LIQUID',

L	I	Q	U	I	D
O	L	T	X	L	G
T	L	O	G	L	X

So, 'LIQUID' is coded as 'TLOGLX'.
Similarly, in 'ZEBRAS',

Z	E	B	R	A	S
C	H	E	U	D	V
E	H	C	V	D	U

So, 'ZEBRAS' is coded as 'EHCVDU'.
Hence, option d.

4. Solution: C
After replacing the numbers given in option 'A' with the letters given in the table, we get:

4	2	1	6	5	3
M	A	B	R	E	L

'MABREL' is not a meaningful word.
After replacing the numbers given in option 'B' with the letters given in the table, we get:

4	6	2	1	3	5
M	R	A	B	L	E

'MRABLE' is not a meaningful word.
After replacing the numbers given in option 'C' with the letters given in the table, we get:

4	2	6	1	3	5
M	A	R	B	L	E

'MARBLE' is a meaningful word.
After replacing the numbers given in option 'D' with the letters given in the table, we get:

3	1	2	4	5	6
L	B	A	M	E	R

'LBAMER' is not a meaningful word.
Hence, option c.

5. Solution: A
The logic followed here is as follows:
When '#' is used, first divide the first number by the second number and then, multiple the resultant by '2' to get the number.
When $ is given, first multiply the first number and the second number and then, divide the resultant by '2' to get the number.
In 78 # 3 = 52
= (78 ÷ 3) × 2
= 26 × 2 = 52
In 98 # 49 = 4
= (98 ÷ 49) × 2
= 2 × 2 = 4
In 33 $ 4 = 66
= (33 × 4) ÷ 2
= 132 ÷ 2 = 66
In 64 $ 6 = 192
= (64 × 6) ÷ 2
= 384 ÷ 2 = 192
Similarly, in 3375 # 15
= (3375 ÷ 15) × 2
= 225 × 2 = 450
Similarly, in 54 $ 12
= (54 ×12) ÷ 2
= 648 ÷ 2 = 324
So, the value of '3375 # 15' and '54 $ 12' are '450' and '324' respectively.
Hence, option a.

6. Solution: B
The embedded figure is shown below:

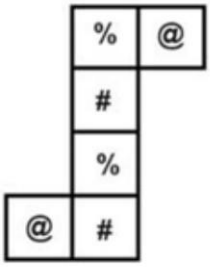
Hence, option b.

7. Solution: C
Statement I: 865 means 'save the water'
Statement II: 623 means 'the bad vibe'
Statement III: 482 means 'water bad flood'
From statement I and II, we conclude that 'the' is coded as '6'
From statement I and III, we conclude that 'water' is coded as '8'
From statement II and III, we conclude that 'bad' is coded as '2'
From statement I alone, we conclude that 'save' is coded as '5'
From statement II alone, we conclude that 'vibe' is coded as '3'

From statement III alone, we conclude that 'flood' is coded as '4'
So, 'flood' is coded as '4'.
Hence, option c.

8. **Solution: C**
Given equation:
155 # 780 % 26 $ 220 & 125
After decoding the code, we get:
155 × 780 ÷ 26 + 220 - 125 = ?
On applying 'BODMAS' we get:
= 155 × 30 + 220 - 125
= 4650 + 220 - 125
= 4870 - 125
= 4745
So, '4745' will come in place of '?'.
Hence, option c.

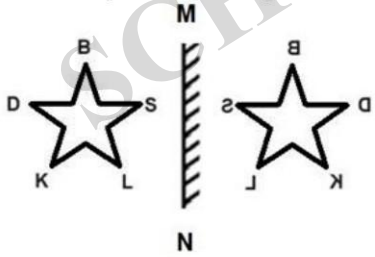
9. **Solution: C**



As, same symbols will appear on the opposite side of paper after a cube is formed.
So, '22' will appear opposite to '62', '12' will appear opposite to '72' and '32' will appear opposite to '42'.
Hence, option c.

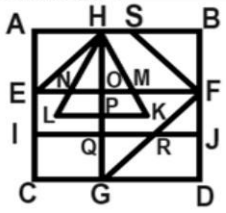
10. **Solution: C**
In all of the above number pairs, the 2nd number is a multiple of the 1st number except the number pair in option 'C'.
A) 15 - 75 (15 × 5)
B) 21 - 189 (21 × 9)
C) 37 - 121 (121 is not a multiple of 37)
D) 45 - 315 (45 × 7)
Hence, option c.

11. **Solution: C**
If mirror is placed to the right of the figure,



Hence, option c.

12. **Solution: B**

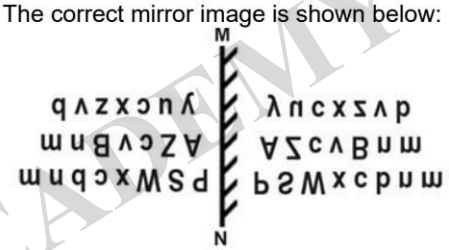


There are 15 triangles (AHE, SBF, GFD, JRF, GOF, HLK, HLP, HPK, HNO, HMO, EHN, EHO, HNM, HEM and QRG).
Hence, option b.

13. **Solution: A**
The logic followed here is as follows:
The product of the numbers of the column I and column II is the number given in column III.
In row I, (26, 8, 208) :
= 26 × 8
= 208
In row II, (18, 12, 216) :
= 18 × 12
= 216
In row III, (19, 14, ?)
= 19 × 14
= 266
So, '266' is the missing number.
Hence, option a.

14. **Solution: B**
The reverse dictionary order of the given words is as follows:
2 - Hurry, 1 - Hunger, 3 - Hunch, 5 - Humility, 4 - Human
So, 'Hunger' will come at the second position.
Hence, option b.

15. **Solution: D**
The correct mirror image is shown below:



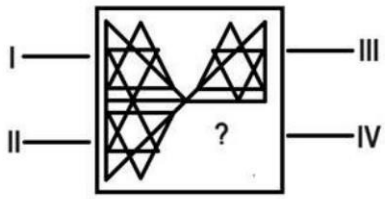
Hence, option d.

16. **Solution: B**
Given: ZEM, FJQ, LOU, RTY, XYC, ?
The logic followed here is as follows:
All the letters of the first term from the left end are replaced by the 6th, the 5th and the 4th succeeding letter respectively as per English alphabetical series to form the next term as shown below.

Z	E	M
+6	+5	+4
F	J	Q
+6	+5	+4
L	O	U
+6	+5	+4
R	T	Y
+6	+5	+4
X	Y	C
+6	+5	+4
D	**D**	**G**

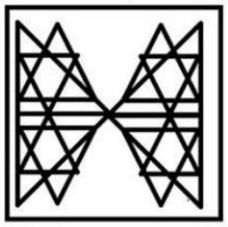
So, 'DDG' will come in place of question mark.
The complete series is as follows:
ZEM, FJQ, LOU, RTY, XYC, **DDG**
Hence, option b.

17. **Solution: B**
The pattern followed here is:
Figure II is the mirror image of Figure I, similarly figure IV will be mirror image of Figure I.



So, the figure that will come in place of IV is:

So, the complete figure is:



Hence, option b.

18. Solution: B

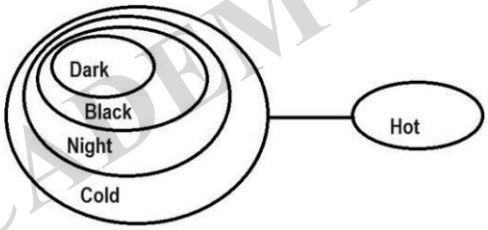
Given: 2, 6, 14, ?, 62, 126
The logic followed here is as follows:
$2 + 2 \times 2 = 2 + 4 = 6$
$6 + 4 \times 2 = 6 + 8 = 14$
$\mathbf{14 + 8 \times 2 = 14 + 16 = 30}$
$30 + 16 \times 2 = 30 + 32 = 62$
$62 + 32 \times 2 = 62 + 64 = 126$
The complete series is as follows:
2, 6, 14, **30**, 62, 126
Hence, option b.

19. Solution: B

Given equation: 427 * 7 * 2 * 61 * 96 * 87
After replacing '*' with mathematical sign given in option 'A', we get:
$427 - 7 \times 2 + 61 = 96 - 87$
LHS:
$= 427 - 7 \times 2 + 61$
$= 427 - 14 + 61$
$= 488 - 14$
$= 474$
RHS:
$= 96 - 87$
$= 9$
LHS ≠ RHS
So, sign given in option 'A' will not balance the equation.
After replacing '*' with mathematical sign given in option 'B', we get:
$427 \div 7 + 2 \times 61 - 96 = 87$
LHS:
$= 427 \div 7 + 2 \times 61 - 96$
$= 61 + 2 \times 61 - 96$
$= 61 + 122 - 96$
$= 183 - 96$
$= 87$
LHS = RHS
So, sign given in option 'B' will balance the equation.
After replacing '*' with mathematical sign given in option 'C' we get:
$427 \div 7 \times 2 - 61 + 96 = 87$
LHS:
$= 427 \div 7 \times 2 - 61 + 96$
$= 61 \times 2 - 61 + 96$
$= 122 - 61 + 96$
$= 218 - 61$
$= 151$
LHS ≠ RHS
So, sign given in option 'C' will not balance the equation.
After replacing '*' with mathematical sign given in option 'D' we get:
$427 + 7 \times 2 - 61 + 96 = 87$
LHS:
$= 427 + 7 \times 2 - 61 + 96$
$= 427 + 14 - 61 + 96$
$= 537 - 61$
$= 476$
LHS ≠ RHS
So, sign given in option 'D' will not balance the equation.
Hence, option b.

20. Solution: C

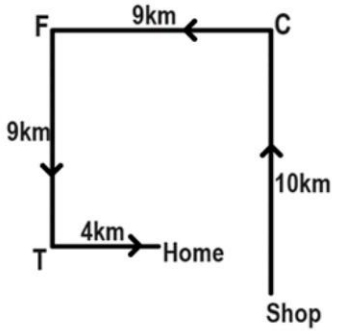
Following figures can be formed:



Conclusions:
I. No Black are Hot. Follow. (As, all Black are Night, all Night are Cold, no Cold are Hot, so, all Black which are Night are also Cold and all Black can never be Hot.)
II. No Dark are Hot. Follow. (As, all Dark are Black, all Black are Night, all Night are Cold, no Cold are Hot, so, all Dark which are Black are also Cold, so, all Dark can never be Hot.)
III. Some Cold are Dark. Follow. (As, all Dark are Black, all Black are Night, all Night are Cold, so, all Dark which are Black are also Cold, so, some Cold are definitely Dark.)
IV. Some Black are Hot. Doesn't follow. (As, all Black are Night, all Night are Cold, no Cold are Hot, so all Black which are Night are also Cold and no Black can ever be Hot.)
Therefore, only conclusions I, II and III follow.
Hence, option c.

21. Solution: A

22. Solution: B

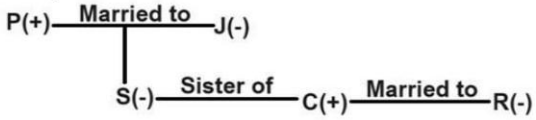


From the above information, we get the following diagram:

So, his home is in northwest direction with respect to his Shop.
Hence, option b.

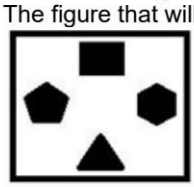
23. Solution: A
Given expression: 18 A 21 C 283 D 1020 B 3 = ?
Expression after replacing letter with symbols:
18 × 21 + 283 - 1020 ÷ 3 = ?
Applying BODMAS rule,
= 18 × 21 + 283 - 340
= 378 + 283 - 340
= 661 - 340
= 321
So, '321' will come in the place of '?' in the given expression.
Hence, option a.

24. Solution: B
After decoding the code, we get:
C # R means C is the husband of R.
S & C means S is the sister of C.
C $ P means C is the child of P.
P # J means P is the husband of J.
From the above information, we make the following family tree:

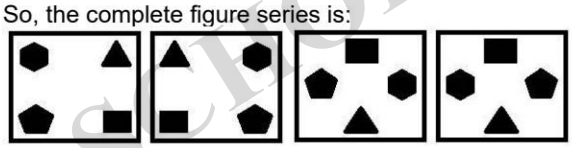


So, R is the daughter-in-law of P.
Hence, option b.

25. Solution: D
In the above figure series, the 1st figure is the mirror image of the 2nd figure. Similarly, the 3rd figure will be the mirrror image of the 4th figure.
The figure that will complete the figure series is:



So, the complete figure series is:



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

Quantitative Aptitude

26. Solution: B
Let cost price of 1,000 grams goods = ₹1,000
But due to use of faulty weight, customer got only 750 grams.
So, selling price of 750 grams is ₹1,000
Selling price of 1,000 grams of goods = (1,000/750) × 1,000 = ₹(4,000/3)
Profit earned = (4,000/3) - 1,000 = ₹(1,000/3)
Required profit percentage = {(1,000/3) ÷ 1,000} × 100 = (100/3) %

27. Solution: D
Length of the transverse common tangent, l = $\sqrt{d^2 - (r_1 + r_2)^2}$
Where, d = Distance between the centres of the two circles
r_1 = Radius of the bigger circle
r_2 = Radius of the smaller circle
So, l = $\sqrt{73^2 - (29 - 19)^2}$
= $\sqrt{73^2 - 48^2}$
= $\sqrt{(73 + 48) \times (73 - 48)}$
= $\sqrt{3025}$
= 55
So, length of the transverse common tangent = 55 cm
Hence, option d.

28. Solution: B
Ratio of profit shares of 'X' and 'Y' = (15,000:12,000) = 5:4
Commission of 'X' = 22500 × 0.2 = ₹4,500
So, net profit remaining to distribute between 'X' and 'Y' = 22500 - 4500 = ₹18,000
So, profit share of 'Y' = 18000 × (4/9) = ₹8,000
Hence, option b.

29. Solution: D
We know that $(a - b)^3 = a^3 - b^3 - 3ab \times (a - b)$
So, $4^3 = 1216 - 3mn \times (4)$
Or, 1152 = 12mn
So, mn = 96
Hence, option d.

30. Solution: B
Let actual profit shares of Ankush and Ananya be ₹'8a' and ₹'3a', respectively.
Let wrong profit shares of Ankush and Ananya be ₹'7b' and ₹'15b', respectively.
So, 8a + 3a = 7b + 15b
Or, 11a = 22b
Or, 'a' = '2b'
ATQ,
So, 16b - 7b = 378
Or, 9b = 378
Or, 'b' = 42
Therefore, total sum = 7b + 15b = '22b' = 22 × 42
= ₹924

31. Solution: B
sin(A + B) = 1 = sin 90°
So, (A + B) = 90° ----------(I)
Also, sin(A - B) = (1/2) = sin 30°
So, (A - B) = 30° ----------(II)
On adding (I) and (II) , we get
(2 × A) = 120°
Hence, option b.

32. Solution: C
Quantity of milk in the solution = (4/3) × 90
= 120 litres
Let 'm' litres of milk are added in the solution so that the ratio of milk and water in the solution becomes 5:3.
So, $\left(\frac{120+m}{90}\right) = \frac{5}{3}$
Or, 3 × (120 + m) = 90 × 5
Or, 360 + (3 × m) = 450
Or, (3 × m) = 90
So, m = 30
Hence, option c.

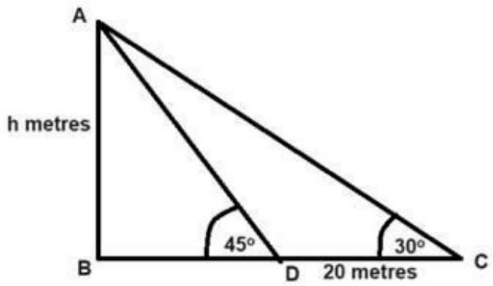
33. Solution: A
Number of female players in sports academy 'B' = (100 - 70) % of 240 = (0.3) × 240 = 72
Number of female players in sports academy 'D' = (100 - 50) % of 420 = (0.5) × 420 = 210
Number of female players in sports academy 'E' = (100 - 80) % of 150 = (0.2) × 150 = 30
Required average = {(72 + 210 + 30) /3} = (312/3)

= 104
Hence, option a.

34. Solution: D
Let the sum is ₹'d'.
Interest earned in 125 years = (76d - d) = ₹'75d'
Using, simple interest earned = sum × (rate of interest/100) × time period
So, 75d = d × (rate of interest) × 1.25
Or, rate of interest = 75 ÷ 1.25 = 60%
Let the sum becomes 97 times in 'T' years.
Interest earned in 'T' years = 97d - d = ₹'96d'
So, 96d = d × (60/100) × T
Or, 'T' = 96 × (100/60) = 160
Therefore, required time is 160 years.
Alternate method:
Let the sum be ₹'P'.
So, Amount = ₹'76P'
So, Interest, ₹'75P', is earned in 125 years.
Therefore, required Interest, ₹'96P' will be earned in
= (125/75P) × 96P = 1160 years
Hence, option d.

35. Solution: B
Let the total capacity of tank be 30 units (LCM of 10, 15 and 5) .
Efficiency of pipe 'A' = (30/10) = 3 units/hour
Efficiency of pipe 'B' = (30/15) = 2 units/hour
Efficiency of pipe 'C' = (30/5) = 6 units/hour
Capacity of tank filled till 3 PM = 3 × 1= 3 units
Capacity of tank filled till 6 PM = 3 + (3 + 2) × 3
= 3 + 15 = 18 units
Time taken by Pipe 'C' to empty the tank = (18/6)
= 3 hours
So, tank gets completely empty at (6 PM + 3 hours = 9 PM)
Alternate Solution
Part of tank filled by pipe 'A' from 2 PM to 6 PM i.e. 4 hours = (4/10) = (2/5) th part
Part of tank filled by pipe 'B' from 3 PM to 6 PM i.e. 3 hours = (3/15) = (1/5) th part
Part of tan filled till 6 PM = (2/5) + (1/5) = (3/5) part
Time taken by pipe 'C' to empty the filled part of tank = 5 × (3/5) = 3 hours
Therefore, required time = 6 PM + 3 hours = 9 PM
Hence, option b.

36. Solution: C
Let AB be a tower having base at point 'B'
Let 'h' be the height of the tower
Therefore, AB = h metres
Let the two points of the observation be 'D' and 'C'
Therefore, DC = 20 metres



In ΔABC, tan 45° = (AB/BC)
(h/BC) = 1 (since, tan 45° = 1)
So, BC = 'h'
In ΔABD, tan 30° = (AB/BD)
$\frac{h}{BC+20} = \frac{1}{\sqrt{3}}$ $\left(\text{since}, \tan 30° = \frac{1}{\sqrt{3}}\right)$
$\sqrt{3}h = h + 20$ (since, BC = 'h' metres)
$\sqrt{3}h - h = 20$
$(\sqrt{3} - 1)h = 20$
'h' = $\frac{20}{\sqrt{3}-1} \times \left(\frac{\sqrt{3}+1}{\sqrt{3}+1}\right)$
'h' = $\frac{20(\sqrt{3}+1)}{(\sqrt{3})^2 - 1^2}$ $\{\text{since}, (a^2 - b^2) = (a + b)(a - b)\}$
'h' = $\frac{20(\sqrt{3}+1)}{2} = 10(\sqrt{3} + 1)\text{metres}$
Hence, option c.

37. Solution: C
Let 'C' = '5y' and 'D' = '6y'
So, 'B' = (6C/5) = (6 × 5) ÷ 5 = '6y'
And, 'A' = (2B/3) = (2 × 6y) ÷ 3 = '4y'
So, required percent = (4y + 5y) ÷ (6y + 6y) × 100 = (9/12) × 100 = 75%
Hence, option c.

38. Solution: C
Let the cost price of article be ₹'100y'
ATQ:
We have, 100y × 1.24 - 600 = 100y × 0.84y
Or, 124y - 600 = 84y
So, 'y' = (600/40) = 15
So, cost price of article = 15 × 100 = ₹1,500
Marked price of article = 1.2 × 1,500 = ₹1,800
Required selling price of article = 1,800 - 200
= ₹1,600
Hence, option c.

39. Solution: B
(12/5) = 2.4
(8/3) ~ 2.67
(15/8) = 1.875
(21/8) = 2.625
So, (14/3) is the highest among the given fractions.
Hence, option b.

40. Solution: C
$4^2 \times 128 \div 64 + 18^2 - 72 + 5 \times 8$
= 16 × 2 + 324 - 72 + 40
= 32 + 292
= 324
Hence, option c.

41. Solution: C
Let, the total work be LCM (16, 24) = 48 units
So, the efficiency of 'A' = (48/16) = 3 units/day
Efficiency of 'B' = (48/24) = 2 units/day
Work done on first 3 days = 2 × 1 + 3 × 1 + (3 + 2) × 1
= 2 + 3 + 5 = 10 units
So, the work done in 12 days = 10 × 4 = 40 units
Remaining work = 48 - 40 = 8 units
Work done on next 2 days = 2 × 1 + 3 × 1 = 5 units
So, the time taken to complete the remaining work by 'A' and 'B' together = [(8 - 5) /5] = (3/5) = 0.6 days
So, the total time taken to complete the whole work
= 12 + 2 + 0.6 = 14.6 days
Hence, option c.

42. Solution: D
As we observe the given table, we can clearly see that for company 'D', the number of tea bags sold increases every year from 2018 to 2022.
Hence, option d.

43. Solution: D
$\{\sin 20° \cos(90° - 20°) + \sin(90° - 70°) \times \cos 20°\} \times \text{cosec } 30°$
we know that, $\sin(90° - A) = \cos A$ & $\cos(90° - B) = \sin B$
$= (\sin^2 20° + \cos^2 20°) \times \text{cosec } 30°$
we know that, $\sin^2 A + \cos^2 A = 1$ and $\text{cosec } 30° = 2$
So, required value = (1 × 2) = 2

Hence, option d.

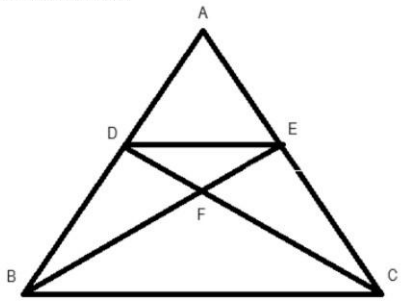
44. **Solution: B**

Difference between percentage of employees working in company 'A' and company'C' = (28 - 20) = 8%

So, Required difference = $\left(\frac{8}{100} \times 360\right) = 28.8°$

Hence, option b.

45. **Solution: A**



When a line is drawn by connecting two points on the two sides of the triangle and the line so formed is parallel to the third side of the triangle, then,

$\frac{AD}{AB} = \frac{AE}{AC} = \frac{DE}{BC}$

Or, $\frac{DE}{BC} = \frac{AE}{AC} = \frac{AE}{AE+CE} = \frac{6}{6+9} = \frac{6}{15} = \frac{2}{5}$...(i)

In ΔDEF and ΔCBF

DE II BC

So, ∠DEF = ∠CBF and ∠FDE = ∠FCB (alternate interior angles)

∠DFE = ∠CFB (vertically opposite angles)

So, In ΔDEF ~ ΔCBF (by AAA)

So, $\frac{\text{area } \Delta CBBF}{\text{area } \Delta DEF} = \frac{BC^2}{DE^2} = \left(\frac{BC}{DE}\right)^2 = \left(\frac{5}{2}\right)^2 = 25:4$

Hence, option a.

46. **Solution: B**

In case of the largest possible cylinder which can be carved out from a cube,

Diameter of the cylinder = Side of the cube

And, Height of the cylinder = Side of the cube

Let, the radius and height of the cylinder be, 'r' cm and 'h' cm.

So, r = (42/2) = 21 cm

h = 42 cm

Required volume = $\pi \times r^2 \times h = (22/7) \times (21)^2 \times 42$

= 58,212 cm^3

Hence, option b.

47. **Solution: B**

$\frac{\sin^3 A - \cos^3 A}{1+\sin A \cos A}$

Using $a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$

$= \frac{(\sin A - \cos A)(\sin^2 A + \cos^2 A + \sin A \cos A)}{1+\sin A \cos A}$

Using $\sin^2 A + \cos^2 A = 1$,

$= \frac{(\sin A - \cos A)(1+\sin A \cos A)}{1+\sin A \cos A}$

= sin A - cos A

Hence, option b.

48. **Solution: A**

$\left(9p + \frac{11}{p} + 5\right) = 20$

So, $9p + \frac{11}{p} = 15$

Squaring both sides,

Or, $81p^2 + \frac{121}{p^2} + 2 \times (9p) \times \left(\frac{11}{p}\right) = 225 \quad \{\text{since}, (a + b)^2 = a^2 + b^2 + 2ab\}$

Or, $81p^2 + \frac{121}{p^2} + 198 = 225$

Or, $81p^2 + \frac{121}{p^2} = 27$

Multiplying both sides with 3,

$3 \times \left(81p^2 + \frac{121}{p^2}\right) = 3 \times 27$

Or, $\left(243p^2 + \frac{363}{p^2}\right) = 81$

Hence, option a.

49. **Solution: D**

The number which is divisible by 6 must be divisible by both 2 and 3.

We know that a number is divisible by '3' when the sum of its digits is also divisible by '3' and it is divisible by two when the unit digit of the number is even. Since the unit digit of all four numbers is even, we must check for divisibility of '3'.

Sum of digits of 3,35,460 = 3 + 3 + 5 + 4 + 6 + 0 = 21 (Divisible by 3)

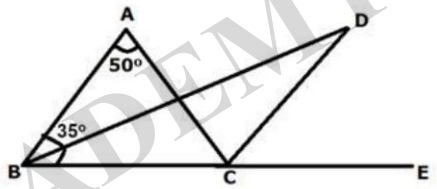
Sum of digits of 1,23,660 = 1 + 2 + 3 + 6 + 6 + 0 = 18 (Divisible by 3)

Sum of digits of 5,14,236 = 5 + 1 + 4 + 2 + 3 + 6 = 21 (Divisible by 3)

Sum of digits of 4,20,322 = 4 + 2 + 0 + 3 + 2 + 2 = 13 (Not divisible by 3) .

Hence, option d.

50. **Solution: C**



Sum of each angle of a triangle is 180°.

So, ∠C = 180° - 70° - 50° = 60°

Exterior angle of ∠C = 180° - 60° = 120°

∠ACD = ∠ECD (CD is the external bisector of ∠C)

So, ∠ACD = (120°/2) = 60°

Again, ∠ABD = ∠CBD (BD is the internal bisector of B)

So, ∠DBC = (70°/2) = 35°

So, ∠BDC = 180° - (2 × 60°) - 35° = 25°

Hence, option c.

General Awareness

51. **Solution: B**

A **liquidity adjustment facility** (LAF) is a tool used in monetary policy, primarily by the Reserve Bank of India (RBI) that allows banks to borrow money through repurchase agreements (repos) or to make loans to the RBI through reverse repo agreements.

· This arrangement is effective in managing liquidity pressures and assuring basic stability in the financial markets.

· The RBI introduced the LAF as a result of the **Narasimham Committee**.

Hence, Option B is the correct answer.

52. **Solution: B**

Algae are plant-like organisms that are usually photosynthetic and aquatic in nature. These are chlorophyll containing thallophytes, in which vascular tissue (xylem and phloem) are absent.

Spirogyra is a genus of filamentous charophyte green algae of the order Zygnematales, named for the helical or spiral arrangement of the chloroplasts that is characteristic of the genus.

Spirogyra is also called **pond silk**.

Hence, Option B is the correct answer.

53. **Solution: D**

Union Minister of State for Electronics and IT, Skill Development, Entrepreneurship and Jal Shakti, Rajeev Chandrasekhar inaugurated **India's first Future LABS center** in C-DAC **Thiruvananthapuram**, Kerala.
This center, namely, **"Centre for Semiconductor Chips & Systems for Strategic Electronics"**, will be playing a crucial role in catalyzing an ecosystem for next generation chip design, manufacturing, and research.
Hence, Option D is the correct answer.

54. Solution: C
Portugal is a southern European country on the Iberian Peninsula, bordering **Spain**. The mainland is located on the southwest of the Iberian Peninsula, bordering Spain to the north and east, and the **Atlantic Ocean** to the west and south.
Hence, Option C is the correct answer.

55. Solution: C
Any limestone, dolomite, and gypsum region showing typical landforms produced by the action of ground water through the processes of solution and deposition is called **Karst Topography**.
Hence, option C is the correct answer.

56. Solution: D
Chanhu-daro is an archaeological site belonging to the Indus Valley civilization.
· The site is located 130 kilometers south of Mohenjo-daro, in **Sindh**, Pakistan.
· The settlement was inhabited between 4000 and 1700 BCE and is considered to have been a centre for manufacturing carnelian beads.
· It is situated in a desert area, but it is believed that the **Indus River** used to flow near this site.
Hence, Option D is the correct answer.

57. Solution: B
Article 25 in Constitution of India: Freedom of conscience and free profession, practice, and propagation of religion.
(X) Subject to public order, morality, and health and to the other provisions of this Part, all persons are equally entitled to freedom of conscience and the right freely to profess, practise and propagate religion.
(Y) Nothing in this article shall affect the operation of any existing law or prevent the State from making any law -
(i) regulating or restricting any economic, financial, political or other secular activity which may be associated with religious practice;
(ii) providing for social welfare and reform or the throwing open of Hindu religious institutions of a public character to all classes and sections of Hindus.
Hence, Option B is the correct answer.

58. Solution: A
The World Inequality Lab (WIL) and Sciences Po's Center for Research on Social Inequalities (CRIS) have joined forces for the first edition of the **Global Inequality Research Award (GiRA)** , which aims to recognize every two years researchers from all disciplines who have made a significant contribution to the understanding of global inequalities.
The 2024 GiRA Prize is jointly awarded to **Bina Agarwal and James K. Boyce** for their groundbreaking work in the field of social and environmental inequalities.
Hence, Option A is the correct answer.

59. Solution: B
The **Bardoli Satyagraha**, was a farmer's agitation and nationalist movement in India against the increased taxation of farmers by the colonial government. It demanded a cancellation of the **22% tax** hike being levied in Bombay Presidency. The movement began on 12 June **1928**.
It was eventually led by **Sardar Vallabhbhai Patel**, and its success gave rise to Patel becoming one of the main leaders of the independence movement.
Hence, Option B is the correct answer.

60. Solution: B
MSF or Marginal Standing Facility enables banks to borrow funds from RBI (Reserve Bank of India) in emergency situations when their liquidity absolutely dries up.
MSF was introduced by **Reserve Bank of India**.
Hence, Option B is the correct answer.

61. Solution: C
Nine amino acids - **histidine**, isoleucine, **leucine**, lysine, **methionine**, phenylalanine, threonine, tryptophan, and valine are not synthesized by mammals and are therefore dietarily essential or indispensable nutrients. These are commonly called **essential amino acids**.
Amino acids (AAs) are building blocks of **protein**.
Note: Asparagine is synthesized by mammals.
Hence, Option C is the correct answer.

62. Solution: C
BJP leader **Nayab Saini** has been appointed as the new Chief Minister (CM) of Haryana.
Nayab Singh Saini was sworn in as the Haryana chief minister after Manohar Lal Khattar and his cabinet ministers resigned from their posts.
Hence, Option C is the correct answer.

63. Solution: C
Amaravati Stupa is a ruined Buddhist stupa at the village of **Amaravathi**, Palnadu district, **Andhra Pradesh**, India.
The site is under the protection of the Archaeological Survey of India and includes the stupa itself and the Archaeological Museum.
The material used in Amaravati art is 'White marble'.
Hence, Option C is the correct answer.

64. Solution: C
Digboi refinery is known as birthplace of the oil Industry in India. It was commissioned on 11 December 1901.
Digboi Oil Refinery was set up at Digboi by Assam Oil Company Ltd. It has the distinction of being Asia's first refinery and one of oldest still in operation.
Hence, Option C is the correct answer.

65. Solution: B
The **Jnanpith Award** is the oldest and the highest Indian literary award presented annually by the Bharatiya Jnanpith to an author for their "outstanding contribution towards literature".
· It was instituted in 1961.
· The award is bestowed only on Indian writers.
Hence, Option B is the correct answer.

66. Solution: B
Sir **Chandrasekhara Venkata Raman** was an Indian physicist known for his work in the field of light scattering.
Using a spectrograph that he developed, he and his student K. S. Krishnan discovered that when light traverses a transparent material, the deflected light changes its wavelength and frequency. This

phenomenon, a hitherto unknown type of scattering of light, which they called "modified scattering" was subsequently termed the Raman effect or Raman scattering.
Raman received the **1930 Nobel Prize in Physics** for the discovery and was the first Asian to receive a Nobel Prize in any branch of science.
Hence, option B is the correct answer.

67. Solution: C
Heavy water is a form of water whose hydrogen atoms are all deuterium rather than the common hydrogen-1 isotope that makes up most of the hydrogen in normal water.
Formula: D_2O
Hence, option C is the correct answer.

68. Solution: A
Second Five-Year Plan (1956-61) :
· Rapid industrialization with particular emphasis on the development of basic and heavy industry, also called Nehru Mahalanobis Plan.
· To increase the rate of investment from 7% to 11% of GDP.
· Atomic Energy Commission came into being and TIFR was set-up.
· Targeted growth rate was 4.5% but achieved 4.1%.
· Durgapur (UK) , Bhilai (USSR) and Rourkela (Germany) steel plant was set-up with foreign help.
Hence, Option A is the correct answer.

69. Solution: B
Important Tribes of India:
· Aptanis: Arunachal Pradesh
· Chakma: Tripura
· Gaddis: Himachal Pradesh
· Garos: Meghalaya
Hence, Option B is the correct answer.

70. Solution: C

List I (Countries)	List II (Capitals)
Iraq	Baghdad
Zambia	Lusaka
Uganda	Kampala
Argentina	Buenos Aires

Hence, Option C is the correct answer.

71. Solution: C
The Government of India (GoI) has announced that veteran leader **Lal Krishna Advani** will be conferred with **Bharat Ratna**, the highest civilian award of the nation, for the year 2024.
Lal Krishna Advani:
· He was born on 8 November 1927 in Karachi, British India.
· He served as the **7th Deputy Prime Minister of India** in the Atal Bihari Vajpayee government from **2002-04.**
· He is the longest serving **Minister of Home Affairs,** serving from 1998 to 2004.
· In **2015**, he was awarded the **Padma Vibhushan**, India's second highest civilian honour.
Hence, option C is the correct answer.

72. Solution: C
The **Human Development Index** (HDI) is a statistical measure (composite index) developed by the United Nations to assess the social and economic development of countries around the world.
The HDI considers **three indicators** of human development, namely, life expectancy, education, and per capita income.
Hence, option C is the correct answer.

73. Solution: C
List of folk dances of Indian states:
· **Bihar**: Jat-Jatin, Bakho-Bakhain, Panwariya, Sama-Chakwa, Bidesia, Jatra, etc.
· **Chhattisgarh**: Gendi, Karma, Jhumar, Dagla, Pali, Tapali, Navrani, Diwari.
· **Goa**: Mandi, Jhagor, Khol, Dakni, etc.
· **Gujarat**: Garba, Dandiya Ras, Tippani Juriun, Bhavai, etc.
Note:- Laho Dance is a folk dance of Meghalaya.
Hence, Option C is the correct answer.

74. Solution: B
The **International Monetary Fund** (IMF) is an organization of **190 countries**, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.
India became the member of IMF in **1945**.
Hence, Option B is the correct answer.

75. Solution: B
UDGAM refers to **Unclaimed Deposits-Gateway to Access inforMation**, which is an online portal developed by Reserve Bank of India (RBI) . It facilitates the registered users to search for unclaimed deposits/accounts across multiple banks at one place in a centralised manner.
Hence, Option B is the correct answer.

English Language

76. Solution: D
4 is incorrectly spelled. The correct spelling of the word is OCCASION (a particular time) . Thus, D is the right answer.

77. Solution: B
The word PRODIGAL means spending money or using resources freely and recklessly. The sentence seeks to convey that after spending a lot of money for a long time, he finally understood its importance. The word that can substitute the given word is EXTRAVAGANT (lacking restraint in spending money or using resources) . Thus, B is the right answer.
The other options cannot substitute the given word:
Ubiquitous - present, appearing, or found everywhere.
Extensive - of great extent; wide, broad.
Narrow - of small width.

78. Solution: D
The sentence is incorrect as it uses "well," and the correct word is "good." as the sentence here is describing the quality of people for which the use of an adjective should be done instead of an adverb. Thus, D is the right answer.
Also, use of the singular verb 'makes' is correct here with respect to the noun 'ability.'

79. Solution: D
We need a verb phrase to agree with the subject HE. The sentence talks about an event that happened in the past; therefore, we need the past tense form of a verb. The sentence seeks to convey that even though he faced many problems, he stayed determined to achieve his dream of becoming an IAS officer. The

highlighted phrase is incorrect as it has misspelt REMAINS. Thus, D is the right answer.
A is incorrect as the past participle form verb REMAINED should be replaced with the base form REMAIN to follow the modal verb WILL.
B is incorrect, it should use helping verb to be followed by present participle verb REMAINING.
C is incorrect as the base form verb REMAIN should be replaced with the present participle form REMAINING to follow WAS.

80. Solution: D
The correct order is DBAC. D introduces the main theme by discussing the new project, which is a collaboration between Ikea's US branch and SunPower. B follows D, providing additional information about SunPower. AC follows next as a mandatory pair, as A elaborates on the project, stating that the line of home solar products called Home Solar will be given to members of IKEA's customer loyalty programme, and C further states the additional benefits of these products. Thus, D is the right answer

81. Solution: A
We need an adjective to modify the noun EYES. FIXED (focused) will fit here contextually as the sentence talks about how her eyes were focused on his face, waiting for a reaction. Thus, A is the right answer.
Flow - move freely. Flicker - shine unsteadily. Understood - comprehended.

82. Solution: B
We need the past participle form of a verb to fit in the passive voice construction IS + VERB. Replace the base form verb PREVENT with the past participle form verb PREVENTED to make the sentence correct. Thus, B is the right answer.

83. Solution: D
We need an adverb to modify the verb CREATE. Also, we need the base form of a verb, as the modal verb CAN will take the base form of the verb after it. The sentence tells us that OpenAI released a video tool that can quickly make short clips based on written prompts. Thus, D is the right answer.
The remaining options are incorrect.
A is incorrect because it uses the present participle form of the verb, CREATING.
B is incorrect because it uses the past participle form of the verb, CREATED.
C is incorrect because it uses the adjective INSTANT in place of the adverb INSTANTLY and also uses the third person singular form of the verb, CREATES.

84. Solution: C
LIVING OFF (depending on) will fit here as the sentence talks about how the company is depending on borrowed money until the new investors come in. Thus, C is the right answer.
Living in - residing in. Living with - coexisting. Living up - to meet standards or expectations.

85. Solution: B
We need a noun to be modified by the definite article THE. FLOOR (the surface of a room on which one stands or walks) will fit here, as the sentence tells us that the surface of the room is clean. Thus, B is the right answer.
The other words have different meanings:
Flower - the reproductive part of a plant, often colourful and fragrant.
Flour - a powdery substance made by grinding grain, used for baking.
Flaw - a defect or imperfection in something.

86. Solution: C
The sentence talks about an event that happened in the past; therefore, we need the past tense form of a verb to come after the subject, ISRO. The sentence tells us that ISRO praised JAXA on September 7 for launching the Smart Lander for Investigating Moon (SLIM) successfully. CONGRATULATED (praised someone) will fit here. Thus, C is the right answer.
The other options are contextually incorrect:
Migrated - travelled in large numbers to a new place to live temporarily.
Abducted - took someone away by force or deception.
Privileged - possessing special rights, advantages, or immunities.

87. Solution: A
We need a past tense form of verb to maintain the parallelism with the verb CONVEYED. The sentence tells us that ISRO sent good wishes to JAXA for their mission to the moon and showed support for the efforts of the global space community. EXPRESSED (showed) will fit here. Thus, A is the right answer.
The other words are contextually incorrect:
Misrepresented - interpreted or understood something wrongly.
Perplexed - caused someone to be confused and slightly worried.
Integrated - combined one thing with another.

88. Solution: B
We use the preposition ON with WEEKDAYS and DATES. Thus, B is the right answer.
We use AT for a PRECISE TIME, IN for MONTHS, YEARS, CENTURIES and LONG PERIODS. We use FOR to state a reason, purpose, or refer to a period of time in perfect tenses.

89. Solution: D
We need the base form of a verb to fit in the TO + VERB infinitive construction. The sentence tells us that Japan sent its H-IIA rocket into space on September 7 carrying a JAXA Moon lander that will descend to the surface of the Moon early next year. LAND (to descend or come down through the air and rest on the ground or another surface) will fit here. Thus, D is the right answer:
The other words are contextually incorrect:
Submit - to present a proposal, application, or other document to a person or body for consideration or judgement.
Surrender - to give up completely or agree to forgo something, especially in favour of another.
Exhibit - to publicly display something.

90. Solution: B
We need a noun to be modified by the definite article THE. The sentence tells us about the action of sending the rocket into space, which was earlier postponed on numerous occasions due to unfavourable weather conditions. LAUNCH (an act or instance of sending something into space) will fit here. Thus, B is the right answer.
The other options are either grammatically or contextually incorrect:
Assure (verb) - to make sure of something.
Fabrication (noun) - the act of inventing false information in order to deceive someone.

Coordinate (verb) - to make many different things work together as a whole.

91. **Solution: C**
A person who eats too much is called a GLUTTON. Thus, C is the right answer.
Abstinent - one who refrains from indulging in certain pleasures. Ascetic - a person who practices severe self-discipline. Epicurean - a person who takes pleasure in fine food and drink.

92. **Solution: C**
In C, remove the redundant pronoun IT after COMPLETE, as the verb COMPLETE itself implies that the task should be completed. Thus, C is the right answer.

93. **Solution: D**
The sentence is in the active voice. Follow the rules below to convert a present continuous sentence in the active voice to the passive voice:
I. The object clause will become the subject clause. Here, the object of the verb, THE MYSTERY BOX, will change into the subject and begin the sentence.
II. Replace IS LEAVING with IS BEING LEFT, as the passive voice construction for the present continuous tense is IS/AM/ARE + PRESENT PARTICIPLE.
III. The preposition BY will be added, and MY SISTER will become its object.
Thus, D is the right answer.

94. **Solution: B**
RPSQ is the final order. R introduces the passage by introducing the context of economic liberalisation in India and the development it brought with itself. P follows by contrasting this development with the quality of children's literature available in the speaker's school. S proceeds by telling us the reason for the lack of development is in the uncared section of the school library filled with a certain type of book, followed by Q, which describes the books available in the other section. Thus, B is the right answer.

95. **Solution: C**
The antonym of "terrified," which means extremely frightened, is "comforted," which means feeling safe, secure, or reassured. Therefore, C is the right answer.
Critical - seeking to criticise or condemn. AFRAID is a synonym of the given word. Stunned - shocked.

96. **Solution: B**
The idiom BOUNCE OFF THE WALLS means to be very energetic or excited. Thus, B is the right answer.

97. **Solution: C**
The word PRESENTIMENT means a feeling that something is going to happen. The sentence seeks to convey that even though she had a feeling that something was off, she could not figure out what it was. SUSPICION (a feeling or thought that something is possible, likely, or true) will be the synonym of the given word. Thus, C is the right answer.
Wisdom - the ability to use your knowledge and experience to make good decisions.
Farce - an event or situation that is absurd or disorganised.
Continuation - the act of carrying on something over time.

98. **Solution: A**
The given sentence is in active voice. Follow the rules below to change this sentence to the passive voice:
I. The object A NEW BRIDGE will become the subject and begin the sentence, and the subject THE CONSTRUCTION WORKERS will become the object.
II. The present continuous tense construction ARE GOING TO BUILD will change to IS GOING TO BE BUILT in the passive voice, to agree with the singular subject BRIDGE.
III. The preposition BY will be added and THE CONSTRUCTION WORKERS will become its object.
The passive voice sentence will be: A new bridge is going to be built by the construction workers.
Thus, A is the right answer.

99. **Solution: C**
The word FOILED means prevented something from succeeding. The sentence seeks to convey that the idea to make a roof terrace was rejected by the building authorities. THWARTED (prevented from accomplishing something) will fit here. Thus, C is the right answer.
The other options have different meanings:
Fleeced - obtained a great deal of money from someone.
Assisted - helped someone.
Tilted - moved or caused to move into a sloping position.

100. **Solution: C**
COMUNITIES is incorrectly spelled. The correct spelling of the word is COMMUNITIES (groups) . The sentence tells us that it is important to think about how we use AI in healthcare and make sure we engage well with people and communities. Thus, C is the right answer.
Ethical - dealing with moral values.
Engagement - meeting.
Essential - important.