

6538 , SOLUTION , SSC CGL

Ques 1. ANS (A) Solution:

If we interchange the numbers 2 and 15, then the equations will be:

$$\begin{aligned} \text{I. } & 810 + 2 \times 60 \div 15 - 3 \\ & = 810 + 2 \times 4 - 3 \\ & = 810 + 8 - 3 \\ & = 818 - 3 \\ & = 815. \end{aligned}$$

Thus, equation I is incorrect.

$$\begin{aligned} \text{II. } & 81 \times 6 - 700 \div 15 + 2 \\ & = 486 - 46.6 + 2 \\ & = 488 - 46.6 \\ & = 441.33 \end{aligned}$$

Thus, equation II is incorrect.

Ques 2. ANS (B) Solution:

Kinjal sits second to the right of Jigar.

Kinjal sits immediate left of Rashi.

Neither Jigar nor Rakesh sits at the end of the row.

Case 1-

Right Rashi Kinjal _____ Jigar _____ Left

Case 2-

Right _____ Rashi Kinjal _____ Jigar _____ Left

Shweta sits third to the right of Rakesh.

Neither Jigar nor Rakesh sits at the end of the row.

Case 2-

Right Shweta Rashi Kinjal Rakesh Jigar _____ Left

Now, only Ahem is remaining.

Right Shweta Rashi Kinjal Rakesh Jigar Ahem Left

Two persons sit between Ahem and Kinjal.

Ques 3. ANS (A) Solution:

A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)	H (8)	I (9)	J (10)	K (11)	L (12)	M (13)
Z (26)	Y (25)	X (24)	W (23)	V (22)	U (21)	T (20)	S (19)	R (18)	Q (17)	P (16)	O (15)	N (14)

Here, the pattern is:

	N (14)	I (9)	K (11)	E (5)	NIKE
Opposite letter	M (13)	R (18)	P (16)	V (22)	13+18+16+22=69
	P (16)	U (21)	M (13)	A (1)	PUMA
Opposite letter	K (11)	F (6)	N (14)	Z (26)	11 + 6 + 14 + 26 = 57
	F (6)	I (9)	L (12)	A (1)	FILA
Opposite letter	U (21)	R (18)	O (15)	Z (26)	21 + 18 + 15 + 26 = 80

Ques 4. ANS (C) Solution:

A (1)	B (2)	C (3)	D (4)	E (5)	F (6)	G (7)	H (8)	I (9)	J (10)	K (11)	L (12)	M (13)
Z (26)	Y (25)	X (24)	W (23)	V (22)	U (21)	T (20)	S (19)	R (18)	Q (17)	P (16)	O (15)	N (14)
E (5)		L (12)		O (15)		Y (25)		ELOY				
5 + 5 = 10(J)		12 + 5 = 17(Q)		15 - 5 = 10(J)		25 - 5 = 20(T)		JQJT				
10 + 5 = 15(O)		17 + 5 = 22(V)		10 - 5 = 5(E)		20 - 5 = 15(O)		OVEO				
15 + 5 = 20(T)		22 + 5 = 1(A)		5 - 5 = 26(Z)		15 - 5 = 10(J)		TAZJ				
20 + 5 = 25(Y)		1 + 5 = 6(F)		26 - 5 = 21(U)		10 - 5 = 5(E)		YFUE				
25 + 5 = 4(D)		6 + 5 = 11(K)		21 - 5 = 16(P)		5 - 5 = 26(Z)		DKPZ				

Ques 5. ANS (B) Solution:

Let, the present ages of Tarun & Saurabh be T & S years respectively.

According to question,

$$(T - 5)/(S - 5) = 4 / 1$$

$$T - 5 = 4 (S - 5)$$

$$4S - 15 = T \text{ ----- Equation (a)}$$

According to question,

$$(T + 5)/(S + 5) = 2 / 1$$

$$T + 5 = 2 (S + 5)$$

$$2S + 5 = T \text{ ----- Equation (b)}$$

By solving equation (a) and (b), we get,

$$4S - 15 = 2S + 5$$

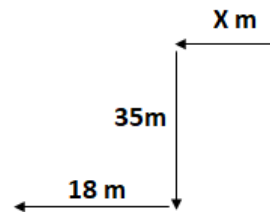
$$2S = 20$$

$$S = 10 \text{ years}$$

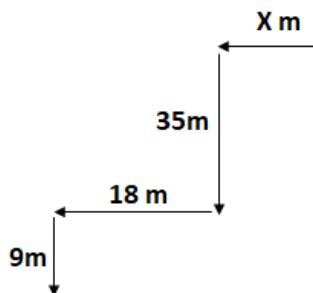
So, the present age of Saurabh is 10 years.

Ques 6. ANS (A) Solution:

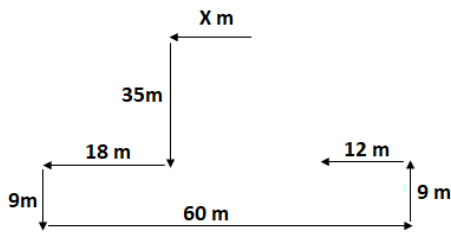
Shanshank walks a certain distance, say X m, towards the west, then turns left and walks 35 m, and then turns right and walks 18 m.



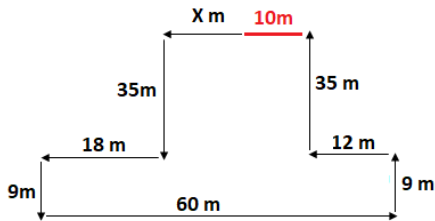
From there, he turns left and walks 9 m, and then turns left again and walks 60 m.



From there, he turns left and walks 9 m, and then turns left again and walks 12 m.



He finally turns right and walks 35 m to reach a point that is exactly 10 m to the east of the starting point.



So, the value of $X = 18 + 12 + 10 + X = 60$

$$40 + x = 60$$

$$X = 60 - 40 = 20\text{m}$$

Ques 7. ANS (D) Solution:

The series will be 'L G P Q':

L G P Q L G P Q L G P Q L G P Q

So, the blanks of the given series will complete the series as:

"P, L, Q, G, L, P"

So, Option (4) is the correct answer.

Ques 8. ANS (B) Solution:

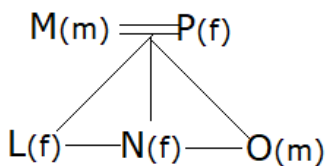
$L \% M + N * O \$ P$

$L \% M$ means L is the daughter of M

$M + N$ means M is the father of N

$N * O$ means N is the sister of O

$O \$ P$ means O is the son of P



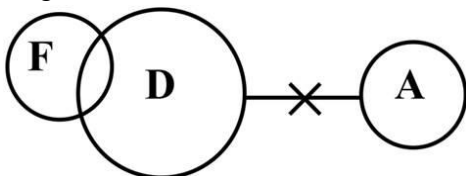
L is the daughter of P.

Ques 9. ANS (B) Solution:

It is given that,

Some F are D. No A is D.

We get,



Here, there is no direct relationship between F and A, no D is A, and some F, which are D are not A.

Hence, conclusions II and III follow.

Ques 10. ANS (D) Solution:

Here, the letters of the words are replaced by the next letters in the English alphabetical series with a gap of two letters.

Hence, CLASSROOM -- FODVVURRP

C (DE) F, L (MN) O, A (BC) D, S (TU) V, S (TU) V, R (ST) U, O (PQ)

R, O (PQ) R, M (NO) P.

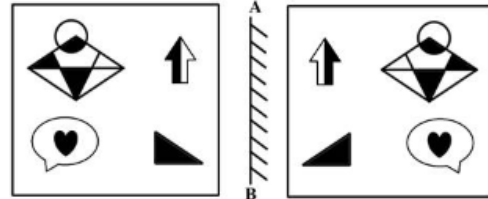
Ques 11. ANS (D) Solution:

$$L + 3 = O, O + 6 = U, U + 9 = D, D + 12 = P$$

$$E + 5 = J, J + 5 = O, O + 5 = T, T + 5 = Y$$

Ques 12. ANS (B) Solution:

Here, figure (II) is the correct mirror image.



Ques 13. ANS (C) Solution:

From 1,

$$6 + 39 - (\sqrt{144} \div 4) + (5 \times 3) - 14 = 6 + 39 - 3 + 15 - 14 = 43$$

From 2,

$$14 + 5 - (\sqrt{144} \div 4) + (39 \times 3) - 6 = 14 + 5 - 3 + 117 - 6 = 127$$

From 3,

$$14 + 39 - (\sqrt{144} \div 3) + (5 \times 4) - 6 = 14 + 39 - 4 + 20 - 6 = 63$$

From 4,

$$14 + 39 - (\sqrt{144} \div 6) + (5 \times 3) - 4 = 14 + 39 - 2 + 15 - 4 = 62$$

Ques 14. ANS (C) Solution:

Here, the letters of the word are replaced by the letters which have the same positional values in English alphabetical order and reverse order. The middle letter is unchanged.

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

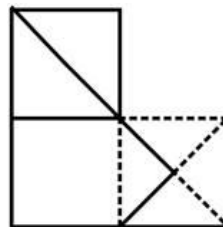
Hence, FLAGGER -- UOZGTVI

Ques 15. ANS (A) Solution:

Here, the number 4 is adjacent to numbers 1, 2, 3, and 5. We know, if a face is adjacent to four other faces, then it is opposite to the remaining faces. Hence, faces 4 and 6 are opposite. Hence, when '6' is at the top, number '4' will be at the bottom.

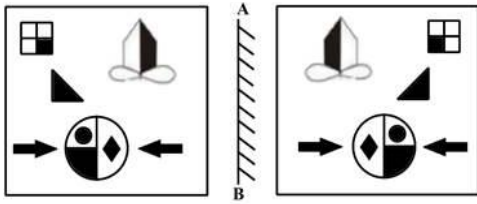
Ques 16. ANS (A) Solution:

Here, figure (I) is embedded in the given figure as its part.



Ques 17. ANS (B) Solution:

Here, figure (II) is correct mirror image.



Ques 18. ANS (B) Solution:

Here, option (2) is odd.

From 1, $(18 \times 18) + 5 = 329$

From 2, $(16 \times 16) + 5 = 261$

From 3, $(14 \times 14) + 5 = 201$

From 4, $(12 \times 12) + 5 = 149$

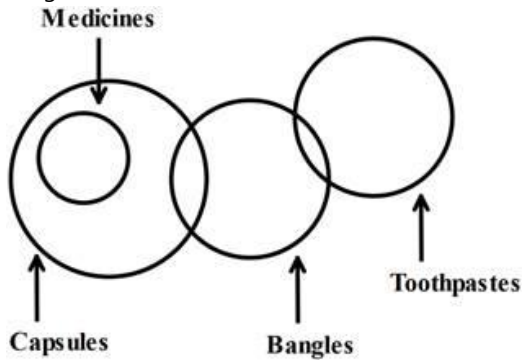
Ques 19. ANS (B) Solution:

It is given that,

All the medicines are capsules. Some capsules are bangles.

Some bangles are toothpaste.

We get,



Here, there is no direct relationship between any of the conclusions.

Hence, none of the conclusions follows.

Ques 20. ANS (A) Solution:

The circle is either at the centre or at the top left corner. The shaded regions follow a pattern in alternate manner and the circles are rotated by 90° in a clockwise direction. Hence, the circle in the missing figure would be in the centre and top right quadrant of the circle would be shaded. The trapezium changes its position after two steps each and in the step before changing its position is rotated 90° in an anti-clockwise direction. Hence, the trapezium is in the bottom left corner.

Hence, figure (I) will replace the question mark

Ques 21. ANS (C) Solution:

A kite is diamond shaped and a ball is round.

Ques 22. ANS (B) Solution:

$$10 + 5 = 15, 15 + 10 = 25, 25 + 20 = 45, 45 + 40 = 85, 85 + 80 = 165$$

Ques 23. ANS (A) Solution:

From 1,

$$11 \times 3 \div 11 - 2 + 9 = 3 - 2 + 9 = 10$$

From 2,

$$11 \div 3 \times 11 - 2 + 9 = 47.34$$

From 3,

$$11 \div 3 + 11 - 2 \times 9 = - 3.33$$

From 4,

$$11 \times 3 \div 11 + 2 - 9 = - 4$$

Ques 24. ANS (C) Solution:

Here, the alternate figures in the series are the same. Hence, figure (III) will replace the question mark.

Ques 25. ANS (A) Solution:

From 1,

It means that P is the sister of R and R is the father of Q.

Hence, R is the brother of P.

From 2,

It means that P is the mother of R.

Hence, R is the child of P.

From 3,

It means that P is the sister of Q and Q is the father of R.

Hence, P is the aunt of R.

From 4,

It means that P is the sister of R and R is the mother of Q.

Hence, R is the sister of Q.

Ques 26. ANS (C) Solution:

Governor of Uttarakhand Lt. Gen (retd) Gurmit Singh gave the nod to a Bill that gives 30% reservation to the native women of the State.

With the Governor's nod to Uttarakhand Public Services (Horizontal Reservation for Women) Bill, 2022, the women candidates with Uttarakhand State domicile got the legal right of 30% reservation in public services and posts.

Ques 27. ANS (A) Solution:

The National Action for Mechanised Sanitation Ecosystem (NAMASTE) Scheme has been approved with an outlay of Rs. 360 crore for four years from 2022-23 to 2025-26.

It is a Central Sector Scheme of the Ministry of Social Justice and Empowerment (MoSJE) as a joint initiative of the MoSJE and the Ministry of Housing and Urban Affairs (MoHUA).

NAMASTE envisages safety and dignity of sanitation workers in urban India by creating an enabling ecosystem that recognizes sanitation workers as one of the key contributors in operations and maintenance of sanitation infrastructure thereby providing sustainable livelihood and enhancing their occupational safety through capacity building and improved access to safety gear and machines.

Five hundred cities (converging with AMRUT cities) will be taken up under this phase of NAMASTE.

Ques 28. ANS (C) Solution:

The Consumer Price Index is a measure that examines the weighted average of prices of a basket of goods and services which are of primary consumer needs. They include transportation, food, and medical care. CPI is calculated by taking price changes for each item in the predetermined basket of goods and averaging them based on their relative weight in the whole basket.

Producer Price Index A family of indexes that measures the average change in selling prices received by domestic producers of intermediate goods and services over time.
Wholesale Price Index Measures and tracks the changes in the price of goods in the stages before the retail level.

Ques 29. ANS (C) Solution:

जी7 वित्त प्रमुखों की बैठक 23 फरवरी को बेंगलुरु में आयोजित हुई। ग्रुप ऑफ सेवन (जी7) के वित्तीय प्रमुखों ने रूस के खिलाफ उपायों पर चर्चा करने के लिए बैठक आयोजित की गई ताकि वह यूक्रेन युद्ध को समाप्त कर सके। G7 समूह के सदस्य देश ब्रिटेन, कनाडा, फ्रांस, जर्मनी, इटली, जापान और संयुक्त राज्य अमेरिका शामिल हैं।

The meeting of G7 finance chiefs was held in Bengaluru on 23 February. The finance chiefs of the Group of Seven (G7) met to discuss measures against Russia to end the Ukraine war. The member countries of the G7 group include Britain, Canada, France, Germany, Italy, Japan and the United States.

Ques 30. ANS (B) Solution:

अमेरिका में डलास स्थित टेक्सास विश्वविद्यालय ने भारतीय उद्योगपति नवीन जिंदल को उद्योग, राजनीति और शिक्षा के क्षेत्र में उनकी उपलब्धियों के लिए 'लाइफटाइम अचीवमेंट' पुरस्कार से सम्मानित किया है। टेक्सास विश्वविद्यालय के 1992 बैच के पूर्व छात्र जिंदल को 25 मार्च को आयोजित एक समारोह में पुरस्कृत किया गया।

The University of Texas at Dallas in the US has honored Indian industrialist Naveen Jindal with the 'Lifetime Achievement' award for his achievements in the fields of industry, politics and education. Jindal, an alumnus of the 1992 batch of the University of Texas, was awarded at a ceremony held on March 25.

Ques 31. ANS (B) Solution:

Chief Minister Pinarayi Vijayan declared Kerala as the first state in the country to go fully digital in its banking service and said this recognition would boost the state economy.

The Chief Minister also said the ambitious Kerala Fibre Optic Network (K-FON) project of the state government, which was almost 90 per cent completed, will reduce the digital divide.

Ques 32. ANS (A) Solution:

Durga Puja is a major festival of Hinduism, traditionally held for 10 days in the month of Ashvina (September-October), the seventh month of the Hindu calendar, and particularly celebrated in Bengal, Assam, and other eastern Indian states.

Ques 33. ANS (C) Solution:

The Emergency Provisions are contained in part XVIII of the Indian constitution from article 352 to 360.

These provisions enable the central government to satisfy any abnormal situation effectively.

There are three types of emergencies under Constitution of India:

National emergency: Due to war, external aggressions, or armed rebellion (Art 352).

State emergency: Due to the failure of constitutional machinery in states, this is popularly known as Presidential Rule (Art 356).

Financial emergency: Due to a threat to the financial constancy or credibility of India (Art 360).

Ques 34. ANS (B) Solution:

The southwest monsoon sets in over the Kerala coast by 1st June and moves swiftly to reach Mumbai and Kolkata between 10th and 13th June. By mid-July, southwest monsoon engulfs the entire Indian subcontinent.

Ques 35. ANS (A) Solution:

Jivatram Bhagwandas Kripalani, popularly known as Acharya Kripalani, was noted particularly for holding the presidency of the Indian National Congress at the time of independence of India in 1947 and the husband of Sucheta Kripalani.

Kripalani was well-known as a Gandhian and a socialist.

Ques 36. ANS (A) Solution:

Atolls: These are low islands found in the tropical oceans consisting of coral reefs surrounding a central depression.

Bays: A bay is a small body of water or a broad inlet that is set off from a larger body of water generally where the land curves inward.

Straits: A strait is a narrow passageway of water, usually between continents or islands, or between two larger bodies of water.

Gulfs: A gulf is a large body of water, sometimes with a narrow mouth, that is almost completely surrounded by land.

Source: Skholar Notes

Ques 37. ANS (D) Solution:

States and their dance forms:

Uttar Pradesh: Nautanki, Raslila, Kajri, Chappeli, Jaita, Nautanki, Naqal, Khayal etc;

Rajasthan: Ghoomar, Chakri, Ganagor, Jhulan Leela, Gawri, Jhuma, Suisini, Ghapal, Kalbelia, Bhavai etc.

Ques 38. ANS (C) Solution:

Akbar succeeded Humayun in 1556 to become the emperor at the age of 13 years.

Akbar (1556-1605) was considered the greatest of all the Mughal emperors, for he not only expanded but also consolidated his empire, making it the largest, strongest and richest kingdom of his time.

Ques 39. ANS (D) Solution:

List I (Country)	List II (Mountain)
Italy	Vesuvius
Morocco	Toubkal
Tanzania	Kilimanjaro
Argentina	Aconcagua

Ques 40. ANS (C) Solution:

Raja rammohan Roy believed in modern scientific approach and principles of human dignity and social equality. Hence, he is regarded as father of Indian Renaissance.

He denounced polytheism and had put faith in monotheism. He founded Brahma Sabha later renamed as Brahma Samaj. His efforts in anti-sati struggle resulted in abolition of practice of sati.

Dayanand Saraswati was the founder of Arya Samaj.

Ques 41. ANS (C) Solution:

Constitutional bodies refer to those institutions that are created by the Constitution itself.

They derive their authority from Constitution of India.

Examples include: Election Commission, Union Public Service Commission, Finance Commission, Comptroller & Auditor General of India, Attorney General, National Commission for Schedule Castes, and National Commission for Schedule Tribes.

Statutory bodies are created by passing an Act of parliament.

Ex: National Human Rights Commission.

Ques 42. ANS (D) Solution:

Extra time is 30 minutes, divided into two halves of 15 minutes each and is commonly used only during knockout matches.

While stoppage time is used at the end of each half, extra time is added only after the full 90 minutes and stoppage time have passed and the scores are still tied.

If the teams are still level after the extra time, a penalty shootout is taken. Five rounds of penalty kicks are taken alternatively by each team.

Ques 43. ANS (A) Solution:

Indian National Center for Ocean Information Services (INCOIS) is an autonomous organization of the Government of India, under the Ministry of Earth Sciences, located in Pragathi Nagar, Hyderabad. It was established in 2007. Recently INCOIS added 214.5 kWp rooftop solar system on the buildings of the International Training Centre for Operational Oceanography (ITCOcean).

Ques 44. ANS (D) Solution:

Traveling is a violation in basketball that occurs when a player takes too many steps without dribbling the ball.

Ques 45. ANS (A) Solution:

Karyokinesis involves following four stages: Prophase, Metaphase, Anaphase and Telophase.

Prophase which is the first stage of karyokinesis of mitosis follows the S and G2 phases of interphase. In the S and G2 phases the new DNA molecules formed are not distinct but intertwined. Prophase is marked by the initiation of condensation of chromosomal material.

The complete disintegration of the nuclear envelope marks the start of the second phase of mitosis, hence the chromosomes are spread through the cytoplasm of the cell. By this stage, condensation of chromosomes is completed and they can be observed clearly under the microscope. This then, is the stage at which morphology of chromosomes is most easily studied.

Ques 46. ANS (D) Solution:

भारतीय रिजर्व बैंक (RBI) और बैंक फॉर इंटरनेशनल सेटलमेंट्स (BIS) ने एक ग्लोबल टेक कॉम्पटीशन 'जी20 टेकस्प्रींट' (G20 TechSprint) लॉन्च किया है. RBI और BIS इनोवेशन हब ने संयुक्त रूप से G20 TechSprint के चौथे संस्करण की शुरुआत भी की है. नई टेक्नोलॉजी विकसित करने पर ध्यान केंद्रित करेगा।

The Reserve Bank of India (RBI) and the Bank for International Settlements (BIS) have launched a global tech competition 'G20 TechSprint'. RBI and BIS Innovation Hub have also jointly launched the 4th edition of G20 TechSprint. Will focus on developing new technology.

Ques 47. ANS (A) Solution:

Weight is the measure of the amount of force acting on a mass due to the acceleration due to gravity.

Weight usually is denoted by W.

$W = m * g$; m- mass; g- acceleration due to gravity.

Ques 48. ANS (B) Solution:

The Surat Split occurred in the Surat session of Indian National Congress in 1907. Indian National Congress was divided in two groups in the session: - Extremists and Moderates. Extremists were led by Lala Lajpat Rai, Bal Gangadhar Tilak and Bipin Chandra Pal whereas the Moderates were led by Gopal Krishna Gokhale.

Ques 49. ANS (A) Solution:

प्रधानमंत्री नरेंद्र मोदी ने कर्नाटक के ग्रीन फील्ड शिवमोगा हवाईअड्डे का उद्घाटन किया साथ ही उन्होंने बेलगावी में विभिन्न विकास परियोजनाओं की आधारशिला भी रखी। यह कमल के आकार का यह हवाई अड्डा लगभग 450 करोड़ रुपये की लागत से विकसित किया गया है।

Prime Minister Narendra Modi inaugurated the green field Shivamogga airport in Karnataka and also laid the foundation stone of various development projects in Belagavi. This lotus shaped airport has been developed at a cost of around Rs 450 crore.

Ques 50. ANS (A) Solution:

Cuprite is a soft, heavy, red oxide mineral (Cu_2O) that is an important ore of copper.

A secondary mineral often formed by the weathering of copper sulfide minerals, cuprite is widespread as brilliant crystals, grains, or earthy masses in the oxidized zone of copper lodes.

Ques 51. ANS (B) Solution:

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

$$[(5a + b)^3 - c^3]$$

$$= (5a + b - c)(25a^2 + b^2 + 10ab + 5ac + bc + c^2)$$

$$= (5a + b - c)(25a^2 + b^2 + c^2 + 10ab + c(5a + b))$$

Ques 52. ANS (C) Solution:

Average weight of 40 students = 40 kg

Total weight of 40 students = 1600 kg

Remaining students = 40 - 4 = 36

Average weight of 36 students = 39 kg

Total weight of 36 students = 1404 kg

Total weight of 4 students = 1600 - 1404 = 196 kg

Average weight of 4 students = $196/4 = 49$ kg

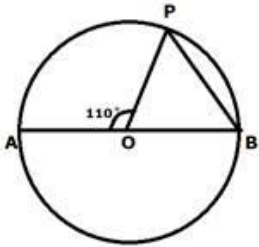
Ques 53. ANS (D) Solution:

$$P1 = 22000 * (37 + 20 + 4 + 10)/400 = 3905$$

$$P2 = 22000 * (16 - 13)/100 = 660$$

$$\text{Hence, } P1 + P2 = 3905 + 660 = 4565$$

Ques 54. ANS (D) Solution:



$OP = OB$ (radius of the circle)

$$\angle OPB = \angle OBP$$

$$\angle OPB + \angle OBP = 110^\circ$$

$$\angle OBP + \angle OBP = 110^\circ$$

$$\angle OBP = 110^\circ/2$$

$$\angle OBP = 55^\circ$$

Ques 55. ANS (C) Solution:

$$x + \frac{1}{x} = -14$$

$$\left[x - \frac{1}{x}\right]^2 = \left[x + \frac{1}{x}\right]^2 - 4$$

$$\left[x - \frac{1}{x}\right]^2 = 196 - 4 = 192$$

$$x - \frac{1}{x} = 8\sqrt{3}$$

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

$$= -14 * 8\sqrt{3}$$

$$= -112\sqrt{3}$$

Ques 56. ANS (A) Solution:

The difference in the subscription of scheme X between

December and February = $40 - 30 = 10$ crores

Ques 57. ANS (B) Solution:

Distance between two towns = $7 * 50 = 350$ km

New time = 5 hours

New speed = $350/5 = 70$ km/hr

Increase in speed = $70 - 50 = 20$ km/hr.

Ques 58. ANS (A) Solution:

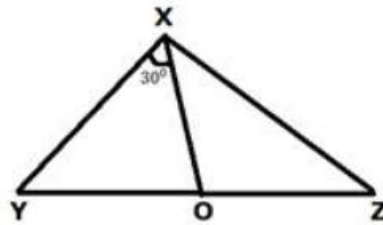
$$\frac{428 * 428 * 428 + 348 * 348 * 348}{428 * 428 - 428 * 348 + 348 * 348}$$

$$= \frac{(428 + 348)(428 * 428 - 428 * 348 + 348 * 348)}{428 * 428 - 428 * 348 + 348 * 348}$$

$$= 428 + 348$$

$$= 776$$

Ques 59. ANS (C) Solution:



$$XO = \frac{1}{2} YZ$$

Since XO is the median then $YO = \frac{1}{2} YZ$

Therefore, $XO = YO$

$$\angle YXO = \angle XYZ = 30^\circ$$

Ques 60. ANS (C) Solution:

We know that,

$$\sec^2 A - \tan^2 A = 1$$

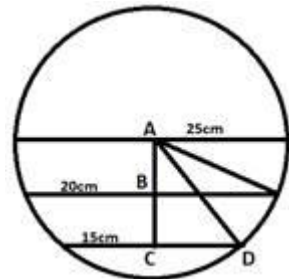
$$\sec^2 A + \tan^2 A = \frac{4}{17}$$

And given,

$$\text{So, } (\sec^2 A + \tan^2 A)(\sec^2 A - \tan^2 A) = \frac{4}{17} * 1$$

$$\Rightarrow \sec^4 A - \tan^4 A = \frac{4}{17}$$

Ques 61. ANS (C) Solution:



Distance between the chord will be minimum when the chord are of same side of diameter.

Diameter of circle = 50 cm

Radius of circle = 25 cm

In triangle ABE:

$$AE^2 = AB^2 + BE^2$$

$$AB^2 = 25^2 - 20^2$$

$$AB^2 = 625 - 400 = 225$$

$$AB = 15 \text{ cm}$$

In triangle ACD:

$$AC^2 = AD^2 + CD^2$$

$$AC^2 = 25^2 - 15^2$$

$$AC^2 = 625 - 225 = 400$$

$$AC = 20 \text{ cm}$$

$$BC = AC - AB$$

$$= 20 - 15$$

$$= 5 \text{ cm}$$

Ques 62. ANS (A) Solution:

$$\text{Area}(\triangle ABC) = 80 \text{ cm}^2$$

$$\frac{1}{2} * AD * BC = 80$$

$$AD * 16 = 160$$

$$AD = 10 \text{ cm}$$

Ques 63. ANS (A) Solution:

Given that number is divisible by 3, 7, and 11. So, by the composite rule of divisibility, number is also divisible by $3 * 7 * 11 = 231$.

Now,

$$75099/231 = 325.10$$

Therefore, the number should be $231 * 325 = 75075$.

$$SO, P = 7 \text{ and } Q = 5$$

$$\text{Hence } P + 2Q = 7 + 10 = 17$$

Ques 64. ANS (C) Solution:

$$1/3 : 1/4 : 1/6 = 4 : 3 : 2$$

$$\text{So, Ram would have received} = 4/9 * 702 = \text{Rs. } 312$$

$$\text{Ramesh would have received} = 3/9 * 702 = \text{Rs. } 234$$

$$\text{And Naresh would have received} = 2/9 * 702 = \text{Rs. } 156$$

Instead Rs. 702 was divided in the ratio of 3:4:6

$$\text{Now Ram receives} = 3/13 * 702 = \text{Rs. } 162$$

$$\text{And Ramesh receives} = 4/13 * 702 = \text{Rs. } 216$$

$$\text{And Naresh receives} = 6/13 * 702 = \text{Rs. } 324$$

$$\text{Naresh gained the most by} = 324 - 156 = \text{Rs. } 168$$

Ques 65. ANS (C) Solution:

$$\text{Work completed by 3 men in 3 days} = 60\% = 60/100 = 3/5$$

$$\text{Work completed by 3 men in 1 day} = (3/5)/3 = 1/5$$

3 men completed 60% of the work in 3 days.

$$\text{Hence, 3 men can complete the entire work in} = (100 * 3)/60 = 5 \text{ days}$$

$$1 \text{ man can complete the work in} = 5 * 3 = 15 \text{ days}$$

$$\text{Therefore, work done by 1 man in 3 days} = 3/15 = 1/5$$

$$\text{Remaining work} = \left[1 - \left(\frac{3}{5} + \frac{1}{5} \right) \right] = \frac{1}{5}$$

Hence, 3 men can complete the remaining work in = 1 day

Ques 66. ANS (A) Solution:

Let the number be X.

According to the question,

$$(3/4) * (60/100) * X - 34 = (1/3) * (50/100) * X$$

$$(9X/20) - 34 = (X/6)$$

$$(9X/20) - (X/6) = 34$$

$$17X/60 = 34$$

$$X = 120$$

Ques 67. ANS (A) Solution:

$$16 \cos^3 \frac{\pi}{6} - 12 \cos \frac{\pi}{6}$$

$$= 16 * \left(\frac{\sqrt{3}}{2} \right)^3 - 12 * \frac{\sqrt{3}}{2}$$

$$= 6\sqrt{3} - 6\sqrt{3}$$

$$= 0$$

Ques 68. ANS (B) Solution:

The single percentage discount equivalent to two successive discounts of 15% and 5% = $15 + 5 - 15 * 5/100 = 19.25\%$

Ques 69. ANS (B) Solution:

$$SP = \text{Rs. } 60000$$

$$CP = 60000 * 100/120 = \text{Rs. } 50000$$

$$\text{New SP when earned } 30\% \text{ of profit} = 130/100 * 50000 = \text{Rs. } 65000$$

Ques 70. ANS (C) Solution:

In Irrational number, decimals are non-terminating as well as non-recurring.

Ques 71. ANS (D) Solution:

$$\cot B = 9$$

$$\tan B = 1/9$$

$$\sec^2 B - \tan^2 B = 1$$

$$\sec^2 B = 1 + (1/9)^2$$

$$\sec^2 B = 1 + (1/81)$$

$$\sec^2 B = (82/81)$$

Ques 72. ANS (A) Solution:

$$\text{Inner curved surface area of the hemisphere bowl} = 2\pi r^2 = 2 * 22/7 * 42^2 = 11088 \text{ cm}^2$$

$$\text{Cost of tin plating} = 21/100 * 11088 = \text{Rs. } 2328.48$$

Ques 73. ANS (D) Solution:

According to the Question,

Two diagonals of rhombus = D and D'

$$D/2 = 14 \text{ cm}$$

$$D = 28 \text{ cm}$$

$$D'/2 = 26 \text{ cm}$$

$$D' = 52 \text{ cm}$$

Area of Rhombus = Product of the diagonals/2

$$= D * D' / 2$$

$$= 28 * 52 / 2$$

$$= 728 \text{ cm}^2$$

$$\frac{1}{2} * (\text{Area of Rhombus}) = 728/2 = 364 \text{ cm}^2 \text{ Ans.}$$

Ques 74. ANS (C) Solution:

$$\text{Required average} = 30000 * (8 + 5 + 3)/300 = 1600$$

Ques 75. ANS (B) Solution:

$$1026 = 2 * 3^3 * 19$$

$$2268 = 22 * 3^4 * 7$$

$$2430 = 2 * 3^5 * 5$$

So, largest common divisor of the numbers 1026, 2268 and 2430 = $2 * 3^3 = 54$

Ques 76. ANS (D) Solution:

The subject of the Active Voice is changed into the object of the Passive voice. Also, the object of the Active Voice is changed into the subject of the Passive Voice.

In Passive Voice, the preposition "by" is used before the object. However, it is optional in some cases.

The question in Active voice is an interrogative sentence. The answer to this question will be either "yes" or "no".

These types of sentences usually begin with a helping verb like: Do, does.

The format of such a sentence in Active voice is: Do/Does + Subject + V1 + Object?

Therefore, in Passive voice, the format will be: Am/Is/Are + Object of the active voice (Subjective case) + V3 + by + Subject of the active voice (Objective case)?

For example:

Does he need a therapy? (Active)

Is a therapy needed by him? (Passive)

The options except (d) don't follow the correct grammatical format of the Passive Voice.

Ques 77. ANS (C) Solution:

Kennel- a small shelter for a dog. Stable- the place where horses are kept. Aviary- a large cage, building, or enclosure for keeping birds in. Aquarium- a transparent tank of water in which live fish and other water creatures and plants are kept.

Ques 78. ANS (C) Solution:

The sentence in the Direct Speech is in Past Simple. Therefore, the sentence in the Indirect Speech should be in Past Perfect Tense.

Past Simple (Subject + V2 + Object) should be converted into Past Perfect (Subject + had + V3 + Object).

For example:

He said, "Arya sent me a book." (Direct Speech)

He said that Arya had sent him a book. (Indirect Speech)

The following things in the sentence should change when changed from Direct speech to Indirect Speech:

The pronoun 'I' is changed into 'he'.

The passive voice verb 'was' (past simple) is changed into 'had been' (past perfect).

'This is changed into 'that'.

All options except (c) don't follow these changes.

Therefore, the correct answer is: My brother said that he had been unable to book any restaurant in that area.

Hence,

Ques 79. ANS (C) Solution:

The idiom 'It's all Greek to me' means it is too difficult for me to understand. Hence,

Usage: This contract is written in such a complicated language that it's all Greek to me.

Ques 80. ANS (A) Solution:

'School' means a group of fish or a group of marine mammals such as porpoises, dolphins, or whales. Hence, 'Flock' means a number of sheep.

'Pack' means a number of wolves, hounds or submarines.

'Team' means a number of horses (two or more) harnessed together.

Ques 81. ANS (A) Solution:

The subject of the Passive Voice is changed into the object of the Active Voice. Also, the object of the Passive Voice is changed into the subject of the Active Voice.

The removal of the "to be" verb ("be" in the given sentence) and the preposition "by" is necessary while changing the voice of the sentence from Passive to Active.

These types of questions contain Modal verbs and they should be used correctly as stated below.

Some of the modal verbs are: Can, could, may, might, shall, should, will, would, must, ought to.

In Passive voice, the format is: Object of the Active voice (Subjective case) + Modal + be + V3 + by + Subject of the Active voice (Objective case).

Thus, the format of such a sentence in Active voice is: Subject + Modal + V1 + Object.

For example:

This can be done by you. (Passive Voice)

You can do this. (Active Voice)

The options except (a) don't follow the correct grammatical format of the Active Voice.

Therefore, the correct answer is

Ques 82. ANS (A) Solution:

The correct spelling of option (a) is 'aisle'.

'Aisle' means a passage between the rows of seats in a church, theatre, etc.

'Mischief' means conduct that playfully causes petty annoyance.

'Subtle' means not very noticeable; not very strong or bright.

'Committee' means a body of one or more persons convened for the accomplishment of some specific purpose.

Hence,

Ques 83. ANS (C) Solution:

The noun 'word' refers to a specific profession [scientist] in the passage which is clarified in the first sentence itself. The definite article (the) is used before a noun to indicate that the identity of the noun is known to the reader or is specified. So, in this case, the definite article 'the' should be used before the noun 'word'. This helps in eliminating indefinite articles 'a' and 'an' which are used before non-specific nouns only. 'Neither' is used where there is some kind of comparison involved or a choice is available, which is not the case here; thus, option b) is also eliminated. Therefore, option c) is the correct answer.

Note:

Definite and indefinite articles: In English language, we have one definite article 'the'; it refers to, or introduces, a particular, specific noun. 'An' and 'a' are indefinite articles; they refer to, or introduce, an unspecified noun.

Ques 84. ANS (D) Solution:

The blank requires a word that meaningfully precedes the base verb 'attain'. 'Of' [expressing the relationship between a part and a whole] and 'in' [expressing the situation of something that is or appears to be enclosed or surrounded by something else] are prepositions and do not form a meaningful sentence. 'Here' [used when indicating a time, point, or situation that has arrived or is happening] is an adverb and renders the sentence meaningless. 'In order to' is a subordinating conjunction. We use 'in order to' with an infinitive form of a verb to express the purpose of something. It connects the subordinate clause 'attain a better understanding of how things work and function' to the main clause of the first sentence i.e. '...researches and examines various aspects of the physical world'. Therefore, the correct answer is option d).

Note:

A Preposition is a word placed before a noun or a pronoun or a noun equivalent (pronoun, adverb, gerund, infinitive, adverbial clause, or any clause that can be used as the object of the preposition) and shows a relationship in space or time or a logical relationship between two or more people, places, or things in a sentence.

Examples

- 1) The teacher scolded the child for being late.
- 2) We're going to a party.

The words in bold are called prepositions because they normally take position before (pre) a noun/pronoun or a noun equivalent (pronoun, adverb, gerund, infinitive, adverbial clause, or any clause that can be used as the object of the preposition.)

The noun/pronoun which is used with a preposition is called its Object.

Subordinating conjunctions connect subordinate clauses (dependent clauses) to the main clause of a sentence. A subordinate conjunction performs two functions within a sentence. First, it illustrates the importance of the independent clause. Second, it provides a transition between two ideas in the same sentence. The chief Subordinating conjunctions are after, because, if, another, though, till, than, lest, etc.

Infinitive: The infinitive is the base form of a verb, often preceded by to.

Consider the sentences given below:

To err is human. [like a noun, the infinitive 'to err' is the subject of the verb 'is']

My father likes to cook. [like a noun, the infinitive 'to cook' is the object of the verb 'likes']

To vote in elections is our right. [the infinitive 'to vote', like a noun, is the subject of the verb 'is', but, like a verb, it also takes an object (elections)]

Radha went to the lake to fetch water. [the infinitive 'to fetch', like a noun, is the object of the verb 'went', but, like a verb, it also takes an object (water)]

The above sentences illustrate various ways in which infinitives are used. It can both act as a noun and a verb.

Ques 85. ANS (D) Solution:

The blank requires an adjective/determiner to meaningfully qualify or refer to the noun 'specializations'. Option d) 'many' [a large number of] is the only determiner in the options. All the other options are pronouns. Therefore, the correct answer is option d).

Pronoun: A pronoun is a word that replaces a noun and acts as a substitute for it.

Determiner: A modifying word that determines the kind of reference a noun or noun group has, for example, 'a', 'the', 'every', 'much', 'many', etc.

Ques 86. ANS (C) Solution:

The blank requires an adverb qualifying the verb 'vary'. The only adverb in the given options is 'greatly'. Option a) is incorrect because it is a noun. Options b) and d) are adjectives and therefore, incorrect. Therefore, the correct answer is option c).

Note:

A Verb is a word or group of words used to indicate that something happens or exists, for example, bring, happen, be, do.

Adjectives: Words which are used with a noun/pronoun to describe or point out, the person, animal, place, or thing which the noun names, or to tell the number or quantity, are called Adjectives.

Adverb: The words that describe a verb, an adjective, another adverb, or even a sentence as a whole are called Adverbs.

A noun is a word used as the name of a person, place, or thing. For example:

Mahesh is a clever boy.

A herd of cattle was grazing on the pastureland.

Ques 87. ANS (B) Solution:

The sentence talks about a set of rules for scientific discoveries. The blank requires a verb (to convey the action performed by the subject 'Each scientist') agreeing with the subject 'each scientist', which is singular. The only singular verb which is contextually and grammatically correct is 'follows'. Option a) is incorrect because it is a plural verb. Options c) and d) do not contextually fit as scientists will not flow. Therefore, the correct answer is option b).

Note:

A Verb is a word or group of words used to indicate that something happens or exists, for example, bring, happen, be, do.

Subject-Verb Agreement: Matching up singular or plural subjects with singular or plural forms of a verb is part of the process called agreement. This can be understood better by the examples given: - "She likes cooking." [singular subject and verb] -- "They like to cook vegetables." [plural subject and verb]

Ques 88. ANS (C) Solution:

The word 'scarce' is an adjective meaning insufficient for the demand. Among the given options, the most appropriate antonym of the given word is 'abundant' (existing or available in large quantities; plentiful). Hence, option (c) is the correct answer.

Meagre: small in quantity and poor in quality.

Rare: not done, seen, happening, etc. very often.

Sordid: not moral or honest.

Ques 89. ANS (D) Solution:

'Detest' means to hate or not like a person/thing at all. So, 'admire' which means to look with pleasure, is the right opposite word here.

Hence,

Ques 90. ANS (A) Solution:

The error lies in option (a).

'Neither' implies that out of two options, not one is selected.

For example: Neither of the boys is present.

However, in this context, 'four clerks' are present which is more than two options. So, the use of 'Neither' is incorrect.

'None' means that out of a group of people (more than two), exactly zero were selected.

For example: None of the four boys is present.

So, 'Neither' must be replaced with 'None' in part (1) of the sentence.

Thus, the error is in option (a).

Therefore, the corrected form of the sentence is: None of the four clerks could confirm the whereabouts of the manager.

Additional Information:

Neither..nor are correlative conjunctions. Correlative conjunctions are sort of like tag-team conjunctions. They come in pairs, and you have to use both of them in different places in a sentence to make them work. They get their name from the fact that they work together (co-) and relate one sentence element to another. Correlative conjunctions include pairs such as "both/and," "either/or," "neither/nor," "not/but" and "not only/but also."

Ques 91. ANS (C) Solution:

The error lies in option (c).

The comparative degree compares two things.

For example: This book is the better of the two books.

Similarly, in this context, 'two devices' are compared. So, a comparative degree must be used. 'Best' is a superlative degree and so, 'best' must be replaced with 'better' in part (3) of the sentence.

Thus, the error is in option (c).

Therefore, the corrected form of the sentence is: If we examine carefully, we can conclude that the new prototype will be the better of the two devices.

Ques 92. ANS (D) Solution:

The phrase 'a number of' is followed by a plural noun and a plural verb. 'Is' is a singular verb. So, the underlined part of the sentence is incorrect. 'Many a' is followed by a singular noun and a singular verb. So, option (a) is eliminated. 'All' is used with plural nouns. So, option (b) is also eliminated. Option (d) is the correct choice as it is grammatically correct.

Ques 93. ANS (D) Solution:

The use of 'supposing if' is grammatically incorrect because 'supposing' and 'if' carry the same meaning. The conjunction 'that' is used with 'Supposing'.

For example: Supposing that it rains, you will get wet.

Thus, options (a) and (c) are incorrect.

The tense in the 'Supposing that' clause should be in the Simple Present Tense (tells) when the tense in the main clause is in the Simple Future Tense denoted by a modal verb (will).

Thus, option (b) is incorrect.

Therefore, the correct answer is: (d) No improvement required .

Additional Information:

You use 'suppose' or 'supposing' when you are considering a possible situation or action and trying to think what effects it would have.

'Supposing' can be used independently also (without the use of 'that').

For example: He was bluffed into supposing I was ill-prepared.

Ques 94. ANS (D) Solution:

The meaning of the word 'dislodge' is 'knock or force out of position'. Let's look at the meanings of the given options.

Plant: set or placed in a particular position.

Stay: remain in the same place.

Accompany: go somewhere with (someone) as a companion.

Remove: take (something) away or off from the position occupied.

Among the given options, 'remove' is the most appropriate synonym for the given word.

Hence,

Ques 95. ANS (B) Solution:

The correct answer is: (b) It is I who am.

"It is" is always followed by a subjective pronoun. In this case, the subjective pronoun that will be used is "I".

When a sentence has the subject "I", the verb is placed accordingly. Here, "am" (verb) agrees with "I" (subject).

For example:

o It is I who am responsible for this mess. (The verb "am" agrees with the subject "I".)

All the other options except (b) are grammatically incorrect. Therefore, the correct answer is: It is I who am going to be the topper in the upcoming semester.

Note:

Subjective Pronouns: The pronouns I, you, we, he, she, it, and they are known as subjective pronouns because they act as the subjects of verbs: We went to the party.

Ques 96. ANS (A) Solution:

The phrasal verb 'came apart' means to separate into several pieces; 'broke down', when used in context of a vehicle or machine, means it stops working; 'called off' means to decide that a planned event will not happen, or to end an activity because it is no longer useful or possible; 'cut down' means to do or use less of something. According to the meanings mentioned above, option a) fits in the blank contextually and gives a meaningful sentence. Hence, a) is the correct answer.

Ques 97. ANS (B) Solution:

'Hind' means situated at the back; 'rear' means the space or position at the back of something or someone. 'Rear' is synonymous to 'hind'.

Ques 98. ANS (C) Solution:

'Earnest' means 'Resulting from or showing sincere and intense conviction'. Options b) and d) can be rejected as they are unrelated to the word. 'Indifferent' means 'Having no particular interest or sympathy; unconcerned'. Hence, option a) can also be rejected as it is the exact opposite. 'Thwart' means 'Prevent (someone) from accomplishing something'. 'Succinct' means '(especially of something written or spoken) briefly and clearly expressed'.

Ques 99. ANS (B) Solution:

The correct order is RSPQ. The initial part of the sentence says that the University's team has accomplished something which is discussed in part 'R' i.e. they are the first to develop a technique. What it is used for is discussed in part 'S' i.e. to compare clear glass which are manufactured in two different places mentioned in part 'P' i.e. Egypt and Levant. 'Q' further talks about when they were manufactured i.e. during Roman Empire.

Ques 100. ANS (D) Solution:

Sentences (A) and (B) do not come first in sequence as they contain the pronoun 'it' which refers to something discussed earlier in the passage.

'Then' in sentence (C) implies that it is in continuation of a previous discussion.

So, sentence (D) comes first in the sequence and introduces the best way to wash a weighted blanket. It mentions getting a removable cover for it.

Sentence (C) follows and mentions the benefit of a removable cover. Since the removable cover is being washed now, so 'it' in sentences (A) and (B) refers to 'removable cover'.

Sentence (B) follows and informs that there is no need to wash it for every stain, rather spot clean it.

Sentence (A) follows (evident from the connector 'also') and informs to not wash or dry it on high heat.

So, the correct sequence is DCBA.