

6540 , SOLUTION , SSC CGL

Ques 1. ANS (D) Solution:

Here, the positional values of the letters are considered in alphabetical order. While coding the positional values are doubled.

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

Hence, MAKER -- 13 1 11 5 18 -- 26 2 22 10 36

Ques 2. ANS (C) Solution:

$$3 \times 1 + 1^2 = 3 + 1 = 4$$

$$4 \times 2 + 2^2 = 8 + 4 = 12$$

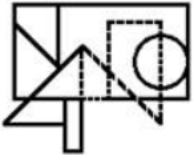
$$12 \times 3 + 3^2 = 36 + 9 = 45$$

$$45 \times 4 + 4^2 = 180 + 16 = 196$$

$$196 \times 5 + 5^2 = 980 + 25 = 1005$$

Ques 3. ANS (A) Solution:

Option figure I is embedded in the given figure (X).



Ques 4. ANS (B) Solution:

$$12 + 7 = 19; 19 + 4 = 23$$

$$14 + 3 = 17; 17 + 4 = 21$$

$$18 + 10 = 28; 28 + 4 = 32$$

$$9 + 5 = 14; 14 + 4 = 18$$

Ques 5. ANS (C) Solution:

Number of students participated in either competition A or B =
71 - 15 = 56

Number of students participated in both competition = 30 +
44 - 56 = 74 - 56 = 18

Number of students participated in competition A only = 30 -
18 = 12.

Ques 6. ANS (B) Solution:

It is given that,

'A%B' means 'B is to the south of A'

'A|B' means 'A is to the east of B'

'A@B' means 'B is to the west of A'

'A>B' means 'A is to the north of B'

'A~YZ' means 'A stands exactly between Y and Z where A, Y and Z are in a vertical line'

'A*YZ' means 'A stands exactly between Y and Z where A, Y and Z are in a horizontal line'

'A1%B' means 'B is 1m to the south of A' and so on.

Thus, we have N13>J3%K7||L10@M*KO

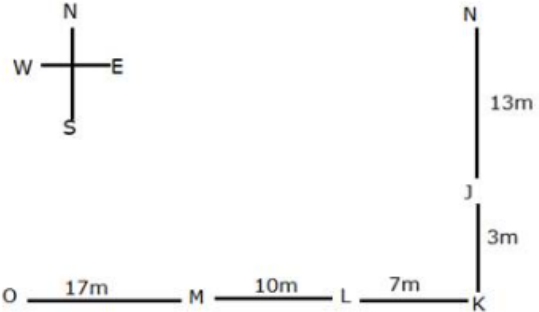
N is 13m to the north of J.

K is 3m to the south of J.

K is 7m to the east of L.

M is 10m to the west of L.

M stands exactly between K and O where K, O and M are in a horizontal line.



Thus, O is towards the southwest of N.

Ques 7. ANS (B) Solution:

$$7 \text{---} 7+1 = 8; 8^3 = 512; 512 + 7 = 519$$

$$9 \text{---} 9+1 = 10; 10^3 = 1000; 1000 + 9 = 1009$$

$$6 \text{---} 6+1 = 7; 7^3 = 343; 343 + 6 = 349$$

$$8 \text{---} 8+1 = 9; 9^3 = 729; 729 + 8 = 737$$

Ques 8. ANS (A) Solution:

The complete series is,

G B P L W G B P L W G B P L W G B P L W G B P L W

Ques 9. ANS (A) Solution:

The first letter is replaced by the immediate next letter.

The last letter is replaced by the immediate previous letter.

Remaining letters of word are arranged in reverse order.

So BEAUTY = CTUAEX

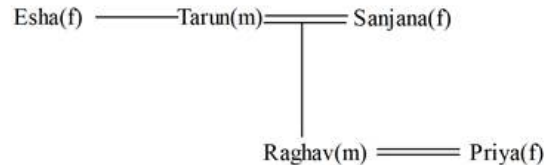
LEMONS = MNOMER

Ques 10. ANS (B) Solution:

We have:

Tarun is the father of Raghav. Esha is the sister of Tarun.

Sanjana is married to Tarun and has only one child. Tarun does not have any daughter.



Tarun is the father in law of Priya.

Ques 11. ANS (C) Solution:

The pattern is:

The inner/large figure is rotated 90 degrees in an anticlockwise direction.

The outer/smaller figures are rotated in clockwise direction and the half portion is darkened.

Ques 12. ANS (C) Solution:

It is given that:

$$\text{Option a) } 19 \times 17 + 228 \div 8 - 148$$

$$= 323 + 28.5 - 148$$

$$= 351.5 - 148 = 203.5$$

So, option (a) is incorrect.

Option b) $17 \times 19 + 148 \div 8 - 228$

$$= 323 + 18.5 - 228$$

$$= 341.5 - 228 = 113.5$$

So, option (b) is incorrect.

Option c) $17 \times 8 + 228 \div 19 - 148$

$$= 136 + 12 - 148$$

$$= 148 - 148 = 0$$

So, option (c) is correct.

Option d) $8 \times 19 + 228 \div 17 - 148$

$$= 152 + 13.4 - 148$$

$$= 165.4 - 148 = 17.4$$

So, option d) is incorrect.

Ques 13. ANS (C) Solution:

Here, only the consonants of the word are replaced by the alphabets which are at the same position in the alphabetical and reverse alphabetical order.

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, PERCEPTION == KEIXEKGIOM

Ques 14. ANS (D) Solution:

'@' means 'division'

'\$' means 'addition'

'%' means 'subtraction'

'!' means 'multiplication'

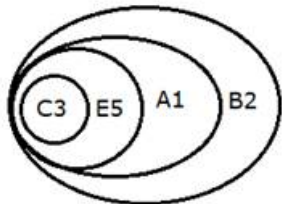
Thus, the expression becomes: $213 \div 3 - 61 + 2 \times 14$

$$= 71 - 61 + 28$$

$$= 99 - 61$$

$$= 38.$$

Ques 15. ANS (D) Solution:



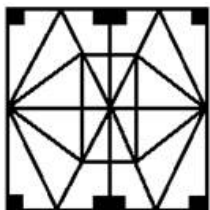
No C3 is B2: All C3 is B2. So, conclusion I is false.

Some A1 is C3: All C3 is E5 and all E5 is A1. So, some A1 is C3.

So, conclusion II is true.

Ques 16. ANS (D) Solution:

When the question mark (?) is replaced by figure (I) would complete the pattern.



Ques 17. ANS (C) Solution:

From a);

$$132 \div 12 + 8 - 3 + 10 = 26 \neq 25$$

From b);

$$132 \times 12 \div 8 - 3 + 10 = 205 \neq 25$$

From c);

$$132 \div 12 + 8 \times 3 - 10 = 11 + 24 - 10 = 25$$

From d);

$$132 \times 12 + 8 - 3 + 10 = 1599 \neq 25$$

Ques 18. ANS (D) Solution:

F (GHI) J (KLMN) O (PQR) S (TUVW) X (YZA) B (CDEF) G (HIJ) K

Ques 19. ANS (D) Solution:

Here, the position of letters in the reverse alphabetical order is considered.

$$\text{ATTIC} \rightarrow 26 + 7 + 7 + 18 + 24 = 82. \text{STONE} \rightarrow 8 + 7 + 12 + 13 + 22 = 62.$$

$$\text{Similarly, POINT} \rightarrow 11 + 12 + 18 + 13 + 7 = 61.$$

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

Ques 20. ANS (C) Solution:

In the figures (I), (II) and (IV), the number of arrows on the both sides is the same and in the figure (III), the number of arrows on the both sides is not the same.

Hence, the figure (III) is the odd one out here.

Ques 21. ANS (B) Solution:

$$\text{Here, } 5^3 - 5^2 = 125 - 25 = 100$$

$$6^3 - 6^2 = 216 - 36 = 180$$

$$\text{Similarly, } 8^3 - 8^2 = 512 - 64 = 448$$

Ques 22. ANS (C) Solution:

The pattern is:

For first term: the place values of all the alphabets are the consecutive multiple of 2.

For second term: the place values of all the alphabets are the consecutive multiple of 3.

For third term: the place values of all the alphabets are the consecutive multiple of 4.

For fourth term: the place values of all the alphabets are the consecutive multiple of 5.

For fifth term: the place values of all the alphabets are the consecutive multiple of 6.

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

Ques 23. ANS (D) Solution:

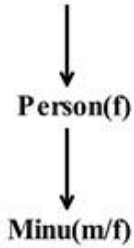
Option figure IV is the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.

2?{SLgaF@< //Y | Y\|>@76pJ2}??S

Ques 24. ANS (A) Solution:

From the given data, we get,

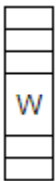
Father of Minu's mother (m)



Here, the person is Minu's mother.

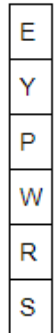
Ques 25. ANS (A) Solution:

W was the fourth person to board the bus.



S was standing behind R. P was standing ahead of R but behind Y.

Y boarded the bus after E.



4 people were standing ahead of R.

Ques 26. ANS (B) Solution:

असम के मुख्यमंत्री हिमंत बिस्वा सरमा ने 26 फरवरी 2023 को असम के काम रूप जिले के सोनापुर में पूर्वोत्तर भारत की पहली संपीडित बायोगैस संयंत्र परियोजना का उद्घाटन किया। इस संयंत्र की उत्पादन क्षमता पांच टन प्रति दिन संपीडित बायोगैस होगी, जो कच्चे माल जैसे गोबर, नगर निगम के ठोस कचरे आदि से उत्पादित की जाएगी।

Assam Chief Minister Himanta Biswa Sarma inaugurated Northeast India's first compressed biogas plant project at Sonapur in Kamrup district of Assam on 26 February 2023. The production capacity of this plant will be five tonnes per day compressed biogas, which will be used as raw material. For example cow dung will be produced from municipal solid waste etc.

Ques 27. ANS (C) Solution:

Avesta, also called Zend-avesta, sacred book of Zoroastrianism containing its cosmogony, law, and liturgy, the teachings of the prophet Zoroaster (Zarathushtra).

These religious ideas are encapsulated in the sacred texts of the Zoroastrians and assembled in a body of literature called the Avesta.

Composed in an ancient Iranian language, Avestan, the Avesta is made up of different texts, most of which are recited in the Zoroastrian rituals, some of them by priests only, others by both priests and laypeople.

Ques 28. ANS (D) Solution:

A landlocked country or landlocked state is a sovereign state that does not have territory connected to an ocean or whose coastlines lie on endorheic basins. Kazakhstan is the world's largest landlocked country. It is bordered by Russia, China, the Kyrgyz Republic, Uzbekistan, Turkmenistan, and the landlocked Caspian Sea.

Ques 29. ANS (A) Solution:

हरियाणा 100% विद्युतीकृत रेलवे नेटवर्क वाला भारत का पहला राज्य बन गया है मार्च 2023 में भारतीय रेलवे ने हरियाणा राज्य के रेलवे नेटवर्क को पूरी तरह से विद्युतीकरण कर दिया, जिससे यह देश का पहला राज्य बन गया जिसने अपने रेलवे नेटवर्क को 100% विद्युतीकरण हासिल किया है.

Haryana has become the first state in India to have 100% electrified railway network In March 2023, the Indian Railways completely electrified the railway network of the state of Haryana, making it the first state in the country to make its railway network 100% electrified. electrification has been achieved.

Ques 30. ANS (D) Solution:

Parts of the teeth - Description

Dentin - A layer underlying the enamel. It is a hard tissue that contains microscopic tubes. When the enamel is damaged, heat or cold can enter the tooth through these paths and cause sensitivity or pain.

Pulp - The softer, living inner structure of teeth. Blood vessels and nerves run through the pulp of the teeth.

Cementum - A layer of connective tissue that binds the roots of the teeth firmly to the gums and jawbone.

Periodontal ligament - Tissue that helps hold the teeth tightly against the jaw.

Ques 31. ANS (B) Solution:

On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemihydrate ($\text{CaSO}_4 \cdot 1/2 \text{H}_2\text{O}$). This is called Plaster of Paris, the substance which doctors use as plaster for supporting fractured bones in the right position. Plaster of Paris is a white powder and on mixing with water, it changes to gypsum once again giving a hard solid mass.

Ques 32. ANS (C) Solution:

Iodine deficiency is the most common cause of goiter. The body needs iodine to produce thyroid hormone. If you do not have enough iodine in your diet, the thyroid gets larger to try and capture all the iodine it can, so it can make the right amount of thyroid hormone.

Ques 33. ANS (B) Solution:

Senior bureaucrat Lalithalakshmi was appointed director in the Prime Minister's Office (PMO).

Lalithalakshmi, a 2008-batch Indian Administrative Service (IAS) officer of the West Bengal cadre, is currently the campus director of the National Institute of Fashion Technology (NIFT) in Kolkata.

Ques 34. ANS (B) Solution:

The world's longest river cruise MV Ganga Vilas was launched by the Prime Minister Shri Narendra Modi on 13 January, 2023 in Varanasi. The luxury cruise will cover a distance of more than 3,200 kms across 27 river systems in 5 states in India and Bangladesh.

The 51 days cruise is planned with visits to 50 tourist spots including World Heritage Sites, National Parks, river Ghats, and major cities like Patna in Bihar, Sahibganj in Jharkhand, Kolkata in West Bengal, Dhaka in Bangladesh and Guwahati in Assam.

The MV Ganga Vilas vessel is 62 meters in length, 12 meters in width and comfortably sails with a draft of 1.4 meters. It has three decks, 18 suites on board with a capacity of 36 tourists, with all the amenities to provide a memorable and luxurious experience for the tourists.

Ques 35. ANS (B) Solution:

Indian cricket team has won its first ICC cricket world cup on 25th June 1983. India won by 43 runs against West Indies. The first world cup that came to India was won by the team led by Mr. Kapil Dev. Other Indian Victories are: The T20 World Cup-2007, held in South Africa and the 2011 World Cup held in India, Bangladesh and Sri Lanka.

Ques 36. ANS (D) Solution:

The Aligarh Movement was started by Syed Ahmad Khan in 1875. He wanted to reconcile Western scientific education with the teachings of the Quran.

The Ahmadiya movement founded by Mirza Ghulam Ahmed (1835 - 1908) in 1889 established a different trend. While emphasizing the return to the original principles enunciated in the Quran, Ghulam Ahmed became controversial when he claimed to be a Messiah, which was considered heretical by mainstream Islam.

The Deoband movement was organised by the orthodox section among the Muslim ulemas as a revivalist movement with the twin objective of propagating the pure teachings of the Quran and Hadis among Muslims. The movement was established in Deoband in Saranpur district by Mohammad Qasim Nanotavi (1833-1877) and Rashid Ahmed Gangohi (1828 - 1905) to train religious leaders for the Muslim community.

A school less conservative than Deoband and more responsive to the demands of the modern age was the Nadwat al-'ulama', founded in 1894 at Lucknow by the historian Shibli Nomani and other scholars.

Ques 37. ANS (D) Solution:

The Ghadr Party was a revolutionary group organised around a weekly newspaper The Ghadr with its headquarters at San

Francisco and branches along the US coast and in the Far East. These revolutionaries included mainly ex-soldiers and peasants who had migrated from the Punjab to the USA and Canada in search of better employment opportunities.

The moving spirits behind the Ghadr Party were Lala Hardayal, Ramchandra, Bhagwan Singh, Kartar Singh Saraba, Barkatullah, and Bhai Parmanand.

Ques 38. ANS (B) Solution:

Yajur means sacrifice or worship. This Veda is concerned mostly with rites and mantras of different sacrifices. Being a treatise on rituals, it is the most popular of the four Vedas. There are two major branches of Yajur Veda, namely Shukla and Krishna Yajur Veda i.e., Vajasaneyi Samhita and Taitriya Samhita. This text reflects on the social and religious condition of India at that time.

Ques 39. ANS (D) Solution:

समूह ने हाल ही में बांग्लादेश के रामपाल, मोंगला, बागेरहाट में स्थित 1320 मेगावाट (2x660) क्षमता के मैत्री सुपर थर्मल पावर प्लांट (एमएसटीपीपी) की 660 मेगावाट क्षमता वाली यूनिट-1 को जोड़ा है। नए विस्तार से राष्ट्रीय ताप विद्युत निगम की स्थापित क्षमता 72304 मेगावाट तक पहुंच गई है।

The group has recently added 660 MW Unit-1 of 1320 MW (2x660) Maitri Super Thermal Power Plant (MSTPP) located at Rampal, Mongla, Bagerhat in Bangladesh. With the new expansion, the installed capacity of National Thermal Power Corporation has reached 72304 MW.

Ques 40. ANS (B) Solution:

भारत रत्न और महान वैज्ञानिक सर चंद्रशेखर वेंकट रमन ने फिजिक्स के क्षेत्र में 28 फरवरी 1928 को 'रमन प्रभाव' (Raman effect) की महत्वपूर्ण खोज की थी. इस दिन को महत्व और सम्मान देने के लिए पूरे देश में प्रतिवर्ष राष्ट्रीय विज्ञान दिवस मनाया जाता है.

Bharat Ratna and great scientist Sir Chandrashekhar Venkata Raman made an important discovery of 'Raman effect' on 28 February 1928 in the field of Physics. To give importance and respect to this day, National Science Day is celebrated every year in the whole country.

Ques 41. ANS (C) Solution:

On August 29, 1936, two British mountaineers Noel Odell and Bill Tilman became the first climbers to climb Mount Nanda Devi, making it the highest peak to be successfully climbed by any human. To protect the mountain's fragile ecosystem, the Government of India established the Nanda Devi Biosphere Reserve in 1982. The surrounding Nanda Devi National Park was designated as a World Heritage Site by UNESCO in 1988 due to its cultural and natural significance.

Ques 42. ANS (A) Solution:

Goods and Services Tax (GST) is based on the principle of destination-based consumption taxation as against the principle of origin-based taxation.

The introduction of the GST is a very significant step in the field of indirect tax reforms in India. By amalgamating a large number of Central and State taxes into a single tax, GST

mitigated the ill effects of cascading or double taxation in a major way and pave the way for a common national market. GST came into effect from 1st July 2017.

Ques 43. ANS (A) Solution:

Mahajanapadas	Capital
Anga	Champa
Magadh	Rajgir
Kuru	Indraprastha
Vatsa	Kausambi
Kosala	Sravasti
Vajji	Vaishali
Malla	Kusinara
Gandhar	Taxila

Ques 44. ANS (A) Solution:

Foreign portfolio investment is the purchase of securities of foreign countries, such as stocks and bonds, on an exchange. Foreign direct investment is building or purchasing businesses and their associated infrastructure in a foreign country.

Ques 45. ANS (B) Solution:

A writ is an order or command issued by a court in writing under its seal. It is in the nature of a command or prohibition from performing certain acts that are specified in the orders of the court. Both the Supreme Court and the High Courts are empowered to issue five kinds of writs. That is why the Supreme Court is called the "Guardian of the Constitution". According to Dr. Ambedkar, Article 32 is "the heart and soul of the Constitution".

Ques 46. ANS (B) Solution:

The Lucknow Pact paved the way for Hindu-Muslim Unity. Sarojini Naidu called Jinnah, the chief architect of the Lucknow Pact, "the Ambassador of Hindu - Muslim Unity".

Ques 47. ANS (C) Solution:

Akbar was only 13 years old at the time of Humayun's death. When his father died, Akbar was at Kalanaur in Punjab and therefore his coronation took place in Kalanaur itself in 1556. Akbar was the only Mughal king to ascend to the throne without the customary war of succession.

Ques 48. ANS (A) Solution:

Black Soil is made up of volcanic rocks and lava. Black soil is also known as 'regur' which is derived from the Telugu word 'reguda'. Black soil is also known as Black Cotton Soil as cotton is an important crop that is grown in this type of soil. This soil is rich in calcium carbonate, potash, lime, and magnesium carbonate but has poor phosphorus content. It is mostly found in areas such as Gujarat, Madhya Pradesh, and Maharashtra. It is also found in states like Tamil Nadu, Andhra Pradesh, and Karnataka. Black soil is excellent and clayey and can hold a lot of moisture. It becomes sticky in the rainy season and develops

cracks when dry. Black soil is good for producing cotton, oilseeds, wheat, linseed, millets, and tobacco.

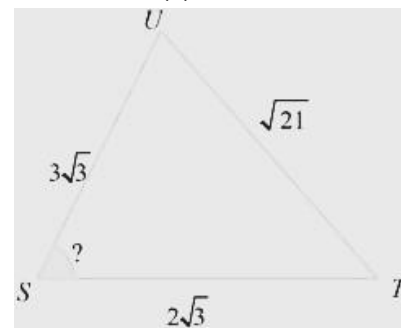
Ques 49. ANS (D) Solution:

Luminous flux, or luminous power, is the measure of the perceived power of light. It differs from the measure of the total power of light emitted, termed 'radiant flux', in that the former takes into account the varying sensitivity of the human eye to different wavelengths of light.

Ques 50. ANS (D) Solution:

On 19 May 1928, a committee was constituted to draft the Constitution. Some of the notable members of this Committee were: Motilal Nehru (Chairman), Sir Ali Imam, Tej Bahadur Sapru and Subash Chandra Bose. M.R. Jayakar and Annie Besant joined the Committee later. Jawaharlal Nehru was appointed the secretary to the Committee.

Ques 51. ANS (A) Solution:



Given, $ST = 2\sqrt{3}$, $TU = \sqrt{21}$ and $US = 3\sqrt{3}$

By cosine rule,

$$\begin{aligned} TU^2 &= ST^2 + SU^2 - 2 * ST * SU * \cos \angle TSU \\ \Rightarrow 21 &= 12 + 27 - 2 * 2\sqrt{3} * 3\sqrt{3} * \cos \angle TSU \\ \Rightarrow 36 * \cos \angle TSU &= 18 \\ \Rightarrow \cos \angle TSU &= 1/2 \\ \Rightarrow \cos \angle TSU &= \cos 60^\circ \\ \Rightarrow \angle TSU &= 60^\circ \end{aligned}$$

Ques 52. ANS (A) Solution:

$$\begin{aligned} a &= (\sqrt{6} - \sqrt{5}) \\ 1/a &= 1/(\sqrt{6} - \sqrt{5}) = [1/(\sqrt{6} - \sqrt{5})] * [(\sqrt{6} + \sqrt{5})/(\sqrt{6} + \sqrt{5})] \\ (1/a) &= (\sqrt{6} + \sqrt{5})/(6 - 5) = (\sqrt{6} + \sqrt{5}) \end{aligned}$$

Similarly,

$$\begin{aligned} (1/b) &= (\sqrt{5} + 2) = (\sqrt{5} + \sqrt{4}) \\ (1/c) &= (2 + \sqrt{3}) = (\sqrt{4} + \sqrt{3}) \\ (1/a) &> (1/b) > (1/c) \end{aligned}$$

So, $a < b < c$

Ques 53. ANS (B) Solution:

Sum of digits of 1527104 = (1 + 5 + 2 + 7 + 1 + 0 + 4) = 20, not divisible by 3.

Sum of digits of 2527104 = (2 + 5 + 2 + 7 + 1 + 0 + 4) = 21, which is divisible by 3

Sum of digits of 3527104 = (3 + 5 + 2 + 7 + 1 + 0 + 4) = 22, not divisible by 3.

Sum of digits of 4527104 = (4 + 5 + 2 + 7 + 1 + 0 + 4) = 23, not divisible by 3.

So, 2527104 is divisible by 3.

Ques 54. ANS (C) Solution:

$$A = 2B - 32$$

$$\text{And } (100 + 50)\% \text{ of } A + (100 - 25)\% \text{ of } B = 117$$

$$2A + B = 156$$

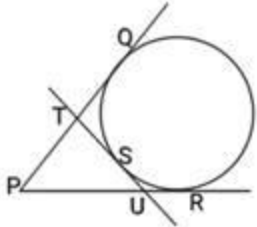
$$\text{Now, } 2 * (2B - 32) + B = 156$$

$$5B = 220$$

$$B = 44$$

$$\text{Therefore, } 25\% \text{ of } B = 25\% \text{ of } 44 = 11$$

Ques 55. ANS (B) Solution:



Since PQ and PR are the tangents to the circle from point P.

$$PQ = PR = 12 \text{ cm}$$

TU is tangent to the circle at point S and intersecting PQ and PR.

$$SU = UR = 4 \text{ cm}$$

$$PU = PR - UR$$

$$PU = 12 - 4 = 8 \text{ cm}$$

Ques 56. ANS (A) Solution:

In this case we have to find the LCM of those given numbers and then the remainder is to be added in the LCM.

$$\text{LCM of } 20, 24, 35, \text{ and } 50 = 4200$$

Therefore,

$$N = 4200 + 9 = 4209$$

$$\text{Hundredth digit of } 4209 = 2$$

$$\text{Unit digit of } 4209 = 9$$

$$\text{Required difference} = 9 - 2 = 7.$$

Ques 57. ANS (B) Solution:

$$\cos^2\theta - \sin^2 2\theta = 0$$

$$\cos^2\theta - (\sin 2\theta)^2 = 0$$

$$\cos^2\theta - (2\sin\theta\cos\theta)^2 = 0$$

$$\cos^2\theta - 4\sin^2\theta\cos^2\theta = 0$$

$$\cos^2\theta = 4\sin^2\theta\cos^2\theta$$

$$\sin^2\theta = 1/4$$

$$\sin\theta = 1/2$$

$$\theta = 30^\circ$$

Ques 58. ANS (C) Solution:

$$\text{Downstream speed of boat in first condition} = X + 10 + X - 5 =$$

$$(2X + 5) \text{ km/hr}$$

According to the question,

$$(2X + 5) = 200/8$$

$$16X + 40 = 200$$

$$16X = 160$$

$$X = 10$$

$$\text{Speed of boat in still water} = 20 \text{ km/hr}$$

$$\text{Speed of stream} = 5 \text{ km/hr}$$

$$\text{Downstream speed of boat} = 20 + 5 = 25 \text{ km/hr}$$

$$\text{Upstream speed of boat} = 20 - 5 = 15 \text{ km/hr}$$

$$\text{Required time} = (45/15) + (50/25) = 3 + 2 = 5 \text{ hours.}$$

Ques 59. ANS (D) Solution:

खर्च प्रतिशत का आरोही क्रम :

$$\text{किराया} < \text{ब्याज} < \text{परिवहन} = \text{वेतन} < \text{बिजली} < \text{कच्चा माल}$$

Ques 60. ANS (C) Solution:

$$\text{MP be } 100$$

$$\text{Then, } SP = 100 * 88/100 = 88$$

$$\text{Now, } SP = 88, \text{ Profit} = 21\%$$

$$\Rightarrow CP = \frac{88}{121} \times 100 = \frac{800}{11}$$

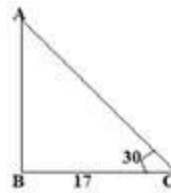
According to the question,

We have, $CP = 800/11$, $SP = MP$ (as no discount offered)

$$\Rightarrow CP = \frac{800}{11}, SP = 100$$

$$\text{Profit \%} = \frac{300}{800} \times 100 = 37.50\%$$

Ques 61. ANS (A) Solution:



$$\tan 30 = AB/BC$$

$$\Rightarrow AB = BC * \tan 30 = 17/\sqrt{3}$$

$$\cos 30 = BC/AC$$

$$\Rightarrow AC = BC/\cos 30 = 34/\sqrt{3}$$

$$\text{Height} = AB + AC = 17/\sqrt{3} + 34/\sqrt{3}$$

$$= 51/\sqrt{3} = 17\sqrt{3}$$

Ques 62. ANS (A) Solution:

$$\text{Initial amount of water} = 50 \text{ L}$$

After first replacement,

$$\text{Water} = 45 \text{ L}$$

$$\text{Milk} = 5 \text{ L}$$

$$\text{Water: milk} = 9: 1$$

After second replacement,

$$\text{Water} = 45 - (20 * 9/10) = 27 \text{ L}$$

$$\text{Milk} = 5 - (20 * 1/10) = 3 \text{ L}$$

$$\text{Liquid X} = 20 \text{ L}$$

$$\text{Required ratio} = 27: 20: 3$$

Ques 63. ANS (A) Solution:

$$\text{From } 7b - 2 = 4b + 13$$

$$3b = 15$$

$$b = 5.$$

So,

$$(b + 3)^3 = (5 + 3)^3 = 512$$

Ques 64. ANS (D) Solution:

$$(x - y)^2 = (x + y)^2 - 4xy = (12)^2 - 4 * 20 = 64$$

$$(x - y) = 8$$

$$\text{Now } (x^2 - y^2) = (x - y)(x + y) = 8 * 12 = 96$$

Ques 65. ANS (C) Solution:

Cost of 3 pair of Gloves = $54 \times 2 = 108 \Rightarrow$ Cost of 1 pair of Gloves = 36
 Cost of 3 pair of leg pads = $36 \times 2 = 72 \Rightarrow$ Cost of 1 pair of leg pads = 24
 Cost of 3 cricket balls = $24 \times 2 = 48 \Rightarrow$ Cost of 1 Cricket balls = 16
 Cost of a cricket ball = Rs.16

Ques 66. ANS (A) Solution:

Given,

$$(x + y) = 8$$

Cube both sides,

$$(x + y)^3 = 512$$

$$x^3 + y^3 + 3xy(x + y) = 512$$

$$96 + 3xy * 8 = 512$$

$$24xy = 416$$

$$xy = 416/24$$

$$xy = 52/3$$

$$\text{The value of } (3xy + 1)^2 = (52 + 1)^2 = 2809.$$

Ques 67. ANS (C) Solution:

$$(\sec^2 A) + (1/\sin^2 A) - (\sec^2 A/\sin^2 A)$$

$$= 1/\cos^2 A + 1/\sin^2 A - 1/\cos^2 A * 1/\sin^2 A$$

$$= (\sin^2 A + \cos^2 A - 1)/\cos^2 A * \sin^2 A$$

$$= (1 - 1)/\cos^2 A * \sin^2 A = 0$$

Ques 68. ANS (C) Solution:

Area of base of cuboidal tank = length of tank * breadth of tank = 256 cm²

Height of tank = 35 cm

Now, volume (capacity) of tank = length * breadth * height
 = $256 * 35$
 = 8960 cm³
 = 8.96 litres

Ques 69. ANS (D) Solution:

$$\frac{3^{18} \times 27^{4x}}{9^2} \times \frac{1}{3^{2x-4}} = 81$$

$$\frac{3^{18} \times 3^{12x}}{3^4} \times \frac{1}{3^{2x-4}} = 3^4$$

$$3^{18+12x-4-2x+4} = 3^4$$

$$18 + 12x - 4 - 2x + 4 = 4$$

$$18 + 10x = 4$$

$$10x = -14$$

$$x = \frac{-7}{5}$$

Ques 70. ANS (C) Solution:

देश B से सर्वाधिक 30 छात्र आए |

Ques 71. ANS (A) Solution:

We know, amount in 't' years when interest is compounded annually = $\text{sum} * (1 + \text{rate of interest per annum}/100)^t$

$$\text{So, } 4494.4 = 4000 * (1 + R/100)^2$$

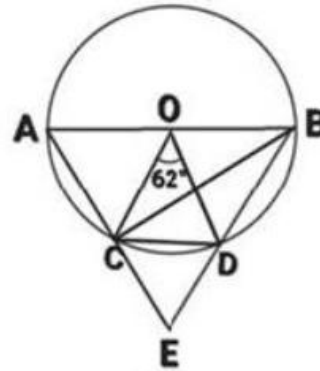
$$11236/10000 = (1 + R/100)^2$$

$$106/100 = 1 + R/100$$

$$6/100 = R/100$$

$$R = 6$$

Ques 72. ANS (B) Solution:



$$\angle COD = 62^\circ$$

Formula used: Sum of all the angles of the triangle = 180°

Exterior angle = Sum of opposite interior angles

Angle made by an arc at the centre = $2 \times$ Angle made by the same arc at any point on the circumference of the circle.

$$\angle CBD = \angle COD/2 = 62/2 = 31^\circ$$

We know that angle in a semi-circle is 90°

Since AB is a diameter.

$$\text{So, } \angle ACB = 90^\circ$$

Now, In triangle CBE, $\angle ACB$ is an exterior angle.

$$\text{So, } \angle ACB = \angle CBE + \angle CEB$$

$$90^\circ = 31^\circ + \angle CEB$$

$$\angle CEB = 90^\circ - 31^\circ = 59^\circ$$

$$\angle AEB = 59^\circ$$

Ques 73. ANS (A) Solution:

Total number of people in the group = 250

Number of people whose weight lies in between 40 kg and 50 kg = $64 + 32 = 96$

$$\text{Therefore, percentage} = (96/250) * 100 = 38.4\%$$

Ques 74. ANS (A) Solution:

$$2r = l$$

Total surface area of a right circular cone = 1848 cm²

$$\pi r (l + r) = 1848$$

$$22/7 * r * (2r + r) = 1848$$

$$3r^2 = 588$$

$$r = 14 \text{ cm}$$

The area of the base of the cone = $\pi r^2 = 22/7 * 14 * 14 = 616 \text{ cm}^2$

Ques 75. ANS (D) Solution:

Using the MDH formula, we have

$$X * X = (X - Y) * Z$$

$$X^2 = XZ - YZ$$

$$X^2 - XZ = -YZ$$

$$XZ - X^2 = YZ$$

$$Y = (XZ - X^2)/Z$$

$$Y = X(Z - X)/Z.$$

Ques 76. ANS (B) Solution:

Use 'we had run' – in place of – 'we had ran' .

When 'had' is used as an auxiliary verb, it is followed by the past participle form of the verb, whereas 'Ran' is the past simple form of verb.

'Run' is the past participle form of the verb 'run'.

So, 'we had run' is correct and can improve the underlined part of the given sentence.

Ques 77. ANS (B) Solution:

To show a clean pair of heels means to run away fast from someone.

Ques 78. ANS (D) Solution:

Option D is the right answer, as the past participle (seen) must be used with the past perfect tense. Option C is eliminated.

Options A and B are eliminated, as they contain no errors.

Ques 79. ANS (B) Solution:

Following parallelism, the past tense of the verb should be used for both the verbs (picked, dialled).

Ques 80. ANS (C) Solution:

The sentence talks about planets like Jupiter and Saturn which have a 'solid planetary core' beneath a blanket or layer of hydrogen and helium gas. The blank requires a noun which can be qualified by the adjective 'thick'. According to this, options a) and b) are negated because these are verbs. Option d) is used to indicate a sense of concealment, which is not intended in this sentence; thus, it is negated.

Ques 81. ANS (B) Solution:

Modify- Make partial or minor changes.

Recreate- Reproduce; re-enact.

Smash- Violently break (something) into pieces.

Recollect- Remember (something); call to mind.

The meaning of the word 'replicate' is 'make an exact copy of, reproduce'. Among the given options, the word that is synonymous with the word 'replicate' is option (b) 'recreate'.

Ques 82. ANS (D) Solution:

Option (d) is the correct answer. The correct spelling is 'virtuous'.

Incubate: (of a bird) sit on (eggs) in order to keep them warm and bring them to hatching.

Frost: a deposit of small white ice crystals formed on the ground or other surfaces when the temperature falls below freezing.

Frown: furrow one's brows in an expression indicating disapproval, displeasure, or concentration.

Virtuous: having or showing high moral standards.

Ques 83. ANS (C) Solution:

'Fastidious' means 'Very attentive to and concerned about accuracy and detail.'. Options a) and b) can be rejected as they are unrelated to the word. 'Scrupulous' means '(of a person or process) careful, thorough, and extremely attentive to details.'. Hence, option d) can also be rejected as it is the same meaning as the word. 'Relentless' means 'Unceasingly intense.'. 'Fatal' means 'Causing death'

Ques 84. ANS (D) Solution:

'CHOREOGRAPHER' means 'A person who composes the sequence of steps and moves for a performance of dance.'.

'LITHOGRAPHY' means 'Printing using a stone or a metal plate with a completely smooth surface.'.

'CHAUFFEUR' means 'A person employed to drive a private or hired car.'.

'MORTUARY' means 'A room or building in which dead bodies are kept'.

According to the meanings mentioned above,

Ques 85. ANS (A) Solution:

'CYNIC' means 'A person who believes that humans are only motivated by selfishness and their own interests.'.

'CHAUFFEUR' means 'A person employed to drive a private or hired car.'.

'IMPRESARIO' means 'A person who organizes and often finances concerts, plays, or operas.'.

'DEBONAIR' means 'A person having a sophisticated charm.'.

According to the meanings mentioned above,

Ques 86. ANS (D) Solution:

'Oblivious' means 'Not aware of or concerned about what is happening around one.'.

Options a) and c) can be rejected as they are unrelated to the word. 'Informed' means 'Having or showing knowledge of a subject or situation.'.

Hence, option b) can also be rejected as it is the exact opposite. 'Alleviate' means 'Make (suffering, deficiency, or a problem) less severe.'.

'Blasphemous' means 'Sacriligious against God or sacred things; profane.'.

Ques 87. ANS (A) Solution:

'Churlish' means '(Adj) Rude in a mean-spirited and surly way'.

Options b) and d) can be rejected as they are unrelated to the word. 'Civil' means 'Relating to ordinary citizens and their concerns, as distinct from military or ecclesiastical matters.'.

Hence, option c) can also be rejected as it is the exact opposite. 'Sanguine' means 'Optimistic or positive, especially in an apparently bad or difficult situation.'.

'Vehement' means 'Showing strong feeling; forceful, passionate, or intense.'.

Ques 88. ANS (C) Solution:

Correct spelling is mentioned in option (c)- 'propensity'.

'Propensity' means a tendency of behaving in a particular way.

Ques 89. ANS (B) Solution:

rdinary - With no special or distinctive features

Majestic - Having or showing impressive beauty or scale

Mediocre - Of only average quality; not very good

Fresh - Not previously known or used; new or different

The meaning of the word 'impressive' is 'evoking admiration through size, quality, or skill; grand, imposing, or awesome'.

Among the options, the word that is synonymous with the word 'impressive' is option (b) 'majestic'.

Ques 90. ANS (B) Solution:

Statement A is the opening sentence as it introduces the donkey, the salt seller and the salt bag which are then referred to in the other statements. Statement D is the outcome of statement B hence follows statement B; statement C explains the path they follow and mentions the stream in their way; as mentioned in statement B, the bag fell in the same stream;

hence statement C should precede statement B. The correct order is ACBD.

Ques 91. ANS (A) Solution:

The phrase after 'but' (connector of contrast) states that the holiday season can be stressful. So, the phrase before it should mention the opposite.

Among the given options, only 'exciting' conveys the opposite meaning.

Other words are contextually unfit.

'Trying' means 'difficult or annoying; hard to endure'.

Ques 92. ANS (B) Solution:

The blank will be filled with the verb that conveys the same meaning as 'marginalize' as connector 'or' is used to introduce a word or phrase that explains or means the same as another.

'Marginalise' means 'treat (a person, group, or concept) as insignificant or peripheral'.

'Ignore' means the same, i.e., 'refuse to take notice of or acknowledge; disregard intentionally'. So, it will be used in the blank as others cannot convey the required meaning.

Ques 93. ANS (B) Solution:

'Deduced' means 'arrive at (a fact or a conclusion) by reasoning; draw as a logical conclusion'.

The sentence mentions the response of people who were surveyed. As per the sentence, the change in stress levels that they experienced can cause physical illness, depression, etc. This implies their stress must have 'increased'. This helps in eliminating other options.

Ques 94. ANS (B) Solution:

The blank shall be filled with the relative pronoun that refers to 'stress'.

'Who' and 'whom' are the pronouns used to refer to humans.

'Whose' indicates possession, which is not the case here.

So, 'which' [used to refer to things] will fill the blank aptly.

Ques 95. ANS (C) Solution:

The blank shall be filled with the verb that states the reasons for the increased stress levels as told by the people surveyed.

So, 'given' is the apt word for the blank.

Other words are contextually unfit.

'Acquired' means 'buy or obtain (an asset or object) for oneself'.

'Dictated' means 'state or order authoritatively'.

Ques 96. ANS (C) Solution:

The sentence in the Indirect Speech is in Conditional Continuous Tense. Therefore, the sentence in the Direct Speech will be in Future Continuous Tense.

Conditional Continuous (Subject + would/should + be + V1 +ing + Object) will be converted into Future Continuous (Subject + will/shall + be + V1 + ing + Object).

For example:

He said that he would be using the book next Friday. (Indirect Speech)

He said, "I will be using the book next Friday" (Direct Speech)

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

Indirect Speech	Direct Speech
said that	said
The following week	Next week
He would be going	I will be going

Ques 97. ANS (A) Solution:

The subject of the Active voice is changed into the object of the Passive voice. The object of the Active voice is changed into subject of the Passive voice. The usage of a 'to be' form of verb is necessary while changing the voice of the sentence from Active to Passive.

Preposition "by" is used before the object made in passive voice.

The question in Active voice is in Infinitive form.

Infinitive sentence is To + V1 form.

The format in Active voice is Subject + am/is/are/was/were + to + V1.

Thus, the format in Passive voice will be Object of the active voice (Subjective case) + am/is/are/was/were + to + be + V3 + by + Subject of the active voice (Objective case).

For example:

You are to bring her here. (Active voice)

She is to be brought here by you. (Passive voice)

Ques 98. ANS (B) Solution:

'Devious' means clever but not honest or direct. 'Deceitful' means dishonest; trying to make somebody believe something that is not true.

Therefore, 'honest' is the right antonym here.

Ques 99. ANS (B) Solution:

'Hers' is a possessive pronoun that denotes a female noun in the third person whereas 'her' is a possessive adjective that describes to whom the noun belongs. In this sentence 'hers' is incorrect, and it should be replaced by 'her'. Among the given options, one that expresses the correct use is option (b) 'her worn-out shoes' and the correct sentence is 'She had faced much humiliation due to her worn-out shoes'.

Ques 100. ANS (A) Solution:

Improve the shining hour - To maximize one's productivity; to make the most of one's time.