

# 6547, SOLUTION, SSC CGL

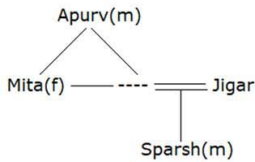
Ques 1. ANS (A) Solution:

Option (a):  $\div, +, =, \times, -$   
 $253 \div 23 + 66 = 30 \times 5 - 73$   
 $11 + 66 = 150 - 73$   
 $77 = 77$

LHS is equal to RHS.

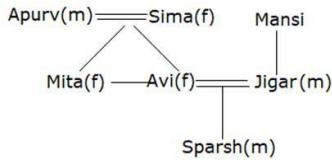
Ques 2. ANS (A) Solution:

Sparsh is the grandson of Apurv.  
 Apurv is the father of Mita, who is unmarried.  
 Mita is the sister-in-law of Jigar.



Avi is married to the son of Mansi. The wife of Apurv is the mother of Avi.

Sparsh is the grandson of Apurv and Sima.



So, Avi is the mother of Sparsh.

Ques 3. ANS (A) Solution:

'DISTANCE' is coded as '4-19-1-3'. 'DEVELOPE' is coded as '4-22-12-16'.

Here, in each word, the 2nd, 4th, 6th and 8th letters from the left end are dropped. Also, the 1st, 3rd, 5th and 7th letters from the left end are replaced by its positional values as per the English alphabetical series.

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

So, IMMUNITY is converted into 9-13-14-20.

Ques 4. ANS (B) Solution:

It will come next. The number of shapes are alternately 3 and 4.  
 The number of edges of each shape follows the given sequence: 4, 3 (i.e.,  $4 - 1$ ), 5 (i.e.,  $3 + 2$ ), 4 (i.e.,  $5 - 1$ ) and 6 (i.e.,  $4 + 2$ ).

Ques 5. ANS (C) Solution:

Second number - first number = third number/4  
 $13 - 7 = 24/4 = 6$

This doesn't follow in options except option (c).

$14 - 11 = 3$  and  $3 \times 4 = 12$

Ques 6. ANS (D) Solution:

$15 \dots (15 \times 15) + (15 - 1) = 225 + 14 = 239$ .

Similarly,

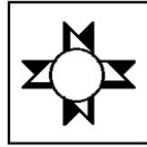
$11 \dots (11 \times 11) + (11 - 1) = 121 + 10 = 131$ .

Ques 7. ANS (B) Solution:

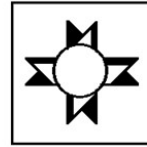
All are metals except Nitrogen which is a gas.

Ques 8. ANS (B) Solution:

The correct water image is:.



M-----N



Ques 9. ANS (A) Solution:

I	N	T	R	O	D	U	C	T	I	O	N
x	g	e	f	p	s	w	h	e	x	p	g

Hence, DOCTOR - sphepf

Ques 10. ANS (C) Solution:

$23 \times 2 = 46$ ;  $46 + 4 = 50$

$18 \times 2 = 36$ ;  $36 + 4 = 40$

$29 \times 2 = 58$ ;  $58 + 4 = 62$

$40 \times 2 = 80$ ;  $80 + 4 = 84$

Ques 11. ANS (C) Solution:

Here, the shaded region changes its position with a gap of one, two, three, and four places respectively.

Hence, figure (III) will come next in the given figure series.

Ques 12. ANS (C) Solution:

On folding the transparent sheet along the dotted line, we get the option figure (III).

Ques 13. ANS (A) Solution:

Here, those who do not like novels =  $A + B + G + H$

Ques 14. ANS (D) Solution:

28<sup>th</sup> November - holiday

17<sup>th</sup> = Monday

$17 + 7 = 24$ <sup>th</sup> = Monday

25<sup>th</sup> = Tuesday

26<sup>th</sup> = Wednesday

27<sup>th</sup> = Thursday (last working day - salary will come on this day)

28<sup>th</sup> = Friday (off)

29<sup>th</sup> and 30<sup>th</sup> = Saturday and Sunday (off)

Ques 15. ANS (A) Solution:

The correct pattern is as:

abd cbd abd cbd abd

Ques 16. ANS (A) Solution:

$A + 2 = C$ ,  $C + 2 = E$ ,  $E + 2 = G$ ,  $G + 2 = I$

$V - 2 = T$ ,  $T - 2 = R$ ,  $R - 2 = P$ ,  $P - 2 = N$

$T - 2 = R$ ,  $R - 2 = P$ ,  $P - 2 = N$ ,  $N - 2 = L$

$E + 2 = G$ ,  $G + 2 = I$ ,  $I + 2 = K$ ,  $K + 2 = M$

Ques 17. ANS (D) Solution:

Here, the expression given in option (d) shows that P is the paternal uncle of R.

Ques 18. ANS (A) Solution:

From option (a),

$(8)^2 - 20 + (28 \div 7) - [(\sqrt{4}) \times 6] + (2)^2 = 64 - 20 + 4 - 12 + 4 = 40$

From option (b),

$(6)^2 - 20 + (28 \div 2) - [(\sqrt{4}) \times 8] + (7)^2 = 36 - 20 + 14 - 16 + 49 = 63$

From option (c),

$(6)^2 - 20 + (28 \div 7) - [(\sqrt{4}) \times 2] + (8)^2 = 36 - 20 + 4 - 4 + 64 = 80$

From option (d),

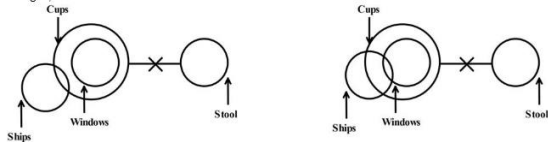
$(6)^2 - 8 + (28 \div 7) - [(\sqrt{4}) \times 20] + (2)^2 = 36 - 8 + 4 - 40 + 4 = -4$

Ques 19. ANS (C) Solution:

It is given that,

Some ships are cups. No cup is a stool. All windows are cups.

We get,



Here, some ships being window is a possibility, no windows are stools, all cups are not windows, and there is no direct relationship between ships and stools.

Hence, conclusions I and II follow.

Ques 20. ANS (C) Solution:

Here, face '5' is adjacent to faces 1, 2, 3, and 4. As we know, if a face is adjacent to four other faces then it is opposite to the remaining face. Hence, faces 5 and 6 are opposite to each other.

Ques 21. ANS (B) Solution:

Here, the numbers are squares of consecutive prime numbers starting with 11.

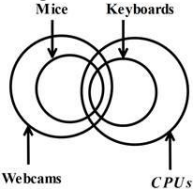
Hence, the series is - 121, 169, 289, 361, 529, 841.

Ques 22. ANS (A) Solution:

It is given that,

Some mice are keyboards. All keyboards are CPUs. All mice are webcams.

We get,



Here, some CPUs are mice, some webcams are keyboards, and some webcams are CPUs.

Hence, all conclusions follow.

Ques 23. ANS (A) Solution:

Here, the positional values of the letters in English alphabetical order are considered.

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
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

BELOVED -  $2 + 5 + 12 + 15 + 22 + 5 + 4 = 65$ . FLOWER -  $6 + 12 + 15 + 23 + 5 + 18 = 79$ . Similarly, QUIVER -  $17 + 21 + 9 + 22 + 5 + 18 = 92$ .

Ques 24. ANS (A) Solution:

From i:

$$14 \div 2 \times 3 - 12 = 9$$

$$21 - 12 = 9$$

$$9 = 9$$

LHS = RHS

From ii:

$$14 - 2 + 3 - 12 = 9$$

$$3 = 9$$

So LHS is not equal to RHS. Hence it is invalid.

From iii:

$$14 \times 2 + 3 \div 12 = 9$$

$$28 + \frac{1}{4} = 9$$

So LHS is not equal to RHS. Hence it is invalid.

From iv:

$$14 - 2 + 3 + 12 = 9$$

$$24 + 3 = 9$$

So LHS is not equal to RHS. Hence it is invalid.

Ques 25. ANS (D) Solution:

The correct sequence is 35241.

browse -> select -> order -> delivery -> review

Ques 26. ANS (B) Solution:

Endocytosis is a type of active transport that moves particles, such as large molecules, parts of cells, and even whole cells, into a cell.

There are different variations of endocytosis, but all share a common characteristic: The plasma membrane of the cell

invaginates, forming a pocket around the target particle. The pocket pinches off, resulting in the particle being contained in a newly created intracellular vesicle formed from the plasma membrane.

Phagocytosis (the condition of "cell eating") is the process by which large particles, such as cells or relatively large particles, are taken in by a cell. For example, when microorganisms invade the human body, a type of white blood cell called a neutrophil will remove the invaders through this process, surrounding and engulfing the microorganism, which is then destroyed by the neutrophil.

The reverse process of moving material into a cell is the process of exocytosis. The purpose is to expel material from the cell into the extracellular fluid. Waste material is enveloped in a membrane and fuses with the interior of the plasma membrane. This fusion opens the membranous envelope on the exterior of the cell, and the waste material is expelled into the extracellular space.

Ques 27. ANS (C) Solution:

In 1820, a Danish physicist, Hans Christian Oersted, discovered that there was a relationship between electricity and magnetism. By setting up a compass through a wire carrying an electric current, Oersted showed that moving electrons can create a magnetic field.

Ques 28. ANS (A) Solution:

The Moatsu is a festival celebrated by the Ao People of Nagaland. This is a festival of community bonding celebrated in May for 3 days. As a celebration, the villagers express their friendship for each other by exchanging gifts, making new friends, feasting, bon fire etc.

Moatsü is celebrated in the first week of May every year. Various rituals are performed during this period. The Aos observe Moatsü Mong after the sowing is done.

Ques 29. ANS (B) Solution:

Canada has the longest total coastline in the world. The country has 202,080 km/ 125,567 miles long coastline with the Pacific Ocean to the west, the Atlantic Ocean to the east, and the Arctic Ocean to the north. Indonesia has the second-longest coastline in the world and Norway has the longest coastline in Europe.

Ques 30. ANS (A) Solution:

Coevolution is the reciprocal evolutionary change in a set of interacting populations over time resulting from the interactions between those populations. Usually, the interacting populations are different species, like plant - pollinator, predator - prey, or host - parasite.

Ques 31. ANS (A) Solution:

Deduced by Daniel Bernoulli, a Swiss mathematician and physicist in 1738, Bernoulli's principle states that in the case of the horizontal flow of motion of fluids (liquids, gases), at the points where there is a higher speed of flow of the fluid, the measured pressure will be lower compared to another point with a relatively low speed of flow. For Bernoulli's principle to hold true, no change in gravitational potential energy must be incurred during the flow of the fluid.

Ques 32. ANS (B) Solution:

Qutbuddin Aibak was a Turkish slave who had risen to high rank in Muhammad Ghori's army.

After Muhammad Ghori's death in AD 1206, the control of his Indian possessions was passed on to Qutbuddin Aibak.

Aibak was the first independent Muslim ruler of Northern India, the founder of Delhi Sultanate.

Ques 33. ANS (C) Solution:

In the Sunderbans, the mangrove forests are characterised by *Heritiera fomes* (sundari trees), a species valued for its timber.

Ques 34. ANS (C) Solution:

The number of atoms constituting a molecule is known as its atomicity. The 7 diatomic elements are hydrogen (H), nitrogen (N), oxygen (O), fluorine (F), chlorine (Cl), bromine (Br), and iodine (I). The atomicity of some non-metals are as follows:

Element name	Atomicity
Argon	Monoatomic
Helium	Monoatomic
Oxygen	Diatomic
Hydrogen	Diatomic
Nitrogen	Diatomic
Chlorine	Diatomic
Phosphorus	Tetratomic

Ques 35. ANS (B) Solution:

डॉ महेंद्र मिश्रा को ढाका में बांग्लादेश की प्रधानमंत्री शेख हसीना द्वारा अंतर्राष्ट्रीय मातृभाषा पुरस्कार से सम्मानित किया गया। डॉ महेंद्र मिश्रा ओडिशा में स्वदेशी भाषाओं के प्रचार के लिए एक भारतीय शिक्षाविद और सामाजिक कार्यकर्ता हैं।

Dr. Mahendra Mishra was honored with the International Mother Language Award by Bangladesh Prime Minister Sheikh Hasina in Dhaka. Dr. Mahendra Mishra is an Indian educationist and social worker for the promotion of indigenous languages in Odisha.

Ques 36. ANS (B) Solution:

A human body has four types of teeth. They are incisors, canines, premolars, and molars.

Incisors - The four front teeth in both the upper and lower jaws are called incisors. Their primary function is to cut food.

Canines - There are four canines in the oral cavity. Their main function is to tear food. They have the longest root of any tooth. They also serve to form the corners of the mouth.

Premolars (Bicuspid) - These teeth are located behind and adjacent to the canines and are designed to crush food. There are eight premolars in the oral cavity.

Molars - The most posterior teeth in the mouth are the molars. They are designed to grind food. Third molars are often referred to as wisdom teeth.

Ques 37. ANS (A) Solution:

Bharatnatyam Dance is considered to be over 2000 years old. Several texts beginning with Bharata Muni's Natya Shastra (200 B.C.E. to 200 C.E.) provide information on this dance form. The Abhinaya Darpana by Nandikesvara is one of the main sources of textual material, for the study of the technique and grammar of body movement in Bharatnatyam Dance.

Ques 38. ANS (B) Solution:

Article 324 [2] of the Constitution states that the Election Commission shall consist of the Chief Election Commissioner and such number of other Election Commissioners, if any, as the President may from time to time fix and the appointment of the Chief Election Commissioner and other Election Commissioners shall, subject to the provisions of any law made in that behalf by Parliament, be made by the President.

Ques 39. ANS (C) Solution:

Another kingdom which rose to a position of importance after the Mauryas was Kalinga. Kalinga included modern Orissa and parts of Northern Andhra. Its most important ruler was Kharavela. The Hathigumpha Inscription in a Jain cave at Udaigiri hills would give us a detailed account of his reign, but unfortunately it is not easily decipherable. It is definitely known that he was a great administrator as well as a brave warrior. He carried out works of piety and public utility, like building roads and gardens.

Ques 40. ANS (A) Solution:

Article 87 of the constitution provides two instances when the President specially addresses both Houses of Parliament.

The President addresses both houses at the commencement of the first session after each general election and at the commencement of the first session of each year the President shall address both Houses of Parliament assembled together and inform Parliament of the causes of its summons.

Provision shall be made by rules regulating the procedure of either House for the allotment of time for discussion of the matters referred to in such address.

Ques 41. ANS (D) Solution:

Renowned Carnatic vocalist and musician Bombay Jayashri will be awarded Sangita Kalanidhi by The Music Academy. The Music Academy also declared names for Nritya Kalanidhi, Sangita Kala Acharya, TTK, and Musicologist awards for the year 2023. The Nritya Kalanidhi award will be presented to Vasanthalakshmi Narasimhachari, who is a dancer and acharya par excellence of both Bharatanatyam and Kuchipudi.

Ques 42. ANS (B) Solution:

In 1928, Motilal Nehru and eight other Congress leaders drafted a constitution for India called the 'Nehru Report'.

Gandhi-Irwin Pact agreement was signed on March 5, 1931, between Mohandas K. Gandhi, leader of the Indian nationalist movement, and Lord Irwin, British viceroy (1926 - 31) of India.

The August Offer was made by Viceroy Linlithgow in 1940 promising the expansion of the Executive Council of the Viceroy of India.

Launched by Mahatma Gandhi on August 8, 1942, the Quit India Movement precipitated the exit of the British.

Ques 43. ANS (B) Solution:

हाल ही में रूसी अंतरिक्ष एजेंसी, रोस्कोस्मोस ने अपने सोयुज कैप्सूल में कूलिंग सिस्टम में रिसाव के बाद अंतर्राष्ट्रीय अंतरिक्ष स्टेशन (आईएसएस) में फंसे तीन अंतरिक्ष यात्रियों को वापस लाने के लिए सोयुज अंतरिक्ष यान को सफलतापूर्वक लॉन्च किया है।

Recently the Russian space agency, Roscosmos has successfully launched the Soyuz spacecraft to bring back three astronauts stranded on the International Space Station (ISS) following a leak in the cooling system in their Soyuz capsule.

Ques 44. ANS (B) Solution:

भारतीय पुरातत्व सर्वेक्षण ने हाल ही में पुरी में स्थित जगन्नाथ मंदिर के पास एक 1,300 साल पुराने बौद्ध स्तूप की खोज की है। खनन कार्य के दौरान स्तूप की खोज की गई थी। यहाँ खोंडालाइट पत्थर (Khondalite stone) का खनन होता है।

The Archaeological Survey of India has recently discovered a 1,300-year-old Buddhist stupa near the Jagannath Temple in Puri. The stupa was discovered during mining operations. Khondalite stone is mined here.

Ques 45. ANS (B) Solution:

Anticline is a geological upfold that has an arch-like convex shape and its oldest beds near its center, often visible at the Earth's surface in exposed rock strata. An anticline is a fold that arches upward. The rocks dip away from the center of the fold. The oldest rocks are found at the center of an anticline. The youngest rocks are draped over them at the top of the structure. When upward folding rocks form a circular structure, that structure is called a dome. If the top of the dome is eroded off, the oldest rocks are exposed at the center.

Ques 46. ANS (D) Solution:

Ecotones are areas of steep transition between ecological communities, ecosystems, and/or ecological regions along an environmental or other gradient. Ecotones occur at multiple spatial scales and range from natural ecotones between ecosystems and biomes to human-generated boundaries.

Ques 47. ANS (D) Solution:

Magdeburg hemispheres are two half-spheres of equal size. Placing them together traps air between them. This air is merely trapped, and not compressed, so the pressure inside is the same as the pressure of the atmosphere outside the spheres. That is to say, the air is pushing equally strongly inside as it is outside. They were used to demonstrate the power of atmospheric pressure.

Ques 48. ANS (A) Solution:

On 9th December 1946, the Constituent Assembly of India met for the first time in the Constitution Hall now popularly referred to as Central Hall of Parliament House in New Delhi. 207 members were present who signed the register and submitted their credentials. As of December 1947, the Assembly had 299 members: 229 members elected from 12 Indian Provinces and 70 members nominated from 29 Princely States.

Ques 49. ANS (D) Solution:

ऑस्ट्रेलिया की सरकार ने, टाटा संस के मानद चेयरमैन रतन टाटा को अपने देश के सर्वोच्च नागरिक सम्मान 'ऑर्डर ऑफ ऑस्ट्रेलिया' (AO) से सम्मानित किया है. रतन टाटा भारत-ऑस्ट्रेलिया आर्थिक सहयोग और व्यापार समझौते के समर्थक रहे हैं.

The Government of Australia has honored Ratan Tata, Chairman Emeritus of Tata Sons, with the 'Order of Australia' (AO), the country's highest civilian honour. Ratan Tata has been a supporter of India-Australia economic cooperation and trade agreement.

Ques 50. ANS (B) Solution:

Finland has been named the happiest country in the world in the annual World Happiness Report.

India, one of the fast growing economies, was placed at number 126 in the report, below Nepal, China, Bangladesh and Sri Lanka. Interestingly, the Russia-Ukraine war caused a drop in the rankings of both the countries. While Russia is ranked 72, Ukraine is at the 92nd spot.

This is the sixth consecutive year that Finland have won the coveted prize due to high scores in factors the report uses to measure happiness: GDP per capita, social support, healthy life expectancy, freedom, generosity and low corruption.

Denmark is at number 2, and Iceland is 3rd. The World Happiness Report is a publication of the UN Sustainable Development Solutions Network and is based on global survey data from people in more than 150 countries.

Ques 51. ANS (C) Solution:

We have  $x + y = 2z$

Subtracting  $z$  from both sides we get

$$x + y - z = 2z - z$$

$$\text{Or } x - z = z - y$$

Substituting the values we get:

$$[x/(x-z)] + [z/(y-z)] - 4$$

$$= [x/(x-z)] - [z/(z-y)] - 4$$

$$= [x/(x-z)] - [z/(x-z)] - 4$$

$$= (x-z)/(x-z) - 4$$

$$= 1 - 4$$

$$= -3$$

Ques 52. ANS (C) Solution:

$$\text{Relative speed} = 45 + 60 = 105 \text{ km/h}$$

$$\text{Time} = 56/60 \text{ hours}$$

$$\text{Relative distance} = \text{speed} * \text{time}$$

$$= 105 * 56/60$$

$$= 98 \text{ km}$$

Ques 53. ANS (C) Solution:

Number divisible by each of 7, 14 and 18 = number divisible by

LCM of 7, 14 and 18 = number divisible by 126

Then, second least number divisible by 126 =  $2 * 126 = 252$

Number divisible by both 12 and 48 = number divisible by LCM of

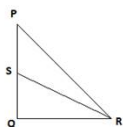
12 and 48 = number divisible by 48

Then, third least number divisible by 48 =  $3 * 48 = 144$

Therefore, sum =  $252 + 144 = 396$

Ques 54. ANS (D) Solution:

According to the question:



Here,  $PS = 6 \text{ cm}$ ,  $SR = 13 \text{ cm}$ ,  $QR = 5 \text{ cm}$

Then, by Pythagoras Theorem:

$$SR^2 = SQ^2 + QR^2$$

$$13^2 = SQ^2 + 5^2$$

$$SQ = 12 \text{ cm}$$

Then,  $PQ = PS + SQ = 6 + 12 = 18 \text{ cm}$

Therefore, again by Pythagoras Theorem:

$$PR^2 = PQ^2 + QR^2$$

$$PR^2 = 18^2 + 5^2$$

$$PR = \sqrt{349} \text{ cm}$$

Ques 55. ANS (B) Solution:

Area of the trapezium =  $0.1696 \text{ m}^2$

$$\Rightarrow \frac{1}{2} * (44 + 62) * \text{height} = 0.1696 * 100 * 100$$

$$\Rightarrow \text{Height} = 1696 * \frac{1}{53}$$

$$\Rightarrow \text{Height} = 32 \text{ cm} = 0.32 \text{ m}$$

Ques 56. ANS (B) Solution:

$$(4ab + 1/3ab) = 16$$

Multiply the equation by  $3/4$ ...

$$4ab * (3/4) + (1/3ab) * (3/4) = 16 * 3/4$$

$$3ab + (1/4ab) = 12$$

Ques 57. ANS (A) Solution:

Numbers divisible by 5 between 501 and 1000 =  $(500/5) = 100$

So, numbers divisible by 5 between 500 and 1000 =  $100 + 1 = 101$

First number divisible by 8 between 500 and 1000 = 504

Last number divisible by 8 between 500 and 1000 = 1000

let there be a total of  $n$  numbers between 500 and 1000 that are divisible by 8

$$\text{So, } 1000 = 504 + (n - 1) * 8$$

$$n = 63$$

Now, let numbers divisible by 40 (LCM of 8 and 5) between 500 and 1000 =  $X$

First number divisible by 40 between 500 and 1000 = 520

And the last number divisible by 40 between 500 and 1000 = 1000

$$\text{So, } 1000 = 520 + (X - 1) * 40$$

$$480 = (X - 1)/40$$

$$X = 13$$

Numbers between 500 and 1000 that are divisible by 5 or 8 =

Numbers that are divisible by 5 + Numbers that are divisible by 8 -

Numbers that are divisible by 40

$$= 101 + 63 - 13 = 151$$

Ques 58. ANS (B) Solution:

Total number of points earned by all the TV's for channels

$$= 15\% \text{ of } (683 + 650 + 640 + 635 + 620 + 600)$$

$$= 15\% \text{ of } 3828 = 574.2$$

Ques 59. ANS (A) Solution:

Here, AB is the diameter of the given circle, then ACB is a right angled triangle which is right angled at C. So,  $\angle ACB = 90^\circ$

Now, AD is the bisector of angle A. Then,

$$\angle CAB = 2 * \angle y = 2 * 28 = 56^\circ$$

$$\text{Now, } \angle z = 180 - \angle ACB - \angle CAB$$

$$= 180 - 90 - 56$$

$$= 34^\circ$$

$$\text{Then, } \angle x + \angle y + \angle z = 180$$

$$\angle x + 28 + 34 = 180$$

$$\angle x = 118^\circ$$

Ques 60. ANS (D) Solution:

$$\sin^2 A = 1 - \cos^2 A$$

$$= 1 - (3/5)^2 = 1 - 9/25 = 16/25$$

Therefore,  $\sin A = 4/5$

$$\tan A = \sin A / \cos A = 4/3$$

$$\text{So, } 3 * (4/3) * (16/25) = z * (9/25)$$

Therefore,  $z = 64/9$

Ques 61. ANS (B) Solution:

On adding  $x$  in the value of  $S$  we get the ratio = 11:9

$$\text{then, } \frac{3500+x}{4500} = \frac{11}{9} = \frac{3500+x}{500} = 11$$

$$= 3500 + x = 5500$$

$$x = 5500 - 3500$$

$$x = 2000$$

Ques 62. ANS (A) Solution:

$$\begin{aligned}
& 3\frac{4}{8} + \left[ \frac{1}{4} \times \left\{ 2\frac{3}{5} \times 1\frac{2}{13} \div \frac{1}{2} \right\} \div 1\frac{1}{4} \right] \\
&= \frac{7}{2} + \left[ \frac{1}{4} \times \left\{ \frac{13}{5} \times \frac{15}{13} \times 2 \right\} \div \frac{5}{4} \right] \\
&= \frac{7}{2} + \left[ \frac{1}{4} \times 6 \times \frac{4}{5} \right] \\
&= \frac{7}{2} + \frac{6}{5} \\
&= \frac{35 + 12}{10} \\
&= \frac{47}{10} \\
&= 4.7
\end{aligned}$$

Ques 63. ANS (A) Solution:

Total number of employees (male + female) hired by the company in 2016 = 40 + 28 = 68

Total number of employees (male + female) hired by the company in 2018 = 24 + 32 = 56

Total number of employees (male + female) hired by the company in 2020 = 36 + 18 = 54

Total number of employees (male + female) hired by the company in 2022 = 48 + 28 = 76

Hence, required number is second maximum in 2016.

Ques 64. ANS (A) Solution:

$$\sqrt{3} \sec 2x = \operatorname{cosec} 2x$$

$$\Rightarrow \tan 2x = 1/\sqrt{3} = \tan 30^\circ$$

$$\Rightarrow 2x = 30^\circ$$

$$\Rightarrow x = 15^\circ$$

$$\text{Thus, } \cos 2 \cdot 3x = \cos^2 45^\circ = 1/2$$

Ques 65. ANS (B) Solution:

$$\begin{aligned}
& \frac{(\cos^2 19^\circ - \sin^2 19^\circ)^2 + 4 \sin^2 19^\circ \cos^2 19^\circ}{\tan 31^\circ \tan 59^\circ + \sin 35^\circ - \cos 55^\circ} \\
&= \frac{(\cos 38^\circ)^2 + (2 \sin 19^\circ \cos 19^\circ)^2}{\tan 31^\circ \tan (90 - 31)^\circ + \sin 35^\circ - \cos (90 - 35)^\circ} \\
&= \frac{\cos^2 38^\circ + \sin^2 38^\circ}{\tan 31^\circ \cot 31^\circ + \sin 35^\circ - \sin 35^\circ} \\
&= \frac{1}{\tan 31^\circ} \\
&= \frac{1}{\tan 31^\circ} \\
&= 1
\end{aligned}$$

Ques 66. ANS (C) Solution:

$$\text{Consider: } (\sqrt{9} - \sqrt{8}) - 1 = (\sqrt{9} + \sqrt{8}) / ((\sqrt{9} - \sqrt{8}) \times (\sqrt{9} + \sqrt{8}))$$

$$= (\sqrt{9} + \sqrt{8}) / (9 - 8) = (\sqrt{9} + \sqrt{8})$$

$$\text{So, the given sum becomes } = (\sqrt{9} + \sqrt{8}) - (\sqrt{8} + \sqrt{7}) + (\sqrt{7} + \sqrt{6}) - (\sqrt{6} + \sqrt{5}) + (\sqrt{5} + \sqrt{4})$$

$$= \sqrt{9} + \sqrt{8} - \sqrt{8} - \sqrt{7} + \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} + \sqrt{5} + \sqrt{4}$$

$$= 3 + 2$$

$$= 5$$

Ques 67. ANS (D) Solution:

Price of the house = Rs 3,25,000

Money received by Ranjit from Manikaran = 106% of Rs 3,25,000 = 3,44,500.

Therefore, price at which Manikaran sells the house back to Ranjit = 96% of Rs 3,44,500

$$= \text{Rs } 3,30,720$$

Thus, Ranjit gains Rs (3,44,500 - 3,30,720) = Rs 13,780

Ques 68. ANS (C) Solution:

Total work in 1 day by A, B and C =  $1/20 + 1/40 + 1/60 = 11/120$

In 4 days = 44/120

By C in last 6 days =  $6/60 = 1/10$

Total =  $44/120 + 1/10 = 56/120$

Work left =  $1 - 56/120 = 64/120$

Work done by B and C in one day =  $1/40 + 1/60 = 5/120$

Work left is done by B and C. Number of days it takes =

$$(64/120) \times (120/5) = 64/5$$

Total time =  $10 + 64/5 = 22(4/5)$  days

Ques 69. ANS (A) Solution:

$$A + B + C = 2800$$

$$B : C = 3 : 4$$

$$A : C = 7 : 4$$

Then, A : B : C = 7 : 3 : 4

So, B =  $2800 \times 3 / (7 + 3 + 4) = \text{Rs. } 600$

Ques 70. ANS (D) Solution:

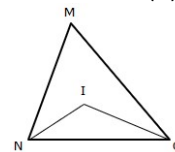
$$\sqrt[3]{a(a^2 - 6a + 12) - 8}$$

$$\sqrt[3]{a^3 - 6a^2 + 12a - 8}$$

$$\sqrt[3]{(a - 2)^3}$$

$$(a - 2) = 21 - 2 = 19$$

Ques 71. ANS (D) Solution:



$$\angle N = 32^\circ \text{ and } \angle O = 64^\circ$$

In  $\Delta MNO$ :

$$\angle M + \angle N + \angle O = 180^\circ$$

$$\angle M = 84^\circ$$

Since I is the incentre of  $\Delta MNO$ .

$$\angle NIO = 90^\circ + (\angle M/2)$$

$$\angle NIO = 90^\circ + 42^\circ$$

$$\angle NIO = 132^\circ$$

Ques 72. ANS (B) Solution:

Let distance travelled by each = d

According to the question-

$$(d/25) - (d/40) = 54/60$$

$$3d/200 = 54/60$$

$$d = 60 \text{ km}$$

Distance travelled by P = 60 km

Ques 73. ANS (C) Solution:

We know that the ratio between the lateral surface area and total surface area of a hemisphere is 2 : 3.

$$\text{Given } 3 \text{ units} = 23.76$$

$$\text{So, } 2 \text{ units} = 23.76 \times 2/3 = 15.84 \text{ sq. cm}$$

Ques 74. ANS (D) Solution:

Males = 1800, females = 1200

$$\text{Qualified candidates} = (42\% \text{ of } 1800) + (34\% \text{ of } 1200) = 1164$$

$$= 756 + 408 = 1164$$

$$\text{Disqualified candidates} = 3000 - 1164 = 1836$$

$$\text{Disqualified\%} = (1836/3000) \times 100 = 61.20\%$$

Ques 75. ANS (B) Solution:

$$31 + 44 + x + y + 12 + z + 24 = 7 \times 30$$

$$\Rightarrow x + y + z = 210 - 111$$

$$\Rightarrow x + y + z = 99$$

$$\text{So, mean of } x, y, \text{ and } z = 99/3 = 33$$

Ques 76. ANS (B) Solution:

complacent (adj.) = self-satisfied; feeling so satisfied with your own abilities or situation that you feel you don't need to try any harder

Usage: We can't afford to become complacent about any of our products.

Apprise (v) = to tell or inform someone about something

Usage: The president has been apprised of the situation.

Bale (n/v) = a large amount of something such as hay, paper, wool, or cloth that has been tied tightly together

Usage: The fire destroyed 500 bales of hay.

Limp (v/n) = to walk slowly and with difficulty because of having an injured or painful leg or foot

Usage: Five minutes into the game, Jack limped off the pitch with a serious ankle injury.

'Complacent' means the same as the given phrase. So, it is the required one-word substitute.

Hence, option b) is correct.

Ques 77. ANS (D) Solution:

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

Athlete: a person who is proficient in sports and other forms of physical exercise.

Practically: in a realistic or sensible way.

Benefitted: receive an advantage; profit.

Antarctic: relating to the south polar region or Antarctica.

Ques 78. ANS (C) Solution:

'Hapless' (unlucky and usually unhappy) is an adjective. 'Enough' can act as both an adjective and an adverb. Since 'hapless' is an adjective, 'enough' acts as an adverb here to qualify it. If 'enough' acts as an adverb, it should be placed after the adjective because 'enough' as an adverb is usually placed after an adjective. So, the underlined part of the sentence is grammatically incorrect. Option (c) is the correct choice among the given options. Hence, option (c) is the correct answer.

Ques 79. ANS (D) Solution:

The apostrophe is not used to form possessive pronouns (his, hers, yours, ours, theirs). Example- yours faithfully, yours truly.

So, the use of 'your's truly' is incorrect. It should be 'yours truly'

Hence, option (d) is correct.

NOTE/-

Possessive Pronouns: The pronouns mine, yours, hers, his, ours, and theirs are known as possessive pronouns: they refer to something owned by the speaker or by someone or something previously mentioned. For example: The pen is mine.

Ques 80. ANS (A) Solution:

An objective case comes after 'let', 'like', 'between..and', 'but', 'except', and 'all prepositions'.

So, the use of 'let I' is incorrect. It should be replaced with 'let me'.

Hence, option (a) is correct.

NOTE/-

Objective Pronouns: The pronouns me, you, us, him, her, it, and them are called objective pronouns because they act as the objects of verbs and prepositions: Anjali drove us home.

Ques 81. ANS (B) Solution:

The use of 'monster' (noun) to describe the 'behaviour' (another noun) is incorrect, an adjective (monstrous) should be used here in place of 'monster'.

Option (a) is incorrect as 'she' is a singular noun and 'have' is a plural verb. Option (c) is incorrect as 'since' is used with a point of time and 'for' denotes a period.

Hence, option (b) is correct.

Ques 82. ANS (A) Solution:

The noun 'observations' needs to be qualified by an adjective ('intimate') and not an adverb ('intimately'). Hence, option (a) is the right answer.

Ques 83. ANS (B) Solution:

The word 'immoral' means 'not conforming to accepted standards of morality'.

Let's look at the meanings of the given words.

Degree: the amount, level, or extent to which something happens or is present.

Decent: of an acceptable standard; satisfactory.

Illness: a disease or period of sickness affecting the body or mind.

Region: an area, especially part of a country or the world having definable characteristics but not always fixed boundaries.

Among the given options, 'decent' is the most appropriate antonym of the given word.

Hence, option (b) is the correct answer.

Ques 84. ANS (D) Solution:

The first sentence is actually about the discovery of the 'chaos' in the middle of an experiment. So, the option 'spilling out of' conveys the same meaning perfectly. 'Throw in' - Include

something free with a purchase/ Make a remark casually as an interjection in a conversation.

Hence, option (d) is correct.

Ques 85. ANS (B) Solution:

This sentence tells us about from where did the concept of 'chaos' originated. To deliver this, 'came' is the correct word for this blank.

Hence, option (b) is correct.

Ques 86. ANS (C) Solution:

The sentence continues to tell us the weight of that computer from which the concept of 'chaos' was discovered. Thus, 'weighed' is the word apt to fit in this blank.

Hence, option (c) is correct.

Ques 87. ANS (A) Solution:

The sentence goes on to describe the type of sound that was coming from that computer. Of all the options, 'passing' is the one that fills the blank. Other options do not convey the intended meaning.

Hence, option (a) is correct.

Ques 88. ANS (C) Solution:

The last sentence wants to convey that the discovered sound was so loud that it was shifted to different floor. To deliver this, option 'another' is apt.

Hence, option (c) is correct.

Ques 89. ANS (A) Solution:

The idiom "in fits and starts" means irregularly or sporadically. In this context, it means that the replies to the advertisements are irregular. The other meanings are contextually incorrect. Hence, a) is the correct answer.

Ques 90. ANS (C) Solution:

Verb ('had done') shifts from past perfect tense to present perfect ('have done') when changing from indirect to direct speech.

We add an exclamatory remark in direct speech when the tone is that of applause. 'Bravo' is used to express approval on a great performance by someone.

Therefore, the correct form of sentence in direct speech will be:

"Bravo! You have done amazing", the trainer said to him.

Therefore, option (c) is the correct answer.

Ques 91. ANS (C) Solution:

The word 'continued' means 'to keep happening, existing, or doing something, or to cause something or someone to do this'.

Let's look at the meanings of the given options.

Ongoing: continuing; still in progress.

Played: engage in activity for enjoyment and recreation rather than a serious or practical purpose.

Stopped: (of an event, action, or process) come to an end; cease to happen.

Disregarded: pay no attention to; ignore.

Among the given options, 'stopped' is the correct antonym of the given word.

Hence, option (c) is the correct answer.

Ques 92. ANS (A) Solution:

The word 'harmony' means 'the situation in which people live or work happily together without any big problems'.

Let's look at the meanings of the given options.

Hostility: an occasion when someone is unfriendly or shows that they do not like something

Congruity: the quality of being the same as, or in agreement with, other facts or principles

Consent: permission or agreement

Concord: agreement and peace between countries and people

Among the given options, 'hostility' is the most appropriate antonym of the given word.

Hence, option (a) is the correct answer.

Ques 93. ANS (A) Solution:

Let's look at the meanings of the given options.

Kennel: a small shelter for a dog.

Canal: an artificial waterway constructed to allow the passage of boats or ships inland or to convey water for irrigation.

Burrow: a hole or tunnel dug by a small animal, especially a rabbit, as a dwelling.

Shed: a simple roofed structure used for garden storage, to shelter animals, or as a workshop.

Among the given options, the word 'kennel' can be used as a one-word substitute for the underlined words in the given sentence.

Hence, option (a) is the correct answer.

Ques 94. ANS (C) Solution:

WORD	MEANING
Fleet	A group of ships sailing together, engaged in the same activity
Barrack	Provide (soldiers) with accommodation in a building or set of buildings
Hamlet	A cluster of houses in a village
Reformatory	An institution for reforming young offenders

So, 'hamlet' is the correct word.

Hence, option (c) is correct.

Ques 95. ANS (D) Solution:

Option (d) is the correct answer.

The correct spelling is 'Equilibrium'. It means 'a state in which opposing forces or influences are balanced'.

Ques 96. ANS (B) Solution:

We need to fill a blank with a relative pronoun. It relates a clause or phrase to a noun or a pronoun. Some of the relative pronouns are 'which', 'that', 'who', 'whose' etc.

Words like everything, nothing, anything, the only, the few, the little, the same, etc., are used with 'that'. Here, 'that' is used for the idea indicated, mentioned, or understood from the situation. 'Who' and 'whom' are also relative pronouns, but we use them for humans in subjective and objective cases respectively.

Hence, option (b) is correct.

Ques 97. ANS (C) Solution:

The correct order is DBAC.

Sentence B cannot be the beginning of the passage. Sentences A and C talk about a problem. Sentence D states that the problem discussed in the passage is the population explosion. Therefore, sentence D comes first. B follows D as it states why this issue is important. A follows B as it describes different problems which are faced by all the countries. C follows A as it states that the core of all this problem is population pressure.

Hence, option (c) is the correct answer.

Ques 98. ANS (D) Solution:

The correct order is SRQP.

The beginning of the sentence is 'Electrolytes like'. Therefore, the phrase that follows should give examples of electrolytes. Phrase S comes first as it gives examples of electrolytes. Phrase P cannot follow as it is grammatically incorrect [because of absence of any verb]. So, option (b) is incorrect. The pair QR is also grammatically incorrect [because of redundancy - helping verb 'are' would be repeated]. So, option (c) is also incorrect. Option (d) gives a coherent sentence.

The sentence after rearrangement is: Electrolytes like sodium, potassium, chloride and magnesium are electrically charged minerals that are present in the body's fluids and are important for balancing the water in your body.

Hence, option (d) is the correct answer.

Ques 99. ANS (A) Solution:

The correct answer is (a) A puny mouse has been caught by the cat outside the house.

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

The usage of a helping 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.

However, it is optional in some cases.

The Active voice in this question is in Present Perfect. Thus, the Passive voice will also be in Present Perfect.

The format of Active voice is: Subject + has/have + V3 + Object.

Thus, in Passive voice, the format will be: Subject (Objective case) + has/have + been + V3 + by + Object (Subjective case).

For example:

o Arya has bought a new horse. (Active Voice)

o A new horse has been bought by Arya. (Passive Voice)

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

Therefore, the correct answer is: A puny mouse has been caught by the cat outside the house.

V1 -> Base form/simple form of verb, V2 -> Past form of verb (-ed form or irregular verb), V3 -> Past participle form of verb (-ed, -d, -t, -en, or -n), V4 -> Continuous form of verb / Present participle form of verb (-ing form), V5 -> Third person singular (V1+ -es or -s)

Ques 100. ANS (C) 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 and the preposition 'by' is necessary while changing the voice of the sentence from Passive to Active.

The Passive voice in this question is in Present Indefinite tense.

Thus, the Active voice will also be in Present Indefinite.

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

Thus, the format of Active voice is: Subject + V1/V5 + Object.

For example:

You are liked by her. (Passive Voice)

She likes you. (Active Voice)

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

Option (b) is incorrect because 'hikers' is a plural noun, whereas the verb ['does'] following it is a singular verb.

Therefore, the correct answer is option (c): Hikers do not visit this trail frequently.