# SSC CHSL 2020 Official Paper 18 (Held On: 4 Aug 2021 Shift 3) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2020 • 100 questions • 60 minutes • Answer key and solutions

**Take this paper as a timed mock test**

Practise under exam conditions, then review your answers after you submit.

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Scan the QR code or click the link to open it.

## ENGLISH LANGUAGE

**Q1.** Select the most appropriate meaning of the given idiom.

Go to the dogs

**(a)** Go crazy
**(b)** Fail miserably
**(c)** Deteriorate shockingly
**(d)** Want something badly

**Q2.** Select the INCORRECTLY spelt word.

**(a)** Envellope
**(b)** Envoy
**(c)** Entrust
**(d)** Entreat

**Q3.** Select the INCORRECTLY spelt word.

**(a)** Vicious
**(b)** Callous
**(c)** Hienous
**(d)** Vicarious

**Q4.** Select the most appropriate synonym of the given word.

APPARENTLY

**(a)** Questionably
**(b)** Considerably
**(c)** Unlikely
**(d)** Seemingly

**Q5.** In the given sentence identify the segment which contains the grammatical error.

I would have died if he did not dress my wound that day.

**(a)** died if he did not dress
**(b)** my wound
**(c)** I would have
**(d)** that day

**Q6.** Select the most appropriate meaning of the given idiom.

Pull something off

**(a)** Make something happen
**(b)** Take out the cover or lid
**(c)** Drag something forcibly
**(d)** Make a lot of noise

**Q7.** Select the most appropriate word to fill in the blank.

Priya has a very _____ nature and does not accept financial help even from her own parents.

**(a)** independent
**(b)** impartial
**(c)** disinterested
**(d)** biased

**Q8.** Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No improvement'.

The child is crying because she can't find her mother.

**(a)** A child is crying
**(b)** The child has cried
**(c)** The child were crying
**(d)** No improvement

**Q9.** Select the option that expresses the given sentence in direct speech.

My friends say that many young people are very active on social media now.

**(a)** My friends say, "Many young people were very active on social media now."
**(b)** My friends said, "Many young people were very active on social media then."
**(c)** My friends are saying, "Many young people are very active on social media then."
**(d)** My friends say, "Many young people are very active on social media now."

**Q10.** The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.

At the workshop, / they were taught how to nail / the pieces of wood together to create toys.

**(a)** they were taught how to nail
**(b)** the pieces of wood together to create toys
**(c)** No error
**(d)** At the workshop

**Q11.** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.

A. Cheetahs are one of the world's most-recognisable cats, known especially for their speed.

B. Their faces too are distinguished by prominent black lines that curve from the inner corner of each eye to the outer corners of the mouth, like a well-worn trail of inky tears.

C. Cheetahs are covered almost entirely with small black spots on a background of pale yellow and have a white underbelly.

D. They have a long, slender body measuring 1.2 metres (4 feet), with a long tail (65-85 cm [2-3 feet]) that generally ends in a white tuft.

**(a)** ABDC
**(b)** DABC
**(c)** CADB
**(d)** BADC

**Q12.** Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, Select 'No substitution required'.

The roof is being held up over two stone pillars.

**(a)** is held up by
**(b)** was held above
**(c)** No substitution required
**(d)** is hold up on

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**Q13.** Select the correct passive form of the given sentence.

At the last moment, a fireman pulled out Manohar from the burning bus.

**(a)** At the last moment, Manohar had been pulled out of the burning bus by a fireman.
**(b)** At the last moment, Manohar was pulled out of the burning bus by a fireman.
**(c)** At the last moment, a fireman was pulled out of the burning bus by Manohar.
**(d)** At the last moment, Manohar was pulling out of the burning bus by a fireman.

**Q14.** Select the option that can be used as a one-word substitute for the given group of words.

Fond of company

**(a)** Gregarious
**(b)** Amiable
**(c)** Cheerful
**(d)** Gracious

**Q15.** Select the most appropriate ANTONYM of the given word.

Harrowing

**(a)** Pleasant
**(b)** Stressful
**(c)** Worrying
**(d)** Repetitive

**Q16.** Select the most appropriate word to fill in the blank in the given sentence.

The passengers waited _____ for the local train to arrive.

**(a)** patiently
**(b)** meekly
**(c)** hastily
**(d)** considerably

**Q17.** Select the most appropriate synonym of the given word.

Encroach

**(a)** Ignore
**(b)** Disregard
**(c)** Intrude
**(d)** Forget

**Q18.** Select the most appropriate ANTONYM of the given word.

INDIGNANT

**(a)** Annoyed
**(b)** Upset
**(c)** Pleased
**(d)** Peeved

**Q19.** Given below are four jumbled sentences. Out of the given options pick the one that gives their correct order.

A. He confessed that the only thing he was afraid of was snakes.
B. On my second visit to West Africa, I met a young man on board the ship.
C. I told him that it was very unlikely that he would see any.
D. He was going out to take up a job in a banana plantation.

**(a)** BDAC
**(b)** DBAC
**(c)** ADBC
**(d)** BACD

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**Q20.** Select the word which means the same as the group of words given.

A person who arranges and sells cut flowers

**(a)** Florist
**(b)** Anthropologist
**(c)** Horticulturist
**(d)** Botanist

**Directions**

In the following passage, some words have been deleted. Fill in the blank with the help of the alternatives given. Select the most appropriate option for each bank.

Equiano was born in 1745 in Nigeria. When he (1) _____ about eleven, Equiano was kidnapped and sold to slave traders headed (2) ____ the West Indies. Though he spent a brief (3) ____ in the state of Virginia, much of Equiano's time (4) ____ serving on slave ships and British navy vessels. In his service on these (5) _____, Equiano travelled extensively.

**Q21.** Select the most appropriate option for blank number 1.

**(a)** was
**(b)** is
**(c)** are
**(d)** were

**Q22.** Select the most appropriate option for blank number 2.

**(a)** to
**(b)** about
**(c)** on
**(d)** in

**Q23.** Select the most appropriate option for blank number 3.

**(a)** life
**(b)** age
**(c)** era
**(d)** period

**Q24.** Select the most appropriate option for blank number 4.

**(a)** is spent
**(b)** was spent
**(c)** has been spent
**(d)** spent

**Q25.** Select the most appropriate option for blank number 5.

**(a)** ships
**(b)** crafts
**(c)** tankers
**(d)** liners

## GENERAL INTELLIGENCE

**Q26.** In a certain code language, PROUD is written as WYJPK. How will GUILTY be written in that language?

**(a)** NPDSAF
**(b)** BPBOGT
**(c)** BBPGOT
**(d)** NDPASF

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**Q27.** Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.




**(a)**



**(b)**



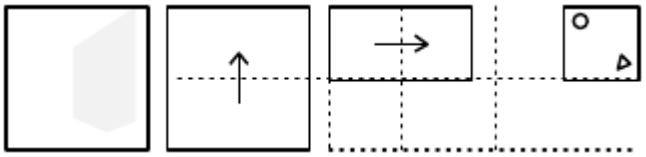
**(c)**



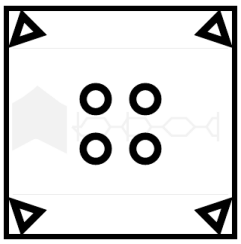
**(d)**



**Q28.** The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?

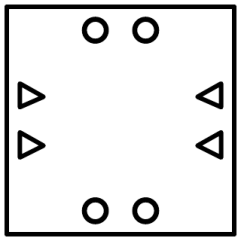


**(a)**

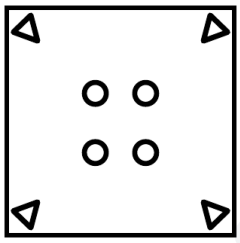


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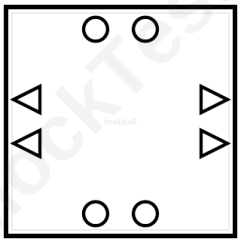
**(b)**



**(c)**



**(d)**



**Q29.** Select the combination of letters that when sequentially placed in the blanks of the given letter series will complete the series.

p l _ p p _ s p _ l s p p l _ p

**(a)** s l p s
**(b)** l s l p
**(c)** p l s p
**(d)** s p p l

**Q30.** Select the option in which the numbers share the same relationship as that shared by the given pair of numbers.

185 : 199

**(a)** 174 : 187
**(b)** 129 : 152
**(c)** 126 : 134
**(d)** 89 : 106

**Q31.** From the given options choose the one in which the set of numbers do not follow the same Logic/Rule/Relation as the numbers given in below set.

(32, 16, 96)

**(a)** (26, 13, 78)
**(b)** (42, 21, 126)
**(c)** (36, 18, 108)
**(d)** (22, 11, 68)

**Q32.** Four numbers have been given, out of which three are alike in some manner and one is different. Select the number that is different.

**(a)** 105
**(b)** 348
**(c)** 252
**(d)** 231

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**Q33.** Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All plots are flats.

All flats are hotels.

Some hotels are restaurants.

Conclusions:

I. Some restaurants are flats.

II. Some hotels are plots.

III. No plot is a restaurant.

**(a)** Only conclusion II follows.
**(b)** Both conclusions II and III follow.
**(c)** Both conclusions I and II follow.
**(d)** Only conclusion I follows.

**Q34.** A driver increases the speed of his vehicle by 5 km/h after every one hour. If the initial speed of the vehicle was 75 km/h, then what was the average speed of the vehicle in a journey of 4 hours?

**(a)** 83.75 km/h
**(b)** 82.5 km/h
**(c)** 82 km/h
**(d)** 83 km/h

**Q35.** Select the correct option that indicates the arrangement of the given words in a logical and meaningful order.

1. Prescription
2. Diagnosis
3. Illness
4. Follow-up
5. Recovery

**(a)** 3 - 2 - 1 - 5 - 4
**(b)** 3 - 4 - 1 - 2 - 5
**(c)** 1 - 2 - 5 - 3 - 4
**(d)** 2 - 3 - 1 - 4 - 5

**Q36.** Select the number from among the given options that can replace the question mark (?) in the following series.

4, 5, 13, 22, 86, 111, ?

**(a)** 327
**(b)** 237
**(c)** 247
**(d)** 427

**Q37.** Select the option in which the numbers are related in the same way as are the numbers of the following set.

(2194, 1328, 726)

**(a)** (1560, 1131, 551)
**(b)** (1406, 962, 390)
**(c)** (1170, 570, 228)
**(d)** (1725, 997, 509)

**Q38.** Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.

**(a)** CIOU
**(b)** SYDJ
**(c)** KQWC

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**(d)** PVBH

**Q39.** Four words are given, three of which are alike in a certain way and one is inconsistent. Select the word that is inconsistent.

**(a)** Aggravate
**(b)** Frighten
**(c)** Calm down
**(d)** Provoke

**Q40.** Nirmala introduced Rahul as the son of the sister of her mother. How is Nirmala related to Rahul?

**(a)** Cousin
**(b)** Brother-in-law
**(c)** Maternal uncle
**(d)** Brother

**Q41.** Which two signs should be interchanged to balance the following equation?

646 ÷ 19 – 746 + 20 × 34 = 100

**(a)** × and +
**(b)** × and ÷
**(c)** – and ×
**(d)** – and +

**Q42.** Select the option that is related to the third term in the same way as the second term is related to the first term.

AMIDST : AIMDST :: SYNTAX : ?

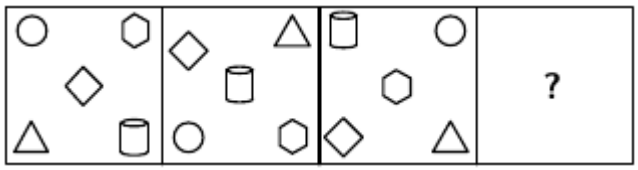
**(a)** NYSTAX
**(b)** NSYATX
**(c)** SANYTX
**(d)** SNYATX

**Q43.** Select the option that is related to the third word in the same way as the second word is related to the first word.

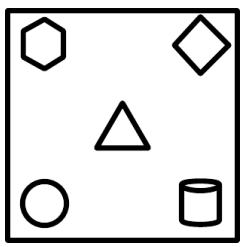
Galvanometer : Electric current : : Graphometer : ?

**(a)** Oscillations
**(b)** Altitudes
**(c)** Angles
**(d)** Humidity

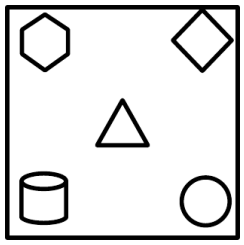
**Q44.** Select the figure from among the given options that can replace the question mark (?) in the following series.



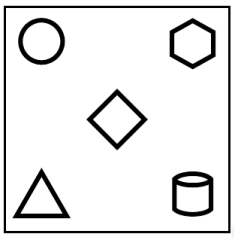

**(a)**



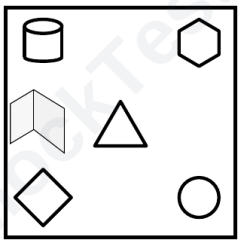
**(b)**



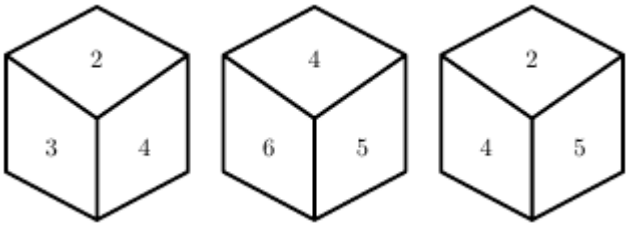
**(c)**



**(d)**



**Q45.** Three different positions of the same dice are shown. Select the number that will be on the face opposite to the face having 6.



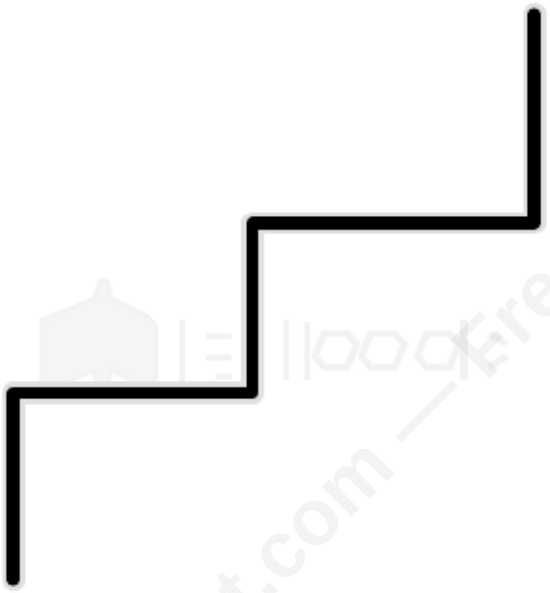

**(a)** 1
**(b)** 2
**(c)** 4
**(d)** 3

**Q46.** In a certain code language, CANDIDATE is coded as 846292417 and ACTION is coded as 481936. How will DICTATION be coded in that language?

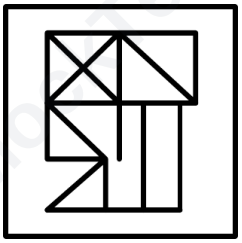
**(a)** 298242956
**(b)** 493212965
**(c)** 493212975
**(d)** 298141936

**Q47.** Select the option in which the given figure is embedded (rotation is NOT allowed).

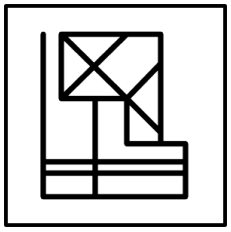
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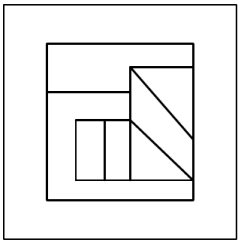
(a)



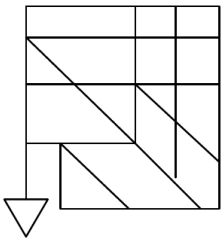
(b)



(c)



(d)



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**Q48.** Select the option in which the words share the same relationship as that shared by the given pair of words.

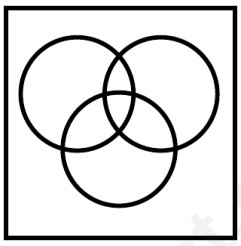
Power : Watt

**(a)** Force : Pascal
**(b)** Volume : Pound
**(c)** Current : Volt
**(d)** Resistance : Ohm

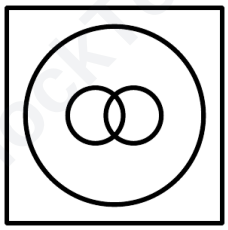
**Q49.** Select the Venn diagram that best represents the relationship between the following classes.

Teachers, Graduates, Tennis players

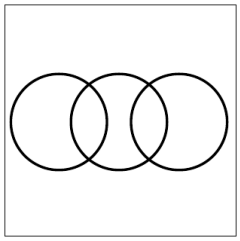
**(a)**



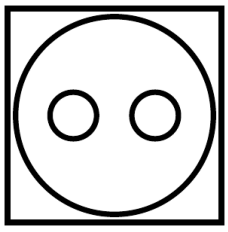
**(b)**



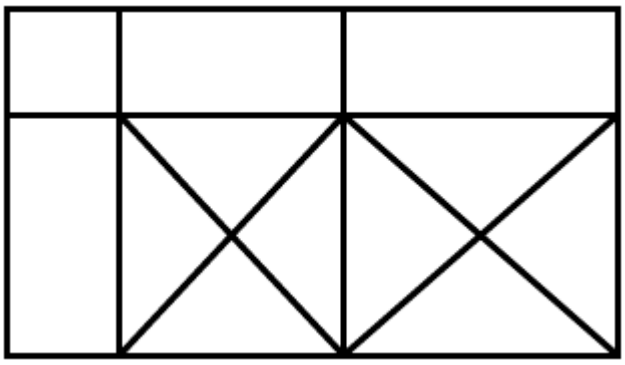
**(c)**



**(d)**



**Q50.** How many triangles are there in the given figure?



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**(a)** 18
**(b)** 16
**(c)** 19
**(d)** 20

## QUANTITATIVE APTITUDE

**Q51.** BD and CE are the medians of Δ ABC, right angled at A. If CE = 5√13/2 cm, BC = 10 cm, then the length of BD is:
**(a)** 3√5 cm
**(b)** 3√7 cm
**(c)** √13 cm
**(d)** 5/2√7 cm

**Q52.** A can complete a certain work in 30 days. He started the work. After 4 days, B joined him and the whole work was completed in 10 days from the beginning. B alone can complete one-third of the same work in:
**(a)** 6 days
**(b)** 3 days
**(c)** 2 days
**(d)** 4 days

**Q53.** In Δ ABC, angle A = 90°, AB = 20 cm and BC = 29 cm. What is the value of (sinB – cotC)?
**(a)** • 9/29
**(b)** 9/29
**(c)** • 189/580
**(d)** 189/580

**Q54.** When (2^(24) – 1) is divided by 7, the remainder is:
**(a)** 4
**(b)** 2
**(c)** 0
**(d)** 1

**Q55.** If $2\cos^2\theta = 3(1 - \sin\theta)$, $0° < \theta < 90°$, then what is the value of $(\tan2\theta + \operatorname{cosec}3\theta - \sec2\theta)$ ?
**(a)** √3 + 1
**(b)** (1 - √3)/(√3)
**(c)** √3 - 1
**(d)** (1 + √3)/(√3)

**Q56.** The perimeters of two similar triangles ABC and PQR are 156 cm and 46.8 cm, respectively. If BC = 19.5 cm and QR = x cm, then the value of x is:
**(a)** 5.85 cm
**(b)** 4.29 cm
**(c)** 3.76 cm
**(d)** 6.75 cm

**Q57.** As observed from the top of a lighthouse, 42 m high above sea-level, the angle of depression of a ship sailing directly towards it changes from 30° to 45°. The distance travelled by the ship during the period of observation is:
**(a)** 42(√3 - 1)
**(b)** 42(√3 + 1)
**(c)** 42
**(d)** 42(1 - √3)

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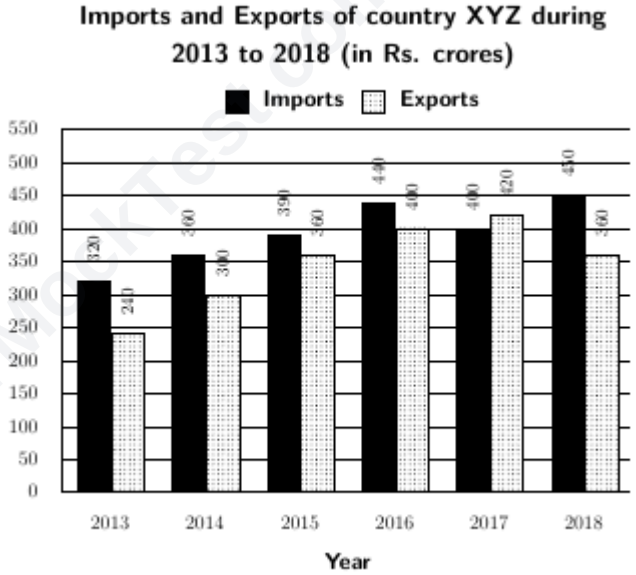
**Q58.** If $a + b + c = 7$ and $a^3 + b^3 + c^3 - 3abc = 301$, then $ab + bc + ca = ?$

**(a)** 2
**(b)** –2
**(c)** –4
**(d)** 3

**Q59.** By selling 3 dozen oranges for Rs. 405, a trader loses 25%. How many oranges should he sell for Rs. 288 if he needs to earn a profit of 20% in the transaction?

**(a)** 16
**(b)** 15
**(c)** 18
**(d)** 12

**Q60.** Study the given graph and answer the question that follows.




By what percentage is the total exports in 2014 and 2016 less than the total imports in the same two years?

**(a)** 14.3
**(b)** 11.25
**(c)** 12.9
**(d)** 12.5

**Q61.** What is the cost (in Rs.) of levelling a triangular park with sides 60 m, 112 m and 164 m at the rate of Rs. 10.50 per $m^2$ ?

**(a)** 21,000
**(b)** 21,168
**(c)** 20,160
**(d)** 21,063

**Q62.** Chords AB and CD of a circle intersect externally at P. If CD = 11.6 cm, PD = 6.4 cm and PB = 7.2 cm, then AB (in cm) is equal to:

**(a)** 8.8
**(b)** 16
**(c)** 12
**(d)** 4.8

**Q63.** If $x^2 + 1 - 2x = 0$, $x > 0$, then $x^2 (x^2 - 2) =$ _____.

**(a)** $\sqrt{2}$
**(b)** 1
**(c)** 0

**(d)** –1

**Q64.** If $x^2 – 3\sqrt{2}x + 1 = 0$, then what is the value of $x^3 + (1/(x^3))$ ?

**(a)** $30\sqrt{2}$
**(b)** $30\sqrt{6}$
**(c)** $45\sqrt{2}$
**(d)** $15\sqrt{6}$

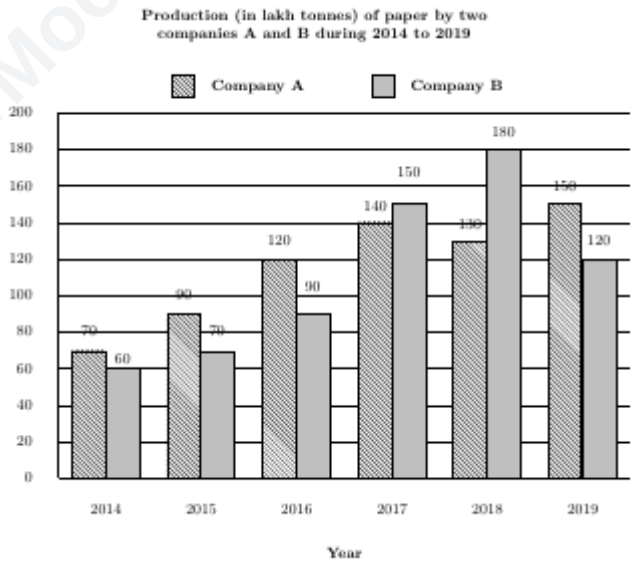
**Q65.** If the difference between the compound interest compounded annually and the simple interest on a certain sum of money for three years at 10% per annum is Rs. 279, then the sum (in Rs.) is:

**(a)** 9,000
**(b)** 10,000
**(c)** 8,000
**(d)** 7,500

**Q66.** The value of 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (9 – 11) ÷ (2 ÷ 4 of 4)}] is:

**(a)** 4/3
**(b)** 1/2
**(c)** 5/6
**(d)** 11/6

**Q67.** Study the given graph and answer the question that follows.




What is the ratio of the total production of paper by company A in 2016 and 2019 to the total production of paper by company B in 2014 and 2017?

**(a)** 8 : 5
**(b)** 5 : 4
**(c)** 3 : 2
**(d)** 9 : 7

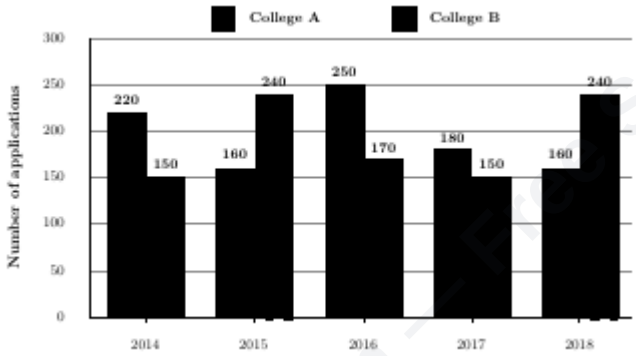
**Q68.** The average of 19 numbers is 48. The average of the first 7 numbers is 50.6 and that of the last 13 numbers is 47.6. If the 7^(th) number is excluded, then what is the average of the remaining numbers (correct to one decimal place)?

**(a)** 49.5
**(b)** 47.3
**(c)** 39.6
**(d)** 42.4

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**Q69.** Study the following bar graph and answer the question given below.

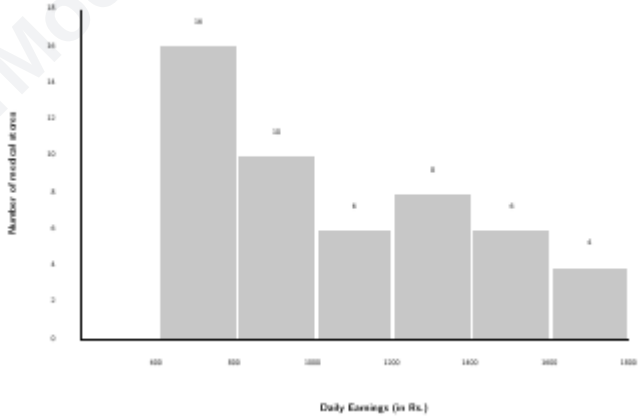
The bar graph represents the total number of applications received for B.Sc. Mathematics by two different colleges A and B in 5 different years.




Find the difference between the average number of applications received by college A from 2014 to 2018 and the average number of applications received by college B from 2014 to 2018?

**(a)** 4
**(b)** 6
**(c)** 5
**(d)** 8

**Q70.** The following histogram represents the daily earnings of 50 medical stores in a locality.




The difference between the percentage of medical stores whose daily earnings are less than Rs. 1,000 and the percentage of medical stores whose daily earnings are Rs. 1,200 and above is:

**(a)** 15%
**(b)** 16%
**(c)** 24%
**(d)** 12%

**Q71.** The marked price of an article is Rs. 480. A person buys it at two successive discounts of 15% and 10%. He sells it at a profit of 25%. What is his profit (in Rs.)?

**(a)** 90.60
**(b)** 93.20
**(c)** 91.80
**(d)** 95.40

**Q72.** In a circle with centre O, chord AB and diameter CD intersect each other at point E, inside the circle. If angle AOD = 42° and angle BOC = 104°, then what is the measure (in degrees) of angle AED?

**(a)** 58
**(b)** 73
**(c)** 84
**(d)** 62

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**Q73.** There are three numbers. If the ratio of the first to the second number is 2 : 7 and that of the second to the third number is 5 : 8, then the ratio of the first to the third number is:

**(a)** 1 : 4
**(b)** 5 : 7
**(c)** 5 : 28
**(d)** 7 : 8

**Q74.** X and Y start at the same time to ride from place A to place B, which is 80 km away from A. X travels 4 km per hour slower than Y. Y reaches place B and at once turns back, meeting X, 16 km from place B. Y's speed (in km/h) is:

**(a)** 8
**(b)** 12
**(c)** 15
**(d)** 9

**Q75.** In a constituency, 55% of the total number of voters are males and the rest are females. If 40% of the males are illiterate and 40% of the females are literate, then by what percentage is the number of illiterate females more than that of the illiterate males (correct to one decimal place)?

**(a)** 21.5%
**(b)** 20.8%
**(c)** 16.4%
**(d)** 22.7%

## GENERAL AWARENESS

**Q76.** Which of the following is one of the basic plant nutrients of fertilizers that are commonly used in agriculture?

**(a)** Arsenic
**(b)** Potassium
**(c)** Mercury
**(d)** Sodium

**Q77.** In which of the following years was the Cornwallis Code enacted?

**(a)** 1723
**(b)** 1857
**(c)** 1793
**(d)** 1805

**Q78.** Which of the following factors is NOT responsible for the loss of fertility of agricultural land?

**(a)** Higher cation exchange capacity of soil
**(b)** Alkalisation of soil
**(c)** Salinisation of soil
**(d)** Waterlogging

**Q79.** How many Rajya Sabha seats come from the state of Assam?

**(a)** 18
**(b)** 9
**(c)** 7
**(d)** 15

**Q80.** Who among the following were awarded the Nobel Prize 2020 in Economics Sciences?

**(a)** Robert W Fogel and Douglass C North
**(b)** James J Heckman and Daniel L McFadden
**(c)** William Vickrey and James A Mirrlees
**(d)** Paul R Milgrom and Robert B Wilson

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**Q81.** Which of the following devices accepts the results produced by the computer in a machine-readable form?

**(a)** Mouse
**(b)** Graphics tablet
**(c)** Printer
**(d)** Microphone

**Q82.** India has engaged actively in the multilateral negotiations in the UNFCCC. What is the full form of UNFCCC?

**(a)** United Nations Fellowship of Central Climate Change
**(b)** United Nations Fellowship Convention on Climate Change
**(c)** United Nations Framework Convention on Climate Change
**(d)** United Nations Framework of Central Climate Change

**Q83.** In which of the following states is Buxa National Park situated?

**(a)** Punjab
**(b)** West Bengal
**(c)** Karnataka
**(d)** Haryana

**Q84.** Which of the followings sports was added to the Asian Beach Games Program 2021 as of December 2020?

**(a)** Athletics
**(b)** Basketball
**(c)** Coastal Rowing
**(d)** Aquatics

**Q85.** In which of the following states is Sri Bhramaramba Mallikarjuna Temple located?

**(a)** Tamil Nadu
**(b)** Odisha
**(c)** Andhra Pradesh
**(d)** Maharashtra

**Q86.** Which of the following diseases is caused by Helicobacter pyroli?

**(a)** Chikungunya
**(b)** Rubella
**(c)** Ringworm
**(d)** Gastritis

**Q87.** Which of the following battles did Maulvi Ahmadullah Shah fight, defeating the forces under Henry Lawrence?

**(a)** Battle of Najafgarh
**(b)** Battle of Saragarhi
**(c)** Battle of Chinhat
**(d)** Battle of Kintoor

**Q88.** Which of the following rivers rises in the west of Rohtang Pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state?

**(a)** Chenab
**(b)** Satluj
**(c)** Ravi
**(d)** Beas

**Q89.** The 'SAKSHAM' campaign launched by the Government of India in January 2021 aims to spread awareness about _____.

**(a)** protection of girl child
**(b)** empowerment of women
**(c)** education for children
**(d)** adoption of cleaner fuels

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**Q90.** Which of the following states Government has unveiled the 'Farmer Registration and Unified beneficiary Information System' (FRUITS), an e-governance portal, to create a repository of farmland information and farm loan details on a single platform?

**(a)** Karnataka
**(b)** Kerala
**(c)** Tamil Nadu
**(d)** Chhattisgarh

**Q91.** Suryadhar lake is located in which of the following states?

**(a)** Arunachal Pradesh
**(b)** Himachal Pradesh
**(c)** Uttarakhand
**(d)** Meghalaya

**Q92.** Who among the following has written the novel "The Awasthis of Aamnagri'?

**(a)** Shubha Sharma
**(b)** Chetan Bhagat
**(c)** Debashish Panigrahi
**(d)** Sarabjit Singh

**Q93.** Which of the following is the full form of EBCDIC?

**(a)** Extended Binary-Coded-Decimal Interchange Code
**(b)** Extended Binary-Control-Device Interchange Code
**(c)** Electronic Binary-Control-Decimal Interchange Code
**(d)** Electronic Binary-Coded-Device Interchange Code

**Q94.** Which of the following is used as a primary means of implementing the monetary policy of the Reserve Bank of India?

**(a)** Mumbai Interbank Offer Rate
**(b)** Promissory notes
**(c)** Call money
**(d)** Repo rate

**Q95.** Shigmotsav is essentially a festival of the masses, celebrated on the full moon day in the month of Phalguna (March). Which state celebrates this festival?

**(a)** Goa
**(b)** Haryana
**(c)** Sikkim
**(d)** Meghalaya

**Q96.** Who among the following footballers won the 'Best FIFA Men's Player Award' 2020?

**(a)** Cristiano Ronaldo
**(b)** Robert Lewandowski
**(c)** Raheem Sterling
**(d)** Lionel Messi

**Q97.** Which of the following banks has signed a loan of $40 million to Northern Arc Capital to support the microfinance borrowers and the MSME sectors in India?

**(a)** ADB
**(b)** IMF
**(c)** World Bank
**(d)** AIIB

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**Q98.** Kuldeep Handoo has won the Dronacharya Award in 2020. He belongs to which of the following sports?

**(a)** Swimming
**(b)** Wushu
**(c)** Wrestling
**(d)** Boxing

**Q99.** According to which of the following Schedules to the Constitution provides for allocation of seats to the states and union territories in Rajya Sabha?

**(a)** Sixth
**(b)** Second
**(c)** Seventh
**(d)** Fourth

**Q100.** In which of the following cities was India's first indigenously designed and developed driverless metro car unveiled in January 2021?

**(a)** Bengaluru
**(b)** Delhi
**(c)** Chennai
**(d)** Kolkata

## ANSWER KEY

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | c | 2 | a | 3 | c | 4 | d | 5 | a | 6 | a | 7 | a | 8 | d | 9 | d | 10 | c |
| 11 | a | 12 | a | 13 | b | 14 | a | 15 | a | 16 | a | 17 | c | 18 | c | 19 | a | 20 | a |
| 21 | a | 22 | a | 23 | d | 24 | b | 25 | a | 26 | a | 27 | b | 28 | d | 29 | a | 30 | d |
| 31 | d | 32 | b | 33 | a | 34 | b | 35 | a | 36 | a | 37 | d | 38 | b | 39 | c | 40 | a |
| 41 | d | 42 | b | 43 | c | 44 | b | 45 | b | 46 | d | 47 | d | 48 | d | 49 | a | 50 | a |
| 51 | d | 52 | b | 53 | c | 54 | c | 55 | c | 56 | a | 57 | a | 58 | a | 59 | a | 60 | d |
| 61 | b | 62 | a | 63 | d | 64 | c | 65 | a | 66 | c | 67 | d | 68 | b | 69 | a | 70 | b |
| 71 | c | 72 | b | 73 | c | 74 | b | 75 | d | 76 | b | 77 | c | 78 | a | 79 | c | 80 | d |
| 81 | c | 82 | c | 83 | b | 84 | a | 85 | c | 86 | d | 87 | c | 88 | c | 89 | d | 90 | a |
| 91 | c | 92 | a | 93 | a | 94 | d | 95 | a | 96 | b | 97 | a | 98 | b | 99 | d | 100 | a |

## SOLUTIONS

**Q1. Answer: (c) Deteriorate shockingly**

The solution is in Hindi. Read it online.

**Q2. Answer: (a) Envellope**

The solution is in Hindi. Read it online.

**Q3. Answer: (c) Hienous**

The solution is in Hindi. Read it online.

**Q4. Answer: (d) Seemingly**

The solution is in Hindi. Read it online.

**Q5. Answer: (a) died if he did not dress**

The solution is in Hindi. Read it online.

**Q6. Answer: (a) Make something happen**

The solution is in Hindi. Read it online.

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**Q7. Answer: (a) independent**

The solution is in Hindi. Read it online.

**Q8. Answer: (d) No improvement**

The correct answer is 'No improvement'.

Key Points

• The given sentence is grammatically correct.

• Here, the definite article 'the' is correctly used because it is used for a specific thing in a particular situation.

• In the given context, it is referring to 'child'.

• Here, 'tense' is also used correctly.

• The present continuous verb tense indicates that an action or condition is happening now, frequently, and may continue into the future.

• The Present Continuous Formula: to be [am, is, are] + verb [present participle]

• Example: They are eating at Scott's favorite restaurant today, Polly's Pancake Dine.

**Q9. Answer: (d) My friends say, "Many young people are very active on social media now."**

The solution is in Hindi. Read it online.

**Q10. Answer: (c) No error**

The correct answer is 'No error'.

Key Points

• The given sentence is grammatically correct.

• After 'they' a plural helping verb is used.

• And the given sentence is an example of passive voice.

• The structure of these kinds of sentences is "Subject + was/were + V3 + Object." (Passive Voice)

**Q11. Answer: (a) ABDC**

The correct answer is 'ABDC'.

Key Points

• The given question is an example of a Para Jumble.

• We know that the first statement of a para jumbled question is usually an independent general statement, a noun, a universal fact, starting of an incident, or it starts with 'most' or 'once'.

• Here, 'Sentence A' should be the first sentence because the given paragraph is talking about the Cheetas. And Sentence A is an introductory sentence.

• Sentence B will be the next sentence. (Moreover, only option 1 starts with 'A', therefore we can instantly mark it as the correct answer)

• Sentence B is talking about the physical appearance of 'Cheetahs' and Sentence D is also talking about the physical appearance. Hence, both of these sentences are connected.

• Hence, sentence D will be the next sentence.

• Lastly, Sentence C will be used.

• Thus, the correct sequence is:

• A: Cheetahs are one of the world's most-recognisable cats, known especially for their speed.

• B: Their faces too are distinguished by prominent black lines that curve from the inner corner of each eye to the outer corners of the mouth, like a well-worn trail of inky tears.

• D: They have a long, slender body measuring 1.2 metres (4 feet), with a long tail (65-85 cm [2-3 feet]) that generally ends in a white tuft.

• C: Cheetahs are covered almost entirely with small black spots on a background of pale yellow and have a white underbelly.

Correct Sequence: Cheetahs are one of the world's most-recognisable cats, known especially for their speed. Their faces too are distinguished by prominent black lines that curve from the inner corner of each eye to the outer corners of the mouth, like a well-worn trail of inky tears. They have a long, slender body measuring 1.2 metres (4 feet), with a long tail (65-85 cm [2-3 feet]) that generally ends in a white tuft. Cheetahs are covered almost entirely with small black spots on a background of pale yellow and have a white underbelly.

**Q12. Answer: (a) is held up by**

The solution is in Hindi. Read it online.

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**Q13. Answer: (b) At the last moment, Manohar was pulled out of the burning bus by a fireman.**

The solution is in Hindi. Read it online.

**Q14. Answer: (a) Gregarious**

The solution is in Hindi. Read it online.

**Q15. Answer: (a) Pleasant**

The solution is in Hindi. Read it online.

**Q16. Answer: (a) patiently**

The solution is in Hindi. Read it online.

**Q17. Answer: (c) Intrude**

The solution is in Hindi. Read it online.

**Q18. Answer: (c) Pleased**

The solution is in Hindi. Read it online.

**Q19. Answer: (a) BDAC**

The correct answer is 'BDAC'.

Key Points

• The given question is an example of a Para Jumble.

• We know that the first statement of a para jumbled question is usually an independent general statement, a noun, a universal fact, starting of an incident, or it starts with 'most' or 'once'.

• Here, Sentence B will be the first sentence because it is the starting of an incident i.e. the narrator meeting a young man on the ship.

• Sentence B is talking about a young man and Sentence D is further explaining why the young man was going out.

• Sentence A will be the next sentence because it is talking about what the young man confessed to the narrator.

• Lastly, Sentence C will be used because it is talking about what the narrator replied to the young man.

• Thus, the correct sequence is:

• B: On my second visit to West Africa, I met a young man on board the ship.

• D: He was going out to take up a job in a banana plantation.

• A: He confessed that the only thing he was afraid of was snakes.

• C: I told him that it was very unlikely that he would see any.

Correct Sequence: On my second visit to West Africa, I met a young man on board the ship. He was going out to take up a job in a banana plantation. He confessed that the only thing he was afraid of was snakes. I told him that it was very unlikely that he would see any.

**Q20. Answer: (a) Florist**

The solution is in Hindi. Read it online.

**Q21. Answer: (a) was**

The correct answer is 'was'.

Key Points

• The most appropriate option for the given blank is 'was'.

• The given passage is in the past tense.

• Hence, a past helping verb should be used.

• Here, 'he' is a singular helping verb. Therefore, 'was' should be used.

Correct Pragraph: Equiano was born in 1745 in Nigeria. When he was about eleven, Equiano was kidnapped and sold to slave traders headed (2) _____ the West Indies. Though he spent a brief (3) ____ in the state of Virginia, much of Equiano's time (4) ____ serving on slave ships and British navy vessels. In his service on these (5) _____, Equiano travelled extensively.

**Q22. Answer: (a) to**

The solution is in Hindi. Read it online.

**Q23. Answer: (d) period**

The solution is in Hindi. Read it online.

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**Q24. Answer: (b) was spent**

The correct answer is 'was spent'.

Key Points

• The most appropriate option for the given blank is 'was spent'.

• As the given passage is talking about a past incident so a past helping verb should be used.

• Here, the passive structure should be used because the given sentence is in the passive voice.

• The structure of these kinds of sentences is: Subject (objective case) + was/were + V3 + Object (subjective case). (Passive Voice)

• Example: They were shown some rare photographs by their cousin. (Passive Voice)

Correct Sentence: Equiano was born in 1745 in Nigeria. When he was about eleven, Equiano was kidnapped and sold to slave traders headed to the West Indies. Though he spent a brief period in the state of Virginia, much of Equiano's time was spent serving on slave ships and British navy vessels. In his service on these (5) _____, Equiano travelled extensively.

**Q25. Answer: (a) ships**

The solution is in Hindi. Read it online.

**Q26. Answer: (a) NPDSAF**

The table is alphabets place value:

The pattern followed here is:

• Consonants are increased by +7.

• Vowels are decreased by -5.

PROUD is written as WYJPK

Similarly,

'GUILTY' = ?

Hence, 'GUILTY' is coded as "NPDSAF".

**Q27. Answer: (b) [figure]**

The correct mirror image of the given figure when the mirror is held at the right side is:

Hence, "option (2)" is the correct answer.

Additional Information

In Mirror image left side and right side changed vice-versa where top and bottom remain same.

Reflection of an object into the water is its water image. It appears by inverting an object vertically i.e. upside down.

The water image of the figure looks like the mirror image of the figure in case the mirror is horizontally at the bottom of the figure.

Water image is just a reflection where top and bottom part of the images changed where left and right side of the image remain same

**Q28. Answer: (d) [figure]**

The image obtained when the paper is unfolded is,

Hence, option 4 is the correct answer.

**Q29. Answer: (a) s l p s**

Given: p l _ p p _ s p _ l s p p l _ p

By checking options and substituting accordingly.

1) s l p s → p l s p / p l s p / p l s p / p l s p

2) l s l p → p l l p / p s s p / l l s p / p l p p

3) p l s p → p l p p / p l s p / s l s p / p l p p

4) s p p l → p l s p / p p s p / p l s p / p l l p

Option (1) gives a cyclic pattern of p l s p / p l s p / p l s p / p l s p

Hence, ‘s l p s’ is the correct answer.

**Q30. Answer: (d) 89 : 106**

The Logic here is as follows:

1^(st) Number : 2^(nd) number

=> 1^(st) Number + digit sum of 1^(st) number = 2^(nd) number

In 185 : 199

1^(st) Number + digit sum of 1^(st) number
= 185 + (1 + 8 + 5)
= 185 + 14
= 199 = 2^(nd) number
Now check the all options,
Option (1) 174 : 187
1^(st) Number + digit sum of 1^(st) number
= 174 + (1 + 7 + 4)
= 174 + 12
= 186 ≠ 2^(nd) Number
Option (2) 129 : 152
1^(st) Number + digit sum of 1^(st) number
= 129 + (1 + 2 + 9)
= 129 + 12
= 141 ≠ 2^(nd) Number
Option (3) 126 : 134
1^(st) Number + digit sum of 1^(st) number
= 126 + (1 + 2 + 6)
= 126 + 9
= 135 ≠ 2^(nd) Number
Option (4) 89 : 106
1^(st) Number + digit sum of 1^(st) number
= 89 + (8 + 9)
= 89 + 17
= 106 = 2^(nd) Number
Hence, the correct answer is "89 : 106".
Note:
Because of the discrepancy, we have altered the question and changed the second option from 139 to 129.

**Q31. Answer: (d) (22, 11, 68)**

The Logic here is as follows:
(1^(st) number + 2^(nd) number) × 2 = 3^(rd) number
In (32, 16, 96)
= (32 + 16) × 2
= 48 × 2
= 96 = 3^(rd) Number
Now check the all options,
Option (1) (26, 13, 78)
= (26 + 13) × 2
= 39 × 2
= 78 = 3^(rd) Number
Option (2) (42, 21, 126)
(1st number + 2nd number) × 2
= (42 + 21) × 2
= 63 × 2
= 126 = 3rd Number
Option (3) (36, 18, 108)
(1st number + 2nd number) × 2
= (36 + 18) × 2
= 54 × 2
= 108 = 3rd Number
Option (4) (22, 11, 68)

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(1^(st) number + 2^(nd) number) × 2

= (22 + 11) × 2

= 33 × 2

= 66 ≠ 3^(rd) Number

This option doesn't follow the pattern.

Hence, the correct answer is "(22, 11, 68)".

**Q32. Answer: (b) 348**

The logic followed here is:

All the given options except option (2), are divisible by 7.

Option (1) 105 → Divisible by 7.

Option (2) 348 → Not divisible by 7.

Option (3) 252 → Divisible by 7.

Option (4) 231 → Divisible by 7.

Hence, "348" is an odd one.

Note: This is an official question of SSC CHSL, two options were found to be correct in this question, hence we have changed option 1 from 217 to 105.

**Q33. Answer: (a) Only conclusion II follows.**

Statements:

All plots are flats.

All flats are hotels.

Some hotels are restaurants.

The least possible diagram for the given statements is as follows

Conclusions:

I. Some restaurants are flats → False (It is possible but not definite because no direct relationship are given between restaurants and flats)

II. Some hotels are plots → True (Because all plots are flats and all flats are hotels so some hotels are definitely plots)

III. No plot is a restaurant → False (It is possible but not definite because no direct relationship are given between plots and restaurants)

Hence, "Only conclusion II follows" is the correct answer.

**Q34. Answer: (b) 82.5 km/h**

Given:

Increases the speed of his vehicle by 5 km/h after every one hour.

And,

Initial speed of the vehicle was 75 km/h

1^(st) hour speed → 75

2^(nd) hour speed → 75 + 5 = 80

3^(rd) hour speed → 80 + 5 = 85

4^(th) hour speed → 85 + 5 = 90

The average speed of vehicle is

=> (75 + 80 + 85 + 90) / 4 = 330 / 4 = 82.5 km/h

Hence, correct answer is "82.5 km/h"

**Q35. Answer: (a) 3 - 2 - 1 - 5 - 4**

The logical and meaningful order of the given words is as follows:

LOGIC: The words have been arranged according to the stage of disease from illness to its recovery.

3. Illness → → Firstly a human illness from any disease.

2. Diagnosis → After the illness we diagnose the disease.

1. Prescription → Then we take a prescription of that disease.

5. Recovery → After taking a prescription we recover the disease.

4. Follow-up → After recovery we need to properly follow up.

Hence, "3, 2, 1, 5, 4" is the correct answer.

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**Q36. Answer: (a) 327**

The pattern followed here is:

Hence, '327' is the correct answer.

Additional Information Square of Numbers: When a number is multiplied by itself, the product is called the square of the numbers.

To calculate square root of a number for example 6889.

Calculation:

Step 1: Check the unit digit of the given number Unit digit is 9, therefore the unit digit of the square root will be 3 or 7.

Step 2: Ignoring the last two digits (unit digit and tens digit), we get 68.

Step 3: The greatest number whose square is less than or equal to 68 is 8, which is tens place digit of the required square root.

Step 4: Now multiply 8 × 9 = 72.

Step 5: On comparing we find, 68 (step 2) < 72 (step 4).

Step 6: Choose the smallest digit for unit place from 3 and 7 (step 1), i.e 3.

This way, square root of 6889 is 83.

**Q37. Answer: (d) (1725, 997, 509)**

The Logic followed here is:

Step 1 → cbrt(1^(st) number + 3) = A perfect cube root

Step 2 → cbrt(2^(nd) number + 3) = A perfect cube root

Step 3 → cbrt(3^(rd) number + 3) = A perfect cube root

In (2194, 1328, 726)

Step 1 → cbrt(2194 + 3) = cbrt2197 = 13 (A perfect cube root)

Step 2 → cbrt(1328 + 3) = cbrt1331 = 11 (A perfect cube root)

Step 3 → cbrt(726 + 3) = cbrt729 = 9 (A perfect cube root)

Similarly,

Option 4 → (1725, 997, 509)

Step 1 → cbrt(1725 + 3) = cbrt1728 = 12 (A perfect cube root)

Step 2 → cbrt(997 + 3) = cbrt1000 = 10 (A perfect cube root)

Step 3 → cbrt(509 + 3) = cbrt512 = 8 (A perfect cube root)

Hence, the correct answer is "(1725, 997, 509)".

**Q38. Answer: (b) SYDJ**

Table show alphabet serial number –

The pattern followed is,

All follow the same pattern, except 'SYDJ'.

Hence, “SYDJ” is the odd one.

**Q39. Answer: (c) Calm down**

The logic followed here is:

Except option 2, all words are synonyms of each other whereas calm down is the antonyms of these words.

Option (1) aggravate → Aggravate means to make something worse or more serious. It is a negative energy word.

Option (2) frighten → Frighten means to make somebody/something afraid or shocked. It is a negative energy word.

Option (3) calm down → Calm down means to make someone or something less agitated. It is a positive energy word.

Option (4) Provoke → Provoke means to cause a particular feeling or reaction. It is a negative energy word.

All words are negative energy words expect "Calm down"

Hence, ‘calm down’ is the correct answer.

**Q40. Answer: (a) Cousin**

Preparing the family tree using the following symbols,

Given:

Nirmala introduced Rahul as the son of the sister of her mother

We can draw the following Family Tree from the information given above:

Hence, the Nirmala is the "Cousin" of Rahul.

**Q41. Answer: (d) – and +**

According to the BODMAS rule:
Option 1 : × and +
Given:
646 ÷ 19 – 746 + 20 × 34 = 100
After interchange the signs;
646 ÷ 19 – 746 × 20 + 34 = 100
By BODMAS rule
34 – 746 × 20 + 34 = 100
34 – 14920 + 34 = 100
68 – 14920 = 100
-14852 = 100 (LHS ≠ RHS)
Option 2 : × and ÷
Given:
646 ÷ 19 – 746 + 20 × 34 = 100
After interchange the signs;
646 × 19 – 746 + 20 ÷ 34 = 100
By BODMAS rule
646 × 19 – 746 + 0.588 = 100
646 × 19 – 746 + 0.588 = 100
12274 – 746 + 0.588 = 100
12274.588 – 746 = 100
11,528.588 = 100 (LHS ≠ RHS)
Option 3 : – and ×
Given:
646 ÷ 19 – 746 + 20 × 34 = 100
After interchange the signs;
646 ÷ 19 × 746 + 20 - 34 = 100
By BODMAS rule
34 × 746 + 20 - 34 = 100
25364 + 20 - 34 = 100
25384 - 34 = 100
25350 = 100 (LHS ≠ RHS)
Option 4 : – and +
Given:
646 ÷ 19 – 746 + 20 × 34 = 100
After interchange the signs;
646 ÷ 19 + 746 - 20 × 34 = 100
By BODMAS rule
34 + 746 - 20 × 34 = 100
34 + 746 - 680 = 100
780 - 680 = 100
100 = 100 (LHS = RHS)
Hence, the answer is “– and +”.

**Q42. Answer: (b) NSYATX**

The logic here is,
AMIDST : AIMDST
Similarly,
SYNTAX : ?
Hence, "NSYATX" is the correct answer.

**Q43. Answer: (c) Angles**

The logic followed here is:

Given:

Galvanometer : Electric current → Galvanometer is used for Electric current measurement.

Similarly,

Graphometer : Angles → Graphometer is used for Angles measurement.

Hence, 'Angles' is the correct answer.

**Q44. Answer: (b) [figure]**

The figure that will replace the question mark (?) in the following figure series is shown below:

1) Upper left side figure transfer lower left side.

2) Upper right side figure transfer lower right side.

3) Lower left side figure transfer upper right side.

4) Lower right side figure transfer middle position.

5) Middle figure transfer upper left side.

Final series is

Hence, 'option 2' is the correct answer.

**Q45. Answer: (b) 2**

For this question, the relation is given below -

Logic: If two dice have the same two face values in the given image then the third number is opposite to each other.

In second dice and third dice.

Numbers 4 and 5 are common.

So, the number 2 is the opposite of 6.

Now, check the second pattern:

In first dice and second dice.

If we rotate the second dice in an anti-clockwise direction.

We get,

Logic: If two dice have the same face value in the given image then their clockwise or anticlockwise wise number are known as opposite numbers in dice.

In first dice and second dice. The number '4' is common.

The left letter will be opposite each other writing them clockwise starting from 4.

| Number | Opposite |
|---|---|
| 3 | 5 |
| 2 | 6 |

Hence, the face opposite the 6 is "2".

Hence, the correct answer is "2"

**Q46. Answer: (d) 298141936**

The codes have been assigned as follows,

CANDIDATE →

| C | A | N | D | I | D | A | T | E |
|---|---|---|---|---|---|---|---|---|
| 8 | 4 | 6 | 2 | 9 | 2 | 4 | 1 | 7 |

ACTION →

| A | C | T | I | O | N |
|---|---|---|---|---|---|
| 4 | 8 | 1 | 9 | 3 | 6 |

Similarly,

DICTATION →

| D | I | C | T | A | T | I | O | N |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | 9 | 8 | 1 | 4 | 1 | 9 | 3 | 6 |

Hence, DICTATION is coded as “298141936”.

**Q47. Answer: (d) [figure]**

The embedded part of this image is:

Hence, option (4) is the correct answer.

**Q48. Answer: (d) Resistance : Ohm**

The logic followed here is:

Given:

Power : Watt → The SI unit of Power is the Watt.

Now, check all the options:

Option (1) Force : Pascal → The SI unit of Force is the newton and Pascal is the SI unit of pressure.

Option (2) Volume : Pound → The SI unit of volume is the cubic meter and the Pound is the unit of weight.

Option (3) Current : Volt → The SI unit of Current is the Ampere and Volt is the SI unit of electric potential.

Option (4) Resistance : Ohm → The SI unit of Resistance is the Ohm.

Hence, ‘Resistance : Ohm’ is the correct answer.

**Q49. Answer: (a) [figure]**

The Venn diagrams best represent the relationship between - Teachers, Graduates, Tennis players figures are shown below:

• Some teachers are graduated.

• Some graduated are tennis players.

• Some Teachers are tennis players.

• Some teachers are both graduated and tennis players

Hence, ‘option 1’ is the correct answer.

**Q50. Answer: (a) 18**

The number of triangles in the given figure is:

So, there are a total of 18 triangles in the figure.

Hence, ‘18’ is the correct answer.

**Q51. Answer: (d) 5/2√7 cm**

Given:

BD and CE are the medians of Δ ABC

CE = 5√13/2 cm

BC = 10 cm

Concept used:

When two median is given, then add the two numbers in the middle and then divide by 2.

Calculation:

According to the question

$\Rightarrow BD^2 = AB^2 + (AC/2)^2$

$\Rightarrow BD^2 = AB^2 + AC^2/4$

Now,

$CE^2 = (AB/2)^2 + AC^2$

$\Rightarrow AB^2/4 + AC^2$

Now,

$BD^2 + CE^2 = 5/4(AB^2 + AC^2)$

$\Rightarrow BD^2 + CE^2 = 5/4\ BC^2$

$\Rightarrow BD^2 + (5\sqrt{13}/2)^2 = 5/4 \times (10)^2$

$\Rightarrow BD^2 + 325/4 = 5/4 \times 100$

$\Rightarrow BD^2 + 325/4 = 125$

$\Rightarrow BD^2 = (125 – 325/4)$

$\Rightarrow BD^2 = (500 – 325)/4$

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=> $BD^2 = 175/4$

=> $BD = 5\sqrt{7}/2$ cm

Therefore The length of the BD is $5\sqrt{7}/2$ cm

**Q52. Answer: (b) 3 days**

Given:

Time taken by A to complete the work = 30 days

Time taken by B to complete the work after 4 days = 10 days

Formula used:

Work = Efficiency × Time

Calculation:

Let B can complete the work in x days

Time taken by A to complete the work in 1 day = 1/30 units

Time taken by B to complete the work in 1 day = 1/x units

According to the question

=> 10 × 1/30 + (10 – 4) × 1/x = 1

=> 1/3 + 6/x = 1

=> 6/x = (1 – 1/3)

=> 6/x = 2/3

=> 2x = 18

=> x = 9

B alone can complete one-third of the same work = (1/3 × 9)

=> 3 days

Therefore The required time is 3 days

Alternate Method

According to the question, A can complete a work in 30 days,

After 4 days of work B join and completed the remaining work next 6 days,

What A alone can do in 26 days that work A + B can do in 6 days, so

=> A × 26 = (A + B) × 6

=> 26A = 6A + 6B

=> A/B = 6/20 = 3/10

So, total work is 30 × 3 = 90 unit

Now, B can do 1/3_(rd) of the work in 90 × 1/3 × 1/10 = 3 days

**Q53. Answer: (c) • 189/580**

Given:

angle A = 90°

AB = 20 cm

BC = 29 cm

Formula used:

$AC^2 = BC^2 – AB^2$

$\sin\theta = P/H$

$\cot\theta = B/P$

Calculation:

AC2 = BC2 – $AB^2$

=> $AC^2 = (29)^2 – (20)^2$

=> $AC^2 = (841 – 400)$

=> $AC^2 = 441$

=> AC = 21 cm

Now,

SinB = 21/29

CotC = 21/20

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Now,

(sinB – cotC) = (21/29 – 21/20)

=> (420 – 609)/580

=> -189/580

Therefore The required value is -189/580

**Q54. Answer: (c) 0**

Given:

(2^(24) – 1) is divided by 7

Concept used:

Divisibility rule of 7 - The difference between twice the unit digit of the given number and the remaining part of the given number should be a multiple of 7 or it should be equal to 0.

Calculation:

According to the question

(224 – 1)

=> (2³)^8 – 1

=> (8^8 – 1)

Now,

=> (8^8 – 1)/7

=> (8^8)/7 – (1/7)

=> (1 – 1)/7

=> 0

Therefore The remainder is 0

**Q55. Answer: (c) √3 - 1**

Given:

2cos2θ = 3 (1 – sinθ)

Formula used:

sin²θ + cos²θ = 1

=> 1 – sin²θ = cos²θ

Calculation:

2cos2θ = 3 (1 – sinθ)

=> 2cos²θ = 3 – 3sinθ

=> 2cos²θ + 3sinθ – 3 = 0

=> 2(1 – sin²θ) + 3sinθ – 3 = 0

=> 2 – 2sin²θ + 3sinθ – 3 = 0

=> 2sin²θ – 3sinθ + 1 = 0

=> 2sin²θ – 2sinθ – sinθ + 1 = 0

=> 2sinθ(sinθ – 1) – 1(sinθ – 1) = 0

=> (2sinθ – 1) (sinθ – 1) = 0

=> sinθ = 1/2 or 1

sinθ = 1/2 = 30° [sin90° = 1, but 0° < θ < 90° so, we cannot take this value]

=> So, θ = 30°

The value of (tan2θ + cosec3θ – sec2θ) = (tan60° + cosec90° – sec60°)

=> (√3 + 1 – 2)

=> √3 – 1

Therefore The required value is √3 – 1

Shortcut Trick

If we put θ = 30°, it satisfy the equation 2cos2θ = 3 (1 – sinθ)

So,

=> (tan2θ + cosec3θ – sec2θ)

=> tan 60° + cosec 60° - sec 60°

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=> √3 + 1 - 2

=> √3 - 1

**Q56. Answer: (a) 5.85 cm**

Given:

The perimeters of two similar triangles ABC and PQR = 156 cm and 46.8 cm

BC = 19.5 cm

Calculation:

According to the question

ΔABC ~ ΔPQR

Perimeter of ΔABC/Perimeter of ΔPQR = BC/QR

=> 156/46.8 = 19.5/x

=> 156x = 46.8 × 19.5

=> 156x = 912.6

=> x = (912.6/156)

=> x = 5.85 cm

Therefore The value of x is 5.85 cm

**Q57. Answer: (a) 42(√3 - 1)**

Shortcut Trick

If the angle of elevation (or depression) of a tower of height h changes from θ1 to θ2 as an object moves directly towards it, the distance travelled is:

Distance = h × (cot θ1 − cot θ2)

Here, h = 42 m, θ1 = 30°, θ2 = 45°

Distance = 42 × (cot 30° − cot 45°)

Distance = 42 × (√3 − 1)

Therefore The correct answer is 42(√3 − 1) m.

Alternate Method

Given:

Height of the lighthouse (AB) = 42 m

Angle of depression at initial position C = 30° => Angle of elevation angle ACB = 30°

Angle of depression at final position D = 45° => Angle of elevation angle ADB = 45°

Formula Used:

In a right-angled triangle, tan θ = Perpendicular ÷ Base

Calculations:

In right-angled triangle ΔABD,

=> tan 45° = AB ÷ BD

=> 1 = 42 ÷ BD

=> BD = 42 m

In right-angled triangle ΔABC,

=> tan 30° = AB ÷ BC

=> 1 ÷ √3 = 42 ÷ BC

=> BC = 42√3 m

The distance travelled by the ship is CD, which is the difference between BC and BD.

=> Distance CD = BC − BD

=> Distance CD = 42√3 − 42

=> Distance CD = 42(√3 − 1) m

Therefore The correct answer is 42(√3 − 1) m.

Additional Information

Heights and Distances (Trigonometry)

The angle of elevation is the angle formed between the horizontal reference line and the line of sight when looking up at an object. The angle of depression is the angle formed when looking down from a height.

Two Objects on the Same Side

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If two objects are observed on the ground from a tower of height h at angles θ1 and θ2, the distance separating them is easily calculated as h(cot θ1 − cot θ2).

Two Objects on Opposite Sides

When two objects are situated on opposite sides of a central tower of height h, having respective angles of elevation θ1 and θ2, the total distance between them is h(cot θ1 + cot θ2).

**Q58. Answer: (a) 2**

Shortcut Trick

Use the direct relationship: $(a^3 + b^3 + c^3 - 3abc) = (a + b + c) \times [(a + b + c)^2 - 3(ab + bc + ca)]$

Substitute the given values: $301 = 7 \times [7^2 - 3(ab + bc + ca)]$

=> $301 \div 7 = 49 - 3(ab + bc + ca)$

=> $43 = 49 - 3(ab + bc + ca)$

=> $3(ab + bc + ca) = 6$ => $ab + bc + ca = 2$

Therefore The correct answer is 2.

Alternate Method

Given:

Sum of variables $(a + b + c) = 7$

Sum of cubes $(a^3 + b^3 + c^3 - 3abc) = 301$

Formula Used:

1. $a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - (ab + bc + ca))$

2. $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

Calculations:

=> Let $ab + bc + ca = x$

=> From identity (1): $301 = 7 \times (a^2 + b^2 + c^2 - x)$

=> $a^2 + b^2 + c^2 - x = 43$ => $a^2 + b^2 + c^2 = 43 + x$

=> From identity (2): $(7)^2 = (a^2 + b^2 + c^2) + 2x$

=> $49 = (43 + x) + 2x$

=> $49 = 43 + 3x$

=> $3x = 49 - 43$

=> $3x = 6$

=> $x = 2$

Therefore The correct answer is 2.

Additional Information

Special Case: $a + b + c = 0$

If the sum of variables is zero, then $a^3 + b^3 + c^3 = 3abc$.

Alternative Form of Identity

$a^3 + b^3 + c^3 - 3abc = 1/2(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$.

Square of Trinomial

The expression $(a + b + c)^2$ always equals $a^2 + b^2 + c^2 + 2(ab + bc + ca)$.

**Q59. Answer: (a) 16**

Given:

SP of 3 dozens oranges = Rs. 405

Loss = 25%

Concept used:

3 dozen = 36 oranges [1 dozen = 12 oranges]

Calculation:

According to the question

SP of 36 oranges = Rs. 405

Cost price of 36 oranges = Rs. (405/75 × 100)

=> Rs. 540

Now,

He needs to earn a profit of 20% in the transaction = Rs. (540 × 120/100)

=> Rs. 648
Now,
Oranges should he sell for Rs. 288 is
=> (36/648 × 288)
=> (288/18)
=> 16
Therefore The required oranges is 16
Shortcut Trick
Concept used:
(N1 × P1)/Rs1 = (N2 × P2)/Rs2
N1 = 36, P1 = 75, Rs1 = 405 and N2 = ?, P2 = 120, Rs2 = 288
Calculation:
=> (36 × 75)/405 = (N2 × 120)/288
=> N2 = 16

**Q60. Answer: (d) 12.5**

Calculation:
The total imports in 2014 and 2016 = (300 + 400) = 700
The total exports in 2014 and 2016 = (360 + 440) = 800
Required percentage = [(800 – 700)/800 × 100]
=> (100/800 × 100)
=> 12.5%
Therefore The required percentage is 12.5%

**Q61. Answer: (b) 21,168**

Given:
The sides of a triangular park = 60m, 112m and 164m
The rate of levelling a triangular park = Rs. 10.50 $m^2$
Formula used:
S = (a + b + c)/2
By Heron's formula
Area of triangle = √s(s – a)(s – b)(s – c)
Calculation:
As we know,
S = (a + b + c)/2
=> (60 + 112 + 164)/2
=> 336/2
=> 168 m
Now,
Area of triangle = √s(s – a)(s – b)(s – c)
=> √168(168 – 60)(168 – 112)(168 – 164)
=> √168 × 108 × 56 × 4)
=> √(2 × 2 × 2 × 3 × 7 × 2 × 2 × 3 × 3 × 3 × 2 × 2 × 2 × 7 × 2 × 2)
=> (2 × 2 × 2 × 2 × 2 × 7 × 3 × 3)
=> 2016 $m^2$
Now,
The cost of levelling of 1 $m^2$ of the park = 10.50
The cost of levelling of 2016 $m^2$ of the park = (10.50 × 2016)
=> Rs. 21,168
Therefore The required cost is Rs. 21,168

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**Q62. Answer: (a) 8.8**

Given:

Chords AB and CD of a circle intersect externally at P.

CD = 11.6 cm

PD = 6.4 cm

PB = 7.2 cm

Concept used:

Using basic proportionality theorem,

Calculation:

Let the value of AB be x

Then, PA = PB + AB

=> PA = (7.2 + x) cm

Again,

PC = PD + CD

=> PC = (6.4 + 11.6) = 18 cm

Now,

Using basic proportionality theorem,

PB × PA = PD × PC

=> 7.2 × (7.2 + x) = 6.4 × 18

=> 51.84 + 7.2x = 115.2

=> 7.2x = (115.2 – 51.84)

=> 7.2x = 63.36

=> x = (63.36/7.2)

=> x = 8.8 cm

Therefore The required value of AB is 8.8 cm

**Q63. Answer: (d) –1**

Given:

x2 + 1 – 2x = 0

Formula used:

$(a – b)^2 = a^2 + b^2 – 2ab$

Calculation:

x2 + 1 – 2x = 0

=> $(x – 1)^2 = 0$

=> x = 1

Now,

$x2 (x2 – 2) = 1^2(1^2 – 2)$

=> 1(1 – 2)

=> (1 – 2)

=> -1

Therefore The required value is -1

**Q64. Answer: (c) 45√2**

Given:

x2 – 3√ 2x + 1 = 0

Formula used:

$(x + 1/x)^3 = x3 + 1/x3 + 3(x + 1/x)$

Calculation:

x2 – 3√ 2x + 1 = 0

Dividing by x, we get

=> x – 3√2 + 1/x = 0

=> x + 1/x = 3√2

Now,
$(x + 1/x)^3 = x^3 + 1/x^3 + 3(x + 1/x)$
$\Rightarrow (3\sqrt{2})^3 = x^3 + 1/x^3 + 3(3\sqrt{2})$
$\Rightarrow 54\sqrt{2} = x^3 + 1/x^3 + 9\sqrt{2}$
$\Rightarrow x^3 + 1/x^3 = (54\sqrt{2} – 9\sqrt{2})$
$\Rightarrow x^3 + 1/x^3 = 45\sqrt{2}$
Therefore The required value is $45\sqrt{2}$
Alternate Method
Concept used:
If $x + 1/x = a$ then $x3 + 1/x^3 = a^3 - 3a$
Calculation:
According to the question,
$\Rightarrow x + 1/x = 3\sqrt{2}$ then,
$\Rightarrow x3 + 1/x^3 = (3\sqrt{2})^3 - 3(3\sqrt{2})$
$\Rightarrow x3 + 1/x^3 = 54\sqrt{2} - 9\sqrt{2}$
$\Rightarrow x3 + 1/x3 = 45\sqrt{2}$

**Q65. Answer: (a) 9,000**

Given:
Rate = 10%
Time = 3 years
The difference between the CI and SI = Rs. 279
Formula used:
SI = (P × R × T)/100
Amount = P(1 + r/100)^t
CI = A – P
Calculation:
Let Principal be x
SI = (x × 10 × 3)/100
$\Rightarrow$ 3x/10
Now,
Amount = P(1 + r/100)^t
$\Rightarrow x(1 + 10/100)^3$
$\Rightarrow [x(100 + 10)/100]^3$
$\Rightarrow [x(110/100)^3]$
$\Rightarrow$ (x × 11/10 × 11/10 × 11/10)
$\Rightarrow$ 1331x/1000
Now,
CI = A – P
$\Rightarrow$ CI = (1331x/1000 – x)
$\Rightarrow$ (1331x – 1000x)/1000
$\Rightarrow$ 331x/1000
The difference between the CI and SI = Rs. 279
$\Rightarrow$ 331x/1000 – 3x/10 = 279
$\Rightarrow$ (331x – 300x)/1000 = 279
$\Rightarrow$ 31x/1000 = 279
$\Rightarrow$ x = (9 × 1000)
$\Rightarrow$ Rs. 9000
Therefore The required sum is Rs. 9000
Shortcut Trick
Formula used:
$(P\times r^2 \times (300 + r))/(100^3)$ = Difference between C.I & S.I for 3 years

Calculation:

=> (P× $10^2$ × (300 + 10))/($100^3$) = 279

=> P = (279 × $100^3$)/(100 × 310)

=> P = 9000

**Q66. Answer: (c) 5/6**

Concept Used:

Follow the BODMAS rule according to the table given below:

Calculation:

8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (9 – 11) ÷ (2 ÷ 4 of 4)}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (9 – 11) ÷ (2 ÷ 16)}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (9 – 11) ÷ 1/8}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (9 – 11) × 8}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 – (-2) × 8}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {4 × 3 + 2 × 8}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of {12 + 16}]

=> 8 ÷ 2 of 3 – [56 ÷ 4 of 28]

=> 8 ÷ 2 of 3 – [56 ÷ 112]

=> 8 ÷ 2 of 3 – 1/2

=> 8 ÷ 6 – 1/2

=> 4/3 – 1/2

=> (8 – 3)/6

=> 5/6

Therefore The required value is 5/6

**Q67. Answer: (d) 9 : 7**

Calculation:

The total production of paper by company A in 2016 and 2019 = (120 + 150) = 270

The total production of paper by company B in 2014 and 2017 = (60 + 150) = 210

The ratio of the total production of paper by company A in 2016 and 2019 to the total production of paper by company B in 2014 and 2017

=> (270 : 210)

=> 9 : 7

Therefore The required ratio is 9 : 7

**Q68. Answer: (b) 47.3**

Given:

The average of 19 numbers = 48

The average of the first 7 numbers = 50.6

The average of last 13 numbers = 47.6

Formula used:

Average = sum of observations/Number of observations

Calculation:

The average of 19 numbers = (19 × 48) = 912

The average of the first 7 numbers = (7 × 50.6) = 354.2

The average of last 13 numbers = (13 × 47.6) = 618.8

Now,

7^(th) number = (618.8 + 354.2 – 912)

=> (973 – 912)

=> 61

Sum of remaining 18 numbers = (912 – 61) = 851

The average of the remaining numbers = (851/18)

=> 47.3

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Therefore The required average is 47.3

Alternate MethodLet a1, a2.....a19 are the number

=> a1 + a2 + ...a19 = (19 × 48) = 912 ----(1)

=> a1 + a2 + ...a7 = (7 × 50.6) = 354.2 ----(2)

=> a7 + a8 + ...a19 = (13 × 47.6) = 618.8 ----(3)

Adding equation (2) and (3)

=> a1 + a2 + ..a7 + a7 + .....a19 = 354.2 + 618.8 = 973

=> a7 + a1 + a2 + .....a19 = 973

=> a7 + 912= 973 [From (1)]

=> a7 = 61

Hecne new sum = 912 - 61 = 851

Therefore New average = 851/18 = 47.3

**Q69. Answer: (a) 4**

Calculation:

The total number of applications received by college A from 2014 to 2018 = (220 + 160 + 250 + 180 + 160) = 970

The average number of applications received by college A from 2014 to 2018 = (970/5) = 194

The total number of applications received by college B from 2014 to 2018 = (150 + 240 + 170 + 150 + 240) = 950

The average number of applications received by college B from 2014 to 2018 = (950/5) = 190

The difference between the average number of applications received by college A from 2014 to 2018 and the average number of applications received by college B from 2014 to 2018 = (194 – 190)

=> 4

Therefore The required difference is 4

**Q70. Answer: (b) 16%**

Calculation:

The total number of medical stores = 50

The medical stores whose daily earning are less than Rs. 1000 = (16 + 10) = 26

The percentage of medical stores whose daily earning are less than Rs. 1000 = (26/50 × 100) = 52

The medical stores whose daily earning are Rs. 1200 and more = (8 + 6 + 4) = 18

The percentage of medical stores whose daily earning are Rs. 1200 and more = (18/50 × 100) = 36

Now,

The difference between the percentage of medical stores whose daily earnings are less than Rs. 1,000 and the percentage of medical stores whose daily earnings are Rs. 1,200 and above

=> (52 – 36)%

=> 16%

Therefore The required difference is 16%

**Q71. Answer: (c) 91.80**

Given:

The marked price of an article = Rs. 480

The two successive discounts = 15% and 10%

Profit = 25%

Here A person first buys and then sell so when he buys a goods is called his cost price and company's selling price

So CP for person CP = MP × (100 - Successive Discount%)/100

Now he sells this on profit of 25%

So SP for person SP = CP × (100 + Profit%)/100

Formula used:

CP = MP × (100 - Successive Discount%)/100

=> CP = Rs. (480 × 85/100 × 90/100)

=> Rs. (3,672,000/10,000)

=> CP = Rs. 367.2

SP = Rs. (367.2 × 125/100)

=> Rs. (367.2 × 5/4)

=> SP = Rs. 459

Calculation:

For the person CP = Rs. 367.2, SP = Rs. 459

Profit = SP - CP

Profit = Rs. (459 - 367.2)

=> Rs. 91.8

Therefore The required profit is Rs. 91.8

**Q72. Answer: (b) 73**

Shortcut Trick

The angle between two chords intersecting inside a circle is half the sum of the central angles of the intercepted arcs.

=> angle AED = (angle AOD + angle BOC) ÷ 2

=> angle AED = (42° + 104°) ÷ 2

=> angle AED = 146° ÷ 2 = 73°

Therefore The correct answer is 73°.

Alternate Method

O

C

D

A

B

E

42°

104°

?

Given:

angle AOD = 42°

angle BOC = 104°

Calculations:

=> Let us construct a line segment joining points A and C.

=> According to the Inscribed Angle Theorem, the angle subtended by an arc at the circumference is exactly half of the angle subtended by it at the centre.

=> For arc AD, angle ACD = angle AOD ÷ 2

=> angle ACD = 42° ÷ 2 = 21°

=> For arc BC, angle BAC = angle BOC ÷ 2

=> angle BAC = 104° ÷ 2 = 52°

=> In ΔACE, the exterior angle is equal to the sum of the two opposite interior angles.

=> The exterior angle at E along the line CD is angle AED.

=> angle AED = angle ACD + angle BAC

=> angle AED = 21° + 52° = 73°

Therefore The correct answer is 73°.

Additional Information

Interior Intersecting Chords Theorem

When two chords intersect inside a circle, the angle formed between them is half the sum of the central angles subtended by the intercepted arcs.

Formula: angle Interior = (Arc1 + Arc2) ÷ 2

Exterior Intersecting Secants Theorem

When two secants intersect outside a circle, the angle formed is half the difference of the central angles subtended by the intercepted arcs.

Formula: angle Exterior = (Major Arc − Minor Arc) ÷ 2

Inscribed Angle Theorem

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An angle inscribed in a circle is exactly half the measure of the central angle that subtends the same arc.
Formula: angle Inscribed = angle Central ÷ 2

**Q73. Answer: (c) 5 : 28**

Given:
The ratio of the first to the second number = 2 : 7
The ratio of the second to the third number = 5 : 8
Calculation:
The ratio of the first to the second number = (2 : 7) × 5
=> 10 : 35
The ratio of the second to the third number = (5 : 8) × 7
=> 35 : 56
The ratio of the first to the second to the third number = 10 : 35 : 56
Now,
The ratio of the first to the third number = (10 : 56)
=> 5 : 28
Therefore The required ratio is 5 : 28

**Q74. Answer: (b) 12**

Given:
X and Y start at the same time to ride from place A to place B, which is 80 km away from A
X travels 4 km per hour slower than Y
Y reaches place B and at once turns back meeting X, 16 km from place B.
Calculation:
Let the speed of X be p km/hr
The speed of Y = (p + 4) km/hr
Distance travelled by Y = (80 + 16) = 96 km/hr
Distance travelled by X = (80 – 16) = 64 km/hr
According to the question
=> 96/(p + 4) = 64/p
=> 96p = 64p + 256
=> 32p = 256
=> p = 8 km
Now,
The speed of Y is (p + 4) = (8 + 4)
=> 12 km/hr
Therefore The required speed of Y is 12

**Q75. Answer: (d) 22.7%**

Given:
The number of voters are males = 55%
Number of males who are illiterate = 40%
Number of females who are literate = 40%
Calculation:
The number of voters are males = 55%
Number of voters who are females = (100 – 55)% = 45%
Number of males who are illiterate = (55 × 40/100)
=> 22
Number of males who are literate = (55 – 22) = 33
Now,
Number of females who are literate = (45 × 40/100)
=> 18
Number of females who are illiterate = (45 – 18) = 27

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The percentage is the number of illiterate females more than that of the illiterate males = [(27 – 22)/22 × 100]

=> (5/22 × 100)

=> 500/22

=> 22.7%

Therefore The required percentage is 22.7%

**Q76. Answer: (b) Potassium**

The correct answer is Potassium.

Key Points

• The fertilizers constitute the essential nutrients needed by the plants, including nitrogen, potassium, and phosphorus.

• The main constituents of fertilizers include- nitrogen, phosphorus, and potassium.

• Hence Potassium is the correct answer.

Additional Information

• Fertilizers are commercial products available in different forms like solid, gas, or liquid.

• Both manure and fertilizers contain salts and organic chemicals that consist of essential plant nutrients such as nitrogen, potassium, phosphorus in known concentrations.

• They make soil fertile and provide nutrients to plants for better growth and higher yield.

• There are six different types of Fertilizers.

• Potassic Fertilizers.

• Complete Fertilizers.

• Phosphate Fertilizers.

• Compound Fertilizers.

• Nitrogenous Fertilizers.

• Organic Nitrogenous Fertilizers.

**Q77. Answer: (c) 1793**

The correct answer is 1793.

Key Points

• The Cornwallis Code was passed in 1793 by Viceroy Lord Cornwallis which contained provisions for governing the policing, judiciary, and civil administration in British India.

• The Cornwallis Code (1793), the enactment by which Lord Cornwallis, governor-general of India, gave legal form to the complex of measures that constituted the administrative framework in British India known as the Cornwallis, or Bengal, system.

Additional Information

• The system, as codified in these regulations, provided that the East India Company’s service personnel be divided into three branches: revenue, judicial, and commercial.

• Private trade was forbidden to the members of the first two branches, and they were instead compensated by a new and generous scale of pay.

• The land revenue assessment (the major source of revenue) was fixed permanently with zamindars or hereditary revenue collectors.

**Q78. Answer: (a) Higher cation exchange capacity of soil**

The correct answer is Higher cation exchange capacity of soil.

Key Points

• Soil fertility decline occurs when the quantities of nutrients removed from the soil in harvested products exceed the quantities of nutrients being applied.

• The nutrient requirements of the crop are met from soil reserves until these reserves cannot meet crop demands.

• This results in a reduction of plant growth and yield.

• Nutrients may be removed from the soil by:

• Growing extensive crops

• Soil erosion

• Leaching.

• Alkalisation of soil

• Salinisation of soil

• Waterlogging

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• Higher cation exchange usually indicates more clay and organic matter is present in the soil, high CEC soils generally have greater water holding capacity than low CEC soils.

• Hence Higher cation exchange capacity of soil is NOT responsible for the loss of fertility of agricultural land.

Additional Information

• Fertility can be maintained with the maintenance of soil organic matter, soil structure, soil nutrient status and satisfactory soil pH.

• This can be achieved in cropping systems by:

• including pasture phases and leguminous crops

• including the addition of soil amendments or fertilisers

• employing a reduced tillage system

• retaining crop residues on site.

**Q79. Answer: (c) 7**

The correct answer is 7.

Key Points

• 7 Rajya Sabha seats come from the state of Assam.

• The Number of Members of the Rajya Sabha to be elected from Each States/Union Territory has been fixed by the Fourth Schedule of the Constitution.

• In India, the seats of states/Union territory are dependent on the Larger Size of the population get more Representatives seats than the states with Smaller Populations.

• This table shows the number of seats allocated to the states or union territory of India.

Additional Information

| Name of states | Number of seats allocated |
|---|---|
| Andhra Pradesh | 11 |
| Gujarat | 11 |
| Madhya Pradesh | 11 |
| Manipur | 1 |
| Nagaland | 1 |
| Mizoram | 1 |
| Chattishgarh | 5 |
| Odisha | 10 |
| Tripura | 1 |
| Sikkim | 1 |
| Telangana | 7 |
| Tamil Nadu | 18 |
| Karnataka | 12 |
| Maharashtra | 19 |
| Rajasthan | 10 |
| Kerala | 9 |
| Arunachal Pradesh | 1 |
| Pondicherry | 1 |
| Goa | 1 |
| West Bengal | 16 |
| Bihar | 16 |
| Jharkhand | 6 |
| Uttar Pradesh | 31 |

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| | |
|---|---|
| Haryana | 5 |
| Punjab | 7 |
| Jammu and Kashmir | 4 |
| New Delhi | 3 |
| Uttarakhand | 3 |
| Himachal Pradesh | 3 |
| Assam | 7 |

**Q80. Answer: (d) Paul R Milgrom and Robert B Wilson**

The correct answer is Paul R Milgrom and Robert B Wilson.

• American economists Paul Milgrom and Robert Wilson have been awarded the 2020 Nobel Prize in economic sciences.

• Milgrom and Wilson, who are professors at Stanford University in California, were recognized for theoretical discoveries that improved how auctions work.

• They also designed auction formats for goods and services that are difficult to sell in a traditional way, such as radio frequencies.

Additional Information

Nobel Prize Winners 2020

| Field | Name |
|---|---|
| Medicine/ Physiology | Harvey J. Alter, Charles M. Rice, and Michael Houghton |
| Physics | 1. Roger Penrose 2. Reinhard Genzel and Andrea Ghez |
| Chemistry | Emmanuelle Charpentier and Jennifer A. Doudna |
| Literature | Louise Glück |
| Peace | World Food Programme (WFP) |
| Economics | Paul Milgrom and Robert Wilson |

**Q81. Answer: (c) Printer**

The correct answer is Printer.

Key Points

• Printer accepts the results produced by the computer in a machine-readable form.

• A printer produces hard copies of the processed data. It enables the user, to print images, text, or any other information onto paper.

Additional Information

• There are 2 types of printers that are there based on their printing techniques.

• A printer is an external output device.

• Two types of printers:

• Impact Printers

• Non-Impact Printers

• Impact Printers:

• An impact printer makes contact with the paper by pressing an inked ribbon against the paper using a hammer.

• Types of Impact Printers:

• Dot-Matrix Printers

• Daisy-Wheel Printers

• Line Printers

• Drum Printer

• Chain Printers

• Band Printers

• Non-Impact Printers:

• Non-impact printers do not use a striking device to produce characters.

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• Types of Non-Impact Printers:
• Ink-Jet Printers
• Laser Printers
• Thermal Printer

**Q82. Answer: (c) United Nations Framework Convention on Climate Change**

The correct answer is United Nations Framework Convention on Climate Change.

Key Points

• The full form of UNFCCC is United Nations Framework Convention on Climate Change.
• The UNFCCC entered into force on 21 March 1994.
• United Nations Framework Convention on Climate Change (UNFCCC) was the first multilateral legal instrument on Climate Change.

Additional Information

• There are now 195 Parties to the UNFCCC. “Momentum for Change: Climate Neutral Now" campaign was initiated by UNFCC.
• Executive Secretary, UNFCCC: Patricia Espinosa.
• The UNFCCC secretariat is part of the United Nations and primarily focuses on developing climate change mitigation strategies at the global level.
• The objective of UNFCCC is to stabilize atmospheric concentrations of greenhouse gases at a level that will prevent dangerous interference with the climate system.
• The UNFCCC is a “Rio Convention”, one of two opened for signature at the “Rio Earth Summit” in 1992 held in Rio de Janeiro, Brazil.

**Q83. Answer: (b) West Bengal**

The correct answer is West Bengal.

• The Buxa Tiger Reserve (BTR) is a 760-square-kilometre tiger reserve located inside the Buxa National Park in West Bengal, India, in the Buxa Hills of the southern hilly area of Bhutan.

Additional Information

• Bird enthusiasts come here to watch and click photographs of the migratory birds that come to this region from colder regions of the northern hemisphere.
• Buxa is a heaven for bird enthusiasts and people can see rare Avian species here.
• It is a 4-day festival in which rare bird species like the greater spotted eagle and great Hornbill are expected to be seen.
• Buxa National Park is also a tiger reserve that was created in 1983 and is the 15th Tiger Reserve of India.
• There are around 284 bird species, 73 mammal species, 450 species of trees, 400 types of herbs, 10 species of bamboo, 150 species of orchids are some of the flora and fauna found in this park.

**Q84. Answer: (a) Athletics**

The correct answer is Athletics.

Key Point

• The Asian Beach Games, or ABG, is a multi-sport event that takes place every four years and brings together participants from all across Asia.
• The Olympic Council of Asia is in charge of organizing the Games (OCA).
• After Haiyang in 2012, Sanya will be the second Chinese city to hold the 6th Asian Beach Games.
• The Asian Olympic Council first announced on April 11th, 2019, that the Games would include 19 sports in 22 disciplines (Ju-Jitsu, Teqball and Woodball were added later).
• As of December 2020, athletics has been included in the Asian Beach Games 2021 programme.

**Q85. Answer: (c) Andhra Pradesh**

The correct answer is Andhra Pradesh.

Key Points

• Sri Bhramaramba Mallikarjuna Temple or Srisailam Temple is a Hindu temple dedicated to the deities Shiva and Parvati is located in Andhra Pradesh.
• This temple is one of the twelve Jyotirlingas of Lord Shiva and one of the eighteen Shakti Peethas of goddess Parvati.
• Shiva is worshipped as Mallikarjuna and is represented by the lingam.

Additional Information

• The temple architecture in India is not the same everywhere.

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• Basically, there are three styles of temple architecture in India:
1. Nagara Style (North India)
2. Dravida Style (South India)
3. Vasara style (Mix of Nagara and Dravida style)
• Nagara Style:
1. Built on a stone platform with steps leading up to it.
2. Have a tower or Shikhara.
3. Have Grabhagriha (A place for the idols of god and goddess).
4. Examples: Kandariya Mahadeo temple at Khajuraho, Lakshamana temple
• Dravida Style:
1. Generally enclosed within a compounded wall.
2. The entrance gateway is known as Gopuram.
3. The shape of the Temple tower is known as Vimana (similar to Shikhara in Nagara style).
4. Large water tanks are common in the temple complex.
5. Examples: Brahadeeshwara temple, Rajarajeswara temple.
• Vasara style:
1. This style of temple architecture is a mix of Nagara and Dravid styles.
2. Examples: Dodda Basappa Temple, Hoysala Temple

**Q86. Answer: (d) Gastritis**

The correct answer is Gastritis.

Key Points

• Helicobacter pylori are bacteria that can cause an infection in the stomach or duodenum (first part of the small intestine).
• It's the most common cause of peptic ulcer disease.
• H. pylori can also inflame and irritate the stomach lining (gastritis).

Additional Information

• Chikungunya virus is transmitted to people through bites of Aedes aegypti and Aedes albopictus mosquitoes.
• Rubella is a mild viral infection that mostly affects children.
• It is also called German measles or three days measles.
• Ringworm is caused by a type of fungus that eats keratin
• The fungus that causes ringworm is called Microsporum.

**Q87. Answer: (c) Battle of Chinhat**

The correct answer is Battle of Chinhat.

Key Points

• Barkat Ahmad led one of the most powerful rebel armies of 5000 soldiers with Ahmadullah Shah as his commander.
• He fought against Henry Lawrence in Chinat, outside Lucknow.
• The confrontation between them is known as the Battle of Chinat.
• Henry Lawrence died as a result of the fierce battle.

Additional Information

• The Battle of Najafgarh was an engagement during the Indian Rebellion of 1857 or the First War of Indian Independence as it has since been termed in Indian histories of the events.
• The famous Battle of Saragarhi was fought on 12 September 1897.
• The battle took place in Tirah which is in present-day Pakistan.
• It was fought between The British Indian Empire and Afghan tribesmen of the area.
• Only 21 Sikh soldiers fought for the British against about 10,000 tribesmen.
• Battle of Kintoor was a conflict between rebel sepoys and troops from East India Company and Kapurthala State.

**Q88. Answer: (c) Ravi**

The correct answer is Ravi.

Key Points

• About Ravi River:
• The Ravi is born as a joint stream generated by the glacier feeds Bhadal and Tantgari that begins in Bara Banghal, Kangra

district.

• It rises in the west of Rohtang Pass in the Kullu hills of Himachal Pradesh and flows through the Chamba valley of the state

• The river has a catchment area of roughly 5,451 square kilometres and is around 158 kilometres long (98 miles).

• Chamba lies on its right bank.

Additional Information

• About Chenab River:

• The Chenab River, the largest river (in terms of volume of water), is formed by the confluence of two streams, Chandra and Bhaga, at Tandi, in Lahaul.

• Before entering Jammu and Kashmir, it runs 122 kilometres (76 miles) and covers an area of 7,500 square kilometres (2,900 square miles) in Himachal Pradesh.

• About Sutlej River:

• The Sutlej River originates in distant Tibet.

• The river flows through the Himalayan and Zaskar ranges and passes the Indo-Tibetan border (near Shipkila).

• Then, from the north, the river Spiti enters Sutlej, and from the south, the Baspa.

• It emerges from the mountains in Bhakra, passing through gorges. Sutlej's catchment area in Himachal Pradesh is around 20,000 square kilometres (7,700 sq mi).

• About Beas River:

• Beas is a tributary of the Indus river and a part of the Indus river system.

• It begins near the Rohtang Pass on the southern end of the Pir Panjal Range and flows about 256 kilometres (159 mi) in Himachal Pradesh.

• It is 460 kilometres long and flows entirely within Indian territory.

**Q89. Answer: (d) adoption of cleaner fuels**

The correct answer is adoption of cleaner fuels.

Key Points

• SAKSHAM is the name of the campaign launched by the Petroleum Conservation Research Association to spread awareness about ‘Green and Clean Energy'.

• The month-long campaign highlights the adverse health and environmental impacts of increasing carbon footprints.

• The idea of the SAKSHAM is to convince consumers to switch to cleaner fuels and bring in behavioural change to use fossil fuel intelligently.

• The campaign activities include cyclotron, farmer workshops, seminars, painting competitions, CNG vehicle driving contests, etc.

• The campaign will spread awareness about seven key drivers-

• moving towards a gas-based economy

• cleaner use of fossil fuels

• greater reliance on domestic sources to drive bio-fuels

• achieving renewable targets with the set deadlines

• increased use of electric vehicles to decarbonize mobility

• increased use of cleaner fuels like Hydrogen

• digital innovation across all energy systems

Confusion Points

• A total of 152 Centre for Financial Literacy and Service Delivery (SAKSHAM Centres) across 77 districts of 13 states were launched under Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM) in October 2021.

**Q90. Answer: (a) Karnataka**

The correct answer is Karnataka.

Key Points

• Karnataka government has unveiled the Farmer Registration and Unified beneficiary Information System (FRUITS).

• FRUITS is an e-governance portal to create a repository of farmland information and farm loan details on a single platform.

• All farmers who will be registered under this will be given an identification number on the portal.

• By using this number, banks and other lending institutions can access the land details of farmers as well as details of their existing borrowings and take a quick decision on lending.

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**Q91. Answer: (c) Uttarakhand**

The correct answer is Uttarakhand.

Key Points

• Suryadhar lake is located at Doiwala, Dehradun Uttarakhand.

• The Suryadhar lake is 550 meters long, 28 meters wide and 10 meters deep with a capacity of 77,000 cubic meters.

Additional Information

• Important Lakes:

| **Largest lake** | **Vembanad lake, Kerala** |
|---|---|
| Longest lake | Vembanad lake, Kerala |
| Largest freshwater lake | Wular Lake, Jammu & Kashmir |
| Largest saline water lake | Chilika Lake, Odisha |
| Highest lake | Cholamu Lake, Sikkim |
| Largest artificial lake | Govind Vallabh Pant Sagar, Uttar Pradesh |
| Largest inland saline water lake | Sambhar Lake, Rajasthan |

**Q92. Answer: (a) Shubha Sharma**

The correct answer is Shubha Sharma.

Key Points

• IAS Officer Shubha Sarma's second book, "The Awasthis of Aamnagri," was published by Niyogi Books in 2020.

• "Fly on the Wall and Other Stories" is her first book.

Additional Information

• Recent books of Chetan Bhagat are "400 Days" and "One arranged Murder".

• Debashish Panigrahi, Senior IPS officer and Director Vigilance of Odisha Police, is the author of the book "Things Left Unsaid."

• Sarabjit Singh Attwal was an Indian national who was convicted by a Pakistani court of terrorism and spying.

• A book was written on his life, "Sarabjit Singh: A Case of Mistaken Identity" by Awais Sheikh.

**Q93. Answer: (a) Extended Binary-Coded-Decimal Interchange Code**

The correct answer is Extended Binary-Coded-Decimal Interchange Code.

Key Points

• EBCDIC which stands for the Extended Binary Coded Decimal Interchange Code, is an 8-bit character encoding used on IBM mainframes and AS/400s.

• This encoding was developed in 1963 and 1964.

• This is a coding system used to represent characters-letters, numerals, punctuation marks, and other symbols in computerized text. A character is represented in EBCDIC by eight-bit.

• EBCDIC can code up to 256 different characters.

Additional Information

• Some important abbreviations used in Computer:

• BIOS - Basic Input Output System

• CAD - Computer-Aided Design

• EDVAC - Electronic Discrete Variable Automatic Computer

• EPROM - Erasable Programmable Read-Only Memory

• FORTRAN - FORmula TRANslation

• GPRS - General Packet Radio Service

**Q94. Answer: (d) Repo rate**

The correct answer is Repo rate.

Key Points

• Repo stands for Repurchase Rate.

• Repo rate is the rate at which the central bank of a country lends money to commercial banks in the event of any shortfall of funds.

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• In the event of inflation, central banks increase the repo rate as this acts as a disincentive for banks to borrow from it. This ultimately reduces the money supply within the economy and thus helps in arresting inflation.

• Repo Rate is the most vital rate for the common man.

• Everything from interest rates on loans to returns on deposits is influenced by this important rate set by the RBI, which is why interest rates on home loans, car loans and other forms of borrowings go up and down supporting the direction of Repo Rate change.

• Similarly, banks adjust bank accounts, fixed deposit returns supported this benchmark.

• Hence Repo rate is used as a primary means of implementing the monetary policy of the Reserve Bank of India.

Additional Information

• Monetary policy refers to the policy of the central bank with regard to the use of monetary instruments under its control to achieve the goals specified in the Act.

• The Reserve Bank of India (RBI) is vested with the responsibility of conducting monetary policy. This responsibility is explicitly mandated under the Reserve Bank of India Act, 1934.

• The primary objective of monetary policy is to maintain price stability while keeping in mind the objective of growth.

• Price stability is a necessary precondition to sustainable growth.

**Q95. Answer: (a) Goa**

The correct answer is Goa.

Key Points

• Shigmo is the celebration of a 'rich, golden harvest of paddy' by the tribal communities of Goa.

• Agricultural communities including the Kunbis, Gawdas and Velips celebrate the festival that also marks the onset of spring.

Additional Information

• Celebrations: Shigmo celebrations last over a fortnight in the months of Phalgun-Chaitra months of the Hindu calendar that correspond with March-April every year.

• Dances: Folk dances like Ghode Modni (a dance of equestrian warriors), Gopha and Phugadi are performed.

• Shigmo is celebrated all over India but in different names:

• North India - Holi.

• Assam and Bengal - Dolyatra.

• South India - Kamadahan.

• Maharashtra - Shimga.

**Q96. Answer: (b) Robert Lewandowski**

The correct answer is Robert Lewandowski.

• Robert Lewandowski is a football player from Poland.

• He won the prestigious award, The Best FIFA Men's Player of the year 2020.

• He prevailed in the final selection against Lionel Messi and Cristiano Ronaldo.

• Currently, he plays for the FC Barcelona.

Additional Information

• Lucy Bronze won The Best FIFA Women's Player of the year 2020.

• Some famous football players of India - Sunil Chhetri, Bhaichung Bhutia, Pronay Halder, Sandesh Jhingan, Gurpreet Singh Sandhu.

**Q97. Answer: (a) ADB**

The correct answer is ADB.

Key Points

• The Asian Development Bank (ADB) signed a $40 million loan to Northern Arc Capital Limited (NACL) to support the livelihoods of microfinance borrowers and MSMEs in India.

• The loan is disbursed to NACL as part of ADB's ongoing COVID-19 response.

• NACL will on-lend the loan proceeds and provide guarantees to financial institutions and individual borrowers.

Additional Information

• ADB:

• Headquarters - Mandaluyong, Philippines.

• President - Masatsugu Asakawa. (Feb 2022)

• Founded On - 19 December 1966.

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**Q98. Answer: (b) Wushu**

The correct answer is Wushu.

Key Points

• National wushu team coach Kuldeep Handoo is the first person from India's Union Territory of Jammu & Kashmir to receive the prestigious Dronacharya Award.

• Mr Handoo is serving as Inspector in Jammu and Kashmir Police Department.

• In his career spanning over 25 years, Kuldeep Handoo has won 11 gold medals at the national level and six at the international stage.

• In Dec 2020 Kuldeep Handoo was appointed Prime Minister Narendra Modi's 'Fit India' Ambassador.

Additional Information

• List of other Dronacharya Awardee in 2020:

• Dharmendra Tiwary (Archery).

• Purushotham Rai (Athletics).

• Shiv Singh (Boxing).

• Romesh Pathania (Hockey).

• Krishan Kumar Hooda (Kabaddi).

• Vijay Bhalchandra Munishwar (Para Powerlifting).

• Naresh Kumar (Tennis).

• Om Parkash Dahiya (Wrestling)

**Q99. Answer: (d) Fourth**

The correct answer is Fourth.

Key Points

• Rajya Sabha seats are allocated by the Fourth Schedule in the Indian Constitution.

• The Number of Members of the Rajya Sabha to be elected from Each state/Union Territory has been fixed by the Fourth Schedule of the Constitution.

• In India, the seats of states/Union territory are dependent on the Larger Size of the population gets more Representatives seats than the states with Smaller Populations.

Additional Information

• This table shows the number of seats allocated to the states or union territory of India.

| Name of states | Number of seats allocated |
|---|---|
| Andhra Pradesh | 11 |
| Gujarat | 11 |
| Madhya Pradesh | 11 |
| Manipur | 1 |
| Nagaland | 1 |
| Mizoram | 1 |
| Chattishgarh | 5 |
| Odisha | 10 |
| Tripura | 1 |
| Sikkim | 1 |
| Telangana | 7 |
| Tamil Nadu | 18 |
| Karnataka | 12 |
| Maharashtra | 19 |
| Rajasthan | 10 |
| Kerela | 9 |

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| | |
|---|---|
| Arunachal Pradesh | 1 |
| Pondicherry | 1 |
| Goa | 1 |
| West Bengal | 16 |
| Bihar | 16 |
| Jharkhand | 6 |
| Uttar Pradesh | 31 |
| Haryana | 5 |
| Punjab | 7 |
| Jammu and Kashmir | 4 |
| New Delhi | 3 |
| Uttarakhand | 3 |
| Himachal Pradesh | 3 |
| Assam | 7 |
| Nominated Members | 12 |

**Q100. Answer: (a) Bengaluru**

The correct answer is Bengaluru.

Key Points

• Rajnath Singh (Union Minister of Defence) recently unveiled India's first indigenously developed driverless metro car in Bengaluru.

• The Driverless Metro Car is manufactured by BEML.

Additional Information

• According to BEML, state-of-the-art driverless metro cars are made up of stainless steel bodies with a capacity of carrying 2280 passengers in a six-cars Metro train set.

• BEML bagged a total order of 576 cars for Mumbai Metropolitan Region Development Authority (MMRDA)'s MRS1 project and the supply is scheduled progressively up to January 2024.

• BEML recently opened its Depot office at Charkop Metro Depot, MMRDA, Mumbai for commissioning, testing, and round-the-clock services for Driverless Metro cars.

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