



SSC CGL 7th March 2020 Shift-2

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General Intelligence and Reasoning

Instructions

For the following questions answer them individually

Question 1

Select the letter will replace the question mark (?) in the following series.

C, B, B, C, Z, E, W, H, S, ?, N

A L

B K

C P

D I

Answer: A

Explanation:

There are 2 series,

1st - C, B, Z, W, S, N

2nd - B, C, E, H, ?

2nd series follows pattern as,

$B + 1 = C$

$C + 2 = E$

$E + 3 = H$

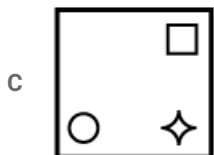
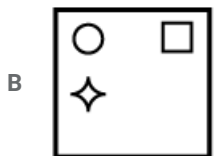
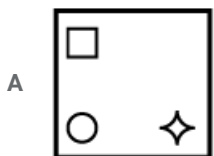
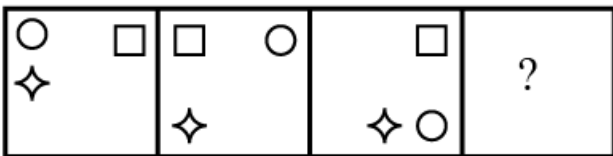
$H + 4 = L$

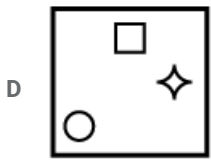
∴ The correct answer is option A.

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Question 2

Select the figure that can replace the question mark (?) in the following series.





Answer: A

Question 3

Select the option in which the numbers are related in the same way as are the numbers in the given set.
(45, 24, 441)

A (30, 60, 1024)

B (41, 18, 630)

C (50, 30, 480)

D (35, 17, 324)

Answer: D

Explanation:

In (45, 24, 441),

$$(45 - 24)^2 = (21)^2 = 441$$

Similarly,

In (35, 17, 324),

$$(35 - 17)^2 = (18)^2 = 324$$

∴ The correct answer is option D.

Question 4

The relationship of Diabetes with blood sugar is the same as the relationship of high blood pressure with _____

A Cells of the body

B Heart

C Red Blood Cells

D Blood Pressure

Answer: D

Explanation:

The relationship of Diabetes with blood sugar is the same as the relationship of high blood pressure with blood pressure.

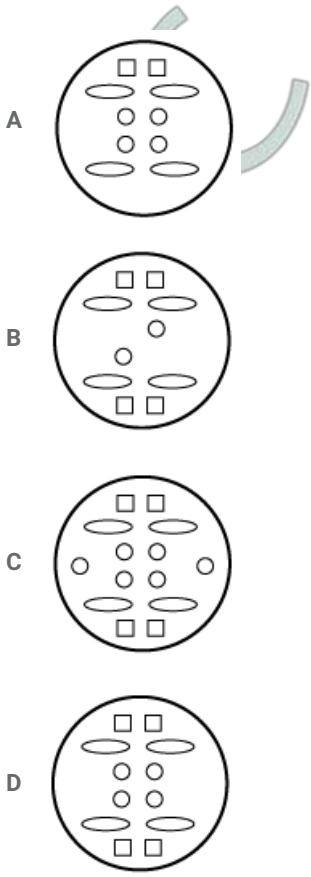
∴ The correct answer is option D.

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Question 5

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?





Answer: D

Question 6

Study the given pattern carefully and select the number that can replace the question mark(?) in it.

14	17	22
49	61	?
189	237	317

- A 83
- B 71
- C 79
- D 81

Answer: D

Explanation:

$14 \times 4 - 7 = 49, 49 \times 4 - 7 = 189$

$17 \times 4 - 7 = 61, 61 \times 4 - 7 = 237$

Similarly,

$22 \times 4 - 7 = 81, 81 \times 4 - 7 = 317$

∴ The correct answer is option D.

Question 7

Select the letter-cluster that can replace the question mark (?) in the following series.
PERSONA, ANPERSO, ANOSPER, ?

- A ANOSERP
- B NOSAREP
- C ANSORPE
- D ANOSREP

Answer: D

Explanation:

The series follows pattern as,
 PERSONA, ANPERSO, ANOSPER, ANOSREP
 ∴ The correct answer is option D.

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Question 8

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:

1. All toys are pens.
2. All games are pens.

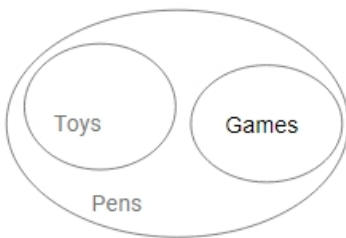
Conclusions:

- I. No toy is a game.
- II. No pen is a game.
- III. Some toys are games.

- A Only conclusions I and II follow.
- B Only conclusions II and III follow.
- C All conclusions I, II and III follow.
- D Either conclusion I or III follows.

Answer: D

Explanation:



From Venn diagram,
 Either conclusion I or III follows.
 ∴ The correct answer is option D.

Question 9

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

Office : Work

- A School : Study
- B House: Bricks
- C Hospital : Director

D Court : Lawyer

Answer: A

Explanation:

People goes to office for work similarly,
Student goes to school for study.

∴ The correct answer is option A.

Question 10

Four words have been given, out of which three are alike in some manner and one is different. Select the odd word.

A Litre

B Distance

C Minute

D Kilogram

Answer: B

Explanation:

Except option B remaining are all are the units of measurement.

∴ The correct answer is option b.

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Question 11

$A - B$ means 'A is the mother of B';

$A \times B$ means 'A is the sister of B';

$A \div B$ means 'A is the daughter of B'.

Which of the following expressions means 'U is the daughter of Q'?

A $Q - Z \div U \times K$

B $Q - Z \times U \div K$

C $K - Z \div U \times Q$

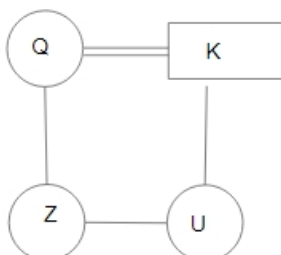
D $K - U \div Z \times Q$

Answer: B

Explanation:

From the Option C, 'U' is the daughter of 'Q'.

In the diagram, Circle shows the female, square shows the male, vertical lines show the generation, single horizontal line shows the brother/sister and double horizontal lines show the couple.



∴ The correct answer is option B.

Question 12

Select the option that is related to the third number in the same way as the second number is related to the first number.

11 : 265 :: 20 : ?

- A 385
- B 481
- C 388
- D 480

Answer: B

Explanation:

$$11 \times 24 + 1 = 265$$

$$20 \times 24 + 1 = 481$$

∴ The correct answer is option B.

Question 13

In a certain code language, 'SOLID' is coded as '64' and 'POUR' is coded as '74'. How will 'TON' be coded as in that language?

- A 49
- B 60
- C 85
- D 52

Answer: D

Explanation:

$$\text{SOLID} = (19 + 1) + (15 + 1) + (12 + 1) + (9 + 1) + (4 + 1) = 64$$

$$\text{POUR} = (16 + 1) + (15 + 1) + (21 + 1) + (18 + 1) = 74$$

Similarly,

$$\text{TON} = (20 + 1) + (15 + 1) + (14 + 1) = 52$$

∴ The correct answer is option D.

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Question 14

Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the number-pair that is different from the rest.

- A 44 : 136
- B 27 : 85
- C 33 : 109
- D 30 : 94

Answer: C

Explanation:

$$44 \times 3 + 4 = 132 + 4 = 136$$

$$27 \times 3 + 4 = 81 + 4 = 85$$

$$33 \times 3 + 4 = 99 + 4 = 103$$

$$30 \times 3 + 4 = 90 + 4 = 94$$

∴ The correct answer is option C.

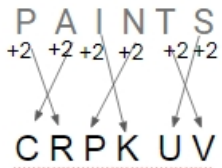
Question 15

In a certain code language, 'PAINTS' is written as 'CRPKUV'. How will 'PURITY' be written as in that language?

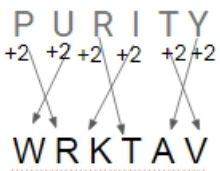
- A WRKTAV
- B XSISBM
- C WRKSNU
- D VSKTAZ

Answer: A

Explanation:



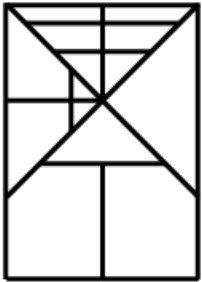
Similarly,



∴ The correct answer is option A.

Question 16

How many triangles are there in the given figure?



- A 19
- B 21
- C 17
- D 20

Answer: A

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Question 17

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

- A NOSV
- B TWZC
- C PSVY
- D EHKN

Answer: A

Explanation:

$$N + 1 = O + 4 = S + 3 = V$$

$$T + 3 = W + 3 = Z + 3 = C$$

$$P + 3 = S + 3 = V + 3 = Y$$

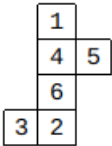
$$E + 3 = H + 3 = K + 3 = N$$

Except option A, remaining all follow a unique pattern.

∴ The correct answer is option A.

Question 18

A cube is made by folding the given sheet. In the cube so formed, which of the following pairs of numbers will be on opposite sides?



- A 1 and 2
- B 2 and 4
- C 1 and 5
- D 3 and 6

Answer: B

Explanation:

1 opposite to 6, 4 opposite to 2 and 3 opposite to 5.

∴ The correct answer is option B.

Question 19

Select the correct mirror image of the given alphanumeric-cluster when a vertical mirror is placed on the right side of the cluster.

6 5 4 H B M A

- A **A M B H 4 2 9**
- B **A M B H 4 2 6**
- C **A M B H 2 9**
- D **6 2 4 H B M A**

Answer: B

Question 20

Arrange the following words in the order in which they would appear in an English dictionary.

1. Temper
2. Temple
3. Tamarind
4. Tender
5. Tenacity

- A 3, 1, 5, 4, 2
B 3, 2, 1, 4, 5
C 1, 3, 2, 5, 4
D 3, 1, 2, 5, 4

Answer: D

Explanation:

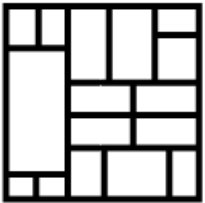
Order of the words according to the English dictionary,
Tamarind, Temper, Temple, Tenacity, Tender
∴ The correct answer is option D.

Question 21

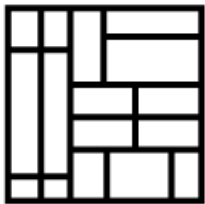
Select the option in which the given figure is embedded (rotation is not allowed).



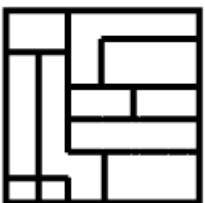
A



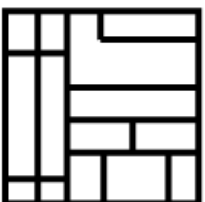
B



C



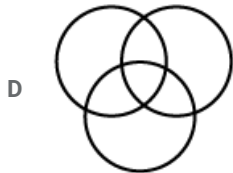
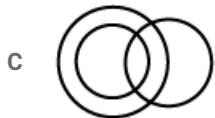
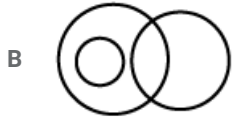
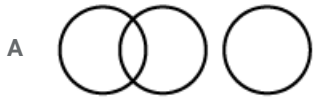
D



Answer: B

Question 22

Which of the following Venn diagrams best represents the relationship between the following classes?
Accountants, Girls, Internet users



Answer: D

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Question 23

Select the number that can replace the question mark (?) in the following series.
35, 36, 40, 49, ?, 81

A 73

B 55

C 56

D 60

Answer: C

Explanation:

The series follows pattern as,

$$35 + 1^2 = 36$$

$$36 + 2^2 = 36 + 4 = 40$$

$$40 + 3^2 = 40 + 9 = 49$$

$$49 + 4^2 = 49 + 16 = 65$$

$$65 + 5^2 = 65 + 25 = 90$$

∴ The correct answer is option C.

Question 24

If 'A' stands for 'subtraction', 'B' stands for 'multiplication', 'C' stands for 'addition', and 'D' stands for 'division', then what is the value of the following expression?

27 A 8 B 5 C (11 C 3) B 5 C 36 D 6

- A 24
- B 20
- C 63
- D 60

Answer: C

Explanation:

27 A 8 B 5 C (11 C 3) B 5 C 36 D 6

On changing the alphabets,

$$\begin{aligned} & 27 - 8 \times 5 + (11 + 3) \times 5 + 36 \div 6 \\ & = 27 - 40 + (14) \times 5 + 6 \\ & = 27 - 40 + 70 + 6 \\ & = 63 \end{aligned}$$

∴ The correct answer is option C.

Question 25

What day of the week was 31 January 2007?

- A Monday
- B Tuesday
- C Thursday
- D Wednesday

Answer: D

Explanation:

Number of odd days in 2006 = 7

(∵ number of Leap year from 2000 to 2007 = 1(2004))

Odd days in 31 January = 31

Total odd days = (31 + 7) = 38

Odd day = $38/7 = 3$ remaining

The day of the week was Wednesday.

∴ The correct answer is option D.

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General Awareness

Instructions

For the following questions answer them individually

Question 26

Who wrote the play 'Mricchakatika' (The Little Clay Cart), a social drama with touches of grim reality?

- A Raidasa
- B Magh
- C Kalidasa
- D Sudraka

Answer: D

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Question 27

In which part of India are the Patkai Bum hills located?

- A Southern part of India
- B Eastern part of India
- C Northern part of India
- D Western part of India

Answer: B

Question 28

Which one of the following statements is INCORRECT?

- A Brass is a mixture of 30% zinc and 70% copper.
- B Evaporation causes cooling.
- C The measurable unit of pressure is denoted in Metre.
- D Matter is made up of small particles.

Answer: C

Question 29

Who won the 'ICC (International Cricket Council) Spirit of Cricket, 2019' award?

- A Pat Cummins
- B Ben Stokes
- C Rohit Sharma
- D Virat Kohli

Answer: D

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Question 30

In which year did the battle of Khanua (Khanwa) take place between Babur and the Rajput forces led by Rana Sanga?

- A 1529
- B 1522
- C 1527
- D 1526

Answer: C

Question 31

In which year did the Third Round Table Conference take place?

- A 1932
- B 1928
- C 1929
- D 1930

Answer: A

Question 32

What is Gotabaya Rajapaksa's nationality?

- A Burmese
- B Bangladeshi
- C Sri Lankan
- D Indonesian

Answer: C

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Question 33

Where were the Khelo India Youth Games, 2020 held?

- A Guwahati
- B Chandigarh
- C Bhopal
- D New Delhi

Answer: A

Question 34

Which of the following can be diagnosed with the Widal test?

- A Typhoid fever
- B Tuberculosis
- C Cancer
- D AIDS

Answer: A

Question 35

Which of the following is one of the Articles of the Constitution of India that mentions the Comptroller and Auditor General of India?

- A 156
- B 352
- C 280
- D 148

Answer: D

Explanation:

Article 148 of Indian Constitution says that, There shall be a **Comptroller and Auditor-General in India**. He is appointed by the President of India.

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Question 36

Who discovered cells in the human body?

- A Charles Darwin
- B Robert Hooke
- C Herbert Spencer
- D Albert Einstein

Answer: B

Question 37

Who is the author of the book titled 'The Anarchy: The East India Company, Corporate Violence, and the Pillage of an Empire'?

- A VP Menon
- B William Dalrymple
- C Shashi Tharoor
- D Pankaj Mishra

Answer: B

Question 38

Which of the following martial art forms is practiced in the state of Punjab and West Bengal?

- A Lathi
- B Mardaani khel
- C Kalaripayattu
- D Thang-ta

Answer: A

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Question 39

Where was the 107th edition of the Indian Science Congress held?

- A Bengaluru
- B Chennai
- C Lucknow
- D Dehradun

Answer: A

Question 40

The tidal mouth of a river where fresh and saline water get mixed is known as a/an ____.

- A Gorge
- B Archipelago
- C Fold
- D Estuary

Answer: D

Question 41

A situation where the expenditure of the government exceeds its revenue is known as ____.

- A Default
- B Devaluation
- C Deficit Financing
- D Morbidity

Answer: C

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Question 42

Which organisation launched the Agricultural Marketing and Farmer Friendly Reforms Index (AMFFRI) in 2016?

- A Reserve Bank of India
- B NITI Aayog
- C National Institute of Public Finance and Policy (NIPFP)
- D Indian Institute of Public Administration

Answer: B

Question 43

Who among the following was NOT associated with the revolt of 1857?

- A Kunwar Singh
- B Begum Hazrat Mahal
- C Mangal Pandey
- D Bhagat Singh

Answer: D

Question 44

Who among the following was NOT a recipient of the Arjuna Awards in 2019?

- A Swapana Burman
- B Mezban Patel
- C Poonam Yadav
- D Ravindra Jadeja

Answer: B

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Question 45

On which lake is the world's only floating post office situated?

- A Wular Lake
- B Dal Lake
- C Chilika Lake
- D Loktak Lake

Answer: B

Question 46

What is the name of the anti-hijacking exercise conducted by the Indian Navy in collaboration with the Indian Coast Guard?

- A Apharan
- B Indra
- C Ekuverin
- D Nagah

Answer: A

Question 47

Who among the following was known as 'Andhra Kesari'?

- A T. Prakasam
- B Khan Abdul Ghaffar Khan

C Mahatma Gandhi

D Chittaranjan Das

Answer: A

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Question 48

Which of the following schedules of the Constitution of India has been INCORRECTLY matched with its content?

A Second Schedule - Languages

B First Schedule - The states and the union territories

C Third Schedule - Forms of oath or affirmations

D Fourth Schedule - Allocation of seats in the council of states

Answer: A

Question 49

Which of the following is caused by a virus named 'Varicella zoster'?

A Chickenpox

B Polio

C Cholera

D Rabies

Answer: A

Question 50

Which of the following is used for removing permanent hardness of water?

A Lime

B Washing soda

C Bleaching powder

D Baking soda

Answer: B

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Quantitative Aptitude

Instructions

For the following questions answer them individually

Question 51

If 18 men can cut a field in 35 days, then in how many days can 21 men cut the same field?

- A 27
- B 28
- C 30
- D 32

Answer: C

Explanation:

Total work = man \times days

Total work is same in both condition so,

$$18 \times 35 = 21 \times d$$

$$d = 630/21 = 30 \text{ days}$$

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Question 52

The perimeter of an isosceles triangle is 50 cm. If the base is 18 cm, then find the length of the equal sides.

- A 18 cm
- B 25 cm
- C 16 cm
- D 32 cm

Answer: C

Explanation:

The perimeter of an isosceles triangle = 50 cm

$$\text{Base} + 2 \times \text{length of equal side} = 50$$

$$2 \times \text{length of equal side} = 50 - 18 = 32$$

$$\text{Length of equal side} = 32/2 = 16 \text{ cm}$$

Question 53

A man buys two watches 'A' and 'B' at a total cost of ₹800. He sells both watches at the same selling price, and earns a profit of 18% on watch 'A' and incurs a loss of 22% on watch 'B'. What are the cost prices of the two watches? (two place after decimal).

- A A = ₹350.32 and B = ₹450.68
- B A = ₹318.37 and B = ₹481.63
- C A = ₹220 and B = ₹580
- D A = ₹317 and B = ₹483

Answer: B

Explanation:

Let the selling price be x.

Total cost price = cost price for A + cost price for B

$$800 = \frac{x}{100+18} \times 100 + \frac{x}{100-22} \times 100$$

$$8 = \frac{x}{118} + \frac{x}{78}$$

$$78x + 118x = 8 \times 118 \times 78$$

$$x = 73632/196 = 375.67$$

$$\text{Cost price for A} = \frac{375.67}{118} \times 100 = \text{Rs.}318.37$$

$$\text{Cost price for B} = 800 - 318.37 = \text{Rs.}481.63$$

Question 54

The cost price of goods, for a shopkeeper, was X. He marked them at 15% above the cost price. Finally, he sold the goods at a discount of 25%. What is his profit/loss percentage ?

- A 13% Loss
- B 12% Profit
- C 13.5% Profit
- D 13.75% Loss

Answer: D

Explanation:

Cost price of goods = x

$$\text{Marked price} = x \times \frac{115}{100} = 1.15x$$

Discount = 25%

$$\text{Selling price} = 1.15x \times \frac{75}{100} = 0.8625x$$

$$\text{Loss} = x - 0.8625x = 0.1375x$$

$$\text{Loss\%} = \frac{0.1375x}{x} \times 100 = 13.75\%$$

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Question 55

The following table shows the age-wise brand ownership of mobile phone handsets.

Brands	1 year old	1 to 2 years old	2 to 5 years old	More than 5 years old
A	15%	45%	40%	
B	5%	15%	25%	55%
C	10%	10%	10%	70%
D	25%	55%	20%	
E	15%	50%	20%	15%

If a total of 5000 'C' mobile phone sets are sold till date, then how many are more than one year old?

- A 4200
- B 4500
- C 4350
- D 4000

Answer: B

Explanation:

Number of mobile phone sets are sold till date = 5000

Percentage mobile phone sets are sold more than one year old = 10 + 10 + 70 = 90%

$$= 5000 \times \frac{90}{100} = 4500$$

Question 56

The following table shows the number of employees working in various departments of an organisation from 2016 to 2019.

Years	Production	Marketing	Corporate	Research
2016	500	130	50	145
2017	940	146	60	140
2018	1000	160	70	146
2019	1010	150	75	150

In which year were the maximum number of employees working in the organization?

- A 2019
- B 2017
- C 2016
- D 2018

Answer: A

Explanation:

Number of employees working in year 2016 = $500 + 130 + 50 + 145 = 825$

Number of employees working in year 2017 = $940 + 146 + 60 + 140 = 1286$

Number of employees working in year 2018 = $1000 + 160 + 70 + 146 = 1376$

Number of employees working in year 2019 = $1010 + 150 + 75 + 150 = 1385$

In 2019 year were the maximum number of employees working in the organization.

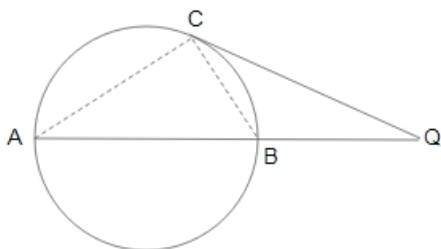
Question 57

AB is a diameter of a circle with centre O. The tangent at a point C on the circle meets AB produced at Q. If $\angle CAB = 42^\circ$, then what is the measure of $\angle CBA$?

- A 45°
- B 47°
- C 48°
- D 37°

Answer: C

Explanation:



$$\angle C = 90^\circ$$

$\triangle ABC$,

$$\angle CAB + \angle C + \angle CBA = 180^\circ$$

$$\angle CBA = 180 - 90 - 42 = 48^\circ$$

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Question 58

If radius of a circle is decreased by 11%, then the total decrease in the area of the circle is given as:

- A 19.50%
- B 20.79%
- C 20.50%
- D 21%

Answer: B

Explanation:

Initially Area = πr^2

After 11% decrements of the radius,

$$r_1 = r \times \frac{88}{100} = 0.88r$$

$$\text{Area} = \pi(0.88r)^2 = \pi \times 0.7744r^2$$

$$\text{Total decrease in the area of the circle} = \frac{\pi r^2 - 0.7744\pi r^2}{\pi r^2} \times 100 = 22.56\%$$

Question 59

If the perimeter of a certain rectangle is 50 units and its area is 150 sq. units, then how many units is the length of its shorter side?

- A 9
- B 12
- C 10
- D 15

Answer: C

Explanation:

Let the side of rectangle be x and y.

Perimeter of a rectangle = 50 units

$$2(x + y) = 50$$

$$x + y = 25 \text{ ---(1)}$$

Area = 150

$$xy = 150$$

$$x = 150/y$$

From equation (1),

$$(150/y) + y = 25$$

$$150 + y^2 = 25y$$

$$y^2 - 25y + 150 = 0$$

$$y^2 - 15y - 10y + 150 = 0$$

$$y(y - 15) - 10(y - 15) = 0$$

$$(y - 15)(y - 10) = 0$$

$$y = 15 \text{ or } y = 10$$

From equation (1),

When $y = 15$

$$15 + x = 25$$

$$x = 10$$

When $y = 10$

$$10 + x = 25$$

$$x = 15$$

Sides are 10 and 15.

Length of shorter side = 10

Question 60

The value of $18 \div (44 \div 5 \text{ of } 82) - \frac{2}{5} \times 13 \div 5 \text{ of } 13 + 20$ is:

A $3\frac{1}{2}$

B $1\frac{1}{2}$

C $1\frac{1}{4}$

D $3\frac{1}{8}$

Answer: B

Explanation:

$$\begin{aligned} & 18 \div (44 \div 5 \text{ of } 82) - \frac{2}{5} \times 13 \div 5 \text{ of } 13 + 20 \\ &= \frac{9}{8} \div \left(\frac{17}{4} \div 5 \text{ of } \frac{17}{2} \right) - \frac{2}{5} \times \frac{4}{3} \div 5 \text{ of } \frac{5}{3} + 20 \\ &= \frac{9}{8} \div \left(\frac{17}{4} \div 10 \right) - \frac{2}{5} \times \frac{4}{3} \div 3 + 20 \\ &= \frac{9}{8} \div \left(\frac{17}{4} \times \frac{10}{51} \right) - \frac{2}{5} \times \frac{4}{3} \times \frac{3}{4} + 20 \\ &= \frac{9}{8} \div \frac{5}{6} - \frac{2}{5} + 20 \\ &= \frac{9}{8} \times \frac{6}{5} - \frac{2}{5} + 20 \\ &= \frac{27}{20} - \frac{2}{5} + 20 = 2 = 1\frac{1}{2} \end{aligned}$$

General Science Notes for SSC CGL

Question 61

Expand $\left(\frac{x}{3} + \frac{y}{5}\right)^3$

A $\frac{x^3}{27} + \frac{x^2y}{25} + \frac{xy^2}{25} + \frac{y^3}{125}$

B $\frac{x^3}{25} + \frac{x^2y}{15} + \frac{xy^2}{25} + \frac{y^3}{125}$

C $\frac{x^3}{27} + \frac{xy}{15} + \frac{xy^2}{25} + \frac{y^3}{125}$

D $\frac{x^3}{27} + \frac{x^2y}{15} + \frac{xy^2}{25} + \frac{y^3}{125}$

Answer: D

Explanation:

$$\left(\frac{x}{3} + \frac{y}{5}\right)^3$$

$$(\because (a + b)^3 = a^3 + b^3 + 3ab(a + b))$$

$$= \left(\frac{x}{3}\right)^3 + \left(\frac{y}{5}\right)^3 + 3\left(\frac{x}{3}\right)\left(\frac{y}{5}\right)\left(\frac{x}{3} + \frac{y}{5}\right)$$

$$= \frac{x^3}{27} + \frac{y^3}{125} + \frac{xy}{5}\left(\frac{x}{3} + \frac{y}{5}\right)$$

$$= \frac{x^3}{27} + \frac{y^3}{125} + \frac{x^2y}{15} + \frac{xy^2}{25}$$

Question 62

If 7 divided a positive integer n, the remainder is 2. Which of the following numbers gives a remainder of 0 when divided by 7?

- A n - 5
- B n + 5
- C n + 2
- D n + 1

Answer: B

Explanation:

If 7 divided a positive integer n, the remainder is 2.

Dividend = Quotient \times Divisor + **Remainder**

$$n = \text{Quotient} \times 7 + 2$$

For remainder 0 we should by add 5 in the number so,

$$\text{Number} = n + 5$$

Question 63

The following table shows the annual profit of a company (in ₹lakh).

2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
625	690	725	775	815

The period which has the maximum percentage increase in profit over the previous year is:

- A 2016-2017
- B 2017-2018
- C 2018-2019
- D 2015-2016

Answer: D

Explanation:

$$\text{Percentage increase in profit in year 2015-2016} = \frac{690 - 625}{625} \times 100 = \frac{65}{625} \times 100 = 10.4\%$$

$$\text{Percentage increase in profit in year 2016-2017} = \frac{725 - 690}{690} \times 100 = \frac{35}{690} \times 100 = 5.07\%$$

$$\text{Percentage increase in profit in year 2017-2018} = \frac{775 - 725}{725} \times 100 = \frac{50}{725} \times 100 = 6.89\%$$

$$\text{Percentage increase in profit in year 2018-2019} = \frac{815 - 775}{775} \times 100 = \frac{40}{775} \times 100 = 5.16\%$$

\therefore The maximum percentage increase in profit over the previous year is 2015-2016.

Question 64

If $3 \sec^2 \theta + \tan \theta = 7$, $0^\circ < \theta < 90^\circ$, then the value of $\frac{\operatorname{cosec} 2\theta + \cos \theta}{\sin 2\theta + \cot \theta}$ is:

A $\frac{2+3\sqrt{2}}{4}$

B $\frac{3+\sqrt{2}}{2}$

C $\frac{2+\sqrt{2}}{4}$

D $\frac{2+\sqrt{3}}{2}$

Answer: C

Explanation:

$$3 \sec^2 \theta + \tan \theta = 7$$

$$3(1 + \tan^2 \theta) + \tan \theta = 7$$

$$4 \tan^2 \theta = 4$$

$$\tan^2 \theta = 1$$

$$\theta = 45^\circ$$

$$\frac{\operatorname{cosec} 2\theta + \cos \theta}{\sin 2\theta + \cot \theta}$$

$$= \frac{\operatorname{cosec} 2 \times 45^\circ + \cos 45^\circ}{\sin 2 \times 45^\circ + \cot 45^\circ}$$

$$= \frac{\operatorname{cosec} 90^\circ + \cos 45^\circ}{\sin 90^\circ + \cot 45^\circ}$$

Put the value of θ ,

$$= \frac{1 + \frac{1}{\sqrt{2}}}{1 + 1}$$

$$= \frac{\sqrt{2} + 1}{2\sqrt{2}}$$

$$= \frac{\sqrt{2} + 1}{2\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$$

$$= \frac{\sqrt{2} + 2}{4}$$

Question 65

A contract is to be completed in 75 days and 187 men are to work 15 hours per day. After 65 days, $\frac{3}{5}$ of the work is completed. How many additional men may be employed, so that the work may be completed in time, each man now working 17 hours per day?

A 532

B 495

C 308

D 514

Answer: C

Explanation:

$10 \times$ From the formula,

$$\text{Total work} = \frac{mdh}{w1}$$

here, m = man/woman

d = days

h = hour

w = work

$$\text{Total work} = 75 \times 187 \times 15 = 210375$$

$$\text{Work done in 65 days} = 210375 \times \frac{3}{5} = 126255$$

$$\text{Remaining work} = 210375 - 126255 = 84150$$

$$(187 + m) \times 10 \times 17 = 84150$$

$$(187 + m) = 495$$

$$m = 495 - 187 = 308$$

∴ 308 additional men may be employed, so that the work may be completed in time.

Question 66

If $a^2 + b^2 + c^2 = 300$ and $ab + bc + ca = 50$, then what is the value of $a + b + c$? (Given that a, b and c are all positive.)

A 22

B 20

C 25

D 15

Answer: B

Explanation:

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

$$(a + b + c)^2 = 300 + 2(50)$$

$$(a + b + c)^2 = 400$$

$$a + b + c = 20$$

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Question 67

In $\triangle ABC$, D , E and F are the midpoints of sides AB , BC and CA , respectively. If $AB = 12$ cm, $BC = 20$ cm and $CA = 15$ cm, then the value of $\frac{1}{2}(DE + EF + DF)$ is:

A 23.5 cm

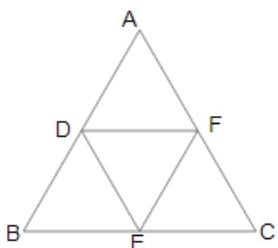
B 11.75 cm

C 15.67 cm

D 5.88 cm

Answer: B

Explanation:



By mid point theorem,

$$DF = BC/2 = 20/2 = 10 \text{ cm}$$

$$DE = AC/2 = 15/2 = 7.5 \text{ cm}$$

$$EF = AB/2 = 12/2 = 6 \text{ cm}$$

$$\frac{1}{2}(DE + EF + DF)$$

$$= \frac{1}{2}(7.5 + 6 + 10)$$

$$= \frac{23.5}{2} = 11.75 \text{ cm}$$

Question 68

The following table shows the percentage of marks obtained by seven students in six different subjects in an examination.

student	Maths	Chemistry	Physics	Geography	History	Computer Science
	Maximum marks = 150	Maximum marks = 130	Maximum marks = 120	Maximum marks = 100	Maximum marks = 110	Maximum marks = 90
Ankit	100	80	80	40	70	70
Aman	90	50	90	60	90	80
Ayush	80	65	70	70	80	70
Rohit	90	60	80	95	60	60
Tanvi	80	65	65	80	40	60
Tarun	70	75	85	77	50	90
Muskan	65	35	50	85	80	80

What are the average marks obtained by all the seven students in Physics? (rounded off to two digits after the decimal)

- A 85.12
- B 75.90
- C 80.15
- D 89.14

Answer: D

Explanation:

Total marks obtained by all the seven students in Physics = $(80 + 90 + 70 + 80 + 65 + 85 + 50)\%$ of 120 = $120 \times \frac{520}{100} = 624$

Average marks obtained by all the seven students in Physics = sum of terms/number of all terms = $624/7 = 89.14$

Question 69

If $x + y + z = 10$ and $xy + yz + zx = 15$, then find the value of $x^3 + y^3 + z^3 - 3xyz$.

- A 660
- B 525
- C 550
- D 575

Answer: C

Explanation:

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - xz)$$

$$x + y + z = 10$$

Taking square on both sides,

$$(x + y + z)^2 = 100$$

$$x^2 + y^2 + z^2 + 2(xy + yz + xz) = 100$$

$$x^2 + y^2 + z^2 = 100 - 2 \times 15 = 100 - 30 = 70$$

$$x^3 + y^3 + z^3 - 3xyz = (10)(70 - 15) = 10 \times 55 = 550$$

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Question 70

A sum lent out at compound interest amounts to ₹1,250 in one year and to ₹1,458 in 3 years at a certain rate percentage p.a. What is the simple interest on the same sum for $5\frac{2}{5}$ years at the same rate of interest?

A ₹600

B ₹520

C ₹500

D ₹480

Answer: C

Explanation:

Compound interest amounts in 1 year = 1,250

Compound interest amounts in 3 years (amount) = 1,458

$$p = 1250$$

t = 2 years

$$\text{Amount} = p\left(1 + \frac{r}{100}\right)^t$$

$$1458 = 1250\left(1 + \frac{r}{100}\right)^2$$

$$\frac{1458}{1250} = \left(1 + \frac{r}{100}\right)^2$$

$$\left(1 + \frac{r}{100}\right) = \frac{27}{25}$$

$$\frac{r}{100} = \frac{27}{25} - 1$$

$$\frac{r}{100} = \frac{2}{25}$$

$$r = 8\%$$

$$\text{Simple interest} = \frac{prt}{100}$$

$$1,250 - p = \frac{p \times 8 \times 1}{100}$$

$$31250 - 25p = 2p$$

$$p = 31250/27 = 1157.4$$

$$\text{Time} = 5\frac{2}{5} = \frac{27}{5}$$

$$\text{Simple interest} = \frac{prt}{100}$$

$$= \frac{1157.4 \times 8 \times 27}{100 \times 5}$$

= Rs.500

Question 71

If in 13 years a fixed sum doubles at simple interest, what will be the interest rate per year? (Correct to two decimal places)

- A 8.69%
- B 7.69%
- C 7.29%
- D 7.92%

Answer: B

Explanation:

Let the principal be Rs. x.

If a fixed sum doubles at simple interest. So,

Interest = x

p = x

t = 13 years

rate = r

Interest = $\frac{prt}{100}$

$x = x \times r \times 13/100$

$r = 100/13 = 7.69\%$

Question 72

Anu spends 68% of her monthly income. If her monthly income increases by 20% and her monthly savings increase by $9\frac{3}{8}\%$, then the percentage increase in her monthly expenditure is:

- A 20%
- B 25%
- C 22%
- D 32%

Answer: B

Explanation:

Let the initial salary of Anu be 100%.

Initially Expenditure of Anu = 68%

Saving = 100 - 68 = 32%

Salary after 20% increment = $100 \times 120/100 = 120$

Saving after increment = $32\% \times \frac{100 + 9\frac{3}{8}}{100} = 32\% \times \frac{109.375}{100} = 35\%$

Expenditure = 120 - 35 = 85%

Percentage increase in her monthly expenditure = $\frac{85-68}{68} \times 100 = \frac{17}{68} \times 100 = 25\%$

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Question 73

If $\frac{\sin A + \cos A}{\cos A} = 12$, then the value of $\frac{1 - \cos A}{\sin A}$ is:

A -5

B 1

C $\frac{5}{12}$

D $\frac{1}{5}$

Answer: D

Explanation:

$$\frac{\sin A + \cos A}{\cos A} = 12$$

$$\cos A \left(\frac{\sin A}{\cos A} + 1 \right) = 12$$

$$\tan A + 1 = 12$$

$$\tan A = 12 - 1 = 11$$

By triplet 5-12-13,

Perpendicular = 5

base = 12

hypotenuse = 13

so,

Sin A = perpendicular/hypotenuse = 5/13

cos A = base/hypotenuse = 12/13

Now,

$$\frac{1 - \cos A}{\sin A} = \frac{1 - \frac{12}{13}}{\frac{5}{13}} = \frac{1}{5}$$

Question 74

The two trains leave Varanasi for Lucknow at 11:00 a.m. and at 11:30 a.m., respectively and travel at a speed of 110 km/h and 140 km/h, respectively. How many kilometers from Varanasi will both trains meet?

A $255\frac{1}{3}$ km

B $238\frac{2}{3}$ km

C $246\frac{1}{3}$ km

D $256\frac{2}{3}$ km

Answer: D

Explanation:

Let the train which leaves Varanasi at 11:00 be A and another train be B.

Speed of train A = 110 km/hr

Speed of train B = 140 km/hr

Distance covered by train A in 30 min ($30/60 = 1/2$ hr) = speed \times time = $110 \times 1/2 = 55$ km

At 11:30, distance between both trains will be 55 km.

Relative speed of train B = $140 - 110 = 30$ km/hr

Time taken by train B to meet = $55/30 = 11/6$ hr

Distance covered by train B in $11/6$ hr = $140 \times 11/6 = 256\frac{2}{3}$

$\therefore 256\frac{2}{3}$ kilometers from Varanasi will both trains meet.

Question 75

In quadrilateral PQRS, $RM \perp QS$, $PN \perp QS$ and $QS = 6$ cm. If $RM = 3$ cm and $PN = 2$ cm, then the area of PQRS is

A 13 cm^2

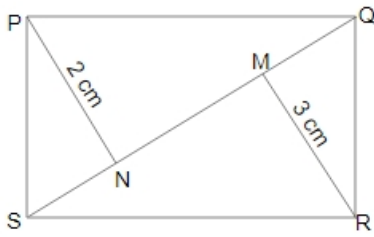
B 15 cm^2

C 14 cm^2

D 11 cm^2

Answer: B

Explanation:



Area of PQRS = area of $\triangle PQS$ + area of $\triangle RQS$

(Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height}$)

$$= \frac{1}{2} \times 6 \times 2 + \frac{1}{2} \times 6 \times 3$$

$$= \frac{1}{2} \times 6(2 + 3)$$

$$= 15 \text{ cm}^2$$

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English Comprehension

Instructions

For the following questions answer them individually

Question 76

Select the most appropriate meaning of the given idiom.

Come to the point

A To speak plainly about the real issue

B To unravel a mystery

C To get reconciled to something

D To meet at a designated place

Answer: A

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Question 77

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

- A. I took a deep breath and inhaled the air.
- B. It was a fine spring morning.
- C. As soon as I entered the garden, lush green grass welcomed me.
- D. The freshness in the air drew my feet towards a garden.

- A BADC
- B ACBD
- C CADB
- D CDAB

Answer: A

Question 78

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 old lady nearly dead from fright.

- A dead out of fright
- B died of fright
- C died with frightening
- D No improvement

Answer: B

Question 79

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

- A. It hurts the heart most of all by inflating blood pressure.
- B. You can blow up and let it out or bottle it up and ignore it.
- C. The question then arises- What to do about it?
- D. Researchers have long agreed that anger hurts your health.

- A BCAD
- B DACB
- C CADB
- D DBCA

Answer: B

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Question 80

Select the correct indirect form of the given sentence.

The guard said to the visitors, "Do not take photographs inside the museum."

- A The guard forbade the visitors to take photographs inside the museum.
- B The guard told the visitors that do not take photographs inside the museum.
- C The guard requested the visitors to not took photographs inside the museum.
- D The guard warned the visitors not to be taking photographs inside the museum.

Answer: A

Question 81

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

Assist

- A Decline
- B Conceal
- C Obstruct
- D Support

Answer: C

Instructions

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

Comprehension:

There are certain spheres of one's life in which one should go by one's own (1)_____ rather than follow another's counsel. The choice (2)_____ one's subject of study is one such sphere. (3)_____ one is genuinely interested in a subject, one (4)_____ never opt for it. India is already full of (5)_____ pegs in round holes, who are unfit for their roles and are doing more harm than good.

Question 82

Select the most appropriate option to fill in blank number (1).

- A option
- B choice
- C possibility
- D alternative

Answer: B

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Question 83

Select the most appropriate option to fill in blank number (2).

- A between
- B at
- C among
- D of

Answer: D

Question 84

Select the most appropriate option to fill in blank number (3).

- A Although
- B Since
- C Even if
- D Unless

Answer: D

Question 85

Select the most appropriate option to fill in blank number (4).

- A ought
- B would
- C could
- D should

Answer: D

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Question 86

Select the most appropriate option to fill in blank number (5).

- A square
- B small
- C circular
- D large

Answer: A

Instructions

For the following questions answer them individually

Question 87

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

Putting to death painlessly to end suffering

- A Blaspheme
- B Altruism
- C Genocide
- D Euthanasia

Answer: D

Question 88

Select the INCORRECTLY spelt word.

- A Actually
- B Parallel
- C Opinion
- D Pursuit

Answer: D

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Question 89

Fill in the blank with the most appropriate word.

There is a _____ growth of flowers in tropical countries.

- A pious
- B plenty
- C luxuriant
- D powerful

Answer: C

Question 90

In the sentence identify the segment which contains the grammatical error.

He went to work but returned back immediately.

- A but returned back
- B immediately
- C He went
- D to work

Answer: A

Question 91

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

A place where plants are grown for sale

- A Yard
- B Garden
- C Aviary
- D Nursery

Answer: D

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Question 92

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.

He was greatly disappointed to be failed again.

- A No improvement
- B to failed
- C by being failed
- D on failing

Answer: D

Question 93

Select the most appropriate ANTONYM of the given word.
Industrious

- A Durable
- B Diligent
- C Lethargic
- D Cautious

Answer: C

Question 94

Select the correct passive form of the given sentence.
He incurred heavy losses in business.

- A Heavy losses was incurred in business by him.
- B Heavy losses were incurred in business by him.
- C Heavy losses are being incurred in business by him.
- D Heavy losses are incurred in business by him.

Answer: B

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Question 95

Select the most appropriate synonym of the given word.
Affluent

- A Prosperous
- B Authentic
- C Hostile

D Impoverished

Answer: A

Question 96

Select the INCORRECTLY spelt word.

A Aesthetic

B Affiliate

C Annihilate

D Exclamation

Answer: D

Question 97

Select the most appropriate synonym of the given word.

Accurate

A Erroneous

B Compact

C Precise

D Capable

Answer: C

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Question 98

In the sentence identify the segment which contains the grammatical error.

The present what I buy for you yesterday was very expensive.

A what I buy

B for you yesterday

C The present

D was very expensive

Answer: A

Question 99

Select the most appropriate meaning of the given idiom.

Give a piece of one's mind

A To rebuke someone strongly

B To advise someone

C To share one's ideas

D To donate something valuable

Answer: A

Question 100

Fill in the blank with the most appropriate word.
There are _____ errors in your assignment.

A abundant

B sufficient

C multifold

D numerous

Answer: D

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