



## 2016 SSC CGL 28 Aug Evening Shift

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# Reasoning

## Instructions

For the following questions answer them individually

### Question 1

Select the related word/letters/number from the given alternatives.

Head : Human Body :: ?

- A Arc : Circle
- B Cube : Circle
- C Square : Circle
- D Triangle : Circle

Answer: A

### Explanation:

As a head is part of the human body, similarly, an arc is also part of the circle.

=> Ans - (A)

## SSC CGL Free Mock Test

### Question 2

Select the related word/letters/number from the given alternatives.

PZQW : NXOU :: FISK : ?

- A EFPJ
- B FERJ
- C DGQI
- D HKVM

Answer: C

### Explanation:

Expression = PZQW : NXOU

The pattern followed is =

P	Z	Q	W
(-2)	(-2)	(-2)	(-2)
N	X	O	U

Similarly, for FISK :

F	I	S	K
(-2)	(-2)	(-2)	(-2)
D	G	Q	I

=> Ans - (C)

### Question 3

Select the related word/letters/number from the given alternatives.

7 : 19 :: 10 : ?

- A 25
- B 30
- C 21
- D 23

**Answer: A**

**Explanation:**

Expression =  $7 : 19 :: 10 : ?$

The pattern followed is =  $n : 2n + 5$

Eg =  $7 : 2(7) + 5 = 7 : 19$

Similarly,  $2(10) + 5 = 20 + 5 = 25$

=> Ans - (A)

**Question 4**

**For the following questions**

**Find the odd word/letters/number pair from the given alternatives.**

- A Bigger
- B Faster
- C Greater
- D Taller

**Answer: B**

**Explanation:**

Bigger, greater and taller are synonyms, hence faster is the odd one out.

=> Ans - (B)

## SSC CGL Previous Papers (DOWNLOAD PDF)

**Question 5**

**For the following questions**

**Find the odd word/letters/number pair from the given alternatives.**

- A AEIM
- B BFJN
- C CGKO
- D FDKN

**Answer: D**

**Explanation:**

(A) : A (+4 letters) = E (+4 letters) = I (+4 letters) = M

(B) : B (+4 letters) = F (+4 letters) = J (+4 letters) = N

(C) : C (+4 letters) = G (+4 letters) = K (+4 letters) = O

(D) : F (-2 letters) = D (+7 letters) = K (+3 letters) = N

=> Ans - (D)

### Question 6

For the following questions

Find the odd word/letters/number pair from the given alternatives.

A 140 → 45

B 110 → 35

C 100 → 30

D 80 → 25

Answer: C

### Explanation:

Only in the third option, the difference between the numbers is divided by 10.

$140 - 45 = 95$ ;  $110 - 35 = 75$ ;  $80 - 25 = 55$

=> Ans - (C)

### Question 7

Arrange the following words as per order in the dictionary

1. Forest
2. Fascinating
3. Fantastic
4. Fabulous

A 2, 4, 3, 1

B 4, 2, 3, 1

C 4, 3, 2, 1

D 2, 3, 4, 1

Answer: C

### Explanation:

As per the dictionary,

= Fabulous -> Fantastic -> Fascinating -> Forest

≡ 4321

=> Ans - (C)

## SSC CGL Tier-2 Previous Papers PDF

### Question 8

Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

a \_ ca \_ c \_ dc \_ d \_ ad \_

A ddacdc

B daadca

C dadaac

D ddaacc

**Answer: D**

**Explanation:**

Expression : a\_ ca\_c\_dc\_d\_ad\_

The pattern is that in a group of 3 letters, the term 'adc' is repeated.

=> adc adc adc adc adc

=> Ans - (D)

**Question 9**

**Which number comes next in the series?**

1, 5, 2, 6, 3, 7, ?

A 6

B 5

C 4

D 3

**Answer: C**

**Explanation:**

The pattern followed is :

$$1 + 4 = 5$$

$$5 - 3 = 2$$

$$2 + 4 = 6$$

$$6 - 3 = 3$$

$$3 + 4 = 7$$

$$7 - 3 = 4$$

=> Ans - (C)

**Question 10**

**P and Q are sisters. R and S are brothers. P's daughter is R's sister. What is Q's relation to S?**

A Mother

B Grandmother

C Sister

D Aunt

**Answer: D**

**Explanation:**

R and S are brothers. P's daughter is R's sister,

=> R and S are sons of P.

Also, Q is the sister of P, => Q is S's aunt.

=> Ans - (D)

**Question 11**

A man was 32 years of age when he had his first son. His wife was 35 years of age when his son attained the age of 7 years. The difference between the age of the father and the mother is \_\_\_\_ .

- A 7 years
- B 3 years
- C 5 years
- D 4 years

**Answer:** D

**Explanation:**

The mother was 35 years of age when his son attained the age of 7 years,

=> Mother's age when son was born =  $35 - 7 = 28$  years

Father's age when son was born = 32 years

=> Required difference =  $32 - 28 = 4$  years

=> Ans - (D)

**Question 12**

From the given alternative words, select the word which cannot be formed using the letters of the given word:

**ANNOUNCEMENTS**

- A CEMENT
- B NOUN
- C COUNTER
- D TENSE

**Answer:** C

**Explanation:**

The word ANNOUNCEMENTS does not contain any 'R', and thus the word 'Counter' cannot be formed.

=> Ans - (C)

**Question 13**

If RATION is written as OXQFLK then LUMBER may be written as \_\_\_\_ .

- A KTLADQ
- B ITJABQ
- C OXPEHU
- D IRJYBO

**Answer:** D

**Explanation:**

RATION is written as OXQFLK

R	A	T	I	O	N
(-3)	(-3)	(-3)	(-3)	(-3)	(-3)
O	X	Q	F	L	K

Similarly, for LUMBER :

L	U	M	B	E	R
(-3)	(-3)	(-3)	(-3)	(-3)	(-3)
I	R	J	Y	B	O

=> Ans - (D)

## SSC CGL Important Questions PDF

### Question 14

$A*B$  means multiply A by B;  $A@B$  means divide A by B,  $A?B$  means add B to A and  $A=B$  means subtract B from A.

Then find the value of  $10*10 = 5*10 ? 50@10$

- A 100
- B 45
- C 1000
- D 55

Answer: D

#### Explanation:

Expression :  $10*10 = 5*10 ? 50@10$

$$\equiv 10 \times 10 - 5 \times 10 + 50 \div 10$$

$$= 100 - 50 + 5 = 55$$

=> Ans - (D)

### Question 15

If  $37*14 = 17$ ,  $69*33 = 34$ ,  $91*125 = 72$  then what should  $28*56 = ?$

- A 26
- B 42
- C 34
- D 28

Answer: D

#### Explanation:

The pattern followed is that both the numbers are added and the result is divided by 3.

$$\text{Eg : } 37*14 = \frac{37+14}{3} = \frac{51}{3} = 17$$

$$\text{Also, } 69*33 = \frac{69+33}{3} = \frac{102}{3} = 34$$

$$\text{and } 91*125 = \frac{91+125}{3} = \frac{216}{3} = 72$$

$$\text{Similarly, } 28*56 = \frac{28+56}{3} = \frac{84}{3} = 28$$

=> Ans - (D)

Question 16

Select the missing numbers from the given responses

21	56	70
45	87	84
115	180	?

- A 110
- B 120
- C 130
- D 140

Answer: C

Explanation:

$$56 - 21 = 35 \rightarrow 35 \times 2 = 70$$

$$87 - 45 = 42 \rightarrow 42 \times 2 = 84$$

$$\text{Similarly, } 180 - 115 = 65 \rightarrow 65 \times 2 = 130.$$

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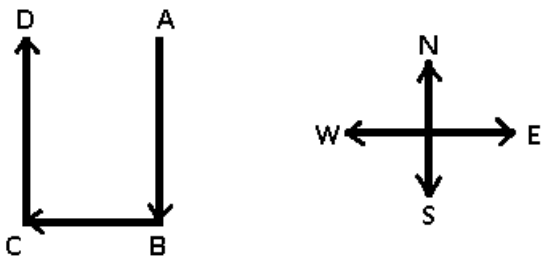
Question 17

P started walking from North to South. She turned right at right angle and then again right at right angle. In which direction was she ultimately walking?

- A North
- B East
- C South
- D West

Answer: A

Explanation:



Let P started from point A and walks towards south to reach B, then she turns right at right angle and walks towards west and reaches C. Finally, she again turned right at right angle and reached point D.

Thus, she is walking in North direction.

=> Ans - (A)



**Question 18**

Consider the given statement/s to be true and decide which of the given conclusions/assumptions can definitely be drawn from the given statement.

**Statement:**

1. All states having dams face no water problem.
2. One of the states has no dam.

**Conclusions:**

- I. It may be facing water problem.
- II. Dams solve water problem.

- A Only conclusion I follows  
B Only conclusion II follows  
C Both conclusion I and conclusion II follow  
D Neither conclusion I nor conclusion II follows

**Answer: C**

**Explanation:**

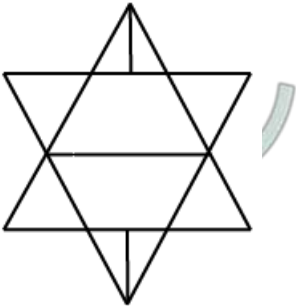
From the given statements, it is evident that all the states that have dams do not face any water problem, thus it is clear that dams solve water problems of a state, hence second conclusion follows. Also, one of the states does not have a dam, and it is possible that it may be facing water problem.

Thus, both conclusion I and conclusion II follow

=> Ans - (C)

**Question 19**

How many triangles are there in this figure?



- A 10  
B 12  
C 14  
D 16

**Answer: C**

**Explanation:**

Small triangles = 8

Triangles formed by 2 triangles = 2

Triangles formed by 2 triangles and one trapezium = 2

Larger triangles = 2

Thus, total triangles =  $8 + 2 + 2 + 2 = 14$

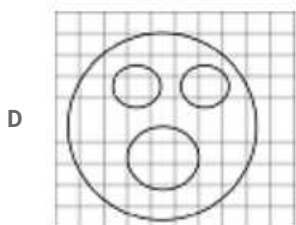
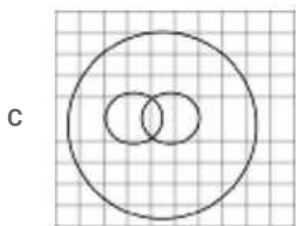
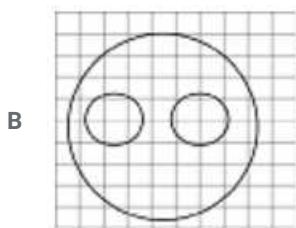
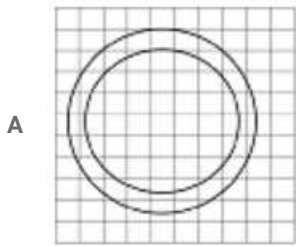
=> Ans - (C)

## General Science Notes for SSC CGL

### Question 20

Which of the answer figures illustrate the relationship between:

Delhi, Sri Lanka, Asia



Answer: B

#### Explanation:

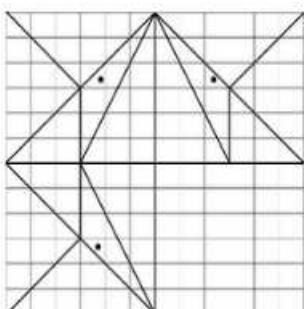
Both Sri Lanka and Delhi are Asian country and city respectively but they Delhi is not part of Sri Lanka.

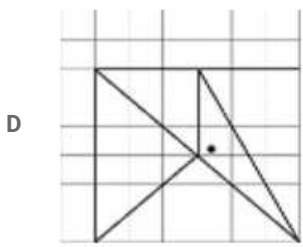
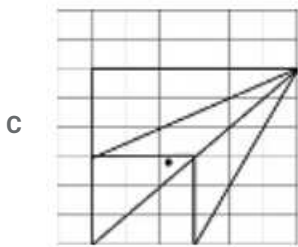
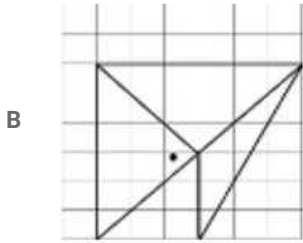
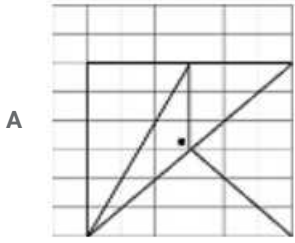
Thus, the second figure best describes above relationship.

=> Ans - (B)

### Question 21

Which answer figure will complete the pattern in the question figure?

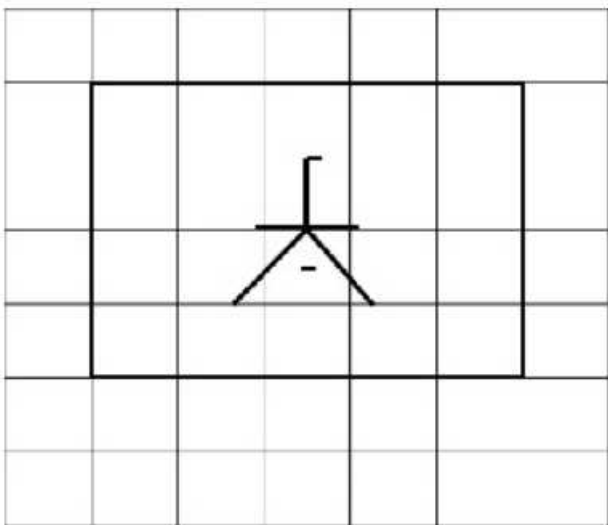


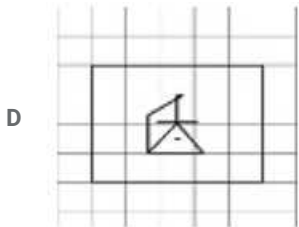
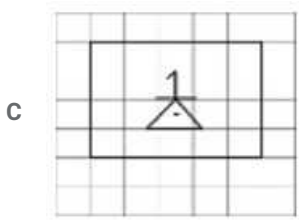
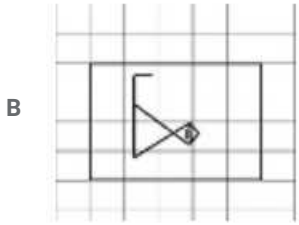
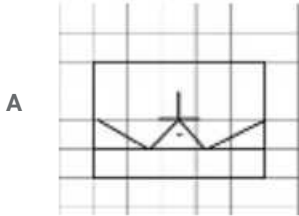


Answer: A

Question 22

From the given answer figures, select the one in which the question figure is hidden/embedded

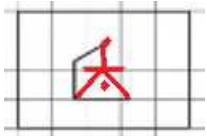




Answer: D

Explanation:

The question figure is embedded in the following figure :

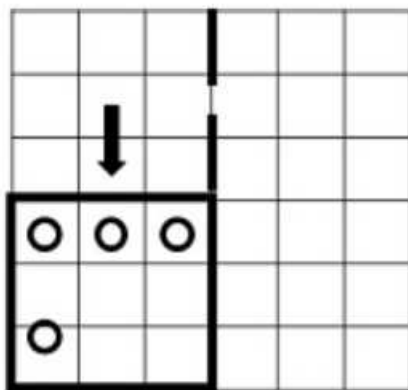
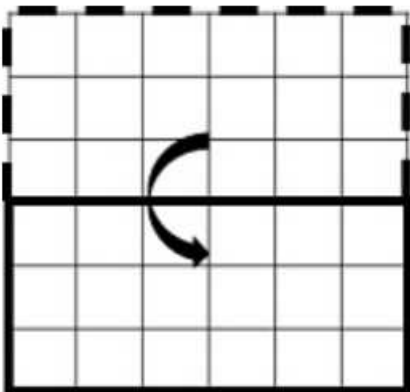


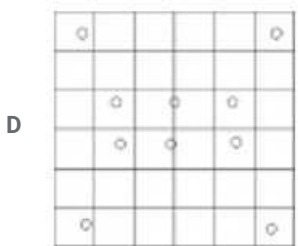
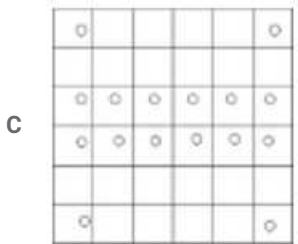
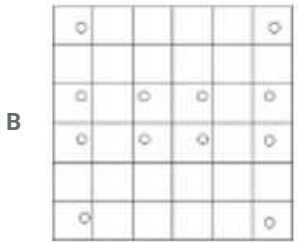
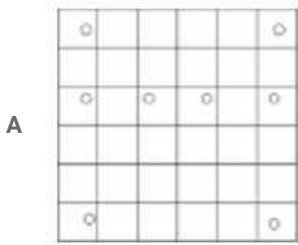
=> Ans - (D)

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Question 23

A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

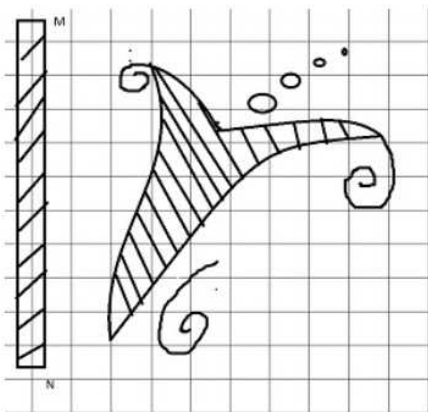


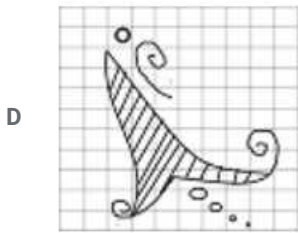
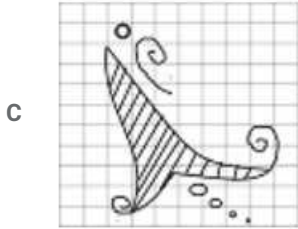
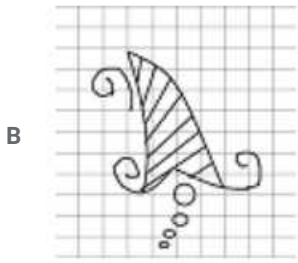


Answer: C

Question 24

If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?





Answer: A

**Explanation:**

A vertical mirror is placed, so the object at the left will appear at the right and vice-versa. Now, the figure is pointing at bottom left, but in the mirror image it will point at bottom right, which is given only in the first figure.

=> Ans - (A)

**Question 25**

In the question, a word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., 'A' can be represented by 03, 55, etc., and 'P' can be represented by 10, 99, etc.

Similarly you have to identify the set for the word 'VENU'

**Matrix - I**

	0	1	2	3	4
0	K	G	E	A	S
1	P	V	H	R	Y
2	N	U	N	R	K
3	W	S	B	O	J
4	T	U	A	I	P

**Matrix - II**

	5	6	7	8	9
5	A	H	U	W	N
6	Y	R	B	T	V
7	O	I	H	B	Q
8	V	O	E	I	S
9	E	T	K	W	P

A 69, 87, 32, 41

B 85, 02, 20, 57

C 11, 95, 89, 57

D 69, 95, 22, 04

Answer: B

**Explanation:**

(A) : 69, 87, 32, 41 = VEBU

(B) : 85, 02, 20, 57 = VENU

(C) : 11, 95, 89, 57 = VESU

(D) : 69, 95, 22, 04 = VENS

=> Ans - (B)

## SSC Exam Free Videos (Youtube)

### General Awareness

#### Instructions

For the following questions answer them individually

#### Question 26

What is the phenomenon which established the transverse nature of light ?

- A Reflection
- B Interference
- C Diffraction
- D Polarisation

Answer: D

### SSC Free Preparation App

#### Question 27

What is the name of a memory buffer used to accommodate a speed differential ?

- A Cache
- B Stack Pointer
- C Accumulator
- D DISC

Answer: A

#### Question 28

What is contained in Chlorophyll ?

- A sodium
- B potassium
- C manganese
- D magnesium

Answer: D

#### Question 29

Epigraphy is the study of which of the following ?

- A Coins
- B Inscriptions
- C Temples
- D Birds

**Answer: B**

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### Question 30

Who won the Women's Singles Wimbledon Championship 2016 ?

- A Angilique Kuber
- B Serena Williams
- C Venus Williams
- D Steffi Graff

**Answer: B**

### Question 31

In which field is B.C. Roy Award given ?

- A Music
- B Journalism
- C Medicine
- D Environment

**Answer: C**

### Question 32

What is Damodar Valley Corporation ?

- A Statutory body
- B Municipal Corporation looking after Damodar Valley
- C A private enterprise located in Bihar
- D A non government organisation

**Answer: A**

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### Question 33

Which is the highest gallantry Award in India?



- A Vir Chakra
- B Param Vishist Seva Medal
- C Kirti Chakra
- D Param Vir Chakra

**Answer: D**

**Question 34**

**Who was recently appointed as the first woman president of Nepal?**

- A Sita Subedi
- B Pampha Bhusal
- C Urmila Rana
- D Bidhya Devi Bhandari

**Answer: D**

**Question 35**

**In which field is Pulitzer Prize awarded for outstanding work ?**

- A Environment study
- B Science and Technology
- C Literature and Journalism
- D International Understanding

**Answer: C**

**SSC CHSL Previous Question papers (download pdf)**

**Question 36**

**Why is Carbon Monoxide a pollutant ?**

- A Reacts with haemoglobin
- B Makes nervous system inactive
- C It reacts with Oxygen
- D It inhibits glycolysis

**Answer: A**

**Question 37**

**Why is Rann Of Kutch of India famous for ?**

- A Tidal and flats
- B Fertile soil

C Dense Vegetation

D All are correct

**Answer: A**

**Question 38**

**Commercial banks lend to which of the following Priority sectors?**

A Heavy Industries

B Agriculture, Small scale industries

C Foreign Companies

D State government in emergency situation

**Answer: B**

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**Question 39**

**What is the accounting year of the Reserve Bank of India ?**

A April-March

B July-June

C October-September

D January-December

**Answer: B**

**Question 40**

**What is the position of the Earth when it is at the greatest distance from the sun ?**

A Aphelion

B Antipode

C Perihelion

D Aldiatc

**Answer: A**

**Question 41**

**The biogas used for cooking is a mixture of which gases?**

A Carbon dioxide & oxygen

B Isobutane & propane

C Methane & carbon monoxide

D Methane & carbon dioxide

Answer: D

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### Question 42

From the following, who was the first women speaker of Lok Sabha?

- A Sushma Swaraj
- B Margret Alva
- C Meera Kumar
- D Sarojini Naidu

Answer: C

### Question 43

Which of the following wind is blowing from the Mediterranean sea to the North Western parts of India?

- A Western disturbances
- B Norwesters
- C Loo
- D Mango showers

Answer: A

### Question 44

Azolla increases soil fertility for ....

- A maize cultivation
- B wheat cultivation
- C barley cultivation
- D rice cultivation

Answer: D

## SSC CGL Free Mock Test

### Question 45

Which of the following is not provided in the constitution ?

- A Election Commission
- B Finance Commission
- C Public Service Commission
- D Planning Commission

Answer: D

**Question 46**

What is the popular name of Monolithic rock shrines at Mahabalipuram ?

- A Rathas
- B Prasadas
- C Mathika
- D Gandhakuti

**Answer: A**

**Question 47**

What is the name of the device used to convert alternating current into direct current?

- A Ammeter
- B Galvanometer
- C Rectifier
- D Transformer

**Answer: C**

**SSC CGL Previous Papers (DOWNLOAD PDF)**

**Question 48**

Why does ice covered in sawdust not melt quickly?

- A Sawdust does not allow the air to touch the ice
- B The water is absorbed by sawdust
- C Sawdust is a bad conductor of heat
- D Sawdust is good conductor of heat

**Answer: C**

**Question 49**

Which layer of the earth's atmosphere contains the ozone layer?

- A Troposphere
- B Mesosphere
- C Ionosphere
- D Stratosphere

**Answer: D**

**Question 50**

Where is the Great Barrier Reef located ?

- A Pacific Ocean
- B Indian Ocean
- C Atlantic Ocean
- D Arctic Ocean

Answer: A

## SSC CGL Tier-2 Previous Papers PDF

### Mathematics

#### Instructions

For the following questions answer them individually

#### Question 51

The sum of three consecutive natural numbers each divisible by 5, is 225. The largest among them is

- A 85
- B 75
- C 70
- D 80

Answer: D

#### Explanation:

Let the three consecutive natural numbers each divisible by 5 be  $(5x - 5), (5x), (5x + 5)$

$$\text{Sum} = (5x - 5) + (5x) + (5x + 5) = 225$$

$$\Rightarrow 15x = 225$$

$$\Rightarrow x = \frac{225}{15} = 15$$

$$\therefore \text{Largest number} = 5(15) + 5 = 75 + 5 = 80$$

$\Rightarrow$  Ans - (D)

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#### Question 52

A can do a piece of work in 18 days. He worked at it for 12 days and B finished the remaining work in 8 days. B alone can do the whole work in

- A 16 days
- B 24 days
- C 28 days
- D 29 days

Answer: B

#### Explanation:

Let total work to be done = 36 units

A can do the work in 18 days.

$$\Rightarrow \text{A's efficiency} = \frac{36}{18} = 2 \text{ units/day}$$

$$\text{Work done by A in 12 days} = 2 \times 12 = 24 \text{ units}$$

$$\text{Thus, work left} = 36 - 24 = 12 \text{ units}$$

This work is done by B in 8 days.

$$\Rightarrow \text{B's efficiency} = \frac{12}{8} = 1.5 \text{ units/day}$$

$$\therefore \text{Time taken by B alone to finish the work} = \frac{36}{1.5} = 24 \text{ days}$$

$\Rightarrow$  Ans - (B)

#### Question 53

The list price of an article is Rs. 900. It is available at two successive discounts of 20% and 10%. The selling price of the article is:

A Rs. 640

B Rs. 648

C Rs. 540

D Rs. 548

**Answer:** B

#### Explanation:

Marked price = Rs. 900

$$\begin{aligned} \text{After first discount of 20\%, price} &= 900 - (900 \times \frac{20}{100}) \\ &= 900 - 180 = \text{Rs. } 720 \end{aligned}$$

$$\begin{aligned} \text{After second discount of 10\%, price} &= 720 - (720 \times \frac{10}{100}) \\ &= 720 - 72 = \text{Rs. } 648 \end{aligned}$$

$\Rightarrow$  Ans - (B)

#### Question 54

A man spends a part of his monthly income and saves the rest. The ratio of his expenditure to the saving is 61 : 6. If his monthly income is Rs.8710, the amount of his monthly savings is

A Rs.870

B Rs.690

C Rs.980

D Rs.780

**Answer:** D

#### Explanation:

Let expenditure of the man = Rs.  $61x$

$$\Rightarrow \text{Savings} = \text{Rs. } 6x$$

$$\text{Total monthly income} = 61x + 6x = 8710$$

$$\Rightarrow 67x = 8710$$

$$\Rightarrow x = \frac{8710}{67} = 130$$

∴ Monthly savings =  $6 \times 130 = Rs. 780$

⇒ Ans - (D)

## SSC CGL Important Questions PDF

### Question 55

An article was sold at Rs. 950 allowing 5% discount on the marked price. The marked price of the article is

- A Rs. 960
- B Rs. 1000
- C Rs. 955
- D Rs. 945

**Answer: B**

#### Explanation:

Let marked price = Rs.  $100x$

Discount % = 5%

$$\Rightarrow \text{Selling price} = 100x \times \frac{95}{100} = 950$$

$$\Rightarrow x = \frac{950}{95} = 10$$

∴ Marked price =  $100 \times 10 = Rs. 1000$

⇒ Ans - (B)

### Question 56

A person loses 75% of his money in the first bet, 75% of the remaining in the second and 75% of the remaining in the third bet and returns home with Rs. 2 only. His initial money was

- A Rs. 64
- B Rs. 128
- C Rs. 256
- D Rs. 512

**Answer: B**

#### Explanation:

Let initial money with the person = Rs.  $x$

The person loses 75% =  $\left(\frac{3}{4}\right)^{th}$  of the money in 3 bets, that is after each of the bet, money left with him is 25% =  $\left(\frac{1}{4}\right)^{th}$

$$\Rightarrow \text{Money left after 3 bets} = \left(\frac{1}{4}\right)^3 \times x = 2$$

$$\Rightarrow \frac{x}{64} = 2$$

$$\Rightarrow x = 2 \times 64 = Rs. 128$$

⇒ Ans - (B)

### Question 57

The time taken by a train 160 m long, running at 72 km/hr, in crossing an electric pole is

- A 8 sec

- B 9 sec
- C 6 sec
- D 4 sec

Answer: A

**Explanation:**

Speed of train = 72 km/hr

$$= (72 \times \frac{5}{18}) \text{ m/s} = 20 \text{ m/s}$$

Length of train = 160 m

Using, time = distance/speed

$$\Rightarrow \text{Time taken} = \frac{160}{20} = 8 \text{ sec}$$

$\Rightarrow$  Ans - (A)

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**Question 58**

If  $x + \frac{1}{9x} = 4$ , then  $9x^2 + \frac{1}{9x^2}$  the value is

- A 140
- B 142
- C 144
- D 146

Answer: B

**Explanation:**

$$\text{Given : } x + \frac{1}{9x} = 4$$

Multiplying both sides by 3,

$$\Rightarrow 3x + \frac{1}{3x} = 12$$

Squaring both sides, we get :

$$\Rightarrow (3x + \frac{1}{3x})^2 = (12)^2$$

$$\Rightarrow 9x^2 + \frac{1}{9x^2} + 2(3x)(\frac{1}{3x}) = 144$$

$$\Rightarrow 9x^2 + \frac{1}{9x^2} = 144 - 2 = 140$$

$\Rightarrow$  Ans - (B)

**Question 59**

If  $a = 2$ ,  $b = -3$  then the value of  $27a^3 - 54a^2b + 36ab^2 - 8b^3$  is

- A 1562
- B 1616
- C 1676
- D 1728

Answer: D



**Explanation:**

Given :  $a = 2$  and  $b = -3$

To find :  $27a^3 - 54a^2b + 36ab^2 - 8b^3$

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

$$= [3(2) - 2(-3)]^3 = (6 + 6)^3$$

$$= (12)^3 = 1728$$

=> Ans - (D)

**Question 60**

Possible length of the three sides of a triangle are :-

- A 2 cm , 3 cm , 6 cm
- B 3 cm , 4 cm , 5 cm
- C 2.5 cm , 3.5 cm , 6 cm
- D 4 cm , 4 cm , 9 cm

**Answer:** B

**Explanation:**

In a triangle, sum of any two sides is always greater than the third side.

In the first option, sides given are 2,3 and 6 cm

Clearly,  $2 + 3 = 5 < 6$

Similar problem arises in the last two options.

Thus, these sides cannot form a triangle.

=> Ans - (B)

## General Science Notes for SSC CGL

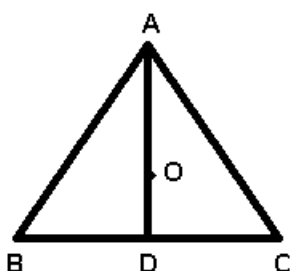
**Question 61**

AD is the Median of  $\Delta ABC$ . If O is the centroid and  $AO = 10$  cm then OD is

- A 5 cm
- B 20 cm
- C 10 cm
- D 30 cm

**Answer:** A

**Explanation:**



Given : AD is the median and AO = 10 cm

To find : OD = ?

Solution : A centroid divides the median in the ratio 2 : 1

=> AO : OD = 2 : 1

$$\therefore OD = \frac{1}{2} \times AO$$

$$= \frac{1}{2} \times 10 = 5 \text{ cm}$$

=> Ans - (A)

#### Question 62

If in a triangle ABC, Sin A = Cos B then the value of Cos C is

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

B 0

C 1

D  $\frac{1}{\sqrt{2}}$

Answer: B

#### Explanation:

If in a triangle ABC, Sin A = Cos B

$$\Rightarrow \sin(A) = \sin(90^\circ - B)$$

$$\Rightarrow A = 90^\circ - B$$

$$\Rightarrow A + B = 90^\circ \text{ -----(i)}$$

Also, in  $\triangle ABC$ ,  $\Rightarrow A + B + C = 180^\circ$

Substituting value from equation (i),

$$\Rightarrow C = 180 - 90 = 90^\circ$$

$$\therefore \cos(C) = \cos(90^\circ) = 0$$

=> Ans - (B)

#### Question 63

Incentre of  $\triangle ABC$  is I.  $\angle ABC = 90^\circ$  and  $\angle ACB = 70^\circ$ .  $\angle AIC$  is

A  $135^\circ$

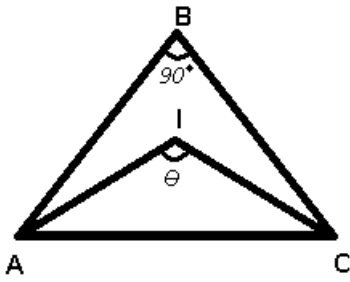
B  $100^\circ$

C  $110^\circ$

D  $105^\circ$

Answer: A

#### Explanation:



Given : I is the incentre of  $\triangle ABC$  and  $\angle ABC = 90^\circ$

To find :  $\angle AIC = \theta = ?$

Incentre of a triangle =  $90^\circ + \frac{1}{2} \times (\text{Angle opposite to it})$

$$\Rightarrow \theta = 90^\circ + \frac{90^\circ}{2}$$

$$\Rightarrow \theta = 90^\circ + 45^\circ$$

$$\Rightarrow \theta = 135^\circ$$

$\Rightarrow$  Ans - (A)

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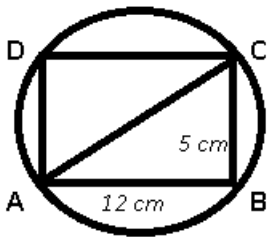
### Question 64

The length of the two adjacent sides of a rectangle inscribed in a circle are 5 cm and 12 cm respectively. Then the radius of the circle will be

- A 6 cm
- B 6.5 cm
- C 8 cm
- D 8.5 cm

Answer: B

Explanation:



Given :  $AB = 12$  cm and  $BC = 5$  cm

To find : Radius of circle =  $\frac{AC}{2} = ?$

Solution : In  $\triangle ABC$ ,

$$\Rightarrow (AC)^2 = (BC)^2 + (AB)^2$$

$$\Rightarrow (AC)^2 = (5)^2 + (12)^2$$

$$\Rightarrow (AC)^2 = 25 + 144 = 169$$

$$\Rightarrow AC = \sqrt{169} = 13 \text{ cm}$$

$$\therefore \text{Radius} = \frac{AC}{2}$$

$$= \frac{13}{2} = 6.5 \text{ cm}$$

=> Ans - (B)

**Question 65**

If  $\sin\theta \times \cos\theta = \frac{1}{2}$ . The value of  $\sin\theta - \cos\theta$  is where  $0^\circ < \theta < 90^\circ$

A 0

B  $\sqrt{2}$

C 2

D 1

**Answer: A**

**Explanation:**

Given :  $\sin\theta \times \cos\theta = \frac{1}{2}$

Using,  $(\sin\theta - \cos\theta)^2 = \sin^2\theta + \cos^2\theta - 2(\sin\theta)(\cos\theta)$

=>  $(\sin\theta - \cos\theta)^2 = 1 - 2\left(\frac{1}{2}\right)$

=>  $(\sin\theta - \cos\theta)^2 = 1 - 1 = 0$

=>  $\sin\theta - \cos\theta = 0$

=> Ans - (A)

**Question 66**

The mean of 100 observations was calculated as 40. It was found later on that one of the observations was misread as 83 instead of 53. The correct mean is:

A 39

B 39.7

C 40.3

D 42.7

**Answer: B**

**Explanation:**

Mean of 100 observations = 40

=> Sum of 100 observations =  $100 \times 40 = 4000$

Now, replacing 53 instead of 83

=> Correct sum =  $4000 - 83 + 53 = 3970$

$\therefore$  Correct mean =  $\frac{3970}{100} = 39.7$

=> Ans - (B)

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**Question 67**

If  $a^3 + \frac{1}{a^3} = 2$ , then value of  $\frac{a^2+1}{a}$  is (a is a positive number)

A 1

B 2

C 3

D 4

Answer: B

Explanation:

$$\text{Given : } a^3 + \frac{1}{a^3} = 2$$

$$\text{To find : } \frac{a^2+1}{a} = (a + \frac{1}{a}) = x = ?$$

$$\text{We know that } (a + \frac{1}{a})^3 = a^3 + \frac{1}{a^3} + 3(a)(\frac{1}{a})(a + \frac{1}{a})$$

$$\Rightarrow (a + \frac{1}{a})^3 = 2 + 3(a + \frac{1}{a})$$

$$\Rightarrow x^3 = 2 + 3x$$

$$\Rightarrow x^3 - 3x = 2$$

$$\Rightarrow x(x^2 - 3) = 2 \times 1$$

Thus, the only value that satisfy above equation is  $x = 2$

$\Rightarrow$  Ans - (B)

Question 68

If  $x(3 - \frac{2}{x}) = \frac{3}{x}$ , then value of  $x^2 + \frac{1}{x^2}$  is

A  $3\frac{1}{9}$

B  $3\frac{2}{9}$

C  $2\frac{1}{9}$

D  $2\frac{4}{9}$

Answer: D

Explanation:

$$\text{Given : } x(3 - \frac{2}{x}) = \frac{3}{x}$$

$$\Rightarrow 3x - 2 = \frac{3}{x}$$

$$\Rightarrow 3x - \frac{3}{x} = 2$$

$$\Rightarrow 3(x - \frac{1}{x}) = 2$$

$$\Rightarrow x - \frac{1}{x} = \frac{2}{3}$$

Squaring both sides,

$$\Rightarrow (x - \frac{1}{x})^2 = (\frac{2}{3})^2$$

$$\Rightarrow x^2 + \frac{1}{x^2} - 2(x)(\frac{1}{x}) = \frac{4}{9}$$

$$\Rightarrow x^2 + \frac{1}{x^2} - 2 = \frac{4}{9}$$

$$\Rightarrow x^2 + \frac{1}{x^2} = 2 + \frac{4}{9} = 2\frac{4}{9}$$

$\Rightarrow$  Ans - (D)

Question 69

A sphere of radius 5 cm is melted to form a cone with base of same radius. The height (in cm) of the cone is

- A 5
- B 10
- C 20
- D 22



**Answer: C**

**Explanation:**

Radius of sphere =  $R = 5$  cm

Let height of cone =  $h$  cm and radius =  $r = 5$  cm

Volume of cone = Volume of sphere

$$\Rightarrow \frac{4}{3}\pi R^3 = \frac{1}{3}\pi r^2 h$$

$$\Rightarrow 4 \times (5)^3 = (5)^2 \times h$$

$$\Rightarrow h = 4 \times \frac{5^3}{5^2}$$

$$\Rightarrow h = 4 \times 5 = 20 \text{ cm}$$

$\Rightarrow$  Ans - (C)

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**Question 70**

The difference between compound interest and simple interest on a certain sum of money for 2 years at 5% per annum is Rs. 41. What is the sum of money?

- A Rs.7200
- B Rs.9600
- C Rs.16400
- D Rs.8400

**Answer: C**

**Explanation:**

Let the given sum = Rs.  $100x$

Rate of interest = 5% and time period = 2 years

$$\text{Compound interest} = P \left[ \left( 1 + \frac{R}{100} \right)^T - 1 \right]$$

$$= 100x \left[ \left( 1 + \frac{5}{100} \right)^2 - 1 \right]$$

$$= 100x \left[ \left( \frac{21}{20} \right)^2 - 1 \right] = 100x \left( \frac{441 - 400}{400} \right)$$

$$= 100x \times \frac{41}{400} = 10.25x$$

$$\text{Simple interest} = \frac{P \times R \times T}{100}$$

$$= \frac{100x \times 5 \times 2}{100} = 10x$$

$$\Rightarrow \text{Difference between simple and compound interests} = 10.25 - 10x = 41$$

$$\Rightarrow 0.25x = 41$$

$$\Rightarrow x = \frac{41}{0.25} = 164$$

∴ Value of given sum =  $100 \times 164 = \text{Rs.}16,400$

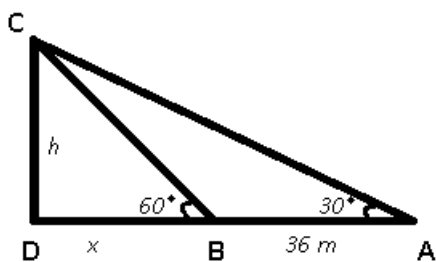
**Question 71**

A man standing on the bank of river observes that the angle subtended by a tree on the opposite bank is  $60^\circ$ . When he retires 36 m from the bank, he finds that the angle is  $30^\circ$ . The breadth of the river is

- A 15 m
- B 18 m
- C 16 m
- D 11 m

**Answer: B**

**Explanation:**



Given : CD is the tree =  $h$  m and  $AB = 36$  m

To find :  $DB = x = ?$

Solution : In  $\triangle BCD$ ,

$$\Rightarrow \tan(60^\circ) = \frac{CD}{DB}$$

$$\Rightarrow \sqrt{3} = \frac{h}{x}$$

$$\Rightarrow h = x\sqrt{3} \text{-----(i)}$$

Again, in  $\triangle ACD$ ,

$$\Rightarrow \tan(30^\circ) = \frac{CD}{AD}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{x\sqrt{3}}{x+36} \text{ [Using (i)]}$$

$$\Rightarrow x + 36 = (x\sqrt{3}) \times \sqrt{3} = 3x$$

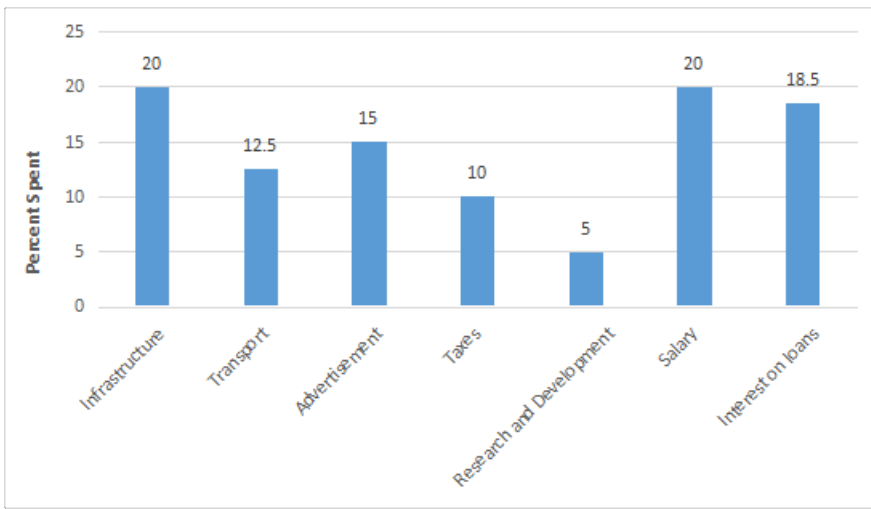
$$\Rightarrow 3x - x = 2x = 36$$

$$\Rightarrow x = \frac{36}{2} = 18 \text{ m}$$

∴ Ans - (B)

**Instructions**

Study the bar-graph given below which shows the % distribution of total expenditures of a company under various expense and answer the questions.



**Question 72**

The expenditures on the interest on loans is more than the expenditures on transport by? (expenditure on the interest on loans = 17.5%)

- A 5%
- B 10%
- C 40%
- D 30%

**Answer: C**

**Explanation:**

% expenditures on the interest on loans = 17.5%

% expenditures on transport = 12.5%

∴ Expenditures on the interest on loans is more than the expenditures on transport by

$$= \frac{17.5 - 12.5}{12.5} \times 100$$

$$= 5 \times 8 = 40\%$$

=> Ans - (C)

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**Question 73**

If the interest on loans amounted to ₹ 2.45 crores, then the total amount of expenditure on advertisement, taxes and research & development is? (expenditure on the interest on loans = 17.5%)

- A 7 Crores
- B 4.2 Crores
- C 5.4 Crores
- D 3 Crores

**Answer: B**

**Explanation:**

Let total expenditure of company = Rs.  $100x$  crores



$$\text{Interest on loans} = \frac{17.5}{100} \times 100x = 17.5x$$

$$\text{Also, } 17.5x = 2.45 \text{ crore}$$

$$\Rightarrow x = \frac{2.45}{17.5} = 0.14$$

$$\% \text{ spent on advertisement, taxes and research \& development} = 15+10+5 = 30\%$$

$$\Rightarrow \text{Total amount spent on advertisement, taxes and research \& development} = \frac{30}{100} \times 100x = 30x$$

$$= 30 \times 0.14 = 4.2 \text{ crores}$$

$\Rightarrow$  Ans - (B)

#### Question 74

The ratio of the total expenditure on infrastructure and transport to the total expenditure on taxes and interest on loans is? (expenditure on the interest on loans = 17.5%)

A 5:4

B 8:7

C 9:7

D 13:11

Answer: D

#### Explanation:

$$\% \text{ expenditure on infrastructure and transport} = 20+12.5 = 32.5\%$$

$$\% \text{ expenditure on taxes and interest on loans} = 10+17.5 = 27.5\%$$

$$\Rightarrow \text{Required ratio} = \frac{32.5}{27.5} = \frac{13}{11}$$

$\therefore$  Ratio of the total expenditure on infrastructure and transport to the total expenditure on taxes and interest on loans = 13 : 11

$\Rightarrow$  Ans - (D)

#### Question 75

If the total expenditure of the company is Rs. 20 crores, then the ratio of expenditure on transport to that on salary is? (expenditure on the interest on loans = 17.5%)

A 5:4

B 4:5

C 5:8

D 8:5

Answer: C

#### Explanation:

$$\% \text{ expenditure on transport} = 12.5\%$$

$$\% \text{ expenditure on salary} = 20\%$$

$$\Rightarrow \text{Required ratio} = \frac{12.5}{20} = \frac{5}{8}$$

$\therefore$  Ratio of expenditure on transport to that on salary = 5 : 8

$\Rightarrow$  Ans - (C)

# English

## Instructions

For the following questions answer them individually

### Question 76

In the following question, out of the four alternatives, choose the word which best expresses the meaning of the given word and click the button corresponding to it.

#### ENIGMA

- A ATTRACTIVE
- B RIDDLE
- C FLARE-UP
- D DREAM

Answer: B

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### Question 77

In the following question, out of the four alternatives, choose the word which is opposite in meaning to the given word and click the button corresponding to it.

#### INERTIA

- A STUPOR
- B VIGOUR
- C LANGUOR
- D INERTNESS

Answer: B

### Question 78

Four words are given, out of which only one word is spelt correctly. Choose the correctly spelt word and click the button corresponding to it.

- A Pious
- B Pios
- C Pieos
- D Piuos

Answer: A

### Question 79

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

Each child (a) / was given a (b) / red beautiful balloon. (c) / No error (d)

- A Each child

- B was given a
- C red beautiful balloon
- D No error

Answer: C

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### Question 80

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

She has had the best medical facilities available (a) / but she will not be cured (b) / unless she does not have a b desire to live (c) / No error (d)

- A She has had the best medical facilities available
- B but she will not be cured
- C unless she does not have a b desire to live
- D No error

Answer: C

### Question 81

In the following questions, one part of the sentence may have an error. Find out which part of the sentence has an error and click the button corresponding to it. If the sentence is free from error, click the "No error" option.

As if aware of my condition (a) / the infuriated bird suddenly doubled back on its course (b) / and charged straight after me (c) / No error (d)

- A As if aware of my condition
- B the infuriated bird suddenly doubled back on its course
- C and charged straight after me
- D No error

Answer: C

### Explanation:

In Part C, 'after' is inappropriate after straight. The correct preposition will be 'at'.

As if aware of my condition the infuriated bird suddenly doubled back on its course and charged straight at me.

### Question 82

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

The passengers were afraid but the captain \_\_\_\_\_ them that there was no danger.

- A suggested
- B pleaded
- C advise

D assured

Answer: D

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**Question 83**

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

I insisted \_\_\_\_\_ his leaving the place.

A on

B about

C in

D with

Answer: A

**Question 84**

The sentences given with blanks are to be filled with an appropriate word(s). Four alternatives are suggested for each question. For each question, choose the correct alternative and click the button corresponding to it.

Please don't \_\_\_\_\_ me when I'm speaking.

A interrupted

B interrupts

C interrupt

D interrupting

Answer: C

**Question 85**

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

**Beat around the bush**

A Walk around the forest

B Clean the bushy areas

C Avoiding the main topic

D Play around the forest

Answer: C

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**Question 86**

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

**Make room**

- A Clean the room
- B Make space
- C Attain the room
- D Make a clean sweep

**Answer: B**

**Question 87**

In each of the questions, four alternatives are given for the Idiom/Phrase. Choose the alternative which best expresses the meaning of the Idiom/Phrase and click the button corresponding to it.

**Mend your ways**

- A Happy with one's behaviour
- B Sad with one's behaviour
- C Destroy one's behaviour
- D Improve one's behaviour

**Answer: D**

**Question 88**

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

**A record of one's own life written by oneself**

- A History
- B Biography
- C Bibliography
- D Autobiography

**Answer: D**

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**Question 89**

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

**Belong to the same period**

- A Comrades
- B Contemporaries

C Compromises

D Renegades

Answer: B

Question 90

Out of the four alternatives, choose the one which can be substituted for the given words/sentences and click the button corresponding to it.

One who listens secretly to private conversation

A Eavesdropper

B Encroacher

C Eaves bearer

D Listener

Answer: A

Question 91

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

You must complete this work up to Sunday.

A within Sunday

B by Sunday

C on to Sunday

D No improvement

Answer: B

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Question 92

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

Hole wheat bread is good for health.

A Whole

B Healthy

C Holed

D No improvement

Answer: A

**Question 93**

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

She has no pen to write.

- A write with
- B write at
- C write in
- D No improvement

**Answer: A**

**Question 94**

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

He dislikes the word, isn't he?

- A doesn't he?
- B didn't he?
- C does he?
- D No improvement

**Answer: A**

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**Question 95**

A sentence/a part of the sentence is underlined. Four alternatives are given to the underlined part which will improve the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the button corresponding to "No improvement".

He is one of those who likes to help others.

- A those persons who like to help others
- B those who like to help the other
- C those who like to help others
- D No improvement

**Answer: C**

**Explanation:**

He is one of those who like to help others. Since 'those' is a plural pronoun, it must be followed by a plural verb which is 'like'.

**Instructions**

A passage is given with 5 questions following it. Read the passage carefully and choose the best answer to each question out of the four alternatives and click the button corresponding to it.

Crude mineral oil comes out of the earth as a thick brown or black liquid with a b smell. It is a complex mixture of many different

substances, each with its own individual qualities. Most of them are combinations of hydrogen and carbon in varying proportions. Such hydrocarbons are also found in other forms such as bitumen, asphalt and natural gas. Mineral oil originates from the carcasses of tiny animals and from plants that live in the sea. Over million of years, these dead creatures form large deposits under sea-bed and ocean currents cover them with a blanket of sand and silt. As this material hardens, it becomes sedimentary rock and effectively shuts out the oxygen, thus preventing the complete decomposition of the marine deposits underneath. The layers of sedimentary rocks become thicker, and heavier. Their pressure produces heat, which transforms the tiny carcasses into crude oil in a process that is still going on today.

**Question 96**

**How does crude oil come out of the earth ?**

- A Thick brown or black liquid with mild smell
- B Thick red brown liquid with b smell
- C Mixture of different colours
- D Thick brown or black liquid with a b smell

**Answer: D**

**Question 97**

**What is crude mineral oil?**

- A Complex mixture of many different substances
- B Simple mixture of natural gas
- C Plain white oil
- D It is bitumen

**Answer: A**

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**Question 98**

**From where does mineral oil originate?**

- A Complex mixture of substances
- B Carcasses of tiny animals and plants that live in the sea
- C From lakes
- D Only from plants

**Answer: B**

**Question 99**

**The time taken for the marine deposits to harden into rocks is**

- A a few centuries
- B millions of years
- C a few decades



D thousands of years

Answer: B

Question 100

Sedimentary rocks leads to the formation of oil deposits because

- A their pressure produces heat and turns deposits of animal carcasses and plants into oil.
- B it turns heavy and shuts out the oxygen
- C it becomes hard and forms into rocks to squeeze oil
- D it becomes light and soft and applies pressure to produce oil

Answer: A

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