





















Parmar SSC Live Mock 28





<p>Q. 1</p>	<p>Select the most appropriate ANTONYM of the given word. Hollow</p> <p>a) Solid </p> <p>b) Empty </p> <p>c) Narrow </p> <p>d) Curved </p>
<p>Explanation:</p>	<p>Correct Answer Option A: Solid</p> <ul style="list-style-type: none"> • Hollow means: having a hole or empty space inside (खोखला). • Solid means: firm and full, without any holes or empty space (ठोस) — opposite of hollow. • Narrow (संकीर्ण) refers to width • Curved (मुड़ा हुआ) refers to shape





<p>Q. 2</p>	<p>Select the option which means the same as the group of words given. To steal and pass off ideas and words of another as one's own</p> <p>a) Review </p> <p>b) Plagiarize </p> <p>c) Credit </p> <p>d) Familiarize </p>
<p>Explanation:</p>	<p>Correct Answer option B : Plagiarize</p> <ul style="list-style-type: none"> • Plagiarize: to copy someone else's work, ideas, or words and present them as your own. • Review: to examine or assess (समीक्षा करना) • Credit: to acknowledge the source (श्रेय देना). • Familiarize: to make someone aware or knowledgeable (परिचित कराना)





<p>Q. 3</p>	<p>Select the option that can be used as a one-word substitute for the given group of words. To stay longer than necessary</p> <p>a) Wander </p> <p>b) Stroll </p> <p>c) Digress </p> <p>d) Linger </p>
<p>Explanation:</p>	<p>Correct Answer: Option D – Linger</p> <ul style="list-style-type: none"> • Linger: to stay in a place longer than necessary (ज़्यादा देर तक ठहरना). • Wander: to move around aimlessly (भटकना). • Stroll: to walk in a relaxed manner (टहलना). • Digress: to go off-topic while speaking/writing.

<p>Q. 4</p>	<p>Select the correct indirect form of the given sentence. “Poonam, I will wait for you in front of the school gate,” Vidushi said.</p> <p>a) Vidushi has told Poonam that she is waiting for her in front of the school gate. </p> <p>b) Vidushi had told Poonam that I would wait for her in front of the school gate. </p> <p>c) Vidushi told Poonam that she would wait for her in front of the school gate. </p> <p>d) Vidushi is telling Poonam that she has waited for her in front of the school gate. </p>
<p>Explanation:</p>	<p>Correct Answer: Option C – Vidushi told Poonam that she would wait for her in front of the school gate.</p> <ul style="list-style-type: none"> ◦ will → would (as reporting verb “said” is in past tense) ◦ I → she, you → her (pronouns change)

Q. 5	<p>Select the most appropriate meaning of the given idiom. Flex one's muscles</p> <p>a) beat someone physically with muscle strength </p> <p>b) show one's muscular strength </p> <p>c) give or make a show of one's strength </p> <p>d) show that one has more muscles than another </p>
Explanation:	<p>Correct Answer: Option C – Give or make a show of one's strength</p> <ul style="list-style-type: none"> • Flex one's muscles is an idiom that means: <ul style="list-style-type: none"> ➤ To demonstrate power, strength, or influence, especially as a warning or to impress.

Q. 6	<p>Select the most appropriate ANTONYM of the given word. Talkative</p> <p>a) Chatty </p> <p>b) Conversational </p> <p>c) Withdrawn </p> <p>d) Garrulous </p>
Explanation:	<p>Correct Answer: Option C – Withdrawn</p> <ul style="list-style-type: none"> • Talkative: someone who talks a lot (बातूनी) • Withdrawn: someone who is quiet and not social; does not speak much (अंतर्मुखी / चुप रहने वाला) • Chatty, Conversational, and Garrulous all mean talkative or fond of talking.

Q. 7	<p>Select the option that expresses the given sentence in reported speech. “Vidushi, you have grown even taller!” said Sana.</p> <p>a) Sana will exclaim to Vidushi that she was even taller. </p> <p>b) Sana exclaimed to Vidushi that she had grown even taller. </p> <p>c) Sana exclaims how even taller Vidushi had grown. </p> <p>d) Sana had exclaimed how Vidushi is growing even taller. </p>
Explanation:	<p>Correct Answer: Option B – Sana exclaimed to Vidushi that she had grown even taller.</p> <ul style="list-style-type: none"> • Direct Speech: “You have grown” → In Reported Speech (past reporting verb “said”), present perfect (“have grown”) changes to past perfect (“had grown”). • “You” changes to “she” (because the speaker is referring to Vidushi). • “Said” + exclamatory tone = “exclaimed”

Q. 8	<p>Select the INCORRECTLY spelt word.</p> <p>a) Courteous </p> <p>b) Disatisfied </p> <p>c) Encourage </p> <p>d) Ambition </p>
Explanation:	<p>Correct Answer: Option B – Disatisfied</p> <p>Correct spelling: Dissatisfied (with double s)</p> <p>Meaning: not content or pleased (असंतुष्ट)</p>

Q. 9

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. As a result, he had a debt of 500 million US dollars at the time of his death.

B. Unfortunately, he began spending lavishly on anything he desired, not what he actually needed.

C. Michael Jackson, called the 'King of Pop Music', stayed at the top of his career for many years.

D. He was respected for his work culture; he would spend long nights at the studio to fix a note correctly in a song.

a) CDBA 

b) DBAC 





c) ADCB 









d) BADC 





Explanation:





Correct Answer: Option A – CDBA

- **C:** Introduces **Michael Jackson** and sets the context → “*King of Pop Music*”
- **D:** Describes his **dedication and work culture**
- **B:** Moves into the **contrast** – his **lavish lifestyle**
- **A:** States the **result** of that lifestyle – **huge debt**

Q. 10	<p>Select the most appropriate synonym of the given word.</p> <p>Forbid</p> <p>a) Close </p> <p>b) Encourage </p> <p>c) Adieu </p> <p>d) Prohibit </p>
Explanation:	<p>Correct Answer: Option D – Prohibit</p> <ul style="list-style-type: none">• Forbid means: to not allow; to order someone not to do something (मनाही करना / मना करना)• Prohibit means: to formally forbid something by law or authority — same meaning• Close: to shut (बंद करना)• Encourage: to support or inspire (प्रोत्साहित करना)• Adieu: farewell or goodbye (अलविदा)

Q. 11	<p>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.</p> <p>A probe has been ordered / by the incident / that occurred at the celebrations.</p> <p>a) A probe has been ordered </p> <p>b) by the incident </p> <p>c) No error </p> <p>d) that occurred at the celebrations </p>
Explanation:	<p>Correct Answer: Option B – by the incident</p> <ul style="list-style-type: none"> When an investigation or "probe" is ordered in relation to an event, the correct preposition to use is typically "into" or "of." "By" implies the agent performing the action, but the incident isn't ordering the probe; it's the subject of the investigation. Corrected sentence: "A probe has been ordered into the incident that occurred at the celebrations."
Q. 12	<p>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'.</p> <p>Lavanya was happy to see that the tree they had planted the previous year <u>has grow quite taller</u>.</p> <p>a) No substitution required </p> <p>b) had grown quite tallest </p> <p>c) had grown quite tall </p> <p>d) had grow quite taller </p>
Explanation:	<p>Correct Answer: Option C – had grown quite tall</p> <ul style="list-style-type: none"> "has grow" is incorrect — the past participle of "grow" is "grown" "taller" is a comparative form, but it needs to be used correctly "quite" usually goes with adjectives like "tall" (positive degree), not with comparative "taller"

Q. 13	<p>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'.</p> <p><u>If the box breaking</u> the glass bottle will be shattered.</p> <p>a) If the box broke </p> <p>b) If the box breaks </p> <p>c) If the box break </p> <p>d) No substitution required </p>
Explanation:	<p>Correct Answer: Option B – If the box breaks</p> <ul style="list-style-type: none"> The correct form should use simple present tense after “If” for a first conditional sentence: <p>➤ If + simple present, will + base verb</p>

Q. 14	<p>Select the most appropriate word to fill in the blank.</p> <p>The first van was sent as a _____ to mislead the thugs.</p> <p>a) persuasion </p> <p>b) determination </p> <p>c) temptation </p> <p>d) decoy </p>
Explanation:	<p>Correct Answer: Option D – Decoy</p> <ul style="list-style-type: none"> The van was sent to mislead the thugs — so the missing word should mean something used to distract or deceive. Decoy – something or someone used to distract or mislead (चाल / भ्रमित करने के लिए साधन)

Q. 15

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. Humans work because they have to; they play because they want to.

B. The most useful definitions are those that clarify the relationship of sports to play, games and contests.

C. "Play," wrote the German theorist Carl Diem, "is purposeless activity, for its own sake, the opposite of work."

D. Sports are part of every culture, past and present, but each culture has its own definition of sports.

a) ABCD 

b) BADC 









c) DCBA 





d) DBCA 





Explanation:





Correct Answer: Option D – DBCA





1. **D** introduces the topic — sports are universal but defined differently across cultures.
2. **B** follows by talking about the importance of defining sports in relation to **play, games, and contests**.
3. **C** defines **play** using a quotation, giving more clarity on its meaning.
4. **A** adds further distinction between **work and play**, connecting smoothly with C.





Q. 16	<p>Select the most appropriate synonym of the given word.</p> <p>Apathetic</p> <p>a) Irregular </p> <p>b) Indifferent </p> <p>c) Irrelevant </p> <p>d) Instantaneous </p>
Explanation:	<p>Correct Answer: Option B – Indifferent</p> <ul style="list-style-type: none"> • Apathetic means: → lacking interest, enthusiasm, or concern (उदासीन / बिना रुचि का) • Indifferent means: → having no particular interest or concern; unconcerned — same meaning <p>Other Options:</p> <ul style="list-style-type: none"> • Irregular – not consistent or uniform • Irrelevant – not related to the topic • Instantaneous – happening immediately
Q. 17	<p>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.</p> <p>The energy required / for perform various functions of the body / is obtained from food.</p> <p>a) for perform various functions of the body </p> <p>b) The energy required </p> <p>c) No error </p> <p>d) is obtained from food </p>
Explanation:	<p>Correct Answer: Option A – for perform various functions of the body</p> <ul style="list-style-type: none"> • After "for," we need to use a gerund (verb + ing) form. • So, "for perform" should be "for performing."

Q. 18	<p>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'.</p> <p>What are the <u>options available of me</u> for a change of career?</p> <p>a) options available over me </p> <p>b) No substitution required </p> <p>c) options available to me </p> <p>d) options available from me </p>
Explanation:	<p>Correct Answer: Option C – options available to me</p> <ul style="list-style-type: none">• The correct preposition after “available” when referring to a person is “to.” <p>Corrected sentence: What are the options available to me for a change of career?</p>

Q. 19	<p>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.</p> <p>The monkeys swunged / on the branches and / jumped over the compound wall.</p> <p>a) on the branches and </p> <p>b) No error </p> <p>c) The monkeys swunged </p> <p>d) jumped over the compound wall </p>
Explanation:	<p>Correct Answer: Option C – The monkeys swunged</p> <ul style="list-style-type: none"> The verb "swing" is irregular. Its past tense is "swung". <p>Correct sentence: The monkeys swung on the branches and jumped over the compound wall.</p>

Q. 20	<p>Select the option that expresses the given sentence in passive voice.</p> <p>The shopkeeper assured me about the freshness of the vegetables.</p> <p>a) I am assured by the shopkeeper about the freshness of the vegetables. </p> <p>b) I had been assured by the shopkeeper about vegetables being freshness of the vegetables. </p> <p>c) I was assured about the freshness of the vegetables by the shopkeeper. </p> <p>d) I was being assured about the freshness of the vegetables by the shopkeeper. </p>
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Explanation:	<p>Correct Answer: Option C – I was assured about the freshness of the vegetables by the shopkeeper.</p> <ul style="list-style-type: none"> • Tense in active voice: Past simple (<i>assured</i>) • In passive voice: Subject + was/were + past participle + by + doer • Me becomes the subject (I) in passive • Assured (past participle) • So, the correct passive: <i>I was assured about the freshness of the vegetables by the shopkeeper.</i>
Q. 21	<p>In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.</p> <p>Sudha Murty was born in 1950 in Shiggaon in north Karnataka. She did her MTech (1) _____ computer science, and is now the chairperson of (2) _____ Infosys Foundation. A prolific (3) _____ in English and Kannada, she (4) _____ novels, technical books, travelogues, collections of short stories and non-fictional pieces, and four books for children. (5) _____ books have been translated into all the major Indian languages.</p> <p>Select the most appropriate option to fill in blank No. 1.</p> <p>a) on </p> <p>b) of </p> <p>c) in </p> <p>d) at </p>
Explanation:	<p>Correct Answer: Option C – in</p> <ul style="list-style-type: none"> • When specifying the field or subject of a degree, the preposition "in" is commonly used.





Q. 22	<p>In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.</p> <p>Sudha Murty was born in 1950 in Shiggaon in north Karnataka. She did her MTech (1) _____ computer science, and is now the chairperson of (2) _____ Infosys Foundation. A prolific (3) _____ in English and Kannada, she (4) _____ novels, technical books, travelogues, collections of short stories and non-fictional pieces, and four books for children. (5) _____ books have been translated into all the major Indian languages.</p> <p>Select the most appropriate option to fill in blank No. 2.</p> <p>a) one </p> <p>b) an </p> <p>c) the </p> <p>d) a </p>
Explanation:	<p>Correct Answer: Option C – the</p> <ul style="list-style-type: none">• "Infosys Foundation" is a specific, well-known organization.• We use the definite article "the" before names of specific institutions, organizations, and foundations when we refer to them clearly and specifically.

Q. 23

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Sudha Murty was born in 1950 in Shiggaon in north Karnataka. She did her MTech (1) _____ computer science, and is now the chairperson of (2) _____ Infosys Foundation. A prolific (3) _____ in English and Kannada, she (4) _____ novels, technical books, travelogues, collections of short stories and non-fictional pieces, and four books for children. (5) _____ books have been translated into all the major Indian languages.

Select the most appropriate option to fill in blank No. 3.

- a) poet 
- b) writer 
- c) reader 
- d) speaker 

Explanation:

Correct Answer: Option B – writer

- **"Prolific"** means *producing a large quantity of something*, especially writing or art.
- So, the noun after "prolific" should be someone who **creates** — not someone who consumes or performs.
- **Writer** – Writes across genres, including stories, novels, non-fiction.

Q. 24

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Sudha Murty was born in 1950 in Shiggaon in north Karnataka. She did her MTech (1) _____ computer science, and is now the chairperson of (2) _____ Infosys Foundation. A prolific (3) _____ in English and Kannada, she (4) _____ novels, technical books, travelogues, collections of short stories and non-fictional pieces, and four books for children. (5) _____ books have been translated into all the major Indian languages.

Select the most appropriate option to fill in blank No. 4.

a) writing 

b) will write 

c) write 

d) has written 

Explanation:

Correct Answer: Option D – has written





- The sentence is talking about **Sudha Murty's body of work up to the present**.
- For actions that **started in the past and have relevance to the present**, we use the **present perfect tense: has written**

Q. 25

In the following passage, some words have been deleted. Read the passage carefully and select the most appropriate option to fill in each blank.

Sudha Murty was born in 1950 in Shiggaon in north Karnataka. She did her MTech (1) _____ computer science, and is now the chairperson of (2) _____ Infosys Foundation. A prolific (3) _____ in English and Kannada, she (4) _____ novels, technical books, travelogues, collections of short stories and non-fictional pieces, and four books for children. (5) _____ books have been translated into all the major Indian languages.

Select the most appropriate option to fill in blank No. 5.

- a) Their 
- b) My 
- c) His 
- d) Her 





Explanation:

Correct Answer: Option D– Her

- The passage is about **Sudha Murty**, a female individual.
- So, the correct possessive pronoun referring to her is “**her**.”

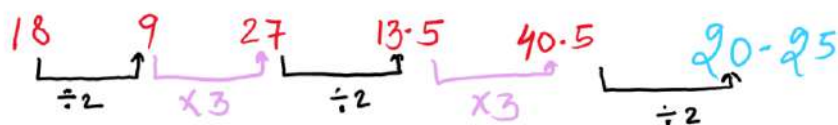
Q. 26

What should come in place of the question mark (?) in the following series?
18, 9, 27, 13.5, 40.5, ?

- a) 81.5 
- b) 22.5 
- c) 81 
- d) 20.25 

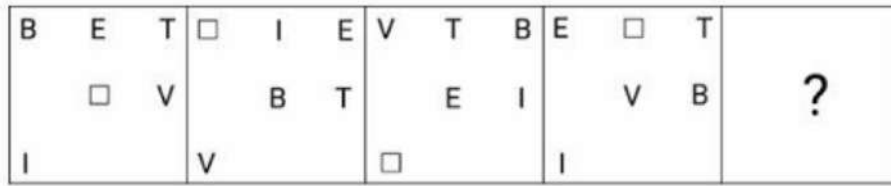
Explanation:

Option 4 is correct.

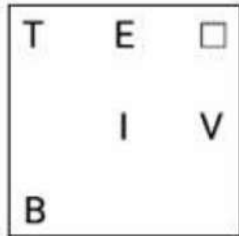


Q. 27

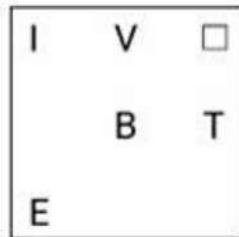
Select the figure from among the given options that can replace the question mark(?) in the following series and complete the pattern.



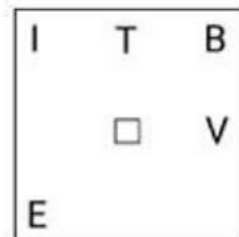
a)



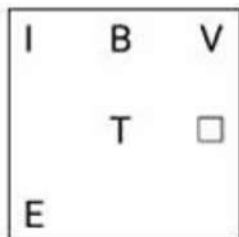
b)



c)

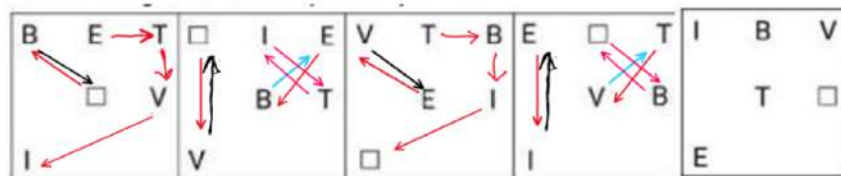


d)



Explanation:

Option 4 is correct.






Q. 28

Which two numbers should be interchanged to make the given equation correct?

$$7 \times 4 - 8 \times 2 + 3 \times 14 \times 5 - 9 = 133$$

(Note: Interchange should be done of entire number and not individual digits of a given number)

a) 7 and 14 b) 9 and 8 c) 2 and 4 d) 14 and 9 

Explanation:

Option 4 is correct.

$$7 \times 4 - 8 \times 2 + 3 \times 14 \times 5 - 9 = 133$$

$$(7 \times 4) - (8 \times 2) + (3 \times 9 \times 5) - 14 = 133$$

$$28 - 16 + 135 - 14 = 133$$

$$-2 + 135 = 133$$

Ans

Q. 29

GN76 is related to UB53 in a certain way. In the same way, KR34 is related to YF11. To which of the following is OV98 related, following the same logic?

a) CJ75 ✓

b) JC88 ✗

c) CJ78 ✗

d) JC68 ✗

Option 1 is correct.

Explanation:

$\begin{array}{cccc} G & N & 7 & 6 \\ +14 \downarrow & -12 \downarrow & -2 \downarrow & -3 \downarrow \\ U & B & 5 & 3 \end{array}$

$\begin{array}{cccc} K & R & 3 & 4 \\ +14 \downarrow & -12 \downarrow & -2 \downarrow & -3 \downarrow \\ Y & F & 1 & 1 \end{array}$

$\begin{array}{cccc} O & V & 9 & 8 \\ +14 \downarrow & -12 \downarrow & -2 \downarrow & -3 \downarrow \\ C & J & 7 & 5 \end{array}$

Q. 30


Select the set in which the numbers are related in the same way as are the numbers of the given sets.


(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding/ subtracting /multiplying to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)


(444, 74, 6)

(666, 37, 18)

a) (256, 32, 8) 

b) (80, 11, 8) 

c) (96, 17, 8) 

d) (80, 17, 8) 

Explanation:

Option 1 is correct.

$$6 \times 74 = 444$$

$$18 \times 37 = 666$$

$$32 \times 8 = 256$$

Q. 31

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 horses are donkeys.

All donkeys are mules.

Conclusions:

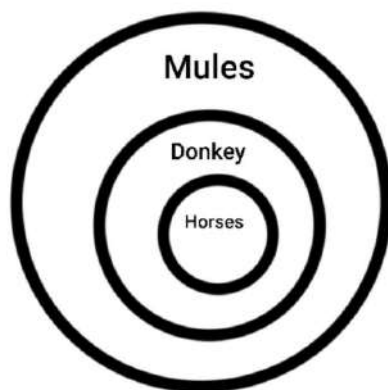
I. All donkeys are horses.

II. Some mules are donkeys.

- a) Only conclusion II follows ✓
- b) Only conclusion I follows ✗
- c) Neither conclusion I nor II follows ✗
- d) Both conclusion I and II follow ✗

Option 1 is correct.

Explanation:






All donkeys are horses **False** (All horses are donkeys it does not mean that all donkeys are horses.)

Some mules are donkeys. **True** (As all donkeys are mules which means some part of mules are donkeys.)

Q. 32

46 is related to 391 following a certain logic. Following the same logic, 52 is related to 442. To which of the following is 67 related, following the same logic?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

a) 479.5 b) 652.6 c) 629.5 d) 569.5 

Explanation:

Option 4 is correct.

$$46 \times 9 - 23 = 391$$

$$52 \times 9 - 26 = 442$$

$$67 \times 9 - 33.5 = 569.5$$

Q. 33

Unscramble the given letter cluster to find meaningful words and choose the odd one.

a) IOAMMRZ ❌

b) RPATRUI ❌

c) PNRAUIM ❌

d) CNLWKUO ✅

Explanation:

Option 4 is correct.

I O A M M R Z → M I Z O R A M

R P A T R U I → T R I P U R A

P N R A U I M → M A N I P U R

C N L W K U O → L U C K N O W

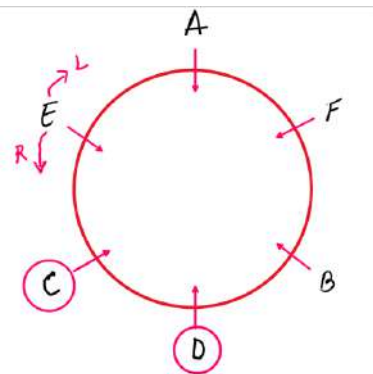
Only Capital here is Lucknow, the rest are States of Indian Territory.

Q. 34

Six people A, B, C, D, E and F are sitting around a circular table, facing the centre (but not necessarily in the same order). F is sitting second to right of D. C is sitting third to left of F. B is sitting to the immediate right of D. A is not an immediate neighbour of C. How many people are sitting between E and B when counted from right of E?

a) 4 b) 2 c) 1 d) 3 **Explanation:**

Option 2 is correct.



Q. 35

In this question, two statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusion(s) logically follows/follow from the

Statements:

All cows are goats.

Some goats are lions.

Conclusions:

I. All lions are goats.

II. Some cows are lions

a) Neither Conclusion I nor II follow. ✓

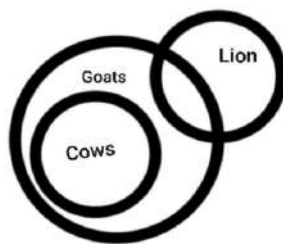
b) Both Conclusions I and II follow. ✗

c) Only Conclusion II follows. ✗

d) Only Conclusion I follows. ✗

Explanation:

Option 1 is correct.



All lions are goats. **False** (Some goats are lions it does not mean all lions are goat)

Some cows are lions. **False** (It is a possibility not a definite statement.)

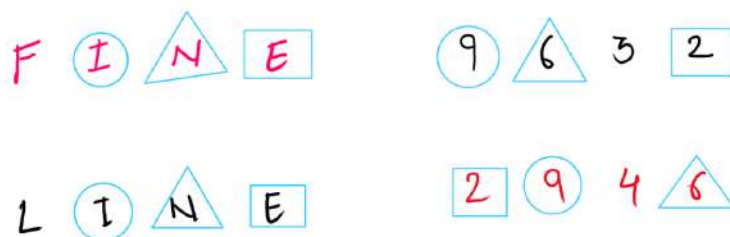
Q. 36

In a certain code language, 'FINE' is coded as '9632' and 'LINE' is coded as '2946'. What is the code for 'F' in that language?

- a) 3 ✓
 b) 9 ✗
 c) 6 ✗
 d) 2 ✗

Explanation:

Option 1 is correct.



Code for 'F' is 3.

Q. 37

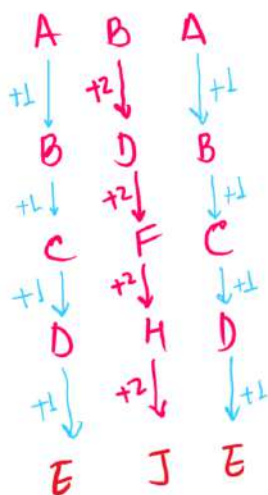
What should come in place of the question mark(?) in the given series based on the English alphabetical order?

ABA, BDB, CFC, DHD, ?

- a) GJE ✗
 b) GJG ✗
 c) EJE ✓
 d) EKE ✗

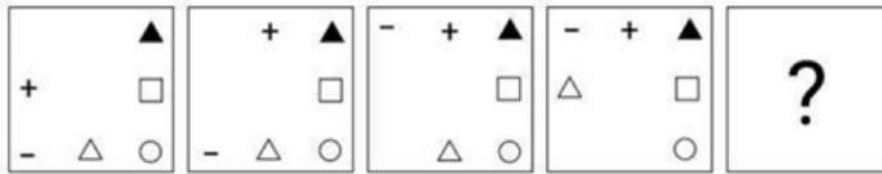
Explanation:

Option 3 is correct.

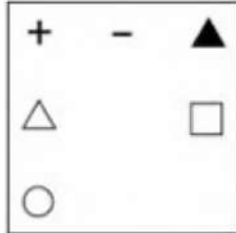


Q. 38

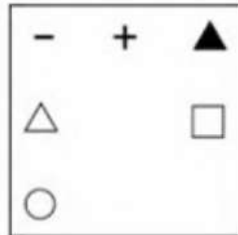
Identify the figure given in the options which when put of ? will logically complete the series.



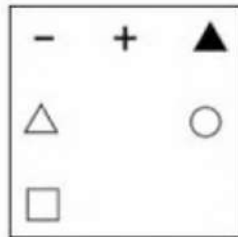
a)



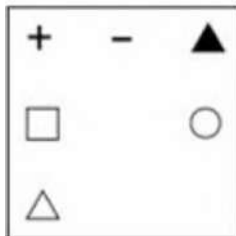
b)



c)

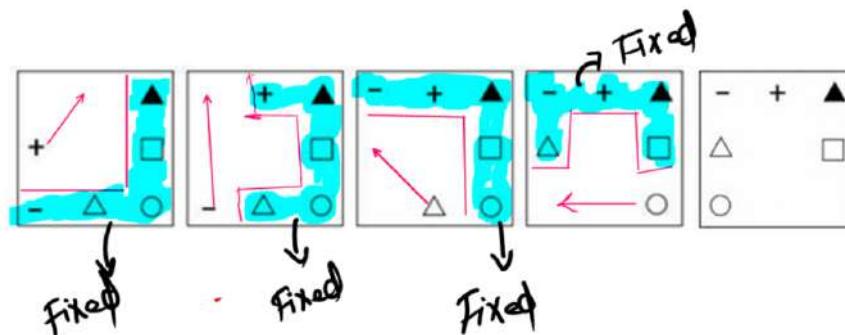


d)



Option 2 is correct.

Explanation:



What was the day on 29 February 2024 ?

d) Saturday 

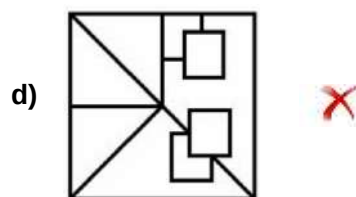
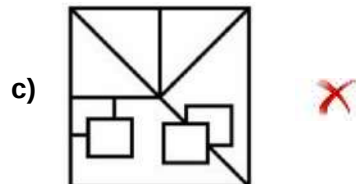
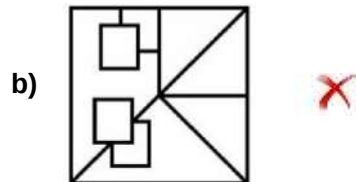
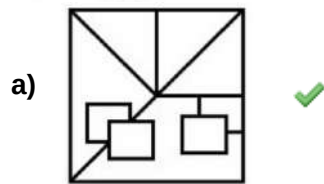
Explanation:

Calculation

$$\frac{29 + 2 + 6 + 24 + 6}{7}$$
$$\Rightarrow \frac{67}{7}$$
$$\Rightarrow 4 \text{ (Remainder)}$$
$$\Rightarrow \text{Thursday}$$

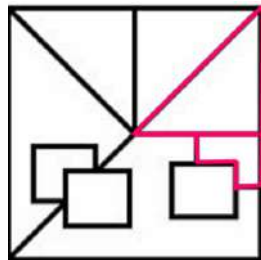
Q. 40

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



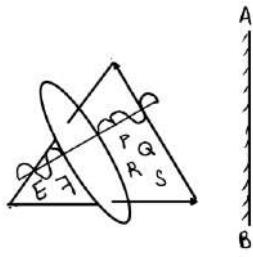
Option 1 is correct.

Explanation:

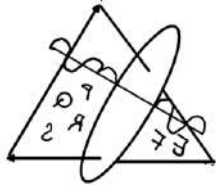


Q. 41

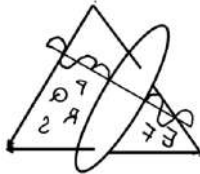
Choose the correct mirror image of the following given figure.



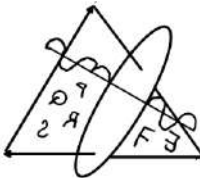
a)



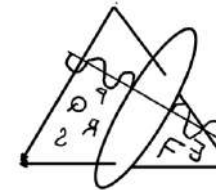
b)



c)

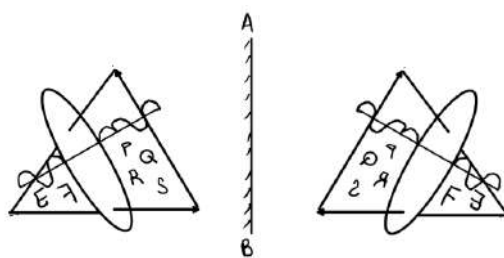


d)



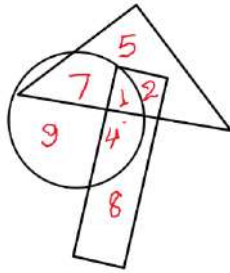
Option 3 is correct.

Explanation:



Q. 42

In the following figure 'Circle' represents 'Civil Servants' , 'Rectangle' represents 'Ministers' and 'Triangle' represents 'Graduates'.

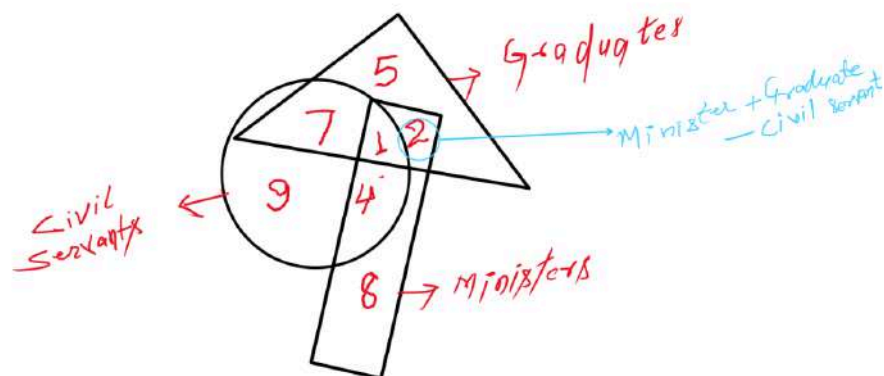


How many Ministers are Graduates but not Civil Servants ?

- a) 2 ✓
 b) 10 ✗
 c) 15 ✗
 d) 7 ✗

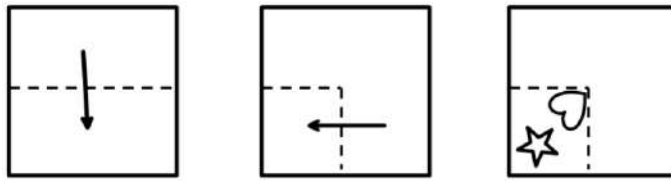
Explanation:









Option 1 is correct.



Q. 43

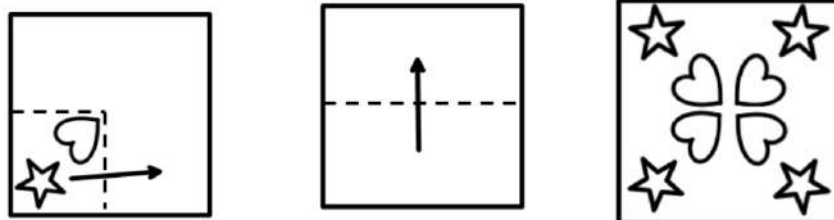
The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?



- a)  
- b)  
- c)  
- d)  

Explanation:

Option 2 is correct.



Q. 44

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

A _ P _ C A L _ P _ A L _ P C

a) LPPCP ✓

b) BQMQM ✗

c) PLLPC ✗

d) LCPPC ✗

Explanation:

Option 1 is correct.

Sequence is : A L P P C / A L P P C / A L P P C

Q. 45

NQRP is related to TIJV in a certain way based on the English alphabetical order. In the same way, EHIG is related to KRSM. To which of the following is LOPN related, following the same logic?

a) RTVT ✗

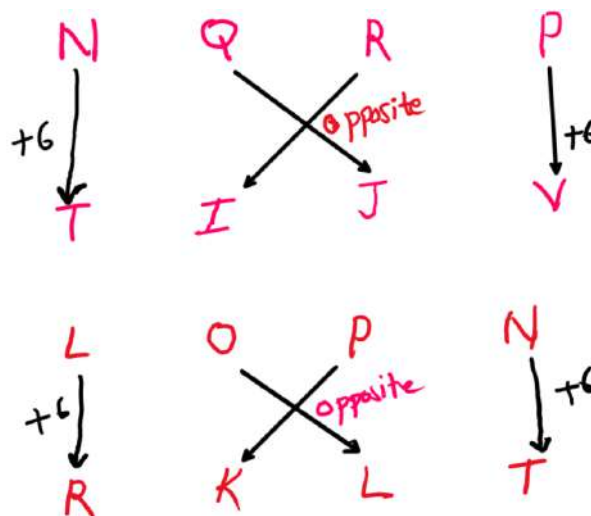
b) TVUR ✗

c) RUTV ✗

d) RKLT ✓

Explanation:

Option 4 is correct.



Q. 46

5 is related to 77 following a certain logic. Following the same logic, 9 is related to 137. To which of the following is 3 related, following the same logic?

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding / subtracting / multiplying etc., to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

a) 49 ✗

b) 47 ✓

c) 44 ✗

d) 45 ✗

Explanation:

Option 2 is correct.

$$5 \times 15 + 2 = 77$$

$$9 \times 15 + 2 = 137$$

$$3 \times 15 + 2 = 47$$

Q. 47

What should come in place of the question mark (?) in the given series?

7 ? 22 37 57 82

a) 17 ✗

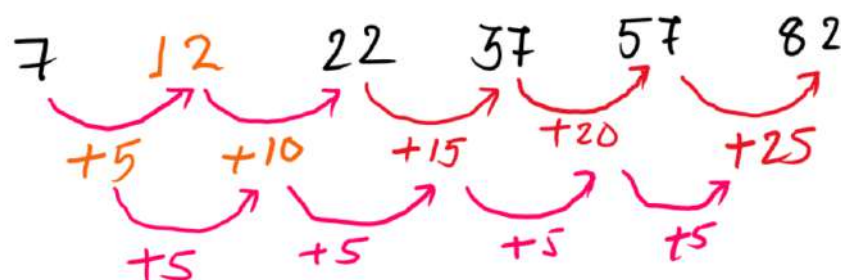
b) 12 ✓





c) 10 ✗





d) 20 ✗





Explanation:





Option 2 is correct.



Q. 48	<p>If “Sun Temple” is Related to “Black Pagoda” then which of the following options is Related to “White Pagoda” ?</p> <p>a) Lingaraja Temple </p> <p>b) Sri Jagannath Temple </p> <p>c) Brahmeshwar Temple </p> <p>d) Ananta Vasudeva Temple </p>
Explanation:	<p>Option 2 is correct.</p> <p>The Sun temple is called as Black Pagoda. Similarly, Sri Jagannath Temple is called as White Pagoda.</p>

Q. 49	<p>Select the correct option that indicates the arrangement of the given words in the reverse order in which they appear in an English dictionary.</p> <p>1 . Dictionary 2 . Disappear 3 . Discourage 4. Disapproval 5. Dominion</p> <p>a) 1, 2, 4, 3, 5 </p> <p>b) 2, 4, 3, 5, 1 </p> <p>c) 5, 3, 4, 2, 1 </p> <p>d) 5, 4, 3, 1, 2 </p>
Explanation:	<p>Option 3 is correct.</p> <p>Words in reverse order as in the English Dictionary are as follows. 5.Dominion > 3.Discourage > 4.Disapproval > 2. Disappear > 1.Dictionary</p>

Q. 50	<p>There are 41 students in a row facing north. If Maya is at 14th from the left end and Niyati is 16th from right end. How many students are there between them ?</p> <p>a) 12 </p> <p>b) 10 </p> <p>c) 9 </p> <p>d) 11 </p>
Explanation:	<p>Option 4 is correct.</p> <p>$41 - (14 + 16) = 11$</p>

Q. 51	<p>Which one of the following correctly explains the change in seasons on Earth?</p> <p>a) Tilt of the earth's axis </p> <p>b) Rotation of the Earth on its own axis </p> <p>c) Revolution of the Moon around the Sun </p> <p>d) Interaction of the Earth with other planets </p>
Explanation:	<p>Correct answer = Option 1 (Tilt of the earth's axis)</p> <ul style="list-style-type: none"> The change in seasons on Earth is primarily due to the 23.5-degree tilt of the Earth's axis relative to its orbital plane around the Sun. Rotation of the Earth = <ul style="list-style-type: none"> When the Earth spins on its axis, it is called rotational motion. This is done once a day or once every 24 hours. Earth rotates along its axis from west to east. EFFECTS = <ul style="list-style-type: none"> Days and nights occur due to rotation of the earth. The circle that divides the day from night on the globe is called the circle of illumination. As the Earth rotates, so do temperature changes. Revolution = <ul style="list-style-type: none"> The second motion of the earth around the sun in its orbit is called revolution. It takes $365\frac{1}{4}$ days (one year) to revolve around the sun. EFFECTS = <ul style="list-style-type: none"> Creation of seasons and duration of days and nights. Creation of Heat Zones.

Q. 52

In humans, urea is mainly formed from the metabolism of which one of the following components of food?

- a) Fatty Acids 
- b) Vitamins 
- c) Amino Acids 
- d) Glucose 

Explanation:

Correct answer = Option 3 (Amino Acids)

Urea =

- **Formation =**

- In the course of the breakdown of proteins, amino groups (NH₂) are removed from the amino acids that partly comprise proteins.
- These amino groups are converted to **ammonia (NH₃)**, which is toxic to the body and thus must be converted to urea by the liver.
- Urea formation takes place in the hepatocytes of the liver and then it is released into the bloodstream.

- **Chemical Formula of Urea:**

- CO(NH₂)₂ — one carbon atom, one oxygen, and two amine groups.
- In 1828, German chemist Friedrich Wöhler synthesized urea from an inorganic compound
- Urea was first isolated from urine in 1773 by the French chemist Hilaire-Marin Rouelle.
- It is a colourless, crystalline substance that melts at 132.7° C (271° F) and decomposes before boiling.
- Urea Cycle is also called Ornithine Cycle
- This cycle was first discovered by Hans Krebs and Kurt Henseleit in 1932
- **Uremia** = A serious condition where urea builds up in the blood due to kidney failure
- **Urea** a commonly used nitrogen based fertiliser , is prepared by the reaction between ammonia and carbon-dioxide.





Q. 53**The common element in graphite, fullerene, diamond and graphene is :****a) Oxygen****b) Nitrogen****c) Hydrogen****d) Carbon**

Correct answer = Option 4 (Carbon)

Allotropes of Carbon =

- Allotrope refers to one or more forms of a chemical element that occur in the same physical state.
- **Diamond =**
 - **Structure:** Each carbon atom is bonded to 4 others in a 3D tetrahedral structure.
 - **Properties:**
 - Hardest natural substance
 - Transparent and shiny
 - Excellent insulator (non-conductor)
 - **Uses:** Jewelry, cutting tools, drill bits
 - **Refractive index- 2.42**
- **Graphite =**
 - **Structure:** Layers of carbon atoms in hexagonal rings, each atom bonded to 3 others. Layers are loosely held.
 - **Properties:**
 - Soft and slippery (used as a lubricant)
 - Black and opaque
 - Good conductor of electricity (free electrons)
 - **Uses:** Pencil lead, lubricants, batteries, electrodes
- **Fullerenes (Buckminsterfullerene – C₆₀) =**
 - **Structure:** Carbon atoms form a hollow sphere, like a football.
 - **Properties:**
 - Molecule is spherical (C₆₀ = 60 carbon atoms)
 - Conducts electricity
 - Soluble in organic solvents
 - **Uses:** Nanotechnology, drug delivery, materials science
 - **Discovered by – Harold Kroto, Richard E. Smalley , and Robert F. Curl Jr , in 1985 .**
 - Very light and strong material .
- **Carbon Nanotubes =**
 - **Structure:** Cylindrical tubes made by rolling graphene sheets.
 - **Properties:**
 - Very strong and lightweight
 - Excellent conductors
 - **Uses:** Electronics, sports equipment, nanotech
- **Graphene =**
 - **Structure:** A single sheet of carbon atoms arranged in a hexagonal lattice.
 - **Properties:**
 - Strongest known material (1 atom thick!)
 - Thinnest and strongest material
 - Excellent conductor of electricity and heat
 - Transparent
 -
 - **Uses:** Touchscreens, flexible electronics, advanced materials

Explanation:

Q. 54	<p>Which one of the following statements is correct?</p> <p>a) Brahmi, used for writing many Ashokan inscriptions, shows local variations. </p> <p>b) The system of hieroglyphic writing was developed in ancient Mesopotamia. </p> <p>c) The system of cuneiform writing developed around the 3rd millennium BCE in Egypt. </p> <p>d) An ancient script, Kharoshthi was widely used in the southern part of India. </p>
Explanation:	<p>Correct answer = Option 1 (Brahmi, used for writing many Ashokan inscriptions, shows local variations)</p> <p>Brahmi =</p> <ul style="list-style-type: none"> • Brahmi is one of the oldest Indian scripts. • Used in the 3rd century BCE for Ashoka's edicts. • Found across India — from Afghanistan to Tamil Nadu. • In most cases Brahmi and its derivatives are written from left to right • Brahmi is semialphabetic, each consonant having either an inherent a sound pronounced after it or a diacritic mark to show another vowel <p>Hieroglyphics =</p> <ul style="list-style-type: none"> • Hieroglyphics were developed in ancient Egypt, not Mesopotamia. • Used pictorial symbols to represent objects, sounds, or ideas. • Written on temples, tombs, papyrus scrolls. • Hieroglyphic symbols may represent the objects that they depict but usually stand for particular sounds or groups of sounds. • Hieroglyph, meaning “sacred carving,” is a Greek translation of the Egyptian phrase “the god's words,”. <p>Cuneiform =</p> <ul style="list-style-type: none"> • Cuneiform was developed in Mesopotamia (modern-day Iraq) • Meaning “wedge-shaped,” • Invented by the Sumerians around 3200 BCE. • Used wedge-shaped marks on clay tablets. <p>Kharoshthi =</p> <ul style="list-style-type: none"> • Kharoshthi was used in northwestern India, especially the Gandhara region (modern Pakistan & Afghanistan). • It was used between the 3rd century BCE – 3rd century CE. • Derived from the Aramaic script. • Written right to left. • Also known as 'Indo-Bactrian' script.

Q. 55

Who among the following coined the name oxygen for the element released by mercury oxide in 1779?

a) John Dalton



b) Martin Klaproth



c) Jons Jacob Berzelius



d) Antoine Lavoisier



Correct answer = Option 4 (Antoine Lavoisier)

Antonie Lavoisier =

- Widely regarded as the "Father of Modern Chemistry."
- Disproved the phlogiston theory, which was the dominant explanation for combustion at the time.
- In 1774, he replicated Joseph Priestley's experiment of heating mercury oxide and collecting the released gas, which supported Priestley's earlier discovery of the gas.
- In 1779, he coined the name "oxygen" from the Greek words "oxys" (acid) and "genes" (producer or former), believing that the element was essential to forming acids (a misconception later corrected).
- He also helped develop a **new chemical nomenclature** and clarified the **law of conservation of mass**.
- In 1787, Antoine Lavoisier published 'Methods of Chemical Nomenclature', which included the rules for naming chemical compounds that are still in use today.
- Antoine Lavoisier, Louis Bernard Guyton de Morveau, Claude Louis Berthollet and Antoine Francois Fourcroy published the book 'Method de nomenclature (System of Chemical Nomenclature)'.

Explanation:

John Dalton =





- Known for Dalton's Atomic Theory, proposed in the year 1808.
- His work explained that all matter is made up of atoms, which are indivisible and indestructible.
- Developed the first scientific atomic model and **used symbols** to represent atoms of different elements.
- **Father of modern atomic theory**.
- According to Dalton atomic theory, atoms combine in the ratio of small whole numbers to form **COMPOUNDS**.





Martin Klaproth =





- He discovered uranium (1789), zirconium (1789), and cerium (1803).
- He rediscovered titanium (1795) about four years after its initial discovery and named it.





Jöns Jacob Berzelius =





- He created the **modern system of chemical symbols** and formulas (e.g., H₂O for water).

Q. 56	<p>Which one of the following central features is not associated with Capitalist Economy?</p> <p>a) There is generalised commodity production - it has market value </p> <p>b) Productive wealth is held predominantly in private hands. </p> <p>c) Economic life is organised according to market principles. </p> <p>d) Economic organisation is based on planning, a supposedly rational process of resource allocation. </p>
Explanation:	<p>Correct answer = Option 4 (Economic organisation is based on planning, a supposedly rational process of resource allocation)</p> <p>Types of Economy =</p> <ul style="list-style-type: none"> • Capitalist Economy= <ul style="list-style-type: none"> ◦ Productive wealth is held predominantly in private hands . ◦ Economic life is organised according to market principles . ◦ In a capitalist society the goods produced are distributed among people – not on the basis of what people need but on the basis of Purchasing Power. ◦ Profit Motive ◦ Competition: In a capitalist system, there are no restrictions on the entry and exit of firms. ◦ Free market economy is a crucial aspect of capitalism. ◦ Absence of government intervention • Socialist Economy = <ul style="list-style-type: none"> ◦ Collective ownership of means of production: In a socialist economy, the government owns the means of production on behalf of the people. ◦ Social Welfare Objective ◦ Economic organisation is based on planning , a supposedly rational process of resource allocation . ◦ Distribution of goods under socialism is supposed to be based on what people need . ◦ The idea of 'Social Market Economy ' first emerged in GERMANY in 1950s. • Mixed Economy = <ul style="list-style-type: none"> ◦ Co-existence of public and private sectors ◦ Individual Freedom ◦ Economic Planning: The government develops long-term plans and determines the private and public sectors' roles in the economy's development. ◦ Price Mechanism: Prices have a significant impact on resource allocation

<p>Q. 57</p>	<p>The area under the velocity-time graph for a particle moving in a straight line with uniform acceleration gives</p> <p>a) Its average velocity </p> <p>b) its net displacement </p> <p>c) the distance travelled by it </p> <p>d) its average speed </p>
<p>Explanation:</p>	<p>Correct answer = Option 2 (its net displacement)</p> <p>Velocity-Time Graph =</p> <ul style="list-style-type: none"> • Velocity-time graph shows how the velocity of an object changes over time. • The slope of a velocity –time graph gives ACCELERATION . • The shape of the graph depends on whether the velocity is constant or changing: <ul style="list-style-type: none"> ◦ Horizontal line: constant velocity (zero acceleration). ◦ Sloped line: changing velocity (uniform acceleration if the line is straight). • Area Under the Curve = <ul style="list-style-type: none"> ◦ The area under a velocity-time graph between two time points tells you the displacement (change in position) of the object during that time. • Constant Velocity (No Acceleration) <ul style="list-style-type: none"> ◦ Graph: A horizontal line ◦ Area under graph = rectangle • Uniform Acceleration <ul style="list-style-type: none"> ◦ Graph: A straight sloped line ◦ Area under graph = trapezium or triangle + rectangle





<p>Q. 58</p>	<p>Which of the following statements with respect to the right to have a legal aid is/are correct?</p> <p>1. Under the Constitution of India, it is given under the Directive Principles of State Policy.</p> <p>2. It is the duty of the police to inform the nearest Legal Aid Committee immediately after the arrest of a person.</p> <p>Select the correct answer using the code given below</p> <p>a) 1 only </p> <p>b) 2 only </p> <p>c) Both 1 and 2 </p> <p>d) Neither 1 nor 2 </p>
<p>Explanation:</p>	<p>Correct answer = Option 3 (Both 1 and 2)</p> <p>Statement I is correct = Article 39A of the Indian Constitution, added by the 42nd Amendment (1976), states that the State shall secure that the operation of the legal system promotes justice on a basis of equal opportunity, and shall provide free legal aid to ensure that justice is not denied to any citizen due to economic or other disabilities.</p> <p>Statement II is correct = As per guidelines laid down by the Supreme Court in various judgments (e.g., Khatri v. State of Bihar, Hussainara Khatoon case), and reinforced by the Legal Services Authorities Act, 1987, it is the duty of police, magistrates, and other authorities to inform arrested persons of their right to free legal aid.</p> <p>Legal Aid =</p> <ul style="list-style-type: none"> • Legal aid means providing free legal services to the poor, marginalized, or disadvantaged sections of society who cannot afford legal representation or access to the justice system. • Case Laws = <ul style="list-style-type: none"> ◦ Hussainara Khatoon v. State of Bihar (1979) ◦ Khatri v. State of Bihar (1981) ◦ M.H. Hoskot v. State of Maharashtra (1978) • Articles Related to Legal Aid = <ul style="list-style-type: none"> ◦ Article 21 = Right to life and personal liberty – includes right to fair trial and legal aid ◦ Article 39A = Directive to provide free legal aid ◦ Article 14 = Equality before the law – legal aid supports equal justice • Legal rights are available to any person including non-citizens . • In India , Legal Services Authorities provide free legal services to –A person with an annual income of less than Rs.1,00,000 . Transgender with an annual income of less than Rs.2,00,000 . • NALSA – National Legal Services Authority .

Q. 59	<p>Phumdis, the floating islands are the unique features of which of the following lakes?</p> <p>a) Chilika Lake </p> <p>b) Sambhar Lake </p> <p>c) Loktak Lake </p> <p>d) Pangong Lake </p>
Explanation:	<p>Correct answer = Option 3 (Loktak Lake)</p> <p>Loktak Lake (Manipur):</p> <ul style="list-style-type: none"> • It is the largest freshwater lake in Northeast India. • The phumdis are its most distinctive feature. They vary in size, from small patches to large islands. • The largest of these phumdis, located in the southeastern part of the lake, forms the Keibul Lamjao National Park, which is the world's only floating national park. <ul style="list-style-type: none"> ◦ This park is the last natural habitat of the critically endangered Sangai deer (Manipur brow-antlered deer), also known as the "dancing deer," which walks on these floating phumdis. • Local fishermen also build huts called "phumsangs" on these phumdis. <p>Chilika Lake (Odisha):</p> <ul style="list-style-type: none"> • It is the largest brackish water lagoon in India, located on the east coast. • It is famous for being a major wintering ground for migratory birds and for its rich biodiversity, including the Irrawaddy dolphin. • The Nalaban Island within the lake is notified as a Bird Sanctuary under Wildlife (Protection) Act, 1972 <p>Sambhar Lake (Rajasthan):</p> <ul style="list-style-type: none"> • It is India's largest inland salt lake, located in Rajasthan. • It is a significant wetland for migratory birds, especially flamingos <p>Pangong Lake (Ladakh/Tibet):</p> <ul style="list-style-type: none"> • It is a high-altitude, endorheic (landlocked) brackish water lake located in the Himalayas, shared by India and China. • It is famous for its stunning blue waters that change color and for freezing completely in winter.

Q. 60	<p>Which of the following is a popular dance and music combination of Andhra Pradesh that is similar to the stick dance?</p> <p>a) Neuleu </p> <p>b) Kolannalu </p> <p>c) Villu Pattu </p> <p>d) Dandiya </p>
Explanation:	<p>Correct answer= Option 2 (Kolannalu)</p> <p>Folk Dances of Andhra Pradesh =</p> <ul style="list-style-type: none"> • Veera Natyam = <ul style="list-style-type: none"> ◦ Veeratanam is known as the “dance of the brave.” ◦ Performed by the men of the Veera Musti community (name changed to Veerabhadraiah) • Tappeta Gullu = <ul style="list-style-type: none"> ◦ Performed by 15 to 20 male dancers with flat drums around their necks, wearing musical ankle bells on their ankles. ◦ Performed as a devotional dance by shepherds to appease Gangamma, the god of rain. • Butta Bommalu = <ul style="list-style-type: none"> ◦ Butta Bommalu” means basket toys made of wood, dry grass, and cow dung. ◦ The performers wear dolls depicting Lord Krishna, Lord Rama, Lord Shiva, Lord Hanuman, etc • Kolattam = <ul style="list-style-type: none"> ◦ It is the harvest dance of the state, performed by both men and women. ◦ Kolattam is similar to the Dandia and Garba dance forms of North India. • Dhimsa = <ul style="list-style-type: none"> ◦ This dance form is performed by the Valmikis, Konds, and Bagatas tribes living in this region. ◦ Performed by 15 to 20 women, forming a chain by holding hands together and moving in a snake-like formation • Lambadi = <ul style="list-style-type: none"> ◦ Lambadi is the tribal dance form of the Banjaras/Lambadi community ◦ Dappu is the main instrument played rhythmically.

Q. 61

Fiat money is the one which_____.





- a) has taxes equal to government spending 
- b) has no intrinsic value 
- c) has intrinsic value equal to the face value 
- d) does not go any further transformation 

Explanation:

Correct answer = Option 2 (has no intrinsic value)


Types of money:

- **Commodity Money:**
 - Money whose value comes from the commodity of which it is made.
 - The item itself has intrinsic value.
 - It's often linked to a barter system
 - Ex:- Gold coins, silver, salt, shells, beads, spices, tobacco, cattle, grains
- **Fiat Money:**
 - A government-issued currency that is not backed by a physical commodity (like gold or silver).
 - Its value is derived from government decree and the public's trust in it as legal tender.
 - The face value is usually much higher than its intrinsic value (the value of the paper or metal it's made from).
 - Ex:- US Dollar, Euro, Japanese Yen, Indian Rupee, British Pound
- **Fiduciary Money:**
 - Money that is accepted as a medium of exchange based on the trust between the payer and the payee, rather than a government order.
 - The issuer usually promises to exchange it for a commodity or fiat money if requested.
 - Ex:- Banknotes, cheques, drafts, electronic credit
- **Commercial Bank Money (or Bank Money/Credit Money):**
 - his refers to the book credit that banks extend to their depositors.
 - It's essentially claims against financial institutions that can be used to buy goods and services.
 - Ex:- Funds in checking accounts, savings accounts, and other types of bank accounts
- **Metallic Money:** Coins made of metals like gold, silver, bronze, or copper.
- **Paper Money:** Bank notes and government notes used as money.
- **Legal Tender Money:** Money that by law must be accepted for the payment of debts.
- **Digital/Electronic Money:** Currency that exists only in digital form.


Q. 62	<p>Nuakhai is an agricultural or harvesting festival mainly observed by people of which state in India?</p> <p>a) Madhya Pradesh </p> <p>b) Manipur </p> <p>c) Odisha </p> <p>d) Kerala </p>
Explanation:	<p>Correct answer = Option 3 (Odisha)</p> <p>Festivals of Odisha =</p> <ul style="list-style-type: none"> • Rath Yatra (Car Festival) = <ul style="list-style-type: none"> ◦ When: June–July (Ashadha month) ◦ Lakhs of devotees pull the huge wooden chariots. It's one of the largest religious processions in the world. • Pana Sankranti (Odia New Year) = <ul style="list-style-type: none"> ◦ When: Mid-April (Same as Vishu, Baisakhi in other parts of India) ◦ Marks the beginning of the Odia calendar year. • Raja Festival (Swing Festival) = <ul style="list-style-type: none"> ◦ Celebrates menstruation and fertility of Mother Earth and women. ◦ Girls wear new clothes, enjoy swings, play games, and eat traditional food. • Kumar Purnima = <ul style="list-style-type: none"> ◦ When: Full moon of Ashwin (October) ◦ Celebrated by unmarried girls praying for a handsome husband like Lord Kartikeya. ◦ Moon worship, singing traditional songs like “Chanda Puja Geeta.” • Magha Saptami (Chandrabhaga Mela) = <ul style="list-style-type: none"> ◦ Worship of the Sun God; devotees take holy dips in the sea at sunrise. ◦ Where: Konark (Chandrabhaga beach) • Nuakhai = <ul style="list-style-type: none"> ◦ Harvest festival — offering of the first crop to the family deity. • Parab Festival <ul style="list-style-type: none"> ◦ Where: Koraput ◦ A tribal festival that showcases the art, dance, and culture of Odisha's indigenous communities.

Q. 63

The frequency of a sound wave is 25 Hz and its wavelength is 4 m. What is the time taken by the sound wave to travel a distance of 200m?

a) 2 s 

b) 1 s 

c) 4 s 

d) 5 s 

Explanation:

Correct answer = Option 1 (2s)

Given:





- Frequency (f) = 25 Hz
- Wavelength (λ) = 4 meters
- Distance = 200 meters





Step 1: Calculate the speed of the wave





- The formula is:
 - Speed (v) = Frequency (f) × Wavelength (λ)
 - $V = 25 \text{ Hz} \times 4 \text{ m} = 100 \text{ m/s}$

Step 2: Calculate time

- Time = Distance / Speed
- Time = $200/100 = 2 \text{ s}$

Q. 64	<p>Which one of the following statements about Tolkappiyam is not correct?</p> <p>a) It is a treatise on grammar. </p> <p>b) It was composed between first and fourth century CE. </p> <p>c) It was part of the Sangam corpus </p> <p>d) It was composed by Panini. </p>
Explanation:	<p>Correct answer = Option 4 (It was composed by Panini)</p> <p>Tolkappiyam =</p> <ul style="list-style-type: none"> • It was written by Tolkappiyar and is considered the first Tamil literary work. • First mentioned by name in Iraiyanar's Akapporul as an authoritative text on Tamil grammar. • This was the most ancient Tamil grammar text and the oldest extant long work of Tamil literature. • Arranged into three books – Eluttatikaram, Sollatikaram and Porulatikaram • Tolkappiyam refers to the Five-fold division of lands – Kurinji (hilly tracks), Mullai (pastoral), Marudam (agricultural), Neydal (coastal) and Palai (desert). • Tolkappiyam also refers to four castes namely arasar(Ruling Class), anthanar, vanigar(carried on trade and commerce) and vellalar(Agriculturists). <p>Panini =</p> <ul style="list-style-type: none"> • Panini was a Sanskrit grammarian. • 'Ashtadhyayi', or 'Eight Chapters', an ancient text written by the scholar Panini. • The Ashtadhyayi laid down more than 4,000 grammatical rules. • It is a linguistic text that set the standard for how Sanskrit was meant to be written and spoken. <p>RECALL ABOUT – Silappadikaram , Manimekalai , about 2nd Sangam .</p>

Q. 65	<p>Shoots of plant show upward movement and it can be designated to be:</p> <p>a) Negatively phototropic </p> <p>b) Positively chemotropic </p> <p>c) Positively hydrotropic </p> <p>d) Negatively geotropic </p>
Explanation:	<p>Correct answer = Option 4 (Negatively geotropic)</p> <p>Shoots of plant =</p> <ul style="list-style-type: none"> • The shoot system of the plant comprises the parts of the plant that rise above the ground. • These parts include buds, leaves, flowering buds, flowering stems, and the main stem. • Shoots grow upward and toward light, helping the plant carry out photosynthesis and reproduction • Shoots Grow Upward <ul style="list-style-type: none"> ◦ Gravity ◦ Light • Geotropism = <ul style="list-style-type: none"> ◦ Geotropism (also called gravitropism) is the plant's growth response to gravity. ◦ Negative geotropism means growth opposite to the direction of gravity (i.e., upward). ◦ Example: <ul style="list-style-type: none"> ▪ Shoots grow upward, away from the gravitational pull. ▪ This is necessary so that leaves can reach sunlight and perform photosynthesis. • Phototropism = <ul style="list-style-type: none"> ◦ Phototropism is growth in response to light. ◦ Shoots actually grow toward light (positive phototropism) to maximize energy from photosynthesis. • Hydrotropism = <ul style="list-style-type: none"> ◦ Hydrotropism is growth in response to water/moisture. ◦ Roots show positive hydrotropism by growing toward underground water sources.

Q. 66	<p>Which one of the following set of trees does not belong to the Temperate Floral Zone of Himalaya?</p> <p>a) Cashewnut and Magnolia </p> <p>b) Oak and Maple </p> <p>c) Rhododendrons </p> <p>d) Birch and Laurels </p>
Explanation:	<p>Correct answer = Option 1 (Cashewnut and Magnolia)</p> <p>Oak and Maple =</p> <ul style="list-style-type: none"> • Both are classic temperate trees. • Found in mid-altitudes of the Himalayas (e.g., Himachal Pradesh, Uttarakhand). • Provide thick canopy and fall foliage. <p>Rhododendrons =</p> <ul style="list-style-type: none"> • Very common in temperate and alpine Himalayan zones. • Especially famous in Sikkim, Arunachal Pradesh, and Uttarakhand. • Known for their vibrant flowers. <p>Birch and Laurels =</p> <ul style="list-style-type: none"> • Both are temperate flora. • Himalayan Birch (<i>Betula utilis</i>) is found near the tree line (cold temperate areas). • Laurels are common in moist temperate forests. <p>Magnolia =</p> <ul style="list-style-type: none"> • While some magnolia species are found in temperate regions worldwide, the species native to India are generally found in the subtropical to warm temperate regions of the Eastern Himalayas and Northeast India, • Recently , JAPAN has developed and launched the world first wooden satellite , named LignoSat , which is made from magnolia wood .

Q. 67


Match List-I with List-II and select the correct answer using the code given below the Lists:


List-I (Speaker of Lok Sabha) / सूची-I (लोकसभा अध्यक्ष)


- A) Manohar Gajanan Joshi
- B) Somnath Chatterjee
- C) Meira Kumar
- D) Sumitra Mahajan


List-II (Tenure) / सूची-II (कार्यकाल)

- 1. 14th Lok Sabha
- 2. 13th Lok Sabha
- 3. 16th Lok Sabha
- 4. 15th Lok Sabha

a) A-2, B-1, C-4, D-3 

b) A-2, B-4, C-1, D-3 

c) A-3, B-4, C-1, D-2 





d) A-3, B-1, C-4, D-2 





Correct answer = Option (A-2, B-1, C-4, D-3)





Lok Sabha Speaker =

- **Article 93:** The Speaker and Deputy Speaker of the House of the People.
- Ganesh Vasudev Mavalankar (1952 – 1956) = 1st Lok Sabha
 - First Speaker of independent India
- M. A. Ayyangar (1956 – 1962) =
 - 1st and 2nd Lok Sabha
- Sardar Hukam Singh (1962 – 1967) =
 - 3rd Lok Sabha
- Neelam Sanjiva Reddy (First Term) (1967 – 1969)
 - 4th Lok Sabha
- Gurdial Singh Dhillon (1969 – 1975) =
 - 4th and 5th Lok Sabha
- Bali Ram Bhagat (1976 – 1977) =
 - 5th Lok Sabha
- Neelam Sanjiva Reddy (Second Term) (1977 (short term)) =
 - 6th Lok Sabha
- K. S. Hegde (1977 – 1980) =
 - 6th Lok Sabha
- Balram Jakhar (1980 – 1989) =
 - 7th and 8th Lok Sabha
 - Longest-serving Speaker until then
- Rabi Ray (1989 – 1991) =
 - 9th Lok Sabha
- Shivraj Patil (1991 – 1996) =
 - 10th Lok Sabha
- P. A. Sangma (1996 – 1998) =
 - 11th Lok Sabha
- G. M. C. Balayogi (1998 – 2002)(died in office) =
 - 12th and 13th Lok Sabha
- Manohar Joshi (2002 – 2004) =
 - 13th Lok Sabha
- Somnath Chatterjee (2004 – 2009) =
 - 14th Lok Sabha
- Meira Kumar (2009 – 2014) =
 - 15th Lok Sabha
 - First woman Speaker
- Sumitra Mahajan (2014 – 2019) =
 - 16th Lok Sabha
- Om Birla (2019 – Present) (17th Lok Sabha)
- Neelam Sanjiva Reddy is the only person to serve twice, and he later became the President of India.
- Meira Kumar was the first woman Speaker of the Lok Sabha.
- G. M. C. Balayogi is the only Speaker to die in office (in a helicopter crash in 2002).

Explanation:

Q. 68	<p>Prayag Prashasti (also known as Allahabad Pillar Inscription) provides us information about the achievements of _____.</p> <p>a) Samudragupta </p> <p>b) Chandragupta-I </p> <p>c) Ashoka </p> <p>d) ShriGupta </p>
Explanation:	<p>Correct answer = Option 1 (Samudragupta)</p> <p>Prayag Prashasti =</p> <ul style="list-style-type: none"> • It is also known as Allahabad Pillar Inscription. • It is a pillar inscription of Samudragupta found at Allahabad and written in Sanskrit. • It was composed by Harisena. • It is one of the important epigraphic sources to know about the political history of the Guptas. • There are thirty-three lines in total. • Line 22 of the inscription especially describes the conquests of Samudragupta over the frontier states. • Lines 13-15 of the inscription refer to the conquests of Samudragupta in his first Aryavarta war in which he defeated three important rulers namely, Achyuta, Nagasena, and Ganapatinaga of the Naga Dynasty. • Lines 19-20 described his South India Campaign. • Line 23 refers to Samudragupta violently exterminating a number of kings of Aryavarta. • Recall about AIHOLE PILLAR INSCRIPTION .

Q. 69	<p>Which one of the following statements regarding gold is not correct?</p> <p>a) 24 karat gold is very soft </p> <p>b) 22 karat gold is generally used to make ornaments. </p> <p>c) 22 karat gold contains 22 parts of pure gold and 2 parts of iron to make it hard </p> <p>d) 18 karat gold comprises 75% gold mixed with 25% of copper or silver to make it hard. </p>
Explanation:	<p>Correct answer = Option 3 (22 karat gold contains 22 parts of pure gold and 2 parts of iron to make it hard)</p> <p>Gold = Au (from Latin Aurum)</p> <ul style="list-style-type: none"> • Atomic Number: 79 • Very dense and heavy <p>24 karat gold =</p> <ul style="list-style-type: none"> • 24K gold = 99.9% pure gold • It is too soft for making durable jewelry. • Easily bends or scratches, hence not ideal for ornaments. <p>22 karat gold =</p> <ul style="list-style-type: none"> • 22K gold = 91.67% gold + 8.33% other metals (like copper, silver, zinc). • It's true that 22K gold is 22 parts gold + 2 parts other metals. • This combination increases hardness while keeping high gold content. • Common in Indian jewelry. <p>18 karat gold =</p> <ul style="list-style-type: none"> • 18K gold = 75% pure gold + 25% alloy metals • Commonly used in jewelry requiring greater durability. • The added copper or silver strengthens the metal and can alter its color (like rose gold) <p>Aqua regia is a freshly prepared mixture of concentrated hydrochloric acid and concentrated nitric acid in the ratio 3:1 .It can dissolve noble metals such as gold and platinum .</p>

Q. 70	<p>Which Article of the Indian constitution mentions that it is the duty of the Union government to protect States against external aggression and internal disturbance?</p> <p>a) 353 </p> <p>b) 356 </p> <p>c) 355 </p> <p>d) 358 </p>
Explanation:	<p>Correct answer = Option 3 (355)</p> <p>Article 355 =</p> <ul style="list-style-type: none"> • Union's Duty: The Central Government (Union) is responsible for: <ul style="list-style-type: none"> ◦ Protecting states from external aggression (like war or foreign invasion). ◦ Maintaining internal security, i.e., controlling internal disturbances like riots, insurgencies, etc. ◦ Ensuring constitutional governance in each state. <p>Article 353 =</p> <ul style="list-style-type: none"> • Deals with the effect of a Proclamation of Emergency (National Emergency). • It states that during a National Emergency, the executive power of the Union extends to giving directions to any State, and Parliament can make laws even on State List subjects. <p>Article 356 =</p> <ul style="list-style-type: none"> • Deals with "Provisions in case of failure of constitutional machinery in State" (popularly known as President's Rule or State Emergency). • It allows the President to assume all or some of the functions of the state government if they are satisfied that the government of a state cannot be carried on in accordance with the provisions of the Constitution. <p>Article 358 =</p> <ul style="list-style-type: none"> • Deals with the suspension of the provisions of Article 19 (Fundamental Freedoms) during a Proclamation of Emergency caused by war or external aggression. • It specifies that during such an emergency, the rights guaranteed by Article 19 are automatically suspended.

Q. 71

Which of the following options is not related to the non-cooperation movement started by Mahatma Gandhi?

- a) Signing of the resolution of Poorna Swaraj in Lahore 
- b) Boycott of foreign goods 
- c) Distribution of spinning wheels 
- d) Picketing at liquor shops 

Explanation:

Correct answer = Option 1 (Signing of the resolution of Poorna Swaraj in Lahore)





Non-Cooperation Movement (1920) =

- The Non-Cooperation Movement (NCM) was the first nationwide movement launched by Gandhiji in 1920 during British rule.
- The Congress Party officially adopted the non-cooperation programme in the **Nagpur Session** (1920) under C. Vijayaraghavachariar.
- **Causes of Non-Cooperation Movement =**
 - First World War
 - Montagu-Chelmsford reforms
 - Rowlatt Act
 - Khilafat Movement
- **Features =**
 - Surrender of Titles and Honorary Positions
 - Swaraj
 - Resignation from Government Positions and Local Bodies
 - Boycott of Foreign Goods
 - Boycott of Elections
 - Non-cooperation with Government Institutions
 - Refusal to Serve in the British Army
 - Promotion of Swadeshi Principles
 - Unity of Congress and Muslim League

The Poorna Swaraj Resolution of the Lahore Congress Session- 1929 , J.L Nehru .

Q. 72

Which among the following is correct with respect to bond formation in an ethyne molecule?

- a) Carbon-Carbon single bond 
- b) Carbon-Carbon double bond 
- c) Carbon-Carbon triple bond 
- d) Carbon-Hydrogen double bond 

Explanation:

Correct answer = option 3 (Carbon-Carbon triple bond)

Carbon–Carbon Single Bond =





- A single bond has only 1 sigma bond between two atoms.
- Ex:-
 - Ethane (C_2H_6) = H_3C-CH_3
 - The two carbon atoms are connected by a single bond
 - All hydrogen atoms are attached via single bonds as well
- Single bonds are found in alkanes, which are saturated hydrocarbons.





Carbon–Carbon Double Bond =





- A double bond has 1 sigma bond and 1 pi bond.
- Ex:-
 - Ethene (C_2H_4) — also called ethylene = $H_2C=CH_2$
 - Each carbon is bonded to 2 hydrogen atoms
 - The two carbons are connected by a double bond
- Double bonds are found in alkenes, which are unsaturated hydrocarbons.

Carbon–Carbon Triple Bond =

- A triple bond consists of 1 sigma (σ) bond and 2 pi (π) bonds between two carbon atoms.
- Ex:-
 - Ethyne (C_2H_2) — also called acetylene = $H-C\equiv C-H$
 - Bonds with 1 hydrogen (single bond)
 - Shares three bonds (triple bond) with the other carbon atom
- Triple bonds are found in alkynes (hydrocarbons with one or more triple bonds).





<p>Q. 73</p>	<p>After fertilization, the fruit and the seed are produced by</p> <p>a) ovule and ovary, respectively </p> <p>b) ovary and ovule, respectively </p> <p>c) ovary, no ovule required </p> <p>d) ovule, no ovary required </p>
<p>Explanation:</p>	<p>Correct answer = Option 2 (ovary and ovule, respectively)</p> <p>Flower Reproductive Structure =</p> <ul style="list-style-type: none"> • Pistil (Carpel): The female reproductive part, typically consisting of: <ul style="list-style-type: none"> ◦ Stigma: The sticky tip that receives pollen. ◦ Style: The stalk connecting the stigma to the ovary. ◦ Ovary: The swollen basal part that contains one or more ovules. • Stamen: The male reproductive part, consisting of: <ul style="list-style-type: none"> ◦ Anther: Produces pollen grains. ◦ Filament: Supports the anther. • Ovule: Located inside the ovary, each ovule contains the female gamete (egg cell) and other important cells. • The Process of Fertilization = <ul style="list-style-type: none"> ◦ Pollination: Pollen grains (containing the male gametes) are transferred from the anther to the stigma. This can happen through wind, water, insects, or other animals. ◦ Pollen Germination: Once on the compatible stigma, the pollen grain absorbs moisture and nutrients and germinates, forming a pollen tube. ◦ Pollen Tube Growth: The pollen tube grows down through the style, guided by chemical signals from the ovule, towards the ovary. ◦ Entry into Ovule: The pollen tube eventually enters an ovule, usually through an opening called the micropyle. ◦ Double Fertilization: This is a unique characteristic of angiosperms ◦ Ovary becomes the Fruit. ◦ Ovule becomes the Seed. ◦ Zygote becomes the Embryo (inside the seed). ◦ Primary Endosperm Nucleus becomes the Endosperm (inside the seed). ◦ Integuments of ovule become the Seed Coat (outer layer of the seed).

Q. 74	<p>Which music festival set a Guinness World Record for the "largest Hindustani classical band" at Gwalior Fort, Madhya Pradesh?</p> <p>a) Dover Lane Music Conference </p> <p>b) Sawai Gandharva Bhimsen Mahotsav </p> <p>c) Tansen Music Festival </p> <p>d) Harivallabh Sangeet Sammelan </p>
Explanation:	<p>Correct Answer= Option C (Tansen Music Festival)</p> <ul style="list-style-type: none"> • The 100th edition of the Tansen Music Festival, held at Gwalior Fort in Madhya Pradesh, set a Guinness World Record for forming the largest Hindustani classical band, showcasing India's rich classical music heritage. • A total of 546 artistes performed various ragas on 9 instruments as part of the 100th International Tansen Samaroh. • The performance was based on Malhar, Miyan ki Todi and Darbari Kanhra, three ragas composed by Tansen. • 'Rashtriya Tansen Samman' for 2023 = Pt. Swapan Chaudhuri (Tabla) • Tansen's Birth Name = Ramtanu Pandey / Ramtanu Baghe • Emperor Akbar later added "Mian" (meaning "learned man") to his name • Swami Haridas – guru of Tansen • Rewa / Gwalior gharana • Rabab/ Rudra Veena – string instrument play • Composed many Dhrupads that praised Hindu deities . • Tansen was a court musician in the darbar of Raja Ramchandra of Rewa(Bandavagarh).

Q. 75	<p>"Bodo Jou Gwran," a traditional rice beer with approximately 16% alcohol content, received a Geographical Indication (GI) tag. It is associated with the Bodo tribe of which Indian state?</p> <p>a) Arunachal Pradesh </p> <p>b) Assam </p> <p>c) Nagaland </p> <p>d) Tripura </p>
Explanation:	<p>Correct Answer= Option 2 (Assam)</p> <ul style="list-style-type: none"> • Bodo Jou Gwran is a potent traditional rice beer made by the Bodo tribe in Assam. It is one of eight Bodo tribal products that recently earned the GI tag, signifying their cultural and regional identity. <p><u>8 GI-tagged Bodo Products-</u></p> <ol style="list-style-type: none"> 1. Bodo Jou Gwran – Strong rice beer (16.11% alcohol) 2. Maibra Jou Bidwi – Ceremonial rice beer served to guests 3. Bodo Jou Gishi – Fermented rice beer linked with Lord Shiva 4. Bodo Napham – Fermented fish dish (takes 2–3 months to prepare) 5. Bodo Ondla – Rice powder curry with garlic, ginger, and alkali 6. Bodo Gwkha – Festival dish prepared during Bwisagu 7. Bodo Narzi – Semi-fermented dish with jute leaves, known for health benefits 8. Bodo Aronai – Handwoven traditional cloth (1.5–2.5m long, 0.5m wide)

Q. 76

The value of $\frac{\{2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta)\}}{\{\cos^4\theta - \sin^4\theta - 2\cos^2\theta\}}$ is :

- a) -2 
 b) -1 
 c) 1 
 d) 2 

Explanation:

$$1. \frac{\{2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta)\}}{\{\cos^4\theta - \sin^4\theta - 2\cos^2\theta\}}$$

$$\begin{aligned} a^3 + b^3 &= (a+b)^3 - 3ab(a+b) \\ a^2 + b^2 &= (a+b)^2 - 2ab \end{aligned}$$

$$\begin{aligned} (\sin^6\theta + \cos^6\theta) &= (\sin^2\theta + \cos^2\theta)^3 - 3\sin^2\theta \cos^2\theta (\sin^2\theta + \cos^2\theta) \\ &= 1 - 3\sin^2\theta \cos^2\theta \end{aligned}$$

$$\begin{aligned} (\sin^4\theta + \cos^4\theta) &= (\sin^2\theta + \cos^2\theta)^2 - 2\sin^2\theta \cdot \cos^2\theta \\ &= 1 - 2\sin^2\theta \cdot \cos^2\theta \end{aligned}$$

$$\begin{aligned} \cos^4\theta - \sin^4\theta - 2\cos^2\theta &= (\cos^4\theta - \sin^4\theta) - 2\cos^2\theta \\ &= (\cos^2\theta + \sin^2\theta)(\cos^2\theta - \sin^2\theta) - 2\cos^2\theta \\ &= \cos^2\theta - \sin^2\theta - 2\cos^2\theta \\ &= -\sin^2\theta - \cos^2\theta \\ &= -(\sin^2\theta + \cos^2\theta) \\ &= -1 \end{aligned}$$

$$\begin{aligned} [\sin^2\theta + \cos^2\theta &= 1] \\ [a^2 - b^2 &= (a+b)(a-b)] \end{aligned}$$

$$* \frac{2(\sin^6\theta + \cos^6\theta) - 3(\sin^4\theta + \cos^4\theta)}{\cos^4\theta - \sin^4\theta - 2\cos^2\theta}$$

$$= \frac{2(1 - 3\sin^2\theta \cos^2\theta) - 3(1 - 2\sin^2\theta \cdot \cos^2\theta)}{-1}$$

$$= \frac{2 - 6\sin^2\theta \cdot \cos^2\theta - 3 + 6\sin^2\theta \cos^2\theta}{-1}$$

$$= 1.$$




PTS WAY-


Put $\theta = 45^\circ$

Q. 77

If $x = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$, then the value of $\frac{\sqrt{2-x}}{\sqrt{2+x}}$ will be closest to:

a) 0.12 

b) 1.4 

c) 0.17 

d) 1.2 

$$2. \quad x = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$$

$$x = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 + 2\left(\frac{1}{2}\right)\left(\frac{\sqrt{3}}{2}\right)} - \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 - 2\left(\frac{1}{2}\right)\left(\frac{\sqrt{3}}{2}\right)}$$

$$x = \sqrt{\left(\frac{1}{2} + \frac{\sqrt{3}}{2}\right)^2} - \sqrt{\left(\frac{\sqrt{3}}{2} - \frac{1}{2}\right)^2}$$

$$= \frac{1}{2} + \frac{\sqrt{3}}{2} - \left(\frac{\sqrt{3}}{2} - \frac{1}{2}\right)$$

$$= 1$$

Explanation:

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

$$= \frac{(\sqrt{2} - 1)^2}{(\sqrt{2})^2 - (1)^2}$$

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





$$= 3 - 2\sqrt{2}$$

$$= 3 - 2 \cdot 82$$

$$= 0.18$$

Q. 78

The ratio of the income of A to that of B is 5 : 7. A and B save Rs.4,000 and Rs.5,000 respectively. If the expenditure of A is equal to $66\frac{2}{3}\%$ of the expenditure of B, then the total income of A and B is :

- a) 28800 
 b) 26400 
 c) 25200 
 d) 24000 

Explanation:

3.	A	B	
Income	$5x$	$7x$	[let common ratio be 'x']
Saving	4000	5000	
Exp.	$66\frac{2}{3}\%$ of B	$3y$	[let expenditure of B be '3y']

$$\frac{2}{3} \times 3y = 2y$$

* **Income = Saving + Expenditure**

$$5x = 4000 + 2y$$

$$\Rightarrow 5x - 2y = 4000 \quad \text{--- (1)}$$

$$7x = 5000 + 3y$$

$$7x - 3y = 5000 \quad \text{--- (2)}$$

Multiplying eqⁿ (1) by 3 and eqⁿ (2) by 2
 then subtract eqⁿ (2) from eqⁿ (1).

$$\Rightarrow 15x - 6y - 14x + 6y = 12000 - 10000$$

$$\Rightarrow x = 2000$$

$$\therefore \text{Total income of A \& B} = 5x + 7x$$



$$= 12x$$

$$= 12 \times 2000$$

$$= 24000$$

Q. 79

In an examination, A obtained 10% more marks than B, B obtained 20% more marks than C and C obtained 32% less marks than D. If A obtained 272 more marks than C, then the marks obtained by B is :

a) 816 b) 850 c) 1020 d) 952 

Explanation:

4. let marks obtained by D = $100x$
 then marks obtained by C = $(1 - 32\%) \times 100x$
 $= 68x$

marks obtained by B = $\frac{120}{100} \times 68x = 81.6x$



marks obtained by A = $\frac{110}{100} \times 81.6x = 89.76x$

$$\begin{aligned} * \quad A - C &= 272 \\ \Rightarrow 89.76x - 68x &= 272 \\ \Rightarrow 21.76x &= 272 \\ \Rightarrow x &= \frac{272}{21.76} \end{aligned}$$

$$\begin{aligned} * \quad \text{Marks obtained by B} &= 81.6x \\ &= 81.6 \times \frac{272}{21.76} \\ &= 1020 \end{aligned}$$

Q. 80

A shopkeeper bought 120 quintals of wheat. 20% of it was sold at 25% loss. At what percent gain should he sell the rest to gain 25% on the whole transaction?

a) 40 b) 35 c) $75/2$ d) $73/2$ 

Explanation:


$$5. \quad \frac{20\% \cdot (-25\%) + (100 - 20\%) (\text{Gain } \%)}{100} = +25\%$$

$$\Rightarrow -500\% + 80 (\text{Gain } \%) = 2500\%$$

$$\Rightarrow \text{Gain } \% = \frac{3000\%}{8} = \frac{75\%}{2}$$

Q. 81

A sum is divided among A, B, C and D such that the ratio of the shares of A and B is 2:3, that of B and C is 1:2 and that of C and D is 3:4. If the difference between the shares of A and D is Rs 648, then the sum of A and D's shares is :

a) 1944 b) 2484 c) 1080 d) 2160 

Explanation:

$$\begin{array}{ccc}
 \text{A} : \text{B} & \text{B} : \text{C} & \text{C} : \text{D} \\
 2 : 3 & 1 : 2 & 3 : 4 \\
 2 : 3 & 3 \times 1 : 2 \times 3 & 2 \times 3 : 4 \times 2
 \end{array}$$

$$\Rightarrow \text{A} : \text{B} : \text{C} : \text{D} = 2 : 3 : 6 : 8$$

[let common factor be 'x']





$$\begin{aligned}
 \text{D} - \text{A} &= 8x - 2x \\
 &= 6x = 648
 \end{aligned}$$

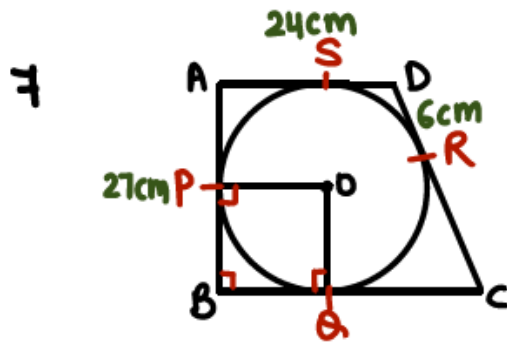
$$\Rightarrow x = 108$$

$$\begin{aligned}
 \text{A} + \text{D} &= 8x + 2x = 10x \\
 &= 10 \times 108 \\
 &= 1080
 \end{aligned}$$

Q. 82

A circle is inscribed in a quadrilateral ABCD touching AB, BC, CD and AD at the points P, Q, R and S, respectively, and $\angle B = 90^\circ$. If AD=24 cm, AB=27 cm and DR= 6 cm, then what is the circumference of the circle?

a) 20π b) 18π c) 12π d) 15π 



let O be the center of the circle

$$OP = OQ = \text{Radius } (r)$$

$\angle OPB = \angle OQB = 90^\circ$ (\angle between Radius and tangent is 90°)

\Rightarrow OQBP is a square

$SD = DR = 6\text{cm}$ (Tangent from same Point are equal).

$$\begin{aligned} AS &= AD - SD \\ &= 24 - 6 \\ &= 18\text{cm} \end{aligned}$$

$AS = AP = 18\text{cm}$ [Tangent from same Point are equal]

$$\begin{aligned} PB &= AB - AP \\ &= 27 - 18 = 9\text{cm} \end{aligned}$$


$$\Rightarrow PO = OQ = PB = 9\text{cm}$$

$$\begin{aligned} \therefore \text{Circumference of Circle} &= 2\pi r \\ &= 2\pi (9) \\ &= 18\pi \end{aligned}$$

Explanation:

Q. 83

If x is the remainder when 3^{61284} is divided by 5 and y is the remainder when 4^{96} is divided by 6, then what is the value of $(2x-y)$?

a) 4 b) -2 c) 2 d) -4 

Explanation:

$$8. \quad 3^4 = 81$$

$$3^{61284} = (3^4)^{15321}$$

$$\frac{(3^4)^{15321}}{5} = \frac{(81)^{15321}}{5} = \frac{(80+1)^{15321}}{5} = 1 = x$$

$$\frac{(4)^1}{6} \Rightarrow R=4 \quad \frac{(4)^2}{6} \Rightarrow R=4$$



$$\frac{(4)^3}{6} \Rightarrow R=4 \quad \frac{(4)^4}{6} \Rightarrow R=4$$

$$\text{In any case } R=4 \Rightarrow y=4$$

$$2x-y = 2(1)-4 = -2$$

Q. 84

A man can row a distance of 900 meters against the stream in 12 minutes and return to the starting point in 9 minutes. What is the speed (in km/hr) of the man in still water?

a) 6 b) $5\frac{1}{4}$ c) 5 d) $4\frac{1}{2}$ 

Explanation:

9. let speed of Stream be 's' km/hr
let speed of Boat be 'b' km/hr

Upstream speed = $(b-s) = \frac{\text{Dist}}{\text{time}}$

$$b - s = \frac{900/1000}{12/60} = 4.5 \text{ km/hr} \text{ ————— ①}$$

$$\text{Downstream speed} = b + s = \frac{900/1000}{9/60} = 6 \text{ km/hr} \text{ ————— ②}$$

from ① & ② we get,


$$b = 5.25 \text{ km/hr} \quad s = 0.75 \text{ km/hr}$$


↳ speed of man in still water.

Q. 85

The compound interest on a certain sum of money at 21% for 2 years is ₹6,961.5. It's simple interest (in ₹) at the same rate and for the same period is:

a) 6300 

b) 6500 

c) 6000 

d) 6750 

$$10. \quad CI = A - P$$

$$6961.5 = P \left(1 + \frac{R}{100} \right)^T - P$$

$$6961.5 = P \left(1 + \frac{21}{100} \right)^2 - P$$

$$6961.5 = P \left(\frac{121}{100} \right)^2 - P$$

$$\Rightarrow 6961.5 = \frac{P}{10^4} (121^2 - 100^2)$$

$$\Rightarrow P(121+100)(121-100) = 6961.5 \times 10^4$$

$$\Rightarrow P = \frac{69615000}{221 \times 21}$$

$$\therefore SI = \frac{PRT}{100}$$

$$SI = \frac{69615000}{221 \times 21} \times \frac{21 \times 2}{100}$$

$$= 6300$$

Explanation:

Q. 86

The base of a right prism is a triangle with sides 20 cm, 21 cm and 29 cm. If its volume is 7560 cm^3 , then its lateral surface area (in cm^2) is:

a) 2520 ✓

b) 2448 ✗

c) 2556 ✗

d) 2484 ✗

Explanation:

11. LSA of Prism = Perimeter of Base \times height of Prism
 LSA of Right Δ prism = perimeter of right Δ \times height of Prism

Volume of Prism = Area of base \times height

$$7560 = \frac{1}{2} \times 20 \times 21 \times \text{height}$$

$$\Rightarrow \text{height} = 36 \text{ cm}$$

$$\text{LSA} = (20 + 21 + 29) \times 36$$

$$= 70 \times 36$$

$$= 2520 \text{ cm}^2$$

Q. 87

Pipes A and B are filling pipes while pipe C is an emptying pipe. A and B can fill a tank in 72 and 90 minutes respectively. When all the three pipes are opened together, the tank gets filled in 2 hours. A and B are opened together for 12 minutes, then closed and C is opened. The tank will be empty after :

a) 15 minutes b) 16 minutes c) 18 minutes d) 12 minutes 

Explanation:

12. A and B are Filling pipes while 'c' is an emptying pipe.

$$\frac{1}{A} + \frac{1}{B} - \frac{1}{C} = \frac{1}{T}$$

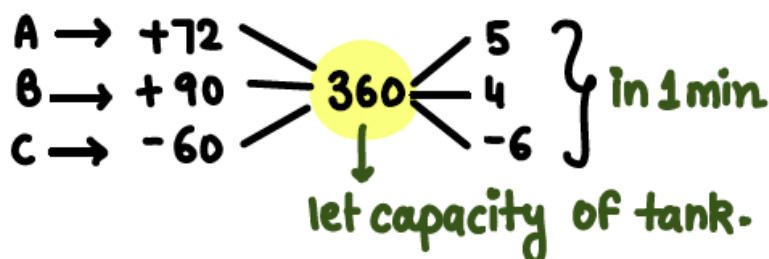
$$\Rightarrow \frac{1}{72} + \frac{1}{90} - \frac{1}{C} = \frac{1}{60 \times 2}$$

$$\Rightarrow \frac{1}{C} = \frac{1}{72} + \frac{1}{90} - \frac{1}{120}$$

$$\frac{1}{C} = \frac{10+8-60}{72 \times 10}$$

$$\frac{1}{C} = \frac{12}{12 \times 10}$$

$$C = 60 \text{ min.}$$

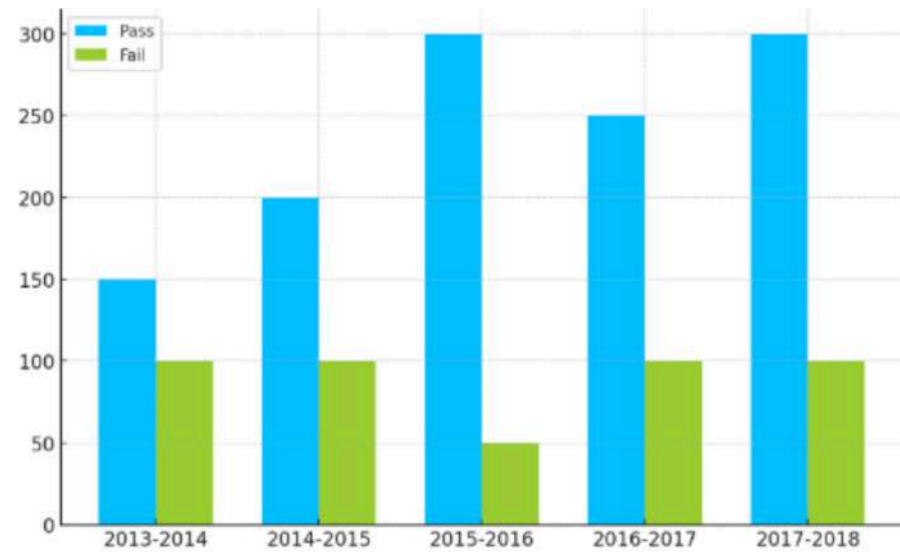


A and B in 12 mins. = $(5+4) \times 12 = 108$ units

'c' empties 108 units in $\frac{108}{6} = 18$ mins.

Q. 88

The given Bar Graph presents the results in terms of the number of students in a school for the five academic years, 2013-2014 to 2017-2018.



In which year the

percentage increase in total number of students is the lowest in comparison to its previous academic year?

a) 2016-2017 ✓

b) 2017-2018 ✗

c) 2015-2016 ✗




d) 2014-2015 ✗

Explanation:

13	Total students	% increase
2013-14	150+100=250	
14-15	200+100=300	$\frac{300-250}{250} \times 100\% = 20\%$
15-16	300+50=350	$\frac{350-300}{300} \times 100\% = 16.67\%$
16-17	250+100=350	$\frac{350-350}{350} \times 100\% = 0$
17-18	300+100=400	$\frac{400-350}{350} \times 100\% = 14.28\%$
* lowest increase in 2016-17.		

Q. 89

From the top of a tower, the angles of depression of two objects on the ground on the same side of it, are observed to be 60° and 30° respectively and the distance between the objects is $400\sqrt{3}$ m. The height (in m) of the tower is:

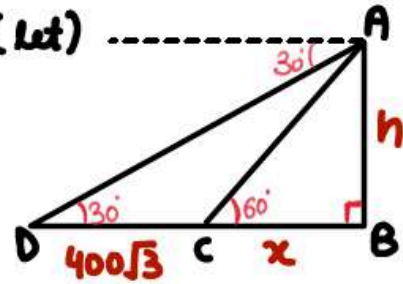
a) $800\sqrt{3}$ b) 600 c) $600\sqrt{3}$ d) 800 

14. Height of tower $AB = h$ (Let)

$$\angle EAD = \angle ADB = 30^\circ$$

$$\angle EAC = \angle ACB = 60^\circ$$

$$\text{let } BC = x$$



$$\text{In } \triangle ABC, \tan 60^\circ = \frac{AB}{BC}$$

$$\sqrt{3} = \frac{h}{BC}$$

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

$$\Rightarrow x = \frac{h}{\sqrt{3}} \text{ ——— (1)}$$

$$\text{In } \triangle ABD, \tan 30^\circ = \frac{AB}{BD}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{400\sqrt{3} + x}$$

$$\Rightarrow 400\sqrt{3} + x = \sqrt{3}h$$

$$\Rightarrow x = \sqrt{3}h - 400\sqrt{3} \text{ ——— (2)}$$

$$\text{Eq}^n (1) = \text{Eq}^n (2)$$

$$\frac{h}{\sqrt{3}} = \sqrt{3}(h - 400)$$

$$\Rightarrow h = 3(h - 400)$$

$$\Rightarrow h = 600\text{m}$$

Explanation:

Q. 90

The value of $\left(2\frac{6}{7} \text{ of } 4\frac{1}{5} \div \frac{2}{3}\right) \times 1\frac{1}{9} \div \left(\frac{3}{4} \times 2\frac{2}{3} \text{ of } \frac{1}{2} \div \frac{1}{4}\right)$ is :

a) $\frac{1}{5}$ ✗

b) 5 ✓

c) $\frac{1}{8}$ ✗

d) 8 ✗

Explanation:

$$15. \left(2\frac{6}{7} \text{ of } 4\frac{1}{5} \div \frac{2}{3}\right) \times 1\frac{1}{9} \div \left(\frac{3}{4} \times 2\frac{2}{3} \text{ of } \frac{1}{2} \div \frac{1}{4}\right)$$

$$\Rightarrow \left(\frac{20}{7} \text{ of } \frac{21}{5} \div \frac{2}{3}\right) \times \frac{10}{9} \div \left(\frac{3}{4} \times \frac{8}{3} \text{ of } \frac{1}{2} \div \frac{1}{4}\right)$$

$$\Rightarrow \left(12 \div \frac{2}{3}\right) \times \frac{10}{9} \div \left(\frac{3}{4} \times \frac{4}{3} \div \frac{1}{4}\right)$$

$$\Rightarrow \left(12 \times \frac{3}{2}\right) \times \frac{10}{9} \div \left(\frac{3}{4} \times \frac{4}{3} \times \frac{4}{1}\right)$$

$$\Rightarrow 18 \times \frac{10}{9} \div 4$$

$$\Rightarrow 18 \times \frac{10}{9} \times \frac{1}{4}$$

$$\Rightarrow 5$$



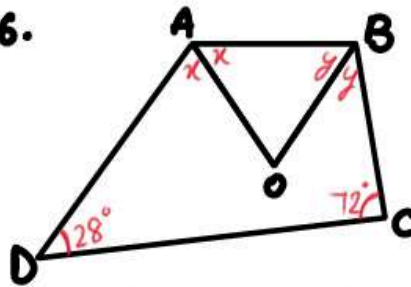
B - bracket
O - of
D - division
M - multiplication
A - addition
S - subtraction

Q. 91

In quadrilateral ABCD, $\angle C = 72^\circ$ and $\angle D = 28^\circ$. The bisectors of $\angle A$ and $\angle B$ meet in O. What is the measure of $\angle AOB$?

- a) 36° ✗
 b) 50° ✓
 c) 48° ✗
 d) 54° ✗

16.



$$\begin{aligned} \text{let } \angle DAO &= \angle OAB = x \\ \text{let } \angle ABD &= \angle OBC = y \end{aligned} \quad \left. \vphantom{\begin{aligned} \text{let } \angle DAO &= \angle OAB = x \\ \text{let } \angle ABD &= \angle OBC = y \end{aligned}} \right\} \text{(Angle Bisectors)}$$

$$\begin{aligned} \angle A + \angle D &= 180^\circ \quad [\text{The sum of angles on same side of quadrilateral is } 180] \\ \Rightarrow 2x + 28 &= 180^\circ \\ x + 14 &= 90^\circ \quad \text{--- ①} \end{aligned}$$

Explanation:




$$\begin{aligned} \angle C + \angle B &= 180^\circ \\ \Rightarrow 72 + 2y &= 180^\circ \\ \Rightarrow 36 + y &= 90^\circ \quad \text{--- ②} \end{aligned}$$

$$\begin{aligned} \text{Adding eq}^n \text{ ① \& ② we get,} \\ x + 14 + 36 + y &= 180^\circ \\ \Rightarrow x + y &= 130^\circ \end{aligned}$$

$$\begin{aligned} \text{In } \triangle AOB, x + y + \angle AOB &= 180^\circ \quad (\text{angle sum property of } \triangle) \\ \Rightarrow 130^\circ + \angle AOB &= 180^\circ \\ \Rightarrow \angle AOB &= 50^\circ \end{aligned}$$

Q. 92

35% of goods were sold at a profit of 65%, while the remaining were sold at x% loss. If the overall loss is 12%, then what is the value of x? (correct to one decimal place)

a) 52.4 b) 53.5 c) 51.8 d) 50.6 

Explanation:

$$17. \quad \frac{35\% \times (+65\%) + (100 - 35\%) \times (-x\%)}{100} = -12\%$$





$$\Rightarrow 2275\% - 65x\% = -1200\%$$

$$\Rightarrow 3475\% = 65x\%$$

$$\Rightarrow x\% = 53.46\% \approx 53.5\%$$

Q. 93

$\sqrt{\frac{\cot\theta + \cos\theta}{\cot\theta - \cos\theta}}$ is equal to:

- a) $1 - \sec\theta \tan\theta$ 
- b) $\sec\theta - \cos\theta$ 
- c) $1 + \sec\theta \tan\theta$ 
- d) $\sec\theta + \tan\theta$ 

18. $\sqrt{\frac{\cot \theta + \cos \theta}{\cot \theta - \cos \theta}} \times \sqrt{\frac{\cot \theta + \cos \theta}{\cot \theta + \cos \theta}}$

$$\frac{\cot \theta + \cos \theta}{\sqrt{\cot^2 \theta - \cos^2 \theta}} = \frac{\cot \theta + \cos \theta}{\sqrt{\frac{\cos^2 \theta}{\sin^2 \theta} - \cos^2 \theta}}$$

$$= \frac{\cot \theta + \cos \theta}{\cos \theta \sqrt{\frac{1 - \sin^2 \theta}{\sin^2 \theta}}}$$

$$= \frac{\cot \theta + \cos \theta}{\cos \theta \sqrt{\frac{\cot^2 \theta}{\sin^2 \theta}}}$$

Explanation:

$$= \frac{\sin \theta (\cot \theta + \cos \theta)}{\cos^2 \theta}$$


$$= \frac{\sin \theta}{\cos^2 \theta} \left(\frac{\cos \theta}{\sin \theta} + \cos \theta \right)$$

$$= \frac{\cancel{\sin \theta}}{\cos^2 \theta} \times \cancel{\cos \theta} \left(\frac{1 + \sin \theta}{\cancel{\sin \theta}} \right)$$

$$= \frac{1 + \sin \theta}{\cos \theta}$$

$$= \sec \theta + \tan \theta$$

Q. 94

The value of $\sqrt{28 + 10\sqrt{3}} - \sqrt{7 - 4\sqrt{3}}$ is closest to:a) 5.8 b) 6.5 c) 6.1 d) 7.2 

Explanation:

$$19. \sqrt{28 + 10\sqrt{3}} - \sqrt{7 - 4\sqrt{3}}$$

$$\Rightarrow \sqrt{25 + 3 + 2 \cdot 5 \cdot \sqrt{3}} - \sqrt{4 + 3 - 2 \cdot 2 \cdot \sqrt{3}}$$

$$\Rightarrow \sqrt{(5)^2 + (\sqrt{3})^2 + 2(5)(\sqrt{3})} - \sqrt{(2)^2 + (\sqrt{3})^2 - 2(2)(\sqrt{3})}$$

$$\Rightarrow \sqrt{(5 + \sqrt{3})^2} - \sqrt{(2 - \sqrt{3})^2}$$



$$\Rightarrow 5 + \sqrt{3} - (2 - \sqrt{3})$$

$$\Rightarrow 3 + 2\sqrt{3}$$

$$\Rightarrow 6.464 \approx 6.5$$

Q. 95

The average of 18 numbers is 37.5. If six numbers of average x are added to them, then the average of all the numbers increases by one. The value of x is:

a) 42 b) 40 c) 38.5 d) 41.5 

Explanation:

$$20. \quad \frac{\text{Sum of 18 Numbers}}{18} = 37.5$$

$$\text{Sum of 18 numbers} = 37.5 \times 18 = 675$$

$$\text{Aft}, \frac{675 + 6x}{18 + 6} = 37.5 + 1 = 38.5$$

$$\Rightarrow 675 + 6x = 24(38.5)$$

$$\Rightarrow 6x = 342 - 675$$



$$\Rightarrow 6x = 249$$

$$\Rightarrow x = \frac{249}{6}$$

$$\Rightarrow x = 41.5$$

Q. 96

A certain sum invested on compound interest grows to ₹8,000 and ₹27,000 in three and six years, respectively when the interest is compounded annually. What is the percentage rate of interest?





a) 25 b) 2.5 c) 50 d) 10 

Explanation:

$$\begin{aligned}
 21. \quad A &= P \left(1 + \frac{R}{100} \right)^T \\
 8000 &= P \left(1 + \frac{R}{100} \right)^3 \text{---} \textcircled{1} \\
 27000 &= P \left(1 + \frac{R}{100} \right)^6 \text{---} \textcircled{2} \\
 &\text{dividing eq}^n (1) \text{ by eq}^n (2) \\
 \frac{8}{27} &= \frac{1}{\left(1 + \frac{R}{100} \right)^3} \\
 \Rightarrow \frac{27}{8} &= \left(1 + \frac{R}{100} \right)^3 \\
 \Rightarrow \left(\frac{3}{2} \right)^3 &= \left(1 + \frac{R}{100} \right)^3 \\
 \Rightarrow 1 + \frac{R}{100} &= \frac{3}{2} \\
 \Rightarrow \frac{R}{100} &= \frac{1}{2} \\
 \Rightarrow R &= 50\%
 \end{aligned}$$

Q. 97

40 litres of 60% concentration of acid solution is added to 35 litres of 80% concentration of acid solution. What is the concentration of acid in the new solution?

- a) 69% 
- b) 66% 
- c) $69\frac{1}{3}\%$ 
- d) $66\frac{2}{3}\%$ 

Explanation:

22. Concentration of Acid in new Solution

$$= \frac{40 \times 60\% + 35 \times 80\%}{40 + 35}$$


$$= \frac{\frac{40 \times 60}{100} + \frac{35 \times 80}{100}}{75} \times 100\%$$

$$= \frac{24 + 28}{75} \times 100\%$$

$$= \frac{52}{75} \times 100\%$$

$$= 69\frac{1}{3}\%$$

Q. 98

If the 11-digit number $5678x43267y$ is divisible by 72, then the value of $\sqrt{5x + 8y}$ is:a) 4 b) 6 c) 7 d) 8 

Explanation:



23. $5678x43267y$ is divisible by 72
 $\Rightarrow 72 \begin{cases} 8 & \text{[last 3 digit should be divisible by 8]} \\ 9 & \text{[sum of all digits should be divisible by 9]} \end{cases}$

$$\begin{array}{l|l}
 5+6+7+8+x+4+3+2+6+7+y & 67y \rightarrow \text{divisible by 8} \\
 48+x+y & \Rightarrow y=2 \\
 x+y=6, 15^x & \\
 y=2 & \\
 x=4 &
 \end{array}$$

$$\begin{aligned}
 \sqrt{5x+8y} &= \sqrt{5 \times 4 + 8 \times 2} \\
 &= \sqrt{36} = 6
 \end{aligned}$$

Q. 99

If I travel by bus, I reach my office 15 min late, and if I travel by car, I reach 10 min early. If the distance between my home and office is 25 km, then the difference of the reciprocals of the average speed of the bus and the car, in second per meter is:

a) $3/25$ b) $3/50$ c) $3/20$ d) $3/10$ 

24. let 'T' (in hours) be the time taken to reach from home to office

$$\text{A/q, } S_{\text{bus}} = \frac{25}{\frac{T+15}{60}} = \frac{25}{T+\frac{1}{4}}$$

$$S_{\text{car}} = \frac{25}{\frac{T-10}{60}} = \frac{25}{T-\frac{1}{6}}$$

difference of Reciprocal of Avg. speed of bus and car

$$= \frac{T+\frac{1}{4}}{25} - \left(\frac{T-\frac{1}{6}}{25} \right)$$

$$= \frac{\frac{1}{4} + \frac{1}{6}}{25}$$

$$= \frac{\cancel{10}^2}{\cancel{24} \times \cancel{25}^5} = \frac{1}{12 \times 5}$$

$$= \frac{1}{60} \text{ h/Km}$$

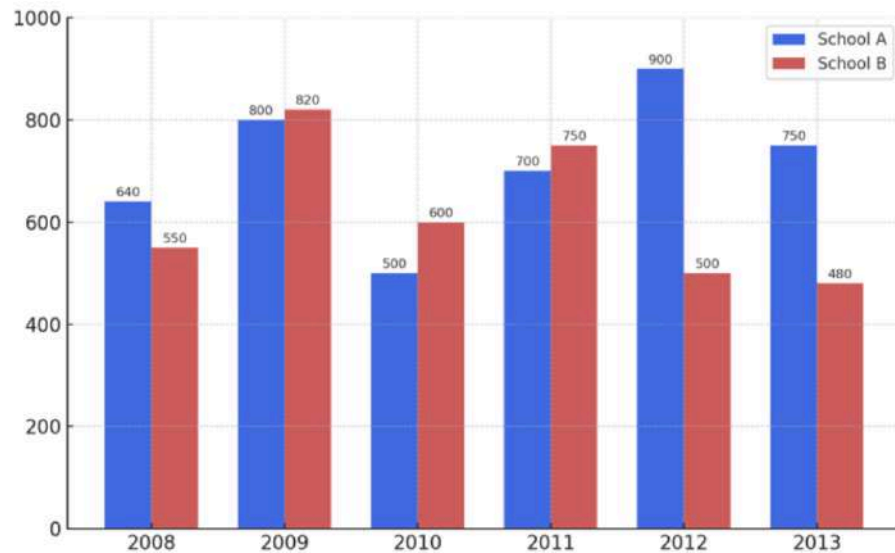
$$= \frac{1}{\cancel{60}^{10}} \times \frac{\cancel{18}^3}{5}$$

$$= \frac{3}{50} \text{ sec/m}$$

Explanation:

Q. 100

The given Bar Graph presents the number of students of two schools for six years.



In which

year the sum of the students in two schools is the highest?

- a) 2009 ✓
- b) 2012 ✗
- c) 2011 ✗
- d) 2008 ✗

Explanation:

25. **2009 → $800 + 820 = 1620$ (highest)**
2012 → $900 + 500 = 1400$
2011 → $700 + 750 = 1450$
2008 → $640 + 550 = 1190$