

SSC CGL 2017 TIER 1 AUGUST 12,2017 SHIFT 2 QUESTION PAPER**Reasoning**

1. In the following question, select the related word from the given alternatives.

Bark : Dog :: ? : Sparrow

- A** Grunt
- B** Snort
- C** Howl
- D** Chirp

Answer: D

Explanation:

The relation given above is the sound of an animal. A dog barks while a sparrow chirps.

=> Ans - (D)

2. In the following question, select the related letters from the given alternatives.

ELQZ : AJOV :: VXTD : ?

- A** GWXE
- B** WGCE
- C** XWGE
- D** WCDE

Answer: B

Explanation:

Expression = ELQZ : AJOV

The pattern followed is that there are as many alphabets to the left of the first letter as there are to the right of the rightmost letter

E is 5th from left end and V is 5th from right end. L is 12th from left end and O is 12th from right end. Q is 17th from left end and J is 17th from right end. Finally, Z is the last alphabet and A is the first.

Similarly, for VXTD , reverse is DTXV,

Now, D is 4th from left end, thus first letter will be 4th from right end = W

T is 20th from left end, second letter will be 20th from right end = G

Thus, missing term = **WGCE**

=> Ans - (B)

3. In the following question, select the related number from the given alternatives.

40 : 100 :: 56 : ?

- A** 140
- B** 112
- C** 118

D 148

Answer: A

Explanation:

Expression : $40 : 100 :: 56 : ?$

The pattern followed is $= n : 2.5n$

Eg = $40 : 2.5(40) = 40 : 100$

Similarly, $2.5 \times 56 = 140$

=> Ans - (A)

4. In the following question, select the odd word from the given alternatives.

A Book

B Pen

C Pencil

D Wax Colours

Answer: A

Explanation:

All except a book are used to write or draw, thus it is the odd one out.

=> Ans - (A)

5. In the following question, select the odd letter group from the given alternatives.

A AZF

B LOQ

C EVJ

D ZAC

Answer: D

Explanation:

The first two letters in each term follows the pattern that there are as many letter to the left of the first letter as there are to the right of the second letter in the English alphabetical series.

Now, for the first and the last letter :

(A) : A (+5 letters) = F

(B) : L (+5 letters) = Q

(C) : E (+5 letters) = J

(D) : Z (+3 letters) = C

=> Ans - (D)

6. In the following question, select the odd number pair from the given alternatives.

A 41 - 22

B 63 - 93

C 82 - 44

D 83 - 64

Answer: B

Explanation:

The difference between each pair of numbers is a multiple of 19 but for the second option.

$$41 - 22 = 19 ; 82 - 44 = 38 ; 83 - 64 = 19$$

=> Ans - (B)

7. Arrange the given words in the sequence in which they occur in the dictionary.

1. Cadatrally

2. Caddisflies

3. Caducities

4. Caddisworms

5. Cadetships

A 12453

B 12534

C 21345

D 45213

Answer: A

Explanation:

As per the dictionary,

= Cadatrally -> Caddisflies -> Caddisworms -> Cadetships -> Caducities

≡ 12453

=> Ans - (A)

8. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

ACE, FHJ, KMO, ?

A QRS

B PRT

C PRU

D QRV

Answer: B

Explanation:

Expression : ACE, FHJ, KMO, ?

The pattern followed is that there is a difference of 5 letters in each letter of the terms.

1st letter = A, F, K, P

2nd letter = C, H, M, R

3rd letter = E, J, O, T

Thus, next term = **PRT**

=> Ans - (B)

9. In the following question, select the missing number from the given series.

9, 18, 72, 576, ?

A 8116

B 8216

C 9016

D 9216

Answer: D

Explanation:

Number of the form 2^n is multiplied.

$$9 \times 2^1 = 18$$

$$18 \times 2^2 = 72$$

$$72 \times 2^3 = 576$$

$$576 \times 2^4 = \mathbf{9216}$$

=> Ans - (D)

10. Poonam told Akshay that "Yesterday she defeated Akshay's only sister's daughter Sneha in a school Taekwondo competition."
How is Akshay related to Sneha?

A Grandfather

B Father

C Cousin

D Uncle

Answer: D

Explanation:

Akshay's only sister's daughter is Akshay's niece.

Now, the name of mentioned girl is Sneha.

Thus, Akshay is Sneha's uncle.

=> Ans - (D)

11. In a row of boys, Tarak is 18th from either end. How many boys are there in the row?

A 19

B 36

C 35

D 42

Answer: C

Explanation:

Position of Tarak from both ends = 18th

=> Total number of boys in the row = $(18+18) - 1 = 36-1 = 35$

=> Ans - (C)

12. In the following question, from the given alternative words, select the word which cannot be formed using the letters of the given word.

ABSOLUTE

A BASE

B BOSE

C LOSE

D SOLVE

Answer: D

Explanation:

The word ABSOLUTE does not contain any 'V' and thus the word 'Solve' cannot be formed.

=> Ans - (D)

13. In a certain code language, "OPTIMIST" is written as "LKRNRGHG". How is "PESSIMIST" written in that code language?

A HGRNRVKHH

B HHRNRVKHG

C VKRNRHGHH

D KVRNRHHHG

Answer: D

Explanation:

"OPTIMIST" is written as "LKRNRGHG"

The pattern followed is that every letter is opposite to each other. But their positions are changed. Eg - The first two and last two letters are written as it is, but the middle letters are written in reverse order.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
↓	↓	...																			...		↓	↓	
Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A

Now, OP -> LK and ST -> HG

But, middle letters, i.e. TIMI -> GRNR is written in reverse order as RNRG

Similarly, for PESSIMIST :

PE -> KV and ST -> HG

and SSIMI -> HHRNR, in reverse order will be RNRHH

Thus, PESSIMIST : **KVRNRHHHG**

=> Ans - (D)

14. In the following question, correct the equation by interchanging two signs.

$$4 - 10 \times 5 + 9 \div 3 = 51$$

- A** $\times$ and $-$
- B** $\div$ and $\times$
- C** $+$ and $-$
- D** $-$ and $\div$

Answer: C

Explanation:

Expression : $4 - 10 \times 5 + 9 \div 3 = 51$

$$(A) : 4 \times 10 - 5 + 9 \div 3 = 51$$

$$\text{L.H.S.} = 40 - 5 + 3 = 38 \neq \text{R.H.S.}$$

$$(B) : 4 - 10 \div 5 + 9 \times 3 = 51$$

$$\text{L.H.S.} = 4 - 2 + 27 = 29 \neq \text{R.H.S.}$$

$$(C) : 4 + 10 \times 5 - 9 \div 3 = 51$$

$$\text{L.H.S.} = 4 + 50 - 3 = 51 = \text{R.H.S.}$$

$\Rightarrow$ Ans - (C)

15. If 12 (20) 16 and 21 (35) 28, then what is value of A in 48 (80) A ?

- A** 50
- B** 56
- C** 64
- D** 72

Answer: C

Explanation:

The numbers are of the form : $3x(5x)4x$, where x is the L.C.M. of the three terms

Eg = 12 (20) 16, L.C.M. = 4 and it can be represented as = $3(4), 5(4), 4(4)$

Similarly, for 21 (35) 28 L.C.M. = 7

Thus, for 48 (80) A, L.C.M. = 16

$$\Rightarrow A = 16 \times 4 = 64$$

$\Rightarrow$ Ans - (C)

16. In the following question. select the number which can be placed at the sign of question mark (?) from the given alternatives.

8	6
96	2

15	2
60	2

?	5
120	6

- A** 3
- B** 4
- C** 8
- D** 14

Answer: B

Explanation:

The number at the bottom left is obtained by the product of the other three.

Eg : $8 \times 6 \times 2 = 96$

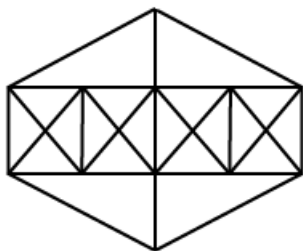
and $15 \times 2 \times 2 = 60$

Similarly, $x \times 5 \times 6 = 120$

$\Rightarrow x = \frac{120}{30} = 4$

$\Rightarrow$ Ans - (B)

17. How many triangles are there in the given figure ?



A 38

B 44

C 46

D 54

Answer: B

18. In the following question below are given some statements followed by some conclusions. Taking the given statements to be true even if they seem to be at variance from commonly known facts, read all the conclusions and then decide which of the given conclusion logically follows the given statements.

Statements:

- I. All dens are spiral.
- II. Some spirals are cards.

Conclusions:

- I. Some spirals are not cards.
- II. Some dens are not cards.
- III. Some cards are den.

A Only conclusion (I) and conclusion(II) follow.

B Only conclusion (III) follows.

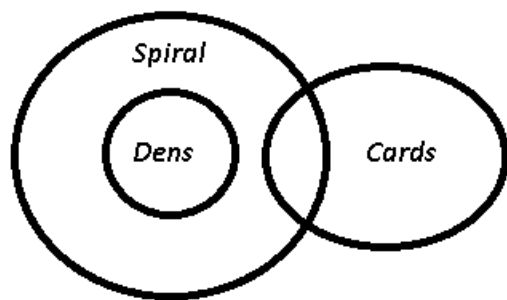
C All conclusions follow.

D No conclusion follows.

Answer: D

Explanation:

The venn diagram of above statements is :



Conclusions:

I. Some spirals are not cards = false

II. Some dens are not cards = false

III. Some cards are den = false (Some dens may or may not be cards)

Thus, no conclusion follows.

=> Ans - (D)

19. Three positions of a cube are shown below. What will come opposite to face containing B?



A C

B D

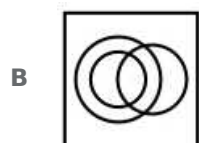
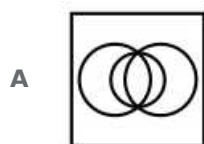
C F

D G

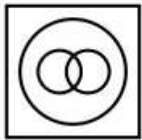
Answer: D

20. Identify the diagram that best represents the relationship among the given classes.

Professionals, Chartered Accountant, Female



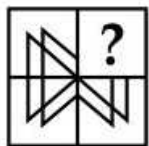
D


Answer: B
Explanation:

Both professionals and Chartered Accountants can be female, and all chartered accountants are professionals, hence the second diagram best describes above relationship.

=> Ans - (B)

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



A



B



C



D


Answer: A
Explanation:

When we complete the above figure, we get :

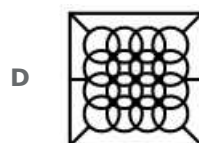
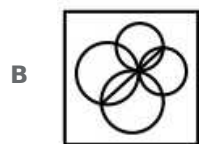
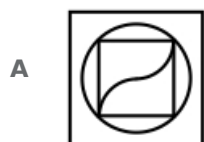


Thus, the first figure is similar to the figure in blue colour.

=> Ans - (A)

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

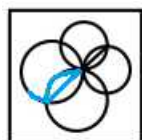




Answer: B

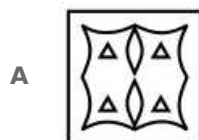
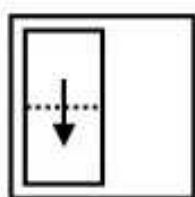
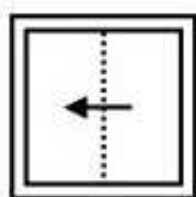
Explanation:

The question figure is embedded in the following figure in blue colour.



=> Ans - (B)

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

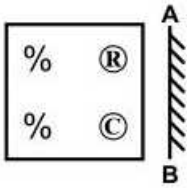


D

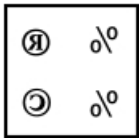


Answer: C

24. If a mirror is placed on the line AB, then which of the answer figure is the right image of the given figure?



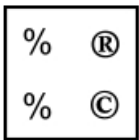
A



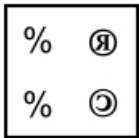
B



C



D



Answer: A

Explanation:

A vertical mirror is placed, so the objects on the left will appear on the right and vice-versa. So, the ® at top right will appear at top left and © will appear below it, and thus all the options except first are eliminated.

Also, the signs will be reversed.

=> Ans - (A)

25. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The columns and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, for example, 'R' can be represented by 23, 31, etc., and 'O' can be represented by 76, 98, etc. Similarly, you have to identify the set for the word "TRAY".

Matrix - I

	0	1	2	3	4
0	T	Z	Y	B	R
1	Y	B	R	T	Z
2	Z	T	B	R	Y
3	B	R	Z	Y	T
4	R	Y	T	Z	B

Matrix - II

	5	6	7	8	9
5	A	O	U	E	I
6	U	E	I	A	O
7	O	A	E	I	U
8	E	I	O	U	A
9	I	U	A	O	E

A 00, 04, 68, 02

- B** 21, 41, 97, 41
- C** 34, 12, 55, 11
- D** 42, 23, 89, 23

Answer: A

Explanation:

(A) : 00, 04, 68, 02 = **TRAY**

(B) : 21, 41, 97, 41 = TYAY

(C) : 34, 12, 55, 11 = TRAB

(D) : 42, 23, 89, 23 = TRAR

=> Ans - (A)

26. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

The reason Priya was late (a)/ to the meeting is because her (b)/ flight was delayed. (c)/ No Error (d)

- A** The reason Priya was late
- B** to the meeting is because her
- C** flight was delayed
- D** No Error

Answer: B

27. In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'.

Not only did they offer him (a)/ good salary but provided (b)/ him with a beautiful bungalow. (c)/ No Error (d)

- A** Not only did they offer him
- B** good salary but provided
- C** him with a beautiful bungalow
- D** No Error

Answer: B

28. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

His father ____ him up in a construction business.

- A** built
- B** hold

C keep

D set

Answer: D

29. In the following question, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

I have ____ respect for his achievement.

A abundant

B profound

C strong

D unique

Answer: B

30. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

Boast

A Avoid

B Change

C Rely

D Pride

Answer: D

31. In the following question, out of the four alternatives, select the word similar in meaning to the word given.

Haste

A Burden

B Expect

C Hurry

D Sight

Answer: C

32. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

Refulgent

A Dark

B Loud

C Rough

D Sweet

Answer: A

33. In the following question, out of the four alternatives, select the word opposite in meaning to the word given.

Skeptic

- A** Believer
- B** Erroneous
- C** Nervous
- D** Nihilist

Answer: A

34. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

Herculean task

- A** Important task
- B** Motivating
- C** Optional to do
- D** Very difficult task

Answer: D

35. In the following question, out of the four alternatives, select the alternative which best expresses the meaning of the idiom/phrase.

On tenterhooks

- A** Flattery
- B** In a disorganized manner
- C** In anxious suspense
- D** Speak quickly

Answer: C

36. Improve the bracketed part of the sentence.

Neha (would be looked) beautiful in Indian attire.

- A** had looking
- B** was looked
- C** would look

- D** No improvement

Answer: C

37. Improve the bracketed part of the sentence.

(People have been long known) how important the trees are to them.

- A** People have to know long
B People had long known
C People have long known
D No improvement

Answer: C

38. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

An associate in crime

- A** Accomplice
B Callous
C Itinerant
D Philistine

Answer: A

39. In the following question, out of the four alternatives, select the alternative which is the best substitute of the phrase.

Man behaving more like a woman than as a man

- A** Biped
B Effeminate
C Gregarious
D Inalienable

Answer: B

40. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

- A** Ecstasy
B Profecient
C Sacrifice
D Temporary

Answer: B

41. In the following question, four words are given out of which one word is incorrectly spelt. Select the incorrectly spelt word.

- A** Familiar
- B** Grammer
- C** Narrator
- D** Operator

Answer: B

42. The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P- On the earth, liquid forms and solid forms (ice/snow) predominate.

Q- The water cycle has two distinct branches the atmospheric branch and the terrestrial branch.

R- Water plays a versatile role in the functioning of the biosphere.

S- In the atmospheric, water exists mainly in gaseous form.

- A** RSPQ
- B** RQSP
- C** RPSQ
- D** RQPS

Answer: B

43. The question below consists of a set of labelled sentences. Out of the four options given, select the most logical order of the sentences to form a coherent paragraph.

P- For however elusively, it still knew of harbours and anchors, of homes to which to return, and of barns in which to store the harvest.

Q- The works of the early Renaissance and the poetry of Shakespeare vibrate with the compassion for live experience in danger of dying from exposure and neglect.

R- Yes, it was a genius of courage, not of desperate audacity.

S- In this compassion was the creative genius of the age.

- A** SQRP
- B** PRSQ
- C** QSRP
- D** RSPQ

Answer: C

44. In the following question, a sentence has been given in Active/Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/Active voice.

Sunita has written a story which fascinates everyone.

- A** A story has been written by Sunita which fascinates every one.
- B** Everyone is fascinated by the story which has been written by Sunita.
- C** Every one fascinates the story which is written by Sunita.

- D** Story written by Sunita fascinates everyone.

Answer: A

45. In the following question, a sentence has been given in Direct/Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

Rajesh ordered his driver to do as he was told.

- A** Rajesh ordered his driver "Do as you are told".
B Rajesh said to his driver "Do as I told you".
C Rajesh said to his driver "Do as you are told".
D Rajesh said to his driver "Do as you were told".

Answer: C

Instructions [46 - 50]

In the following questions, the sentence given with blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

Management is a set of __ (1) __ that can keep a complicated system of people and technology running __ (2) __. The most __ (3) __ aspects of management include planning, budgeting, organizing, staffing, controlling and problem solving. Leadership is a set of process that creates organization in the first place or adapts, them to __ (4) __ changing circumstances. Leadership defines what the future should look like, aligns people with that __ (5) __ and inspires them to make it happen despite the obstacles.

46. (1)

- A** instructions
B resources
C processes
D proposals

Answer: C

47. (2)

- A** fastly
B reliably
C smoothly
D sharply

Answer: C

48. (3)

- A** dangerous

- B** difficult
- C** important
- D** terrible

Answer: C

49. (4)

- A** normally
- B** run
- C** show
- D** significantly

Answer: D

50. (5)

- A** look
- B** role
- C** source
- D** vision

Answer: D

General Awareness

51. Which among the following is not an instrument of fiscal policy?

- A** Taxation
- B** Public expenditure
- C** Public debt
- D** Credit Rationing

Answer: D

52. Which of the following equation is/are INCORRECT?

- I. $NI = NDP + \text{Net Foreign Income}$
- II. $GNP = GDP + \text{Net Foreign Income}$
- III. $NDP = GNP - \text{Depreciation}$

- A** Only (I) and (II)
- B** Only (III)

C Only (II) and (III)

D Only (II)

Answer: B

53. **Comptroller and Auditor General of India is appointed for how many years?**

A 2

B 4

C 6

D 5

Answer: C

54. **Who is the custodian of Contingency Fund of India?**

A The Prime Minister

B Judge of Supreme Court

C The President

D The Finance Minister

Answer: C

55. **Who was the first female emperor of India?**

A Noor Jahan

B Razia Sultana

C Rani Rudrama Devi

D Queen Didda

Answer: B

56. **Who was the first Governor General of India?**

A Lord William Bentick

B Lord Dalhousie

C Lord Cornwallis

D None of these

Answer: A

57. **Which of the following planet is also known as 'Earth's twin'?**

A Mercury

- B** Venus
- C** Jupiter
- D** Saturn

Answer: B

58. Which of the following imaginary lines join places with same level of rainfalls?

- A** Contour lines
- B** Isobaths lines
- C** Isohyets lines
- D** Isobar lines

Answer: C

59. What is study of fungus known as?

- A** Physiology
- B** Phrenology
- C** Mycology
- D** Biology

Answer: C

60. Which of the following bacteria is responsible for the formation of curd?

- A** Lycopodium
- B** Yeast
- C** Lacto-bacillus
- D** Fungus

Answer: C

61. How many pairs of ribs are there in human body?

- A** 13
- B** 11
- C** 12
- D** 14

Answer: C

62. When a ball is thrown vertically upwards, which of the following quantities remains constant during its motion?

- A** Energy
- B** Displacement
- C** Velocity
- D** Acceleration

Answer: A

63. What is the SI unit of heat energy?

- A** Joule
- B** Newton
- C** Calorie
- D** Kelvin

Answer: A

64. Which system is used by the Digital Computers to encode data and Programs?

- A** Decimal
- B** Binary
- C** Hexa decimal
- D** Octal

Answer: B

65. What is the common name of Sodium Bicarbonate?

- A** Baking Soda
- B** Washing Powder
- C** Plaster of Paris
- D** Fly Ash

Answer: A

66. Which of the following is an ore of iron?

- A** Dolomite
- B** Epsom Salt
- C** Siderite
- D** Galena

Answer: C

67. Which of the following has maximum bio-diversity?

- A** Desert
- B** River
- C** Polar Region
- D** Tropical Region

Answer: D

68. Who will be implementing the Varishtha Pension Bima Yojana scheme during financial year 2017-18?

- A** National Insurance Company Limited
- B** New India Assurance Company Limited
- C** Life Insurance of Corporation of India
- D** SBI Life Insurance Company Limited

Answer: C

69. Albert Sabin is known for developing ____.

- A** smallpox vaccine
- B** polio vaccine
- C** penicillin
- D** hepatitis B vaccine

Answer: B

70. Match the following.

Term

- 1. No Ball
- 2. Goal
- 3. Knockout

Associated Sport

- a. Hockey
- b. Cricket
- c. Boxing

- A** 1-b, 2-a, 3-c
- B** 1-c, 2-a, 3-b
- C** 1-b, 2-c, 3-a
- D** 1-c, 2-b, 3-a

Answer: A

71. Who amongst the following is a renowned Indian classical dancer?

- A** Palghat Mani Iyer
- B** Madhumati
- C** Sonal Mansingh
- D** Siddheshwari Devi

Answer: C

72. Who among the following did not receive the 2016 Arjuna award in the field of 'wrestling'?

- A** Virender Singh
- B** Vinesh Phogat
- C** Amit Kumar
- D** Rajat Chauhan

Answer: D

73. Who has written the book 'The Ministry of Utmost Happiness'?

- A** Chaitanya Padukone
- B** Amitav Ghosh
- C** Pramod Kapoor
- D** Anundhati Roy

Answer: D

74. Which country became seventh member of South Asia Sub regional Economic Cooperation (SASEC) on 31 March 2017?

- A** Myanmar
- B** Bhutan
- C** Nepal
- D** Maldives

Answer: A

75. How many Indian states share their boundaries with Nepal?

- A** 3
- B** 4
- C** 8

D 5**Answer:** D

Mathematics

76. Which of the following can't be the unit's digit of a perfect square?

A 4**B** 6**C** 8**D** 9**Answer:** C**Explanation:**

The unit's digit of a perfect square number can be = 1,4,5,6,9

Thus, 8 can't be the unit's digit of a perfect square

=> Ans - (C)

77. Amar can complete a work in 30 days and Raman can complete the same work in 15 days. If both of them work together, then in 4 days what percent of the total work will be completed?

A 15**B** 37**C** 40**D** 45**Answer:** C**Explanation:**

Let total work to be done = 30 units

Amar can complete the work in 30 days

=> Amar's efficiency = $\frac{30}{30} = 1$ unit/day

Similarly, Raman's efficiency = $\frac{30}{15} = 2$ units/day

Thus, (Amar+Raman)'s 1 day's work = $1 + 2 = 3$ units/day

=> Work done by them together in 4 days = $4 \times 3 = 12$ units

$\therefore$ % of work completed = $\frac{12}{30} \times 100$

= $4 \times 10 = 40\%$

=> Ans - (C)

78. The lengths of two parallel sides of a trapezium are 21 cm and 9 cm. If its height is 10 cm, then what is the area (in cm^2) of the trapezium?

- A** 35
- B** 75
- C** 150
- D** 225

Answer: C

Explanation:

Sum of parallel sides of trapezium = $21+9 = 30$ cm

Height = $h = 10$ cm

Area of trapezium = $\frac{1}{2} \times h \times (\text{sum of parallel sides})$

$$= \frac{1}{2} \times 10 \times 30$$

$$= 10 \times 15 = 150 \text{ cm}^2$$

=> Ans - (C)

79. What will be the net discount percentage of three successive discounts of 20%, 10% and 30%?

- A** 45.2
- B** 49.6
- C** 54.6
- D** 50.4

Answer: B

Explanation:

Let list price = Rs. $100x$

$$\text{After first discount of 20\%, price} = 100x \times \frac{(100-20)}{100} = 80x$$

$$\text{After second discount of 10\%, price} = 80x \times \frac{(100-10)}{100} = 72x$$

$$\text{After third discount of 30\%, price} = 72x \times \frac{(100-30)}{100} = 50.4x$$

$$\Rightarrow \text{Equivalent discount} = \frac{100x - 50.4x}{100x} \times 100$$

$$= 49.6\%$$

=> Ans - (B)

80. Three bottles of equal capacity have mixture of milk and water in ratio 5 : 7, 7 : 9 and 2 : 1 respectively. These three bottles are emptied into a large bottle. What is the percentage of milk in the new mixture?

- A** 49.6
- B** 52.3
- C** 51.2
- D** 50.7

Answer: D

Explanation:

Let the capacity of each bottle = 48 litres [L.C.M.(12,16,3)]

Ratio of milk and water in the three bottles respectively = 5:7, 7:9, 2:1

Milk in 1st bottle = $\frac{5}{5+7} \times 48 = 20$ litres

and water in 1st bottle = $48 - 20 = 28$ litres

Similarly, milk in 2nd bottle = $\frac{7}{7+9} \times 48 = 21$ litres

and water in 2nd bottle = $48 - 21 = 27$ litres

Similarly, milk in 3rd bottle = 32 litres and water = 16 litres

=> Total milk = $20 + 21 + 32 = 73$ litres

and total water = $28 + 27 + 16 = 71$ litres

∴ Percentage of milk in the new mixture = $\frac{73}{73+71} \times 100$

= $\frac{7300}{144} = 50.69 \approx 50.7\%$

=> Ans - (D)

81. Seven friends spent Rs 14 each on a project and the eighth friend spent Rs 21 more than the average expenditure of all eight of them. What is the amount of total money (in Rs) spent by them?

A 133

B 136

C 141

D 155

Answer: B

Explanation:

Let amount spent by the 8th friend = Rs. x

Amount spent by the 7 friends = $14 \times 7 = \text{Rs. } 98$

Now, average expenditure of all 8 of them = $\frac{(x+98)}{8}$

According to ques,

$$\Rightarrow x - \frac{(x+98)}{8} = 21$$

$$\Rightarrow \frac{8x - x - 98}{8} = 21$$

$$\Rightarrow 7x - 98 = 21 \times 8 = 168$$

$$\Rightarrow 7x = 168 + 98 = 266$$

$$\Rightarrow x = \frac{266}{7} = 38$$

∴ Total amount spent by all of them = Rs. $38 + 98 = \text{Rs. } 136$

=> Ans - (B)

82. A person sold his pen for Rs 24 and his profit percentage was numerically equal to the cost price (in Rs) of the pen?

A 12

B 14

C 16**D** 20**Answer: D****Explanation:**Let cost price of pen = Rs. x

Selling price = Rs. 24

According to ques,

$$\text{Profit \%} = \frac{24-x}{x} \times 100 = x$$

$$\Rightarrow 2400 - 100x = x^2$$

$$\Rightarrow x^2 + 100x - 2400 = 0$$

$$\Rightarrow x^2 + 120x - 20x - 2400 = 0$$

$$\Rightarrow x(x + 120) - 20(x + 120) = 0$$

$$\Rightarrow (x - 20)(x + 120) = 0$$

$$\Rightarrow x = 20, -120$$

∴ Cost price can't be negative, $\Rightarrow x = \text{Rs. } 20$ $\Rightarrow$ Ans - (D)

83. A, B and C are three students. A got 36% less marks than B and 16% more marks than C. If B got 145 marks, then what are the marks got by C?

A 120**B** 110**C** 80**D** 75**Answer: C****Explanation:**

B's marks = 145

A got 36% less marks than B

$$\Rightarrow \text{A's marks} = 145 - \left(\frac{36}{100} \times 145 \right) = 92.8$$

Also, A got 16% more marks than C

$$\Rightarrow \text{C's marks} = 92.8 \times \frac{100}{100+16}$$

$$= \frac{9280}{116} = 80$$

 $\Rightarrow$ Ans - (C)

84. After repairing a scooter runs at a speed of 54 km/h and before repairing runs at speed of 48 km/h. It covers a certain distance in 6 hours after repairing. How much time will it take to cover the same distance before repairing?

A 6 hours 15 minutes**B** 6 hours 45 minutes

- C** 7 hours
- D** 7 hours 30 minutes

Answer: B

Explanation:

Speed before repairing = $s' = 48$ km/hr and after repairing = $s = 54$ km/hr

Let time taken to cover the distance before repairing = t' hours and after repairing = $t = 6$ hours

Using, distance = speed x time

$$\Rightarrow s' \times t' = s \times t$$

$$\Rightarrow 48 \times t' = 54 \times 6$$

$$\Rightarrow t' = \frac{54}{8} = 6.75 \text{ hours}$$

$$\Rightarrow t' = 6.75 \times 60 = 405 \text{ minutes}$$

$\therefore$ Time taken to cover the same distance before repairing = 405 minutes = 6 hours 45 minutes

$\Rightarrow$ Ans - (B)

85. If a certain sum of money become thrice of itself in 5 years 4 months at simple interest, then what will be the yearly rate of interest (in %)?

- A** 18.75
- B** 27.5
- C** 37.5
- D** 42.25

Answer: C

Explanation:

Let sum of money = Rs. x

$$\Rightarrow \text{Simple interest} = \text{Rs. } (3x - x) = \text{Rs. } 2x$$

$$\text{Time period} = 5 \text{ years } 4 \text{ months} = \left(5\frac{4}{12}\right) \text{ years} = \frac{16}{3} \text{ years}$$

Let rate of interest = $r\%$

$$\Rightarrow \text{S.I.} = \frac{P \times r \times t}{100}$$

$$\Rightarrow \frac{x \times r \times \frac{16}{3}}{100} = 2x$$

$$\Rightarrow 16r = 300 \times 2 = 600$$

$$\Rightarrow r = \frac{600}{16} = 37.5\%$$

$\Rightarrow$ Ans - (C)

86. If $a + b + c = 11$ and $ab + bc + ca = 17$, then what is the value of $a^3 + b^3 + c^3 - 3abc$?

- A** 121
- B** 168
- C** 300

D 770

Answer: D

Explanation:

Given : $ab + bc + ca = 17$ -----(i)

and $a + b + c = 11$ -----(ii)

Squaring both sides, we get :

$$\Rightarrow (a + b + c)^2 = (11)^2$$

$$\Rightarrow (a^2 + b^2 + c^2) + 2(ab + bc + ca) = 121$$

$$\Rightarrow (a^2 + b^2 + c^2) + 2(17) = 121$$

$$\Rightarrow a^2 + b^2 + c^2 = 121 - 34 = 87$$
 -----(iii)

To find : $a^3 + b^3 + c^3 - 3abc$

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

Substituting values from equations (i),(ii) and (iii), we get :

$$= (11)(87 - 17)$$

$$= 11 \times 70 = 770$$

$$\Rightarrow \text{Ans - (D)}$$

87. If $x^4 + \frac{1}{x^4} = 62$, then what is the value of $x^6 + \frac{1}{x^6}$?

A 144

B 288

C 396

D 488

Answer: D

Explanation:

Given : $x^4 + \frac{1}{x^4} = 62$

Adding 2 on both sides,

$$\Rightarrow x^4 + \frac{1}{x^4} + 2\left(x^2\right)\left(\frac{1}{x^2}\right) = 62 + 2$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = 64$$

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right) = \sqrt{64} = 8$$
 -----(i)

Cubing both sides, we get :

$$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^3 = (8)^3$$

$$\Rightarrow x^6 + \frac{1}{x^6} + 3\left(x^2\right)\left(\frac{1}{x^2}\right)\left(x^2 + \frac{1}{x^2}\right) = 512$$

$$\Rightarrow x^6 + \frac{1}{x^6} + 3(8) = 512$$

$$\Rightarrow x^6 + \frac{1}{x^6} = 512 - 24 = 488$$

$$\Rightarrow \text{Ans - (D)}$$

88. If $x+y=4$, then what is the value of $x^{\frac{2}{x-2}} + y^{\frac{2}{y-2}}$?

A -1

B 0**C** 4**D** 16**Answer:** B**Explanation:**Given : $x + y = 4$ -----(i)To find : $x^{-2} + y^{-2}$

$$= \frac{2(y-2)+2(x-2)}{(x-2)(y-2)}$$

$$= \frac{(2y-4)+(2x-4)}{(x-2)(y-2)}$$

$$= \frac{2(x+y)-8}{(x-2)(y-2)}$$

$$= \frac{2(4)-8}{(x-2)(y-2)} = \frac{0}{(x-2)(y-2)} = 0$$

=> Ans - (B)

89. If $\binom{x}{5} + \binom{5}{x} = -2$, then what is the value of x^3 ?**A** -125**B** 5**C** 1/125**D** 625**Answer:** A**Explanation:**Given : $\binom{x}{5} + \binom{5}{x} = -2$

$$\Rightarrow \frac{x^2+25}{5x} = -2$$

$$\Rightarrow x^2 + 10x + 25 = 0$$

$$\Rightarrow (x + 5)^2 = 0$$

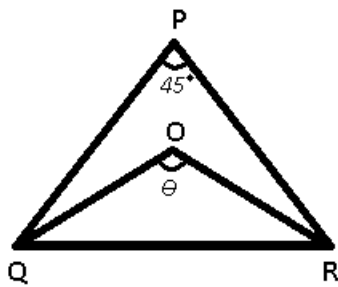
$$\Rightarrow x = -5$$

$$\therefore x^3 = (-5)^3 = -125$$

=> Ans - (A)

90. In ΔPQR , $\angle QPR = 45^\circ$ and the bisectors of $\angle PQR$ and $\angle PRQ$ meet at O. What is the value (in degrees) of $\angle QOR$?**A** 107.5**B** 112.5**C** 117.5**D** 122.5**Answer:** B

Explanation:



Given : O is the incentre of $\triangle PQR$ and $\angle QPR = 45^\circ$

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

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

$$\Rightarrow \theta = 90^\circ + \frac{45^\circ}{2}$$

$$\Rightarrow \theta = 90^\circ + 22.5^\circ$$

$$\Rightarrow \theta = 112.5^\circ$$

$\Rightarrow$ Ans - (B)

91. In triangle ABC, $\angle ABC = 90^\circ$. BP is drawn perpendicular to AC. If $\angle BAP = 30^\circ$, then what is the value (in degrees) of $\angle PBC$?

A 30

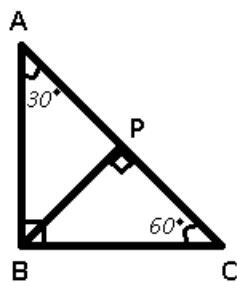
B 36

C 45

D 60

Answer: A

Explanation:



Given : $\angle ABC = \angle BPC = 90^\circ$ and $\angle BAP = 30^\circ$

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

Solution : In $\triangle ABC$,

$$\Rightarrow \angle BAC + \angle ABC + \angle ACB = 180^\circ$$

$$\Rightarrow 30^\circ + 90^\circ + \angle ACB = 180^\circ$$

$$\Rightarrow \angle ACB = 180 - 120 = 60^\circ$$

Similarly, in $\triangle BPC$

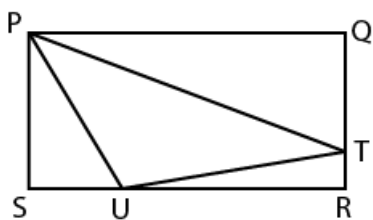
$$\Rightarrow \angle BPC + \angle PBC + \angle PCB = 180^\circ$$

$$\Rightarrow 90^\circ + \theta + 60^\circ = 180^\circ$$

$$\Rightarrow \theta = 180 - 150 = 30^\circ$$

$\Rightarrow$ Ans - (A)

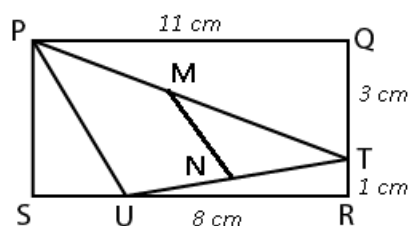
92. In the given figure, PQRS is a rectangle and PTU is a triangle. If PQ = 11 cm, UR = 8 cm, TR = 1 cm and QT = 3 cm, then what is the length (in cm) of the line joining the mid points of PT and TU?



- A** 2.5
B 3
C 4.5
D 5

Answer: A

Explanation:



Length of rectangle PQ = 11 cm and breadth = QR = 4 cm

=> SU = 3 cm and PS = 4 cm

Thus, in $\triangle PSU$,

$$\Rightarrow (PU)^2 = (PS)^2 + (SU)^2$$

$$\Rightarrow (PU)^2 = (4)^2 + (3)^2 = 16 + 9$$

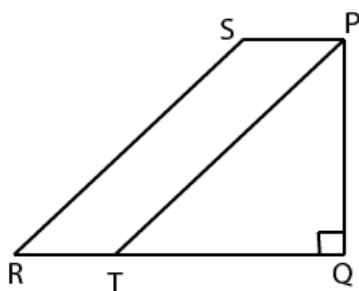
$$\Rightarrow PU = \sqrt{25} = 5 \text{ cm}$$

$\therefore$ M and N are mid points of PT and TU respectively, $\Rightarrow MN = \frac{1}{2}PU$

$$= \frac{1}{2} \times 5 = 2.5 \text{ cm}$$

=> Ans - (A)

93. In the given figure, area of isosceles triangle PQT is 72cm^2 . If QT = PQ, PQ = 2 PS and PT || SR, then what is the area (in cm^2) of the trapezium PQRS?



A 144**B** 216**C** 256**D** 288**Answer:** A**Explanation:**Here, $QT = PQ$ and $PQ = 2 PS$

$$\text{Area of } \triangle PQT = \frac{1}{2} \times (PQ) \times (QT) = 72$$

$$\Rightarrow (PQ)^2 = 72 \times 2 = 144$$

$$\Rightarrow PQ = \sqrt{144} = 12 \text{ cm}$$

$$\Rightarrow PS = \frac{12}{2} = 6 \text{ cm}$$

Area of parallelogram PSRT = base $\times$ height

$$= (PS) \times (PQ) = 6 \times 12 = 72 \text{ cm}^2$$

$$\therefore \text{Area of trapezium PQRS} = 72 + 72 = 144 \text{ cm}^2$$

 $\Rightarrow$ Ans - (A)**94. What is the simplified value of $(\operatorname{cosec} A + \sin A)(\operatorname{cosec} A - \sin A)$?****A** $\cos^2 A + \cot^2 A$ **B** $2\cos^2 A$ **C** $2\cot^2 A$ **D** $2\cos A - \cot A$ **Answer:** A**Explanation:**

$$\text{Expression : } (\operatorname{cosec} A + \sin A)(\operatorname{cosec} A - \sin A)$$

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

$$= \left(\frac{1 + \sin^2 A}{\sin A} \right) \left(\frac{1 - \sin^2 A}{\sin A} \right)$$

$$= \frac{(1 + \sin^2 A)(\cos^2 A)}{\sin^2 A}$$

$$= \frac{\cos^2 A}{\sin^2 A} + \cos^2 A$$

$$= \cot^2 A + \cos^2 A$$

 $\Rightarrow$ Ans - (A)**95. What is the simplified value of $\sqrt{\frac{\sec \theta}{\sec \theta - 1} + \frac{\sec \theta}{\sec \theta + 1}}$?****A** $\operatorname{cosec} \theta$

B $\sqrt{2}\operatorname{cosec}\theta$

C $2\sec^2\theta$

D $\sec\theta$

Answer: B

Explanation:

Expression : $\sqrt{\frac{\sec\theta}{\sec\theta-1} + \frac{\sec\theta}{\sec\theta+1}}$

$$= \sqrt{\frac{\sec\theta(\sec\theta+1) + \sec\theta(\sec\theta-1)}{(\sec\theta-1)(\sec\theta+1)}}$$

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

Using, $(\sec^2\theta - \tan^2\theta = 1)$

$$= \sqrt{\frac{2\sec^2\theta}{\tan^2\theta}} = \sqrt{2\sec^2\theta \cot^2\theta}$$

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

$$= \sqrt{\frac{2}{\sin^2\theta}} = \sqrt{2}\operatorname{cosec}\theta$$

=> Ans - (B)

96. What is the simplified value of $\left[\frac{\cos A}{(1-\tan A)} + \frac{\sin A}{(1-\cot A)} \right]^2$?

A $\sin A + \cos A$

B $1 + \sin 2A$

C $1 + \cos^2 A$

D $\tan A + \cot A$

Answer: B

Explanation:

Expression : $\left[\frac{\cos A}{(1-\tan A)} + \frac{\sin A}{(1-\cot A)} \right]^2$

$$= \left[\left(\frac{\cos A}{1-\frac{\sin A}{\cos A}} \right) + \left(\frac{\sin A}{1-\frac{\cos A}{\sin A}} \right) \right]^2$$

$$= \left[\left(\frac{\cos^2 A}{\cos A - \sin A} \right) - \left(\frac{\sin^2 A}{\cos A - \sin A} \right) \right]^2$$

$$= \left(\frac{\cos^2 A - \sin^2 A}{\cos A - \sin A} \right)^2$$

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

$$= (\cos A + \sin A)^2$$

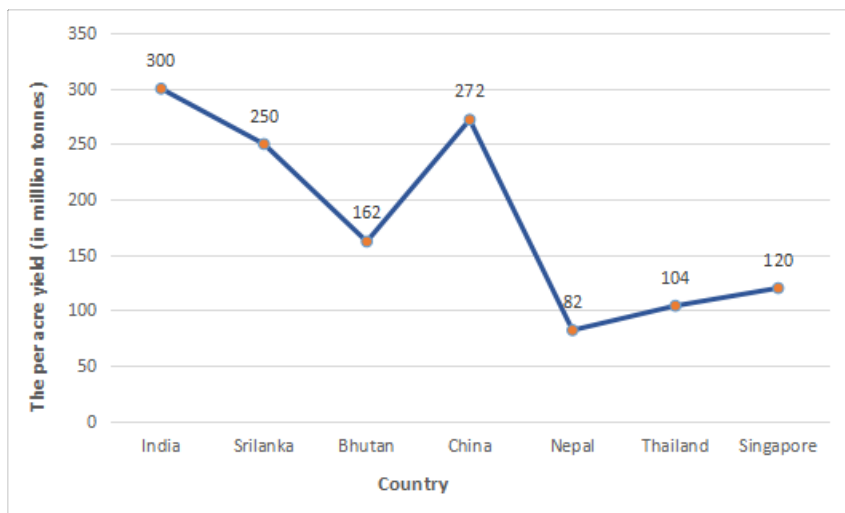
$$= \cos^2 A + \sin^2 A + 2\sin A \cos A$$

$$= 1 + \sin 2A$$

=> Ans - (B)

Instructions [97 - 100]

The line chart given below shows the per acre yield (in million tonnes) of tea of 7 countries.



97. What is average per acre yield (in million tonnes) of these 7 countries?

A 163.14

B 184.28

C 146.78

D 198.26

Answer: B

Explanation:

Total per acre yield (in million tonnes) of these 7 countries

$$= 300 + 250 + 162 + 272 + 82 + 104 + 120 = 1290$$

$$\Rightarrow \text{Required average} = \frac{1290}{7} = 184.28$$

$\Rightarrow$ Ans - (B)

98. What is the respective ratio of average per acre yield of the 3 countries having the highest yield to average per acre yield of the 3 countries having the least yield?

A 148 : 65

B 201 : 149

C 89 : 69

D 137 : 51

Answer: D

Explanation:

$$\begin{aligned} \text{Average per acre yield of the 3 countries having the highest yield (in million tonnes)} &= \frac{(300 + 250 + 272)}{3} \\ &= \frac{822}{3} = 274 \end{aligned}$$

$$\begin{aligned} \text{Average per acre yield of the 3 countries having the least yield (in million tonnes)} &= \frac{(82 + 104 + 120)}{3} \\ &= \frac{306}{3} = 102 \end{aligned}$$

$$\Rightarrow \text{Required ratio} = \frac{274}{102} = \frac{137}{51}$$

=> Ans - (D)

99. Total per acre yield of India and China is what percent of the total per acre yield of the remaining countries?

- A** 44.34
- B** 56.68
- C** 83.24
- D** 79.66

Answer: D

Explanation:

Total per acre yield of India and China (in million tonnes) = $300 + 272 = 572$

Total per acre yield of the remaining countries (in million tonnes) = $250 + 162 + 82 + 104 + 120 = 718$

$$\Rightarrow \text{Required \%} = \frac{572}{718} \times 100$$

$$= 79.66 \%$$

=> Ans - (D)

100. All the countries are arranged in ascending order of per acre yield. If bottom 2 countries increases their per acre yield by 20% and all other countries increase their per acre yield by 10%, then what is the new average per acre yield (in million tonnes)?

- A** 205.37
- B** 210.88
- C** 201.19
- D** 199.26

Answer: B

Explanation:

Countries in ascending order :

$$\text{Nepal : } 82 \times \frac{110}{100} = 90.2$$

$$\text{Thailand : } 104 \times \frac{110}{100} = 114.4$$

$$\text{Singapore : } 120 \times \frac{110}{100} = 132$$

$$\text{Bhutan : } 162 \times \frac{110}{100} = 178.2$$

$$\text{Srilanka : } 250 \times \frac{110}{100} = 275$$

$$\text{China : } 272 \times \frac{120}{100} = 326.4$$

$$\text{India : } 300 \times \frac{120}{100} = 360$$

$$\Rightarrow \text{New average per acre yield (in million tonnes)} = \frac{(90.2 + 114.4 + 132 + 178.2 + 275 + 326.4 + 360)}{7}$$

$$= \frac{1476.2}{7} = 210.88$$

=> Ans - (B)