



Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Pvt. Ltd.)

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Time : 3 Hour.

Answers & Solutions

Max. Marks : 200

for

NTSE (Stage-I) 2017-18

INSTRUCTIONS TO CANDIDATES

- Use blue/black ball point pen only. There is no negative marking.
- This test booklet contains 200 questions of one mark each. All the questions are compulsory.
- Part-I : MAT : 1 - 50 questions
Part-II : Language : 51 - 100 questions
Part-III : SAT : 101 - 200 questions
- Answer each question by darkening the one correct alternative among the four choices on the OMR Sheet with blue/black ball point pen.

Example :

| Q. No. | Alternatives |
|---------------|--------------------|
| Correct way : | 1 ① ② ● ④ |
| Q. No. | Alternatives |
| Wrong way : | 1 ⊗ ⊕ ③ ④ |

Student must darkening the right oval only after ensuring correct answer on OMR Sheet.

- Disparity in mentioning (SC, ST & PH) in application form and OMR Sheet can make your candidature invalid.
- Students are not allowed to scratch/ alter/ change out an answer once marked on OMR Sheet, by using white fluid/ eraser/ blade/ tearing/ wearing or in any other form.
- Separate Sheet has been provided for rough work in this test booklet.
- Please handover the OMR Sheet to the invigilator before leaving the Examination Hall.
*Take all your question booklets with you.
- Darken completely the ovals of your answers on OMR Sheet in the time limit allotted for that particular paper.
- Your OMR Sheet will be evaluated through electronic scanning process. Incomplete and incorrect entries may render your OMR Sheet invalid.
- Use of electronic gadgets, calculator, mobile etc., is strictly prohibited.

PART-I : MENTAL ABILITY TEST (MAT)

Direction (Q. N. 1-5) : In the following questions four items are given, out of these, three of them are alike in a certain way but one is different. Find the different item.

1. (1) 4307 (2) 4009
(3) 5308 (4) 5106

Answer (2)

Sol. 4307 → 4 + 3 → 7

5308 → 5 + 3 → 8

4009 → 4 + 0 → 9 (wrong)

5106 → 5 + 1 → 6

2. (1) ABC = 2 (2) DCB = 23
(3) CAB = 7 (4) BEC = 26

Answer (3)

Sol. (1st term)² + (2nd term)² – (3rd term)

3. (1) Bake (2) Peel
(3) Fry (4) Boil

Answer (2)

4. (1) Silk (2) Wool
(3) Leather (4) Rubber

Answer (4)

Sol. Rubber is obtained from tree but remaining are from animals.

5. (1)  (2) 
(3)  (4) 

Answer (3)

Sol. In options 1, 2, 4 figures are in increasing order but not in option 3.

6. If the following alphabets 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 then which alphabet will be the fourth letter to the left of the fifteenth letter from the right?

- (1) T (2) S
(3) R (4) B

Answer (2)

Directions (Q. N. 7 & 8): Complete the given series -

7. MES, LDR, KCQ, ?, IAO
(1) KCO (2) KBP
(3) JCQ (4) JBP

Answer (4)

Sol. $\begin{matrix} -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 & -1 \\ M & E & S, & L & D & R, & K & C & Q, & J & B & Q, & I & A & O \end{matrix}$

8. 240, ? 120, 40, 10, 2
(1) 180 (2) 240
(3) 420 (4) 480

Answer (2)

Sol. $2 \times 5 = 10$

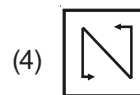
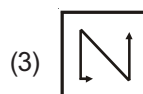
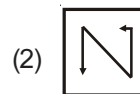
$10 \times 4 = 40$

$40 \times 3 = 120$

$120 \times 2 = 240$

$240 \times 1 = 240$

9. In the given question a series of figures is given which is based on some logic. Find the logic and choose the correct option from the given alternatives.



Answer (3)

Sol. Rotate in clockwise direction by 90°.

10. In the given series one number is incorrect. Find out the incorrect number.

112, 114, 120, 124, 132, 142, 154

- (1) 114 (2) 120
(3) 124 (4) 132

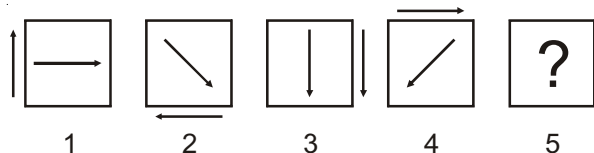
Answer (2)

Sol. $112 \xrightarrow{+2} 114 \xrightarrow{+4} 120 \xrightarrow{+6} 124 \xrightarrow{+8} 132$

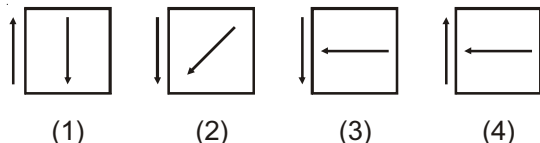
$\xrightarrow{+10} 142 \xrightarrow{+12} 154$

11. Direction : Study the series of given figures and select the appropriate figure from answer figures that will complete the question figure series.

Problem figures :



Answer figure :



Answer (4)

Sol. Outer arrow is rotated by 90° anticlockwise & inner arrow is rotated by 45° clockwise direction.

Direction (Q. N. 12-16) : In the following questions there is a relationship between the two words/ letters/ numbers and figures given to the left of the proportionality ($:$) of which one is missing. Find the missing one from the given alternatives.

12. B Y W : D U X :: F Q Y : ?

- (1) G M Z (2) H M V
(3) G N A (4) H M Z

Answer (4)

Sol. B $\xrightarrow{+2}$ D F $\xrightarrow{+2}$ H

Y $\xrightarrow{-4}$ U Q $\xrightarrow{-4}$ M

W $\xrightarrow{+1}$ X Y $\xrightarrow{+1}$ Z

13. January : 12 :: March : ?

- (1) 8 (2) 10
(3) 5 (4) 13

Answer (2)

Sol. First month name : Last month number

Third month name : Third last month number

14. 1331 : 11 :: ? : 7

- (1) 424 (2) 343
(3) 127 (4) 144

Answer (2)

Sol. $\sqrt[3]{1331} = 11$

$\sqrt[3]{x} = 7$

$x = 343$

15. 3 : 10 :: 8 : ?

- (1) 10 (2) 13
(3) 17 (4) 14

Answer (3)

Sol. $2^2 - 3 = 3 : 3^2 + 1 = 10$

$3^2 - 1 = 8 : 4^2 + 1 = 17$

16. Car : Garage :: Aeroplane : ?

- (1) Hanger (2) Harbour
(3) Port (4) Depot

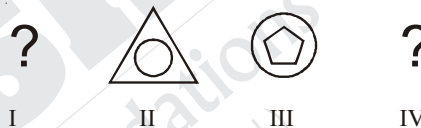
Answer (1)

Parked
Car \uparrow Garage

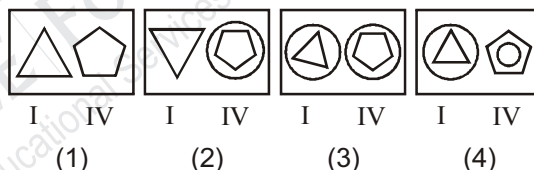
Sol.

Aeroplane - Hanger

17. Problem Figure



Answer Figure



Answer (4)

Sol.

18. If DOCTOR is coded as 36, then how will PATIENT be coded as

- (1) 40 (2) 49
(3) 81 (4) 50

Answer (2)

Sol. (No. of letter in doctor) $^2 = 36$

Patient = 7 $\Rightarrow 7^2 = 49$

19. If 5th January 2001 was Sunday then which day will fall on 6th April 2001?

- (1) Sunday (2) Monday
(3) Tuesday (4) Wednesday

Answer (1)

Sol. Total No. of days from 5th Jan 2001 to 6th April 2001 = 91 = 13 Weeks = No odd days

\therefore Sunday

20. If you want to reach the solution in the given equation then which of the following option will be most appropriate out of given alternatives

$$12 \ 3 \ 4 \ 8 = 0$$

- (1) -, + and + (2) ÷, + and ÷
(3) -, - and - (4) ÷, + and -

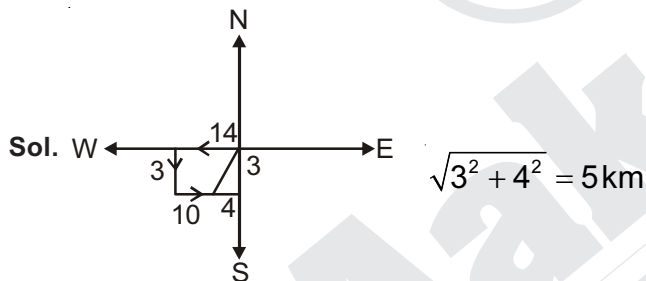
Answer (4)

Sol. $12 \div 3 + 4 - 8 = 0$
(÷, +, -)

21. Jatin goes 14 Km towards west and then he goes 3 Km towards south. Then he again goes 10 Km towards east. How far is he now from his starting point?

- (1) 12 Km (2) 10 Km
(3) 15 Km (4) 5 Km

Answer (4)



22. Which of the following figure represents Human, Teacher and Graduates

- (1) (2)
(3) (4) None of these

Answer (1)

23. A is the son of B. C is wife of A. E is daughter of C. How is E related to B?

- (1) Grand Daughter
(2) Grand Son
(3) Son
(4) Daughter

Answer (1)

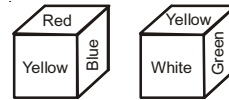
24. Five girls are sitting in a row. Pratima is to the right of Mona. Nidhi is to the left of Mona, but is to the right of Natasha. Pratima is to the left of Anu. The girl sitting on the extreme left is

- (1) Anu (2) Natasha
(3) Pratima (4) Nidhi

Answer (2)



25. Given below a dice whose six sides have been colored with different colours



Study the given situation and find out which colour will be opposite to blue colour?

- (1) White (2) Red
(3) Yellow (4) Green

Answer (1)

26. Problem Figure



Answer Figure

- (1) (2)
(3) (4)

Answer (4)

27. In which answer figure the problem figure is hidden:

Problem Figure



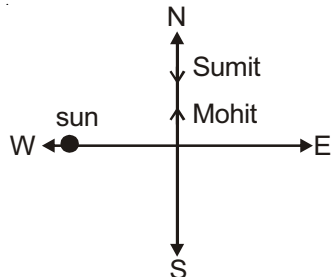
Answer Figure

- (1) (2)
(3) (4)

Answer (1)

28. One evening before sunset, two friends Sumit and Mohit were talking to each other face to face. If Mohit's shadow was falling exactly to his right side, which direction was Sumit facing?
- (1) North (2) South
(3) East (4) West

Answer (2)

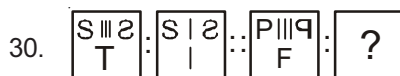


Sol.

29. If 'Tee see pee' means 'Drink fruit Juice' and 'see kee lee' means 'Juice is sweet' and 'lee ree mee' means 'He is intelligent' then what will be the meaning of 'sweet' in that code language?
- (1) see (2) kee
(3) tee (4) pee

Answer (2)

Sol.



Answer Figure

- (1)

| | | |
|---|--|---|
| 9 | | P |
| T | | |

 (2)

| | | |
|---|--|---|
| P | | 9 |
| T | | |
- (3)

| | | |
|---|--|---|
| P | | 9 |
| T | | |

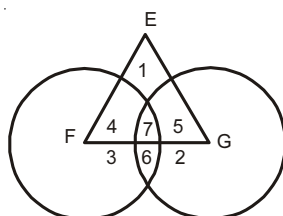
 (4)

| | | |
|---|--|---|
| P | | P |
| T | | |

Answer (2)

Sol.

31. Which number represents the owners who are neither engineers nor good administrators:
- F = Good Administrators
E = Engineers
G = Owners

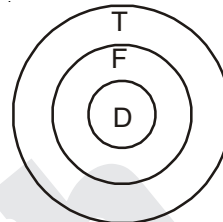


- (1) 4 (2) 6
(3) 2 (4) 7

Answer (3)

32. Statement I- All dogs are foxes.
Statement II- All foxes are tigers.
Conclusion I- All dogs are tigers
Conclusion II- Some foxes are dogs.
- (1) Only I follows
(2) Both I and II follows
(3) Both I and II follows
(4) Neither I nor II follows

Answer (3)



Sol.

33. Choose the figure from the given answer figures which will be formed by folding, punching and opening the page.



Answer Figure

- (1)

| | |
|---|---|
| ○ | ○ |
| ○ | ○ |
- (2)

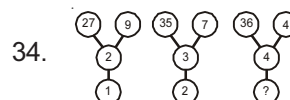
| | |
|---|---|
| ○ | ○ |
| ○ | ○ |
- (3)

| | |
|---|---|
| ○ | ○ |
| ∞ | ∞ |
- (4)

| | |
|---|---|
| ○ | ○ |
| ∞ | ∞ |

Answer (2)

Direction: (Q.N. 34-38): Observe the mutual relationship between the numbers / figures in the matrix and find out the number / figure that will come in place of question mark (?).



- (1) 3 (2) 4
(3) 5 (4) 6

Answer (3)

Sol.

$(1+2) \times 9 = 27$

$(2+3) \times 7 = 35$

$(x+4) \times 4 = 36$
 $x = 5$

35.

- (1) 4
- (2) 16
- (3) 25
- (4) 36

Answer (4)

Sol.

$3+4+5+6 = 18$

$5+8+1+4 = 18$

$3+8+1+x = 18$
 $x = 6 \rightarrow x^2 = 36$

36.

| | | |
|----|----|----|
| 13 | 20 | 27 |
| 17 | ? | 33 |
| 9 | 10 | 11 |

- (1) 28
- (2) 25
- (3) 24
- (4) 21

Answer (2)

Sol. $(13 + 9) - 5 = 17$
 $(27 + 11) - 5 = 33$
 $(20 + 10) - 5 = 25$

37.

- (1)
- (2)
- (3)
- (4)

Answer (4)

Sol. $17+1 = 18, 18-2 = 16, 16+3 = 19, 19-4 = 15.$
 $14-1 = 13, 13+2 = 15, 15-3 = 12, 12+4 = 16$

38.

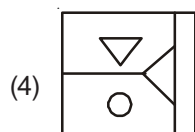
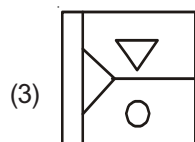
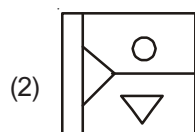
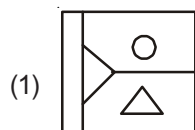
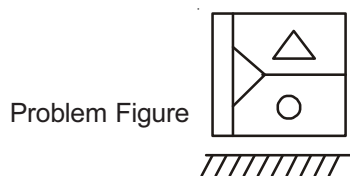
| | | |
|--|--|---|
| | | |
| | | |
| | | ? |

- (1)
- (2)
- (3)
- (4)

Answer (4)

Sol. $2-1 = 1, 3-1 = 2, 2-2 = 0$

39. Choose the correct water image of problem figure from the options given in the answer figures.



Answer (2)

Sol. figure will be inverted around x -axis (Horizontal)

40. If P denotes +, Q denotes -, R denotes X and S denotes \div then which of the following equation is correct-

- (1) $36 R 4 S 8 Q 7 P 4 = 10$
- (2) $16 R 12 P 49 S 7 Q 9 = 200$
- (3) $32 S 8 R 9 Q 12 R 12 = 160$
- (4) $8 R 8 P 8 S 8 Q 9 = 57$

Answer (4)

Sol. $8 \times 8 + 8 \div 8 - 8 = 8 \times 8 + 1 - 8 = 64 + 1 - 8 = 57$

Directions- (Q. No. 41 to 44) study the following information carefully and answer the questions given below.

Five students A,B,C,D and E have five books on subjects Physics, Chemistry, Maths, Biology and English written by Gupta, Khanna, Harish, Sharma and Edwin. Each Student has only one book out of the five subjects.

41. Who among the following is the author of the book on chemistry-

- (1) Edwin
- (2) Harish
- (3) Gupta
- (4) Khanna

Answer (1)

Sol. Edwin - Chemistry - D

42. Who among the following is the Owner of the book written by Harish?

- (1) A
- (2) B
- (3) C
- (4) None of these

Answer (4)

Sol. Harish - English - E

43. Who among the following has a book on Biology?

- (1) A
- (2) B
- (3) C
- (4) D

Answer (1)

Sol. Sharma - Biology - A

44. Which of the following combinations is correct?

- (1) Physics -Gupta - A
- (2) Chemistry - Edwin -D
- (3) Maths - Harish - C
- (4) English - Edwin - E

Answer (2)

Sol. Chemistry - Edwin -D

45. Two clocks were set in the morning at 10 am on Sunday. One clock loses 3 minutes in an hour while the other gains 2 minutes in an hour. By how many minutes do the two clocks differ in the evening at 4 pm on the same day?
- (1) 25 minutes (2) 20 minutes
(3) 35 minutes (4) 30 minutes

Answer (4)

Sol. loss in I clock in 6 hours = $6 \times 3 = 18$
gain in II clock in 6 hours = $6 \times 2 = 12$
total difference = 30 minutes

46. A bus leaves for Delhi in every 30 minutes from a bus stand an enquiry clerk told a passenger that the bus had already left 10 minutes ago and the next bus will leave at 9.35 am. At what time did the enquiry clerk give information to the passenger?
- (1) 9:10 am (2) 9:15 am
(3) 8:55 am (4) 8:08 am

Answer (2)

Sol. $9:05 \xrightarrow{+10} 9:15 \xrightarrow{+20} 9:35$

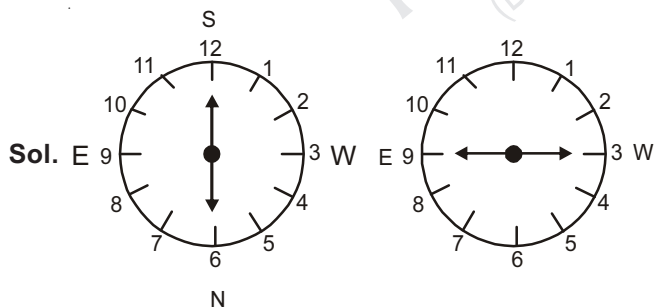
47. There are five different houses A to E in row. A is to the right of B and E is to the left of C and right of A. B is to the right of D. Which house is in the middle?
- (1) A (2) B
(3) C (4) D

Answer (1)

Sol. Correct order is DBAEC

48. A table clock is placed on the table in such a way that the hour hand will point towards north at 6:00 O'Clock. In which direction will the minute hand be at 9:15 O'Clock
- (1) North (2) South
(3) East (4) West

Answer (4)

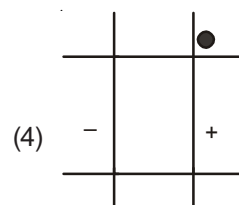
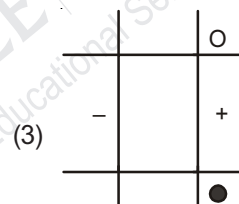
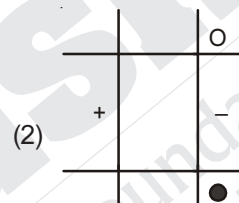
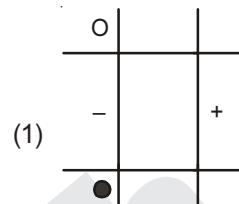
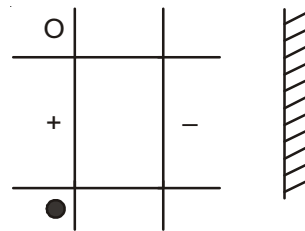


49. a_b_abb_ab_a_bba
- (1) bbaab (2) babba
(3) baaba (4) aabba

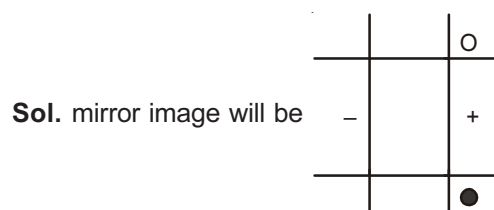
Answer (3)

Sol. abbaabbaabbaabba

50. Which of the answer figure is exactly mirror image of the problem figure?



Answer (3)



PART-II : LANGUAGE TEST

51. According to the passage, the main improvement in modern zoos is that :

- (1) The animals are kept in ditches
- (2) The animals are left loose
- (3) The animals are kept in cages
- (4) The animals are provided enough space to move freely

Answer (4)

Sol. The animals are provided enough space to move freely

52. Some animals died very soon after they were brought to the old-fashioned zoo due to :

- (1) Starvation
- (2) Lack of enough exercise
- (3) Suffocation
- (4) Lack of protection

Answer (2)

Sol. Lack of enough exercise

53. The animals are provided with natural surroundings in the modern zoo for making them :

- (1) Familiar with the natural surroundings
- (2) Secure their own food
- (3) Live happily with other animals
- (4) Feel at home in the zoo

Answer (1)

Sol. Familiar with the natural surroundings

54. The precautions taken in the modern zoo to prevent animals from escaping is that :

- (1) The animals are always kept in cages
- (2) A guard is kept to watch them
- (3) The zoo is surrounded by an iron railing and deep wide ditches are dug inside it
- (4) The animal are chained

Answer (3)

Sol. The zoo is surrounded by an iron railing and deep wide ditches are dug inside it

55. The children who visit the modern zoo are especially attracted to :

- (1) The baby animals born in the zoo
- (2) The different types of animals
- (3) The natural environment of the zoo
- (4) The ditch surrounding the zoo

Answer (1)

Direction (Q. No.56-60) : Read the following stanza and answer the questions that follows :

We scatter seeds with careless hand
 And dream we neer shall see then more :
 But for a thousand years
 Their fruit appears
 In weeds that mar the land,
 Or heal thful store.
 The deeds we do - the words we say
 Into still air they seem to float;
 We count them ever past-
 But they shall last,
 In the dread judgement, they
 And we shall meet !

56. We scatter seeds with careless hand referes to -

- (1) We always know the result of our deeds
- (2) We never sow the seeds with free hand
- (3) We should not scatter the seeds
- (4) We never know the result of our present deeds

Answer (4)

Sol. We never know the result of our present deeds

57. Select the antonym of Disappears :

- | | |
|-------------|-----------|
| (1) Never | (2) Move |
| (3) Appears | (4) Float |

Answer (3)

Sol. Appears

58. Select the closest meaning of the word unwanted plant :

- | | |
|-----------|-----------|
| (1) Land | (2) Weeds |
| (3) Still | (4) Deeds |

Answer (2)

Sol. Weeds

59. The most suitable idiom referes to the theme of the stanza :

- (1) Empty vessel make a lot noise
- (2) Tit for tat
- (3) As you sow So shall you reap
- (4) None of these

Answer (3)

60. Which of the following is the most suitable statement regarding the second stanza - The deeds we do.
- (1) Our every action or deed will return in our future
 - (2) Our deeds will never be returned
 - (3) Our deeds will be surely copied by others
 - (4) Our deeds will be counted by God

Answer (1)

Sol. Our every action or deed will return in our future

Direction (Q. No.61-64) : Choose the correct word/phrase which fills the blank from the given options-

61. There must be a dance rehearsal in the next class we are being disturbed.
- (1) Going off
 - (2) Going Up
 - (3) Going On
 - (4) Getting On

Answer (3)

Sol. Going On

62. Vikas has the habit of buying unnecessary gadgets. He often money before the end of month.
- (1) Go
 - (2) Run out of
 - (3) Use up
 - (4) Run off

Answer (2)

Sol. Run out of

63. Suresh has an old bicycle. He wants to it.
- (1) Give away
 - (2) Get rid of
 - (3) Get out of
 - (4) Move off

Answer (2)

Sol. Get rid of

64. There was a theft in our locality yesterday. The police will the case.
- (1) Look after
 - (2) Look into
 - (3) Look Up
 - (4) Look at

Answer (2)

Sol. Look into

Direction (Q. No.65-69) : Select the appropriate word for the sentence given below.

65. I will never forgive him what he did.
- (1) To
 - (2) On
 - (3) For
 - (4) From

Answer (3)

Sol. For

66. Do you spend a lot of money clothes?
- (1) An
 - (2) On
 - (3) For
 - (4) To

Answer (2)

Sol. On

67. I don't remember about the theft.
- (1) Something
 - (2) Anything
 - (3) Nothing
 - (4) None of these

Answer (2)

Sol. Anything

68. My teacher teaching English for 30 minutes
- (1) Have been
 - (2) Has been
 - (3) Was been
 - (4) Is been

Answer (2)

Sol. Has been

69. It is too painful to it.
- (1) Bear
 - (2) Bear
 - (3) Bore
 - (4) Bier

Answer (2)

Sol. Bear (To takes a base form)

Direction (70-72) : In each of the following questions the first two words in capital letters are related in some way with each other. Now complete each sentence by choosing a word (from those given under each sentence) that is related in the some way with the third word printed in capital letters.

70. ELASTIC is to RIGID as ALLEVIATE is to
- (1) SOFTEN
 - (2) AGGRAVATE
 - (3) AGREE
 - (4) MITIGATE

Answer (2)

Sol. ALLEVIATE means less pain and AGGRAVATE is antonym of ALLEVIATE.

71. Genuine is to Authentic as MIRAGE is to -
- (1) ILLUSION
 - (2) REFLECTION
 - (3) HIDE OUT
 - (4) IMAGE

Answer (1)

Sol. ILLUSION is synonym of MIRAGE.

72. EMPEROR is EMPRESS as STALLION is to -
- (1) SWAN
 - (2) ANIMAL
 - (3) MARE
 - (4) PRAWN

Answer (3)

Sol. STALLION is a male horse whereas MARE is a female.

Direction (Q. No. 73-75) : Rearrange the jumbled part of the sentences:

73. Rain fell heavily and night came on very wet and we all got
 1 2 3 4 5
- (1) 1, 5, 4, 3, 2 (2) 2, 3, 1, 4, 5
 (3) 5, 4, 1, 2, 3 (4) 3, 2, 1, 5, 4

Answer (4)

Sol. Night came on and rain fell havely and we all got very wet.

74. He is either drowned saved him or some passing ship has
 1 2 3 4 5
- (1) 3, 1, 2, 5, 4 (2) 2, 1, 3, 5, 4
 (3) 5, 4, 1, 2, 3 (4) 4, 1, 5, 3, 2

Answer (2)

Sol. Either he is drowned or some passing ship has saved him.

75. rose up and she quickly fled away
 1 2 3 4 5
- (1) 4, 3, 2, 5, 1 (2) 5, 3, 1, 4, 5
 (3) 2, 3, 1, 4, 5 (4) 3, 1, 2, 4, 5

Answer (4)

Sol. She rose up and quickly fled away.

Direction (Q. No. 76-78): Choose Synonym or the closest meaning for the underlined words from the options given below:

76. Homage
- (1) Excessive humility
 (2) Show respect and reverence
 (3) Poverty
 (4) Flattery

Answer (2)

Sol. Homage means a public act of respect shown to someone.

77. Latent
- (1) Concealed (2) Apparent
 (3) Lethargic (4) Prompt

Answer (1)

Sol. Latent means existing but not yet developed and Concealed is a synonym of Latent.

78. Carcass
- (1) Mind (2) Association
 (3) Soul (4) Dead body

Answer (4)

Sol. Carcass means a dead body of an animal.

Direction (Q.N. 79-80): Choose the part of the sentence that is grammatically incorrect for the options given below.

79. Martin talks as if he was innocent
 1 2 3 4
- (1) 1 (2) 2
 (3) 3 (4) 4

Answer (3)

Sol. Martin talks as if he **were** innocent.

80. Don't lie the books on the shelf. its too high up
 1 2 3 4
- (1) 1 (2) 2
 (3) 3 (4) 4

Answer (1)

Sol. Don't tell a lie the books on the shelf, its too high up.

Directions (Q.N.o. 81-85): Out of the given alternatives, choose the one which can be substituted for the given words or sentences.

81. A book or paper written by hand or typed:
- (1) Handwritten (2) Manuscript
 (3) Edition (4) Draft

Answer (2)

Sol. Manuscript is a book or paper written by hand.

82. That which catches fire quickly:
- (1) incombustible (2) Inflammable
 (3) invincible (4) Inaudible

Answer (2)

Sol. Inflammable means something which catches fire quickly.

83. A Poem of mourning:
- (1) Elegy (2) Sonnet
 (3) Lyric (4) Epic

Answer (1)

Sol. Elegy is a sad poem.

84. The house of an eskimo:
- (1) Hamlet (2) Dower
 (3) Igloo (4) Hut

Answer (3)

Sol. Igloo is the house of eskimo.

85. A person who does not believe in the existence of God:
- (1) Theist (2) Atheist
 (3) Agnostic (4) Cynic

Answer (2)

Sol. Atheist is a person who does not believe in the existence of God.

Direction (Q.No. 86-90) : In the following passage there are some number blanks which represents question numbers. Fill In the blanks by selecting the most appropriate word form each of the given option.

In talking about teaching one ...36....to recognize the important role37..... effect of communicative media. and not38..... in old mass media models that39..... entertainment and transmission. Indeed the40..... technologies that underpin global exchange are to do with distribution not content.

86. (1) Needed (2) Needs
(3) Need (4) Must need

Answer (2)

Sol. Needs

87. (1) and (2) on
(3) or (4) of

Answer (1)

Sol. and

88. (1) Been stuck (2) Stuck
(3) Stucked (4) Be Stuck

Answer (4)

Sol. Be Stuck

89. (1) Emphasized (2) Emphasizes
(3) Emphasize (4) Emphasis

Answer (3)

Sol. Emphasize

90. (1) More significant (2) most significant
(3) Significant (4) Signifies

Answer (2)

Sol. most significant

91. What does the prefix gyne mean in gynecologist
(1) Man (2) Children
(3) Old people (4) Woman

Answer (4)

Sol. Woman

92. Which of the following word uses the prefix Ambi?
(1) Violent (2) Dextrous
(3) Talent (4) Writer

Answer (2)

Sol. Dextrous

93. Choose the response that correctly spells the word with its suffix
(1) Swimming (2) Swinming
(3) Swiming (4) Swimiing

Answer (1)

Sol. Swimming

94. Which of the following word uses the prefix in?
(1) indirect (2) index
(3) indigo (4) indicate

Answer (1)

Sol. indirect

95. What does the prefix OCTO means in Octopus?
(1) Out (2) Eight
(3) Odd (4) On

Answer (2)

Sol. Eight

Direction (Q.No. 96-100) : Choose the correct spelling among the following group.

96. A person who resides near your house:
(1) Neihgbour (2) Neighbour
(3) Neighbour (4) Neabhour

Answer (2)

Sol. Neighbour

97. He did not make a single to the Escanination results in his speech.
(1) Elusion (2) Illusion
(3) Allusion (4) Ilusion

Answer (3)

Sol. Allusion means to mention.

98. You must get a driving:
(1) License (2) Licence
(3) Lisense (4) Lisence

Answer (1)

Sol. License

99. I that it will rain tomorrow.
(1) Propesy (2) Prophecy
(3) Profesy (4) Profecy

Answer (1)

Sol. Propesy

100. I have many to whom i have to give lodging food and clothes.
(1) Dependents (2) Depandents
(3) Depandants (4) Dependants

Answer (1)

Sol. Dependents

PART-III : SCHOLASTIC APTITUDE TEST (SAT)

101. In which state the step (terrace) cultivation is in practice:

- (1) Punjab (2) Haryana
 (3) Uttar Pradesh (4) Uttarakhand

Answer (4)

Sol. Uttarakhand

102. According to the National Forest Policy (1952) area covering forest should have been:

- (1) 33% (2) 50%
 (3) 31% (4) 23%

Answer (1)

Sol. 33%

103. Match columns A and B and choose correct option:

- | A | B |
|------------------------------|------------------|
| (a) Rajaji national Park | (i) Rajasthan |
| (b) Kajiranga National park | (ii) Gujrat |
| (c) Gir National Park | (iii) Assam |
| (d) Ranthambor National Park | (iv) Uttarakhand |
- (1) a (ii) b (iii) c (iv) d (i)
 (2) a (i) b (ii) c (iii) d (iv)
 (3) a (iv) b (iii) c (ii) d (i)
 (4) a (iii) b (ii) c (i) d (iv)

Answer (3)

Sol. a (iv) b (iii) c (ii) d (i)

104. Who said Dams are temple of Modern India:

- (1) Vinoba Bhave (2) Medha Patkar
 (3) Jawahar Lal Nehru (4) Mahatma Gandhi

Answer (3)

Sol. Jawahar Lal Nehru

105. In which state the underground tank or 'tanga' are made for water harvesting:

- (1) Uttarakhand (2) Nagaland
 (3) Rajasthan (4) Goa

Answer (3)

Sol. Rajasthan

106. Which one is not an example of Plantation Agriculture:

- (1) Tea (2) Coffee
 (3) Rubber (4) Wheat

Answer (4)

Sol. Wheat

107. Which crop is called the 'Golden fiber':

- (1) Jute (2) Cotton
 (3) Rubber (4) Tea

Answer (1)

Sol. Jute

108. Golden Quadrilateral Project is related to:

- (1) Rail (2) Road
 (3) Air (4) Water

Answer (2)

Sol. Road

109. Longitudinal extension of India is:

- (1) 68° 7'E - 97° 25'E (2) 67°7' E - 98° 25' E
 (3) 68°5' E - 96° 25'E (4) 67° 20' E - 95° 7' E

Answer (1)

Sol. 68° 7'E - 97° 25'E

110. The wind blowing in the northern plains in summer is called:

- (1) kaal Baishakhi (2) Loo
 (3) Trade Winds (4) None of these

Answer (2)

Sol. Loo

111. Party of Young Annan was formed in:

- (1) Vietnam (2) Thailand
 (3) Cambodia (4) Laos

Answer (1)

Sol. Vietnam

112. 'Imperial Forest research Institute' was established in:

- (1) 1906, Dehradun (2) 1916, Shimala
 (3) 1908, Puna (4) 1902, Madras

Answer (1)

Sol. 1906, Dehradun

113. The Folklore of Southern India was published by:

- (1) K. A. Nilakanta Sastri
- (2) Natesa Sastri
- (3) Subramaniam Bharathi
- (4) Chidambram Pilai

Answer (2)

Sol. Natesa Sastri

114. Weimar Republic was established in:

- (1) France
- (2) Germany
- (3) Russia
- (4) Austria

Answer (2)

Sol. Germany

115. 'Collectivisation Programme' in Russia was initiated by:

- (1) Lenin
- (2) Stalin
- (3) Czar
- (4) Kerensky

Answer (2)

Sol. Stalin

116. Vellum was a

- (1) Copper Plate
- (2) Inscription
- (3) Birch Leaf
- (4) Parchment

Answer (4)

Sol. Parchment

117. 'Agent Orange' is a

- (1) Chemical
- (2) Fruit
- (3) Plan
- (4) Spy

Answer (1)

Sol. Chemical

118. Terminology 'Doosra' and 'Reverse Swing' is related to which sport:

- (1) Hockey
- (2) Polo
- (3) Chess
- (4) Cricket

Answer (4)

Sol. Cricket

119. In which Indian Movement, foreign goods were boycotted:

- (1) Quit India Movement
- (2) Civil Disobedience Movement
- (3) Non Cooperation Movement
- (4) Charparan Satyagrah

Answer (3)

Sol. Non Cooperation Movement

120. Armed volunteers under the leadership of Garibaldi was called:

- (1) Black Shirt
- (2) Brown Shirt
- (3) Red Shirt
- (4) White Shirt

Answer (3)

Sol. Red Shirt

121. Men's singles title of Australian open 2017 was won by:

- (1) Rafael Nadal
- (2) Roger Federer
- (3) Novak Djokovic
- (4) Andy murray

Answer (2)

Sol. Roger federar

122. 2016 ICC twenty-20 Cricket World Cup was won by:

- (1) England
- (2) West Indies
- (3) Australia
- (4) India

Answer (2)

Sol. West Indies

123. Leader of militant guerilla movement in the Gudem hills of Andhra Pradesh was

- (1) Kalluri Chandramouli
- (2) T. Prakasham
- (3) E.V. Ramaswamy Naicker
- (4) Alluri Sitaram Raju

Answer (4)

Sol. Alluri Sitaram Raju

124. Right to information Act came into effect from

- (1) 2005
- (2) 2006
- (3) 2007
- (4) 2004

Answer (1)

Sol. 2005

125. Which sector has largest contribution in Gross Domestic product:

- (1) Agriculture Sector
- (2) Manufacturing Sector
- (3) Construction Sector
- (4) Service Sector

Answer (4)

Sol. Service Sector

126. Which organisation is related to World Trade:

- (1) NATO
- (2) WTO
- (3) WHO
- (4) SAARC

Answer (2)

Sol. WTO

127. Human Development index report is published at world level by:

- (1) UNO (2) UNDP
(3) WHO (4) WTO

Answer (2)

Sol. UNDP

128. Match column I with column II and choose correct option:

- | I | II |
|-----------------|---------------------|
| (a) Tat Motors | (i) Paint |
| (b) Infosis | (ii) Medicine |
| (c) Ranbaxy | (ii) I.T |
| (d) Asian Paint | (ii) Motor Vehicles |

- (1) a (iv) b (ii) c (i) d (iii)
 (2) a (iv) b (iii) c (ii) d (i)
 (3) a (i) b (ii) c (iii) d (iv)
 (4) a (iii) b (ii) c (iv) d (i)

Answer (2)

Sol. a (iv) b (iii) c (ii) d (i)

129. Which of the following logo is not authentic :

- (1) I.S.I. (2) Agmark
(3) Hallmark (4) Regmark

Answer (4)

Sol. Regmark

130. Poverty line in India is estimated by

- (1) C.S.O (2) Finance Ministry
(3) NSSO (4) NITI Aayog

Answer (4)

Sol. NITI Aayog

131. Form of Human Resource is

- (1) Machine (2) Money
(3) Raw Material (4) Teacher

Answer (4)

Sol. Teacher

132. What kind of unemployment is found in the rural areas:

- (1) Educated unemployment
 (2) Seasonal and Disguised unemployment
 (3) Both A and B (4) None of the above

Answer (2)

Sol. Seasonal and Disguised unemployment

133. When power is taken away from the central and state government and given to local government, it is called:

- (1) Federalism
 (2) Decentralisation
 (3) Unitary form of government
 (4) Centralisation

Answer (2)

Sol. Decentralisation

134. Rural local government is popularly known as:

- (1) Panchayati Raj (2) Municipality
 (3) Municipal Corporation (4) Mayor

Answer (1)

Sol. Panchayati Raj

135. Which of the following is not a component of a political party:

- (1) The leaders (2) The active members
 (3) The rulers (4) The followers

Answer (3)

Sol. The rulers

136. Pressure Groups are:

- (i) Organisations that attempt to influence government policies
 (ii) Do not aim to directly control or share political power
- (1) Only (i) is correct
 (2) Both (i) and (ii) are correct
 (3) Only (ii) is correct
 (4) None of the statement is correct

Answer (2)

Sol. Both (i) and (ii) are correct

137. In some countries, only one political party is allow to control and run the government. This is called:

- (1) Single party administrative system
 (2) Uni Cameral System
 (3) Bi- party System
 (4) Bi Cameral System

Answer (1)

Sol. Single party administrative system

138. Lok Sabha Speaker can exercise his right to vote in the House:

- (1) As per his will
- (2) When house desires
- (3) When his party directs
- (4) When votes for and against becomes equal for any bill.

Answer (4)

Sol. When votes for and against becomes equal for any bill.

139. When one is not a permanent member of United nation Organisation (UNO):

- (1) China
- (2) USA
- (3) England
- (4) India

Answer (4)

Sol. India

140. Match list I with list II

| I | | II | |
|-----------------------------|------|--------------------|------|
| (i) Union of India | | (a) Prime Minister | |
| (ii) States | | (b) Sarpanch | |
| (iii) Municipal Corporation | | (c) Governor | |
| (iv) Village Panchayat | | (d) Mayor | |
| (i) | (ii) | (iii) | (iv) |
| (1) d | a | b | c |
| (2) b | c | d | a |
| (3) a | c | d | b |
| (4) c | d | a | b |

Answer (3)

Sol. a c d b

141. A person who is not a member of Parliament can be appointed as a Minister by the President for a maximum period of :

- (1) One Year
- (2) 9 Month
- (3) 6 Month
- (4) 5 Years

Answer (3)

Sol. 6 Month

142. A movable pulley is used as :

- (1) Force multiplier
- (2) Speed multiplier
- (3) Device to change the direction of effort
- (4) All the above

Answer (1)

Sol. Force Multiplier

143. A body of mass 0.1 Kg has momentum 20 Kg m/sec. Kinetic energy of the body will be :

- (1) 2×10^3 J
- (2) 5×10^3 J
- (3) 2.5×10^3 J
- (4) 5.2×10^3 J

Answer (1)

Sol. Given That

$m = 0.1$ Kg
 $p = 20$ Kg.m/sec
 K.E. = ?

$$K.E. = \frac{p^2}{2m} = \frac{(20)^2}{2 \times 0.1} = 2 \times 10^3 \text{ J}$$

144. The power of a lens is -2.5 D. It's focal length will be :

- (1) 100 cm
- (2) 40 cm
- (3) -40 cm
- (4) -50 cm

Answer (3)

Sol. $P = -2.5$ D

$f = ?$

$$f(m) = \frac{1}{P} = \frac{1}{-2.5}$$

$$f(cm) = \frac{100}{-2.5} = -40 \text{ cm}$$

145. 'n' equal resistances each of value 'R' connected in parallel, the equivalent resistance is:

- (1) $\frac{R}{n}$
- (2) $n \times R$
- (3) $\frac{n}{R}$
- (4) $n + R$

Answer (1)

Sol. $\frac{1}{R_{eq}} = \frac{1}{R} + \frac{1}{R} + \frac{1}{R} \dots \dots \dots$ upto n times.

$$\frac{1}{R_{eq}} = \frac{n}{R}$$

$$R_{eq} = \frac{R}{n}$$

146. The speed of light in air is 3×10^8 m/s. In medium 'X' its speed is 2×10^8 m/s and in medium 'Y' the speed of light is 2.5×10^8 m/s. Refractive index of 'Y' with respect to 'X' is

- (1) $\frac{5}{4}$ (2) $\frac{4}{5}$
(3) $\frac{3}{2}$ (4) $\frac{4}{3}$

Answer (2)

Sol. $V_x = 2 \times 10^8$ m/s
 $V_y = 2.5 \times 10^8$ m/s
 ${}_x n_y = ?$

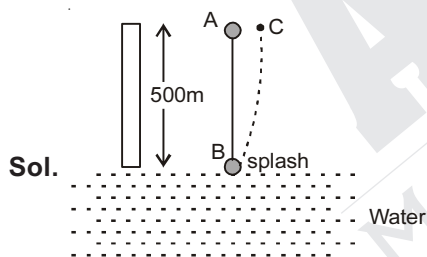
$${}_x n_y = \frac{n_y}{n_x} = \frac{c/v_y}{c/v_x} = \frac{v_x}{v_y}$$

$${}_x n_y = \frac{2 \times 10^8}{2.5 \times 10^8} = \frac{4}{5}$$

147. A stone is dropped from the top of a tower 500 m high into a pond of water at the base of the tower. When is the splash heard at the top? Given, $g = 10 \text{ ms}^{-2}$ and speed of sound = 340 ms^{-1} .

- (1) 10 s (2) 14.70 s
(3) 11.47 s (4) None of these

Answer (3)



Sol.

From A to B

$$h = ut + \frac{1}{2}gt^2$$

$$500 = 0 + \frac{1}{2} \times 10 \times t_{ab}^2$$

$$t_{ab} = 10 \text{ s}$$

From B to C

$$t_{bc} = \frac{500}{340} = 1.47 \text{ sec}$$

$$\text{Total time} = t_{ab} + t_{bc} = 10 + 1.47 = 11.47 \text{ s}$$

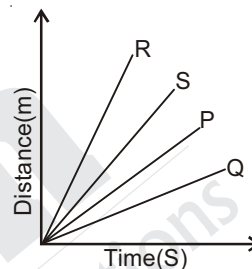
148. Two bodies of masses 10 kg. and 30 kg respectively kept on a smooth, horizontal surface are tied to the end of sofa with light string. A horizontal force $F = 600 \text{ N}$ is applied to A long the direction of string. What is the tension in the string?

- (1) 225 N (2) 450 N
(3) 375 N (4) None of these

Answer (Data insufficient)

Sol.

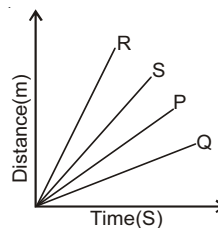
149. Four cars P, Q, R and S are moving on a levelled road. Their distance versus time graphs are shown in figure.



Choose the correct statement.

- (1) Car P is faster than car S
(2) Car Q is the slowest
(3) Car S is faster than car R
(4) Car R is the slowest

Answer (2)



Sol.

Slope of distance time graph gives us speed. Slope of Q is least so speed of Q is slowest.

150. In a nuclear fusion reaction, the loss in mass is 0.3%. Energy released in the fusion of 1 kg mass will be:

- (1) $2.7 \times 10^{14} \text{ J}$ (2) $2.7 \times 10^{16} \text{ J}$
(3) $3.6 \times 10^{14} \text{ J}$ (4) None of these

Answer (1)

Sol. $\Delta m = 0.3 \%$ of 1 Kg

$$\Delta m = \frac{0.3}{100} \times 1 = \frac{3}{1000} \text{ Kg}$$

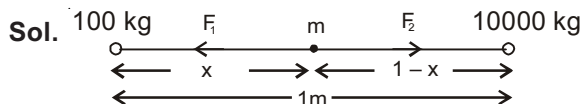
$$\text{As } E = (\Delta m).c^2$$

$$E = 2.7 \times 10^{14} \text{ J}$$

151. Two bodies of masses 100 kg and 10,000 kg are at a distance 1 m apart. At which point on the line joining them a third body experiences the net gravitational force zero:

- (1) 11 m (2) $\frac{1}{11}m$
(3) 10 m (4) $\frac{1}{10}m$

Answer (2)



$$F_1 = F_2$$

$$\frac{G \times 100 \times m}{x^2} = \frac{G \times 10000 \times m}{(1-x)^2}$$

Taking square root of both side

$$\frac{10}{x} = \frac{100}{1-x}$$

$$x = \frac{1}{11}m$$

152. A hammer of mass 500 g moving at 50 m/s strikes a nail. The nail stops the hammer in a very short time of 0.01 S. The force of the nail on the hammer will be :

- (1) 2000 N (2) 250 N
(3) - 2500 N (4) 500 N

Answer (3)

Sol. $m = 500 \text{ g} = \frac{500}{1000} \text{ Kg} = \frac{1}{2} \text{ Kg}$

$$u = 50 \text{ m/s}$$

$$v = 0$$

$$t = 0.01 \text{ sec}$$

From newton's second law

$$F = \frac{m(v-u)}{t}$$

$$F = \frac{\frac{1}{2} \times (0 - 50)}{0.01} = - 2500 \text{ N}$$

153. If the potential difference between the ends of a fixed resistor is halved, the electric power will become :

- (1) Double (2) Half
(3) Four times (4) One-fourth

Answer (4)

Sol. $V_1 = V$

$$V_2 = \frac{V}{2}$$

As $P = \frac{V^2}{R}$ If R = constant

$$P \propto V^2$$

$$\frac{P_2}{P_1} = \left(\frac{V_2}{V_1} \right)^2$$

$$\frac{P_2}{P_1} = \left(\frac{V/2}{V} \right)^2$$

$$\frac{P_2}{P_1} = \frac{1}{4}$$

$$P_2 = \frac{P_1}{4}$$

154. Due to Incephalites the organ of the body affected is:

- (1) Lungs (2) Heart
(3) Brain (4) Eye

Answer (3)

Sol. Encephalites is the disorder which there is inflammation of brain tissues.

155. Main gases in bio gas are:

- (1) Methane, Carbon di oxide
(2) Methane Carbon mono oxide
(3) Ethane carbon mono oxide
(4) Ethane carbon di oxide

Answer (1)

Sol.

156. Which of the following is complex permanent tissue:

- (1) Parenchyma (2) Sclerenchyma
(3) Phloem (4) Collenchyma

Answer (3)

Sol. Phloem and Xylem are complex permanent tissues while as Parenchyma, collenchyma and sclerenchyma are simple permanent tissues.

157. Action of bile juice upon fat is known as:

- (1) Neutralization (2) Emulsification
(3) Fermentation (4) None of the above

Answer (2)

158. Match column I and II then select the correct option:

- | | |
|--------------------|---------------------|
| I | II |
| (a) Insulin | (i) Pitutary gland |
| (b) Growth Hormone | (ii) Thyroid gland |
| (c) Thyroxin | (iii) Adrenal gland |
| (d) Adrenaline | (iv) Pancreas |

- (1) a-i, b-iii, c-iv, d-iv
(2) a-iv, b-i, c-ii, d-iii
(3) a-iii, b-iv, c-i, d-ii
(4) a-11, b-ii, c-iv, d-i

Answer (2)

159. According to 'Laws of inheritance' which of the following is phenotype results of 'Dihybrid cross':

- (1) 3:1 (2) 1:2:1
(3) 1:3:1 (4) 9:3:3:1

Answer (4)

160. Reason of acne is :

- (1) Protozoa Tripanosoma (2) Leishmania
(3) Staphylococci (4) None of above

Answer (3)

Sol. S.aureus is responsible for acne and pimples in humans.

161. Eutrophication Increases :

- (1) B.O.D (2) C.O.D
(3) C.F.C (4) None of the above

Answer (1)

Sol. Due to eutrophication the dissolved oxygen present in water is used and hence results in increase in biological oxygen demand (BOD).

162. Pigment haemoglobin is present in:

- (1) RBC (2) WBC
(3) Blood Platelets (4) Bloods Plasma

Answer (1)

163. Organelle other than nucleus contain DNA is:

- (1) Endoplasmic Reticulum
(2) Mitochondria
(3) Golgi Apparatus
(4) Lysosome

Answer (2)

164. Endoplasmic Reticulum is present in:

- (1) Nucleous (2) Nucleolus
(3) Cytoplasm (4) Chromosomes

Answer (3)

165. Fluid part of blood after removal of corpuscles is:

- (1) Plasma (2) Lymph
(3) Serum (4) Vaccine

Answer (1)

166. Which of the following is wrongly matched :

- (1) Flagella-Euglena (2) Pseudopodia-Amoeba
(3) Cilia - Paramecium (4) Flagella - Plasmodium

Answer (4)

167. Which of the following is not a contagious disease:

- (1) Typhoid (2) Leprosy
(3) Measles (4) Leukemia

Answer (4)

Sol. Because Leukemia does not get transmitted from one person to another.

168. Four stage of binary fission in Amoeba are shown below. The stage at which nuclear fission and cytokinesis are observed is:



I II III IV

- (1) I (2) II
(3) III (4) IV

Answer (2)

169. Match Column I With II and Choose the correct option :

| Column I (Substance) | Column II (P ^H Value) |
|-------------------------|-------------------------------------|
| (a) Vinegar | (i) 7.4 |
| (b) Milk | (ii) 4.0 |
| (c) Blood | (iii) 6.5 |
| (d) Toothpaste | (iv) 8 |
| a b c d | |

- (1) (i), (ii), (iii), (iv)
(2) (ii), (iii), (iv), (i)
(3) (ii), (iii), (i), (iv)
(4) (ii), (iv), (i), (ii)

Answer (3)

170. Mud is an example of :

- (1) Aerosol (2) Foam
(3) Sol (4) Gel

Answer (3)

Sol. Mud is an example of sol in which dispersed phase is solid and dispersion medium is liquid.

171. The solution of one of the following compounds will not conduct electricity. The compound is :

- (1) NaCl (2) CCl₄
(3) MgCl₂ (4) CaCl₂

Answer (2)

Sol. NaCl, MgCl₂, CaCl₂ will conduct electricity in its aqueous solution because of presence of ions which on movement will conduct electricity. CCl₄ is a non polar covalent compound so it will not give ions in solution. So, CCl₄ will not conduct electricity.

172. Number of molecules present in 560 cm³ of NH₃ at STP are :

- (1) 6.022 × 10²³ Molecules
(2) 4 × 6.022 × 10²³ Molecules
(3) 0.25 × 6.022 × 10²² Molecules
(4) 0.5 × 6.022 × 10²³ Molecules

Answer (3)

Sol. 22400 cm³ is occupied by 6.022 × 10²³ NH₃ molecules.

$$560 \text{ cm}^3 \text{ is occupied by } \frac{6.022 \times 10^{23} \times 560}{22400}$$

$$= 0.25 \times 6.022 \times 10^{22} \text{ molecules of NH}_3$$

173. Which one of the following compounds contains an aldehyde group :

- (1) C₃H₈O (2) C₃H₄O₂
(3) C₃H₆O (4) C₄H₁₀O

Answer (3)

Sol. C₃H₈O (CH₃-CH₂-O-CH₃) Methoxy Ethane, it contains ether group.

C₃H₄O₂(CH₂=CH-COOH) Prop-2-ene-1-oic acid, contains carboxylic group.

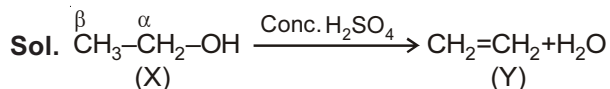
C₃H₆O(CH₃-CH₂-CHO) propanal, contains aldehydic group.

C₄H₁₀O(CH₃-CH₂-O-CH₂-CH₃) ethoxy ethane, contains ether group.

174. A compound X when heated with conc H₂SO₄ at 443 K gives compound Y. Compound Y decolourizes the cold and dilute alkaline KMnO₄ solution compound X and Y are :

- (1) CH₃OH and CH₃CHO
(2) C₂H₅OH and CH₃CHO
(3) CH₃CHO and C₂H₄
(4) C₂H₅OH and C₂H₄

Answer (4)



It removes OH from α-carbon and H from β-carbon



Unsaturated hydrocarbon turns purplish- pink colour of alk. KMnO₄ into brown.

175. Elements A, B, C and D belongs to groups 1, 2 14 and 17 of the periodic table respectively. Which of the following pair of elements would produce a covalent bond :

- (1) A and D (2) B and C
(3) C and D (4) A and C

Answer (3)

Sol. Element A and D, B and C, A and C will form ionic bond while C and D will form covalent bond. C and D both are non metals, while A and B are metals.

176. The correct order of the metallic character for the element Mg, Ca, K and Ga :

- (1) Mg < Ca < K < Ga
(2) Mg > Ca > K > Ga
(3) Ga < Ca < Mg < K
(4) K > Ca > Mg > Ga

Answer (4)

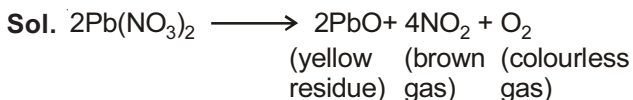
Sol. K has to lose 1 e⁻, Ca and Mg will lose 2 e⁻ while Ga will lose 3 e⁻. In Ca and Mg down the group metallic character increases.

So, K > Ca > Mg > Ga

177. A student while heating solid lead nitrate taken in a test tube would observe :

- (1) White residue of PbO₂
- (2) Green residue of NO₂
- (3) Yellow residue of PbO
- (4) Brown residue of NO

Answer (3)



178. Percentage purity of a sample of gold is 85%. How many atoms of gold are present in 1 g sample. (Atomic mass of gold = 197 u)

- (1) 2.6×10^{21}
- (2) 2.6×10^{23}
- (3) 3.0×10^{21}
- (4) 4.5×10^{20}

Answer (1)

Sol. % purity = 85 i.e. 1 g sample contains 0.85 g of pure gold

197 g contains 6.022×10^{23} Au-atoms

$$0.85 \text{ g contains } \frac{6.022 \times 10^{23} \times 0.85}{197} \\ = 2.588 \times 10^{21} \text{ atoms}$$

179. The number of g moles of aluminium ion present in 0.051 g of aluminium oxide is :

- (1) 0.001
- (2) 0.051
- (3) 0.102
- (4) 2

Answer (1)

Sol. No. of gram moles of Al ions = $\frac{0.051}{102} \times 2 = 0.001$

180. Which one of the following metal can not be extracted by the electrolysis of their molten chloride:

- (1) Na
- (2) Mg
- (3) Al
- (4) Ca

Answer (3)

Sol. Al will not be extracted from its chloride because it is first converted into Al₂O₃ and then turns into Al with help of Cryolite through electrolysis.

181. If $\tan A = \cot B$ then the value of $(A + B)$ will be :

- (1) 90°
- (2) 45°
- (3) 180°
- (4) None of these

Answer (1)

Sol. Given

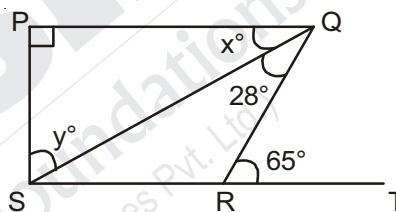
$$\tan(A) = \cot(B)$$

$$\tan(A) = \tan\left(\frac{\pi}{2} - B\right) \Rightarrow \left\{ \cot \theta = \tan\left(\frac{\pi}{2} - \theta\right) \right\}$$

$$\therefore A = \frac{\pi}{2} - B$$

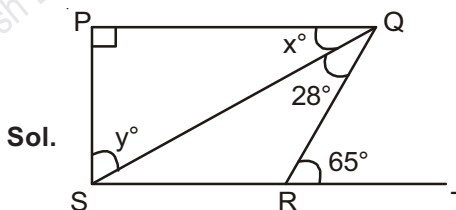
$$A + B = \frac{\pi}{2}$$

182. In figure $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^\circ$ and $\angle QRT = 65^\circ$ then x° and y° will be



- (1) $x^\circ = 37^\circ, y^\circ = 53^\circ$
- (2) $x^\circ = 53^\circ, y^\circ = 37^\circ$
- (3) $x^\circ = 57^\circ, y^\circ = 33^\circ$
- (4) $x^\circ = 33^\circ, y^\circ = 57^\circ$

Answer (1)



Given : $PQ \parallel SR$ and $PS \perp PQ$

$\angle PQR = \angle QRT$ (Alternate angles)

$$65^\circ = x^\circ + 28^\circ$$

$$x^\circ = 65 - 28 = 37^\circ$$

and $\angle PQS = 37^\circ$

$$\angle QPS = 90^\circ \text{ (given)}$$

In ΔPQS

$$90^\circ + x^\circ + y^\circ = 180^\circ$$

$$90^\circ + 37^\circ + y^\circ = 180^\circ$$

$$\therefore y^\circ = 53^\circ$$

so $x^\circ = 37^\circ$ and $y^\circ = 53^\circ$

183. A cuboidal Vessel is 22 meter long and 10 meter wide. How high must it be made to hold 440 cubic meters of water :

- (1) 4 meter (2) 2 meter
(3) 8 meter (4) 6 meter

Answer (2)

Sol. Length of cuboidal vessel = 22m

Width = 10 m

Let Height = x m

Volume = 440m³

$V = lbh$

$440 = 22 \times 10 \times (x)$

$x = 2$ meter

184. The H.C.F. and L.C.M. of two numbers are 12 and 240 respectively. If one of these numbers is 48 what the other number will be :

- (1) 58 (2) 60
(3) 70 (4) 80

Answer (2)

Sol. H.C.F. of two numbers = 12

L.C.M of two numbers = 240

one number = 48

$LCM \times HCF = \text{Product of two number}$

Let the second number be x

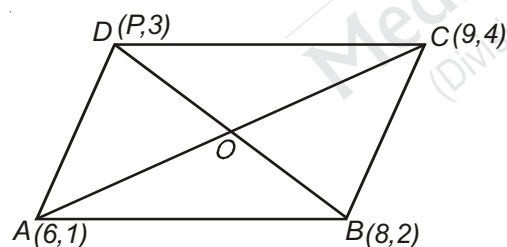
$12 \times 240 = 48 \times (x)$

$x = 60$

185. If the points A (6, 1), B (8, 2), C (9, 4) and D (P, 3) are the vertices of a parallelogram then the value of P will be

- (1) 4 (2) 5
(3) 6 (4) 7

Answer (4)



Sol.

Diagonals of Parallelogram bisect each other

coordinates of 'O' are $(\frac{15}{2}, \frac{5}{2})$ (Using mid point formulae)

O is also mid point of BD

$$\therefore \frac{8+P}{2} = \frac{15}{2}$$

$P = 7$

186. What least number must be added to each of the numbers 6, 15, 20 and 43 to make them proportional :

- (1) 3
(2) 4
(3) 2
(4) 1

Answer (1)

Sol. Let number added be x

$$\therefore \frac{6+x}{15+x} = \frac{20+x}{43+x}$$

$$(6+x)(43+x) = (15+x)(20+x)$$

$$258 + 6x + 43x + x^2 = 300 + 15x + 20x + x^2$$

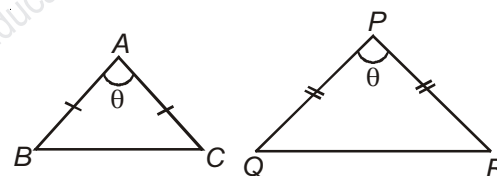
$$14x = 42$$

$$x = 3$$

187. Vertical angles of two isosceles triangle are equal. Their corresponding altitudes are in the ratio 4 : 9 Ratio of their areas will be :

- (1) 16 : 81
(2) 4 : 9
(3) 2 : 3
(4) none of these

Answer (A)



Sol.

In $\triangle ABC$ & $\triangle PQR$

$$\frac{AB}{PQ} = \frac{AC}{PR} \quad \{AB = AC \text{ and } PQ = PR\}$$

$\angle BAC = \angle QPR$ (given)

\therefore By SAS criteria

$\triangle ABC \sim \triangle PQR$

We know

Ratio of area of two similar Triangle

$$= (\text{Ratio of area of their corresponding altitude})^2$$

$$\therefore \text{Ratio of their areas} = \left(\frac{4}{9}\right)^2 = \frac{16}{81}$$

188. If $\tan Q = \frac{a}{b}$ then $\frac{\cos Q + \sin Q}{\cos Q - \sin Q}$ will be :

(1) $\frac{b+a}{b-a}$ (2) $\frac{1}{b-a}$

(3) $\frac{1}{a+b}$ (4) $\frac{b-a}{b+a}$

Answer (1)

Sol. $\tan Q = \frac{a}{b}$, then $\frac{\cos Q + \sin Q}{\cos Q - \sin Q}$

Dividing numerator & Denominator by $\cos Q$ we get

$$\frac{1 + \tan Q}{1 - \tan Q} = \frac{1 + \frac{a}{b}}{1 - \frac{a}{b}} = \frac{b+a}{b-a}$$

189. If the points (x, y) , $(1, 2)$ and $(7, 0)$ are collinear then the relation between x and y will be :

(1) $x - 3y = 7$ (2) $2x - 3y = 7$

(3) $3x + y = 7$ (4) $x + 3y = 7$

Answer (4)

Sol. Point (x, y) , $(1, 2)$, $(7, 0)$ are collinear

Hence (x, y) lies on line segment joining $A(1, 2)$ and $B(7, 0)$

$$\text{slope of line} = \frac{0-2}{7-1} = \frac{-2}{6} \Rightarrow -\frac{1}{3}$$

$$\text{equation of line} \Rightarrow y - 0 = -\frac{1}{3}(x - 7)$$

$$3y = -x + 7$$

$$3y + x = 7$$

190. If $\left(x + \frac{1}{x} = 4\right)$ then the value of $\left(x^2 + \frac{1}{x^2}\right)$ will be :

(1) 14 (2) 16

(3) 15 (4) 18

Answer (1)

Sol. $x + \frac{1}{x} = 4$

on squaring both sides :

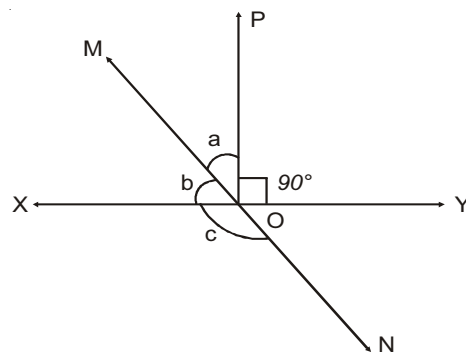
$$x^2 + \frac{1}{x^2} + 2x \cdot \frac{1}{x} = 16$$

$$x^2 + \frac{1}{x^2} + 2 = 16$$

$$x^2 + \frac{1}{x^2} = 14$$

191. Line XY and MN intersect at the point O in the figure. If $\angle POY = 90^\circ$ and $a:b = 4 : 5$.

Then the value of c will be :



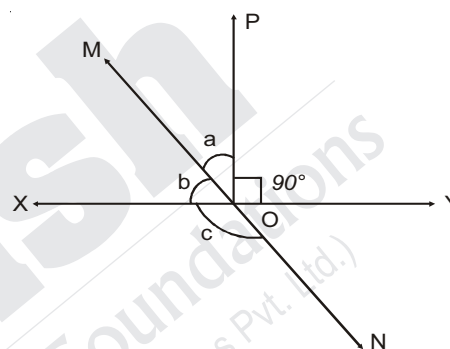
(1) 120°

(2) 135°

(3) 125°

(4) 130°

Answer (4)



Given $a : b = 4 : 5$

$$a + b = 90^\circ$$

$$\text{Let } a = 4x, b = 5x$$

$$\therefore 9x = 90^\circ$$

$$x = 10$$

$$\text{So, } a = 40^\circ$$

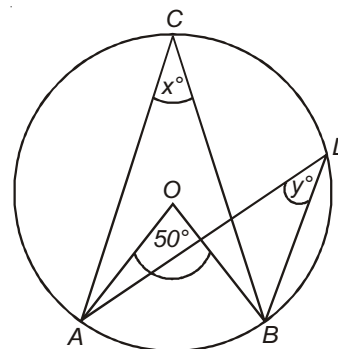
$$b = 50^\circ$$

$$c = a + 90^\circ \quad (\text{vertically opposite angles})$$

$$c = 40^\circ + 90^\circ$$

$$= 130^\circ$$

192. In the given figure the value of $x^\circ + y^\circ$ will be :



(1) 60°

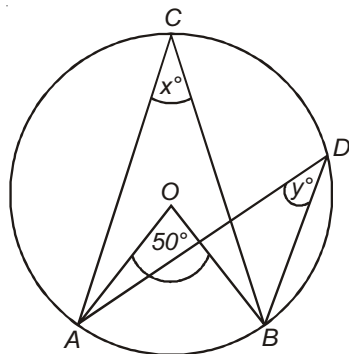
(2) 50°

(3) 25°

(4) 30°

Answer (2)

Sol.



$$\angle ACB = \frac{1}{2}(\angle AOB)$$

{angle subtended by an arc at centre is double of the angle subtended by the arc at any other point on the remaining part of the circle}

$$\therefore x = 25^\circ$$

$x = y$ (Angles in the same segment)

$$x = y = 25^\circ$$

$$x + y = 50^\circ$$

193. Observations 11, 12, 14, 18, $x+2$, $x+4$, 30, 32, 35, 41 have been arranged in ascending order. If median is 24 then the value of x will be:

- (1) 22 (2) 21
(3) 24 (4) None of these

Answer (2)

Sol.

Observations

11, 12, 14, 18, $x + 2$, $x + 4$, 30, 32, 35, 41

are in ascending order

Total Number of observation = 10

$$\text{Median} = \frac{(5^{\text{th}})\text{observation} + (6^{\text{th}})\text{observation}}{2}$$

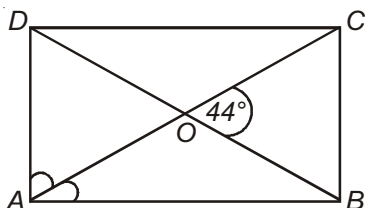
$$24 = \frac{x + 2 + x + 4}{2}$$

$$48 = 2x + 6$$

$$42 = 2x$$

$$x = 21$$

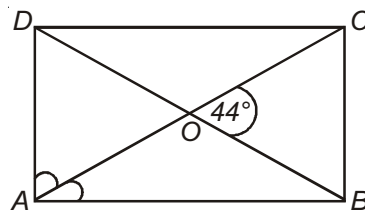
194. The diagonals of rectangle ABCD intersect each other at O. If $\angle BOC = 44^\circ$ the value of $\angle OAD$ will be :



- (1) 120° (2) 68°
(3) 90° (4) 44°

Answer (2)

Sol.



ABCD is a rectangle

$\angle DOA = 44^\circ = \angle COB$ (Vertically opposite angle)

$OD = OA$ { $OD = \frac{1}{2}BD$, $OA = \frac{1}{2}AC$ and $BD = AC$, because diagonals of rectangle are equal in length}

$\therefore \angle ODA = \angle OAD$ (Angles opposite to equal sides are equal)

In $\triangle OAD$

$$\angle ODA + \angle OAD + \angle DOA = 180^\circ$$

$$2\angle OAD = 180^\circ - 44^\circ$$

$$\angle AOD = 68^\circ$$

195. If $\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$ then value of 'a' will be

- (1) -6 (2) -4
(3) -8 (4) -5

Answer (2)

Sol.

$$\sqrt{13 - a\sqrt{10}} = \sqrt{8} + \sqrt{5}$$

on squaring both sides

we get

$$13 - a\sqrt{10} = 8 + 5 + 2\sqrt{40}$$

$$\therefore -a\sqrt{10} = 2\sqrt{40}$$

$$-a\sqrt{10} = 2 \times 2\sqrt{10}$$

$$\therefore a = -4$$

196. If $\frac{3^{2x-8}}{225} = \frac{5^3}{5^x}$ then the value of x will be :

- (1) 4 (2) 2
(3) 5 (4) None of these

Answer (3)

Sol. $\frac{3^{2x-8}}{225} = \frac{5^3}{5^x}$

$$3^{2x-8} \cdot 5^x = 5^3 \cdot (225)$$

$$3^{2x-8} \cdot 5^x = 5^3 \cdot 3^2 \cdot 5^2 \quad \{225 = 3^2 \cdot 5^2\}$$

$$3^{2x-8} \cdot 5^x = 5^5 \cdot 3^2$$

on comparing both sides

$$\therefore 2x - 8 = 2$$

$$2x = 10$$

$$x = 5$$

197. If $\tan A = \sqrt{2} - 1$ then the value of $\sin A \cdot \cos A$ will be

(1) $\frac{\sqrt{2}-1}{4-2\sqrt{2}}$

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

(3) $\frac{\sqrt{2}+1}{4+2\sqrt{3}}$

(4) None of these

Answer (1)

Sol.

$$\tan A = \sqrt{2} - 1$$

value of $\sin A \cos A = ?$

Dividing and multiplying ($\sin A \cos A$) by $\cos A$, we get

$$\left(\frac{\cos A}{\cos A}\right) \cdot \sin A \cdot \cos A$$

$$= \tan A \cdot \cos^2 A$$

$$= \frac{\tan A}{\sec^2 A} = \frac{\tan A}{1 + \tan^2 A}$$

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

$$= \frac{\sqrt{2}-1}{4-2\sqrt{2}}$$

198. The factors of $\left[\frac{2}{x^4} - \frac{1}{x^2}\right]$ will be :

(1) $\left(\frac{\sqrt{2}}{x^4} + \frac{1}{x}\right)\left(\frac{\sqrt{2}}{x^4} - \frac{1}{x}\right)$ (2) $\left(\frac{\sqrt{2}}{x^2} + \frac{1}{x}\right)\left(\frac{\sqrt{2}}{x^2} - \frac{1}{x}\right)$

(3) $\left(\frac{\sqrt{2}}{x} + \frac{1}{x}\right)\left(\frac{\sqrt{2}}{x} - \frac{1}{x}\right)$ (4) None of these

Answer (2)

Sol. Using identity $a^2 - b^2 = (a + b)(a - b)$

$$\begin{aligned} & \left(\frac{\sqrt{2}}{x^2}\right)^2 - \left(\frac{1}{x}\right)^2 \\ &= \left(\frac{\sqrt{2}}{x^2} + \frac{1}{x}\right)\left(\frac{\sqrt{2}}{x^2} - \frac{1}{x}\right) \end{aligned}$$

199. If the diameter of a sphere is decreased by 25% then the curved surface area will be decreased by :

(1) $\frac{5\pi r^2}{4}$

(2) $\frac{2\pi r^2}{4}$

(3) $\frac{\pi r^2}{4}$

(4) $\frac{7\pi r^2}{4}$

Answer (4)

Sol. Diameter is decreased by 25%

So radius also decreased by 25%

So radius becomes $0.75r$

Initial curved surface area = $4\pi r^2$

Final curved surface area = $4\pi(0.75r)^2$

= $2.25\pi r^2$

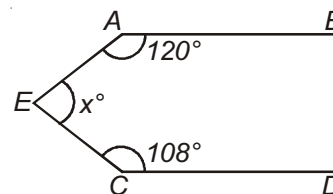
So curved surface area will be decreased by

$4\pi r^2 - 2.25\pi r^2$

= $1.75\pi r^2$

$$= \frac{7}{4}\pi r^2$$

200. In the given figure $AB \parallel CD$. Then the value of x° is:



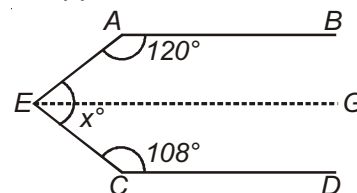
(1) 220°

(2) 140°

(3) 150°

(4) None of these

Answer (4)



Sol.

Given $AB \parallel CD$

Draw line through E parallel to AB & CD

$AB \parallel EG$, $\therefore \angle AEG = 60^\circ$ {Sum of co-interior angle is 180° }

$CD \parallel EG$, $\therefore \angle GEC = 72^\circ$ {Sum of co-interior angle is 180° }

$$\therefore x = 60^\circ + 72^\circ$$

$$= 132^\circ$$