



# Aakash

Medical | IIT-JEE | Foundations

(Divisions of Aakash Educational Services Pvt. Ltd.)

Regd. Office : Aakash Tower, 8, Pusa Road, New Delhi-110005

Ph.: 011-47623456 Fax : 011-47623472

Time : 3 Hours

## 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 :** From question 1 to 6 each question has four options. Out of them three options are alike and one is different from three others. Find out the correct one which is different from rest of three

1. (1) Red (2) Yellow  
(3) Pink (4) Blue

**Answer (3)**

**Sol.** According to VIBGYOR answer is (3)

'Pink' as Red, yellow & Blue belongs to Vibgyor.

2. (1) G I M R (2) K M P T  
(3) J L O S (4) D F I M

**Answer (1)**

**Sol.** As  $\overset{1}{G} \overset{3}{M} \overset{4}{R}$  in others gap is (1,2,3)

3. (1) Rajya Sabha (2) Legislative Assembly  
(3) Lok Sabha (4) Supreme Court

**Answer (4)**

4. (1) 2401 (2) 625  
(3) 4095 (4) 1296

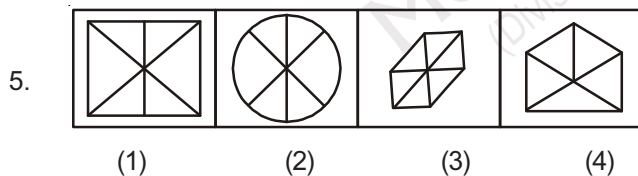
**Answer (3)**

**Sol.** 4095 not a perfect square, where as

$$\sqrt{2401} = 49$$

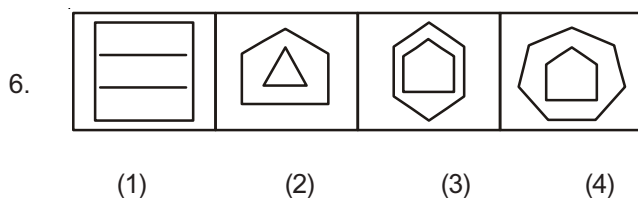
$$\sqrt{625} = 25$$

$$\sqrt{1296} = 36$$



**Answer (4)**

**Sol.** No of segment in 4 figure is 5 and in rest it is 6



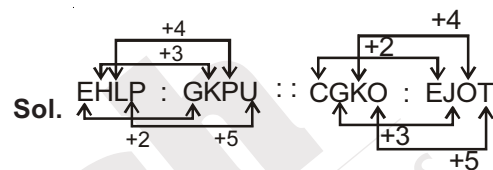
**Answer (3)**

**Direction :** Question 7 to 11 there are four terms/figures in each question. The terms right to the symbol :: have same relationship as the two terms/figure one is missing, which is shown by (?). Four alternative are given for each question. Find out the correct alternative and write its number against the corresponding question on your answer sheet

7. EHL P : GKPU :: CGKO : ?

- (1) EKPT (2) EJOT  
(3) FIOU (4) FKPV

**Answer (2)**



8. CEHI : 5 :: FIJK : ?

- (1) 6 (2) 8  
(3) 7 (4) 4

**Answer (1)**

**Sol.**  $CEHI : 5 :: FIJK : 6$   
 $3+5+8+9 = 25 \Rightarrow \sqrt{25} = 5$   
 $6+9+10+11 = 36 \Rightarrow \sqrt{36} = 6$

9. Italy : Lira :: Japan : ?

- (1) Yuan (2) Kyat  
(3) Yen (4) Taka

**Answer (3)**

**Sol.** Italy : Lira :: Japan

10. 1290 : 6 :: 2394 : ?

- (1) 9 (2) 13  
(3) 8 (4) 7

**Answer (4)**

**Sol.**  $6^4 - 6 = 1290$

$7^4 - 7 = 2394$  (It is more appropriate answer)

one more solution (9) can be obtained by sum of digit divide by 2

11. Durandcup : Football :: Uber Cup : ?

- (1) Golf (2) Badminton  
(3) Hockey (4) Chess

**Answer (2)**

**Sol.** Clearly bad minton

12. Newton : Force :: Hertz : ?

- (1) Frequency                      (2) Work  
(3) Power                            (4) Intensity

**Answer (1)**

**Sol.** Newton : Force :: Hertz : Frequency

**Direction :** Question no. 13 to 18 are based on the number/figure series. One term is missing in each series which is indicated by question mark (?). Find out the missing term out of the four alternatives given below on questions and write that alternative number

13. 2, 7, 22, 67, 202, ?

- (1) 609                                (2) 607  
(3) 576                                (4) 498

**Answer (2)**

**Sol.**  $7 = 2 \times 3 + 1$

$22 = 7 \times 3 + 1$

$67 = 22 \times 3 + 1$

$202 = 67 \times 3 + 1$

$607 = 202 \times 3 + 1$

14. 3, 6, 6, 12, 11, 20, 18, ?, ?

- (1) 25, 27                            (2) 36, 30  
(3) 26, 36                            (4) 30, 27

**Answer (4)**

15. 16, 18, 21, 23, 28, 30, ?, ?

- (1) 36, 32                            (2) 39, 37  
(3) 37, 39                            (4) 34, 40

**Answer (3)**

16. 2, 9, 28, 65, 126, ?

- (1) 217                                (2) 196  
(3) 216                                (4) 226

**Answer (1)**

**Sol.**  $2 = 1^3 + 1$

$9 = 2^3 + 1$

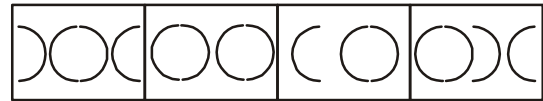
$28 = 3^3 + 1$

$65 = 4^3 + 1$

$126 = 5^3 + 1$

$217 = 6^3 + 1$

17. Question Figures



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

**Answer (2)**

**Sol.** Line change into arc and also arc rotate 180°

Question Figures



18.

Answer Figures



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

**Answer (4)**

**Direction :** for question no. 19 to 23 are based on definite series of letters. In the following questions some places are missing. Find out the correct answer for every question

19. - ER - F - R - FE - K

- (1) K E F K R                      (2) E K F K R  
(3) F K E K R                      (4) F E R E F

**Answer (3)**

**Sol.** FERK/FERK/FERK

20. -- K - W - KX - V --

- (1) W V X V W K X                      (2) W X V W V X K  
(3) X W V K V K V                      (4) V K X W V K X

**Answer (1)**

**Sol.** WVKX/WVKX/WVKX

21. -- L - H - LO - UL -

- (1) O H U O H U                      (2) H U O U H O  
(3) U O H U O H                      (4) O U H U H O

**Answer (2)**

**Sol.** HULO/HULO/HULO

22. -- M - I - MP - VM -

- (1) V P I P V I                      (2) P V I P I V  
(3) I V P V P I                      (4) I V P V I P

**Answer (4)**

**Sol.**  $\cancel{IVMP}/\cancel{IVMP}/IVMP$

23. -- HU - I - U - IH - N

- (1) I H N U H                      (2) I U N O H  
(3) I N H N U                      (4) N H U H N

**Answer (3)**

**Sol.**  $\cancel{IHUN}/\cancel{IHUN}/IHUN$

Direction : In question no. 24 to 28 the equation have become incorrect due to wrong order of signs. Find out the correct order of sign (alternative) from the four alternatives given below

24.  $15 - 3 \div 5 \times 12 = 13$

- (1)  $\times - \div =$                       (2)  $\div \times -- =$   
(3)  $- \times \div =$                       (4)  $\div - \times =$

**Answer (2)**

**Sol.**  $15 \div 3 \times 5 - 12 = 13$

$$\begin{aligned} \text{LHS} &= 15 \div 3 \times 5 - 12 \\ &= 5 \times 5 - 12 \\ &= 25 - 12 = 13 = \text{RHS} \end{aligned}$$

25.  $3 + 4 - 6 \times 13 = 5$

- (1)  $\times + - =$                       (2)  $+ - \times =$   
(3)  $- + \times =$                       (4)  $= \times - +$

**Answer (1)**

**Sol.**  $3 \times 4 + 6 - 13 = 5$

$$\begin{aligned} \text{LHS} &= 3 \times 4 + 6 - 13 \\ &= 12 + 6 - 13 \\ &= 18 - 13 = 5 = \text{RHS} \end{aligned}$$

26.  $12 + 4 - 2 \div 3 = ?$

- (1)  $+ - \div =$                       (2)  $\div = + -$   
(3)  $- + \div =$                       (4)  $\div + - =$

**Answer (NA)**

**Sol.** Incomplete question

27.  $24 = 8 + 3 \div 4 \times 13$

- (1)  $\div + \times =$                       (2)  $\times \div + =$   
(3)  $\div \times + =$                       (4)  $= \div + \times$

**Answer (3)**

**Sol.**  $24 \div 8 \times 3 + 4 = 13$

$$\begin{aligned} 3 \times 3 + 4 \\ 9 + 4 = 13 \end{aligned}$$

28.  $3 + 5 = 2 - 8 \times 9$

- (1)  $\times + - =$                       (2)  $+ - \times =$   
(3)  $= + - \times$                       (4)  $\times + = -$

**Answer (1)**

**Sol.**  $3 \times 5 + 2 - 8 = 9$

$$15 + 2 - 8$$

$$17 - 8 = 9$$

$$\text{So, } \times + - =$$

**Direction :** In question no. 29 to 33 the letters in column I are coded in the form of digits, which is written in the column II. But the order of digits is different. Identify correct code of letters. Find out the correct alternative for each question

Column I	Column II
BLO	369
EPL	279
PJT	175
JNS	018
NLB	309
RTJ	451

29. What will be the code of word. LJN

- (1) 713                                      (2) 910  
(3) 610                                      (4) 817

**Answer (2)**

**Sol. for 29 to 33**

from given data :- L = 9, P = 9, N = 0, R = 4, E = 2, T = 5, S = 8, J = 1, B = 3, O = 6

$$\text{LJN} \rightarrow 910$$

30. What will be the code of word BTS

- (1) 431                                      (2) 850  
(3) 358                                      (4) 258

**Answer (3)**

**Sol.**  $\text{BTS} \rightarrow 358$

31. What will be the code of word REP

- (1) 437                                      (2) 671  
(3) 527                                      (4) 427

**Answer (4)**

**Sol.**  $\text{REP} \rightarrow 427$



**Direction :** Question no. 41 to 45 are based on the information. Read the information carefully and find out the correct alternative for each question.

R has four brothers named S, T, U and V. In which T is elder than U, but younger than S, S is elder than R and T, but younger than V, R is elder than U, but younger than T.

41. Who is the eldest among them

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

**Answer (1)**

**Sol.** from given information, we can conclude

$$V > S > T > R > U$$

42. Who is the youngest among them

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

**Answer (4)**

**Sol.** Option 4 is correct

43. Who is at the middle order among them

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

**Answer (2)**

**Sol.** Option 2 is correct

44. Who is at the second from top order among them

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

**Answer (3)**

**Sol.** Option 3 is correct

45. Who is at the second from bottom order among them

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

**Answer (2)**

**Sol.** Option 2 is correct

46. If the fourth Saturday of a month is 22<sup>nd</sup> days then 13<sup>th</sup> day of the month will be which day

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

**Answer (3)**

**Sol.** Thursday

47. If on the 15<sup>th</sup> September 2008 was a Friday. Then which day will be on 15<sup>th</sup> September 2009

- (1) Sunday
- (2) Friday
- (3) Thursday
- (4) Saturday

**Answer (4)**

**Sol.** Saturday

48. Dinesh home is two Km. South from his school and Satish's home is two Km. in the East from Dinesh home what will be the direction of Satish's home

- (1) North West
- (2) South West
- (3) North East
- (4) South East

**Answer (4)**

**Sol.** South East

49. A man moves 4 Km towards East. Then moves 3 km. towards North. How far he is from the starting point

- (1) 8 Km
- (2) 7 Km
- (3) 5 Km
- (4) 6 Km

**Answer (3)**

**Sol.** 5 Km

50. A person is going towards north from his home then he turns right and then turn to right, again he turns to the left. Now is which direction is he going

- (1) North
- (2) East
- (3) South
- (4) West

**Answer (2)**

**Sol.** East

## PART-II : LANGUAGE TEST

**51-56. Read the following passage and answer the question that follow-**

Speech is a great blessing but it can also be a great curse, for while it helps us to make our intentions and desires known to our fellows, it can also, if we use it carelessly, make our attitude completely misunderstood. A slip of the tongue, the use of an unusual word, or of an ambiguous word, and so on, may create an enemy where we had hoped to win a friend. Again, different classes of people use different vocabularies, and the ordinary speech of an educated man may strike an uneducated listener as pompous. Unwittingly, we may use a word which bears a different meaning to our listener from what it does to men of our own class. Thus speech is not a gift to use lightly without thought, but one which demands careful handling. Only a fool will express himself alike to all kinds and conditions of men.

51. Speech can be a curse, because it can-

- (1) reveal our intentions
- (2) lead to carelessness
- (3) hurt others
- (4) creat misunderstanding

**Answer (4)**

52. A 'slip of tongue' means something said-

- (1) unintentionally
- (2) wrongly by chance
- (3) without giving proper thought
- (4) to hurt another person

**Answer (1)**

53. The word 'speech' is-

- |               |            |
|---------------|------------|
| (1) Noun      | (2) Verb   |
| (3) Adjective | (4) Adverb |

**Answer (1)**

54. What is the opposite of the word 'educated'-

- |                |                |
|----------------|----------------|
| (1) illiterate | (2) uneducated |
| (3) eneligible | (4) unstudious |

**Answer (2)**

55. While talking to an uneducated person, we should use-

- |                     |                     |
|---------------------|---------------------|
| (1) Polite language | (2) ordinary speech |
| (3) his vocabulary  | (4) simple words    |

**Answer (4)**

56. If one used the same style of language with everyone, one would sound-

- |                |             |
|----------------|-------------|
| (1) democratic | (2) foolish |
| (3) boring     | (4) flat    |

**Answer (2)**

**Direction :** (for question nos. 57-58) The following six sentences come from a paragraph. The first and last sentences are given; choose the order in which the four sentence (PQRS) should appear to complete the paragraph.

57. 1. When a satellite is launched, the rocket begins by going slowly upwards through the air

- P. As a result there is less friction
- Q. For the atmosphere becomes thinner
- R. As the rocket goes higher, it travels faster
- S. However, the higher it goes, the less air it needs

6. Consequently, the rocket still does not become so hot.

- |             |             |
|-------------|-------------|
| (1) R S Q P | (2) R Q P S |
| (3) P Q R S | (4) P R S Q |

**Answer (1)**

58. 1. A man can be physically confined within stone walls.

- P. But his mind and spirit will still be free
- Q. His hopes and aspirations still remain with him.
- R. Thus his freedom of action may be restricted
- S. Hence, he will be free spiritually if not physically

6. Soon you will realize that this is an exciting task

- |             |             |
|-------------|-------------|
| (1) S P Q R | (2) Q R P S |
| (3) P Q R S | (4) S Q P R |

**Answer (2)**

**Direction :** (for question nos. 59-60) You are provided with the first and last parts of a sentence. The remaining sentence is broken into four parts labelled (P), (Q), (R), and (S). You are required to arrange these parts so as to form a complete meaningful sentence and then choose the correct combination.



59. I was
- P. and stay for a few days in Delhi  
Q. when my father told me  
R. very excited  
S. that I could go with him
- (1) P Q R S                      (2) Q R S P  
(3) R Q S P                      (4) S P Q R

**Answer (3)**

60. Milton said that-
- P. Those persons  
Q. would be damned  
R. who do not obey  
S. God's Commands
- (1) P Q R S                      (2) P R S Q  
(3) Q R P S                      (4) R S P Q

**Answer (2)**

**61-65 Directions:** Pick out the most effective word from the given words to fill in the blank to make the sentence meaningfully complete.

61. I will be leaving for Delhi tonight and \_\_\_\_\_ to return by this weekend.
- (1) Waiting                      (2) Plan  
(3) Going                        (4) Likely

**Answer (4)**

62. He is too \_\_\_\_\_ to be deceived easily.
- (1) Strong                        (2) Modern  
(3) Kind                         (4) Intelligent

**Answer (4)**

63. The Police have \_\_\_\_\_ a complaint against four persons.
- (1) Evtered                      (2) Lodged  
(3) Registered                 (4) Noted

**Answer (3)**

64. He is so \_\_\_\_\_ of his own idea that he will not entertain any suggestion from others.
- (1) Enamoured                (2) Enchanted  
(3) Hopeful                      (4) Jealous

**Answer (1)**

65. After consulting a \_\_\_\_\_ of doctors he eventually thought of consulting a specialist.
- (1) Chair                         (2) String  
(3) Mass                         (4) series

**Answer (2)**

**66-70 Select the word which means the opposite of the given word-**

66. Nadir-
- (1) Progress                      (2) liberty  
(3) Zenith                        (4) Modernity

**Answer (3)**

67. Knowledge-
- (1) Ignorance                      (2) Illiteracy  
(3) Foolishness                (4) Backwardness

**Answer (1)**

68. Beautiful-
- (1) Ugly                         (2) Dark  
(3) Rough                        (4) Dirty

**Answer (1)**

69. Appointment-
- (1) Disappointment            (2) Suspension  
(3) Dismissal                    (4) Discharge

**Answer (3)**

70. Humble-
- (1) Dominant                      (2) Proud  
(3) Despotic                      (4) Pompous

**Answer (2)**

71-80. In the following passage there are some numbered blanks, fill in the blanks by selecting the most appropriate word from the options given below-

Interviews are very important for all of us. We must face interview with confidence.

There is (71) any persons who at one time or the other has not (72) an interview situation. While (73) are a day to day (74) for people (75) with others in their daily chores, we are here (76) with interview situations when one is a (77) aspiring for an (78) such situations not very (79) happen in one's life, are (80). When the candidate likes to come on top of the situation.

This calls for careful study and preparation

71. (1) perhaps                      (2) hardly  
(3) probably                      (4) possibly

**Answer (2)**

72. (1) known                      (2) faced  
(3) measured                    (4) seen

**Answer (2)**

73. (1) interviews                      (2) discussions  
(3) meetings                      (4) seminars

**Answer (1)**



74. (1) possibility  
 (2) feeling  
 (3) happening  
 (4) experience

**Answer (4)**

75. (1) Interact  
 (2) speak  
 (3) react  
 (4) concern

**Answer (1)**

76. (1) meeting  
 (2) concerned  
 (3) involved  
 (4) interested

**Answer (2)**

77. (1) beggar  
 (2) candidate  
 (3) person  
 (4) student

**Answer (2)**

78. (1) employment  
 (2) estimation  
 (3) elevation  
 (4) establishment

**Answer (1)**

79. (1) frequent  
 (2) happy  
 (3) important  
 (4) consequent

**Answer (1)**

80. (1) minutes  
 (2) times  
 (3) hour  
 (4) occasions

**Answer (4)**

**81-85 In each of the following questions out of the alternatives, choose the one word which is nearest in meaning to the given word.**

81. Candid-  
 (1) Sincere (2) Polite  
 (3) Frank (4) Rude

**Answer (3)**

82. Optimistic-  
 (1) Optician  
 (2) Favourable  
 (3) Wishful  
 (4) Hopeful

**Answer (4)**

83. Ambition-  
 (1) Expectation  
 (2) Desire  
 (3) Aspiration  
 (4) Goal

**Answer (3)**

84. Drowsy-  
 (1) Soothing (2) Lazy  
 (3) Exhausted (4) Sleepy

**Answer (4)**

85. Exclusive-  
 (1) Extensive  
 (2) Sole  
 (3) External  
 (4) Excessive

**Answer (2)**

**Direction :** In each of the following question, choose the most suitable "One word" for the given expressions.

86. An office or post with no work but high pay.  
 (1) Honorary (2) Sinecure  
 (3) Gratis (4) Ex-officio

**Answer (2)**

87. Walking in sleep-  
 (1) Somniloquism (2) Somnambulism  
 (3) Obsession (4) Hallucination

**Answer (2)**

88. A person who regards the whole world as his country-  
 (1) Patriot (2) Nationalist  
 (3) Cosmopolitan (4) Metropolitan

**Answer (3)**

89. One who totally abstains from alcoholic drinks-

- (1) Puritan
- (2) Samaritan
- (3) Pedant
- (4) Teetotaler

**Answer (4)**

90. Time after twilight and before night-

- (1) Evening
- (2) Dawn
- (3) Dusk
- (4) Eclipse

**Answer (3)**

**Direction:** In each of the following questions, a word has been written in four different ways out of which only one is correctly spelt.

Find the correctly spelt word.

91. (1) Entreprenuer  
(2) Enterpraneur  
(3) Entrapreneur  
(4) Entrepreneur

**Answer (4)**

92. (1) Commission  
(2) Comision  
(3) Comission  
(4) Commision

**Answer (1)**

93. (1) Jewelery  
(2) Jeweltry  
(3) Jwellry  
(4) Jewellery

**Answer (4)**

94. (1) Argument  
(2) Arguemant  
(3) Argumant  
(4) Arguement

**Answer (1)**

95. (1) Forein  
(2) Fariegn  
(3) Foriegn  
(4) Foreign

**Answer (4)**

**96-100 Select the meaning of the given Phrases/ idioms.**

96. To give up the ghost-
- (1) to die
  - (2) To make false appearance
  - (3) to terrify others by acting in suspicious manner
  - (4) to leave useless pursuits

**Answer (1)**

97. To get into hot waters-
- (1) To be impatient
  - (2) To suffer a huge financial loss
  - (3) To get into trouble
  - (4) To be in a confused state of mind

**Answer (3)**

98. To read between the lines-
- (1) To concentrate
  - (2) To read carefully
  - (3) To suspect
  - (4) To grasp the hidden meaning

**Answer (4)**

99. All and sundry-
- (1) Greater share
  - (2) Completion of work
  - (3) All of a sudden
  - (4) Everyone without distinction

**Answer (4)**

100. French leave-
- ((1) long absence
  - (2) leave on the pretext illness
  - (3) Casual leave
  - (4) Absence without permission

**Answer (4)**

## PART-III : SCHOLASTIC APTITUDE TEST (SAT)

101. Opposition of flow of electric current is called

- (1) Potential difference
- (2) Electric charge
- (3) Resistance
- (4) Electromagnetic induction

**Answer (3)**

**Sol.** Opposition of flow of Electric current is called Resistance. For same potential difference, more the resistance, less is the current.

102. Which of these does not require a medium

- (1) Conduction
- (2) Convection
- (3) Radiation
- (4) None of these

**Answer (3)**

**Sol.** Out of all the different modes of heat transfer radiation does not require medium. Energy from sun reaches Earth through radiation.

103. Capacity of a measuring flask is 1 litre. what it will be in cubic centimetre

- (1) 1 cubic centimetre
- (2) 10 cubic centimetre
- (3) 100 cubic centimetre
- (4) 1000 cubic centimetre

**Answer (4)**

**Sol.** 1 litre is equivalent to 1000cm<sup>3</sup>. (or 1000 cubic centimetre)

104. Noise is produced by

- (1) Vibration with high frequency
- (2) Regular vibration
- (3) Regular and periodic vibration
- (4) Irregular and non periodic vibration

**Answer (4)**

**Sol.** Noise is a result of random and irregular, non periodic vibrations.

105. A ray passing through which part of a lens emerges undeviated

- (1) Focus
- (2) Centre of curvature
- (3) Optical centre
- (4) Between focus and centre of curvature

**Answer (3)**

**Sol.** A ray of light passing through Optical centre of a lens emerges undeviated.

106. To convert temperature in °F into °C we use the formula

- (1)  $\frac{F}{100} = \frac{C - 32}{180}$
- (2)  $C = \frac{5}{9}(F - 32)$
- (3)  $F = \frac{5}{9}(C - 32)$
- (4)  $C = \frac{9}{5}(F - 32)$

**Answer (2)**

**Sol.** As  $\frac{F - 32}{212 - 32} = \frac{C - 0}{100 - 0}$

$$\Rightarrow \frac{F - 32}{180} = \frac{C}{100}$$

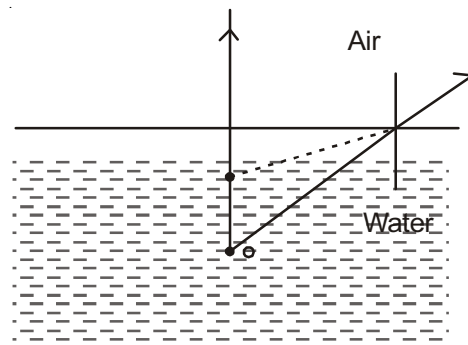
$$\Rightarrow C = \frac{5}{9}(F - 32)$$

107. A swimming pool appears less deeper than its real depth

- (1) due to reflection
- (2) due to refraction
- (3) due to dispersion
- (4) due to lateral displacement

**Answer (2)**

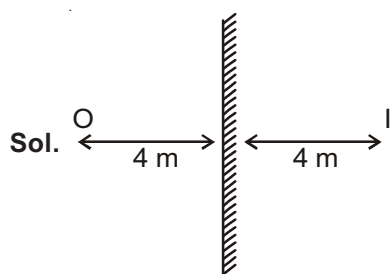
**Sol.** A swimming pool appears less deeper than its real depth due to refraction of light from water to air. Apparent depth is less than actual depth.



108. A person is standing 4m away from plane mirror. Distance between mirror and image is

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

**Answer (1)**



∴ Distance between mirror and image is also 4m.

109. According to law of floatation weight of a floating body is

- (1) Equal to the weight of liquid displaced
- (2) Equal to the volume of liquid displaced
- (3) Is greater than the weight of liquid displaced
- (4) Is less than the weight of liquid displaced

**Answer (1)**

**Sol.** During floatation weight of floating body is equal to buoyant force. Now buoyant force itself is equal to weight of liquid displaced.

110. Two resistance each of 2 ohm are connected in series and in parallel separately. Equivalent resistance is

- (1)  $4\ \Omega$ ,  $1\ \Omega$
- (2)  $1\ \Omega$ ,  $4\ \Omega$
- (3)  $2\ \Omega$ ,  $2\ \Omega$
- (4)  $4\ \Omega$ ,  $4\ \Omega$

**Answer (1)**

**Sol.**  $R_1 = R_2 = 2\ \Omega$

$$R_s = R_1 + R_2 = 4\ \Omega$$

$$R_p = \frac{R_1 R_2}{R_1 + R_2} = 1\ \Omega$$

111. Time period of second's needle of clock

- (1) 1 Minute
- (2) 1 Hour
- (3) 12 Hour
- (4) 24 Hour

**Answer (1)**

**Sol.** Time taken by seconds needle of clock is 60sec or 1minute.

112. If an object is placed between two plane mirror, how many images will be formed

- (1) Only one
- (2) Two
- (3) Infinite
- (4) None of these

**Answer (NA)**

**Sol.** Information regarding the angle between the two mirrors is not given hence answer can not be determined. If the two plane mirrors are parallel and an object is placed between them, then number of images is infinite.

113. In long sightedness images is formed

- (1) On Retina
- (2) Infront of Retina
- (3) Behind Retina
- (4) On blind spot

**Answer (3)**

**Sol.** In long Sightedness or Hypermetropia image by eye lens is formed behind Retina

114. Unsaturated hydrocarbon among the following is

- (1) Ethane
- (2) Methane
- (3) Ethylene
- (4) Propane

**Answer (3)**

**Sol.** Ethylene is  $C_2H_4$  i.e.  $CH_2=CH_2$ , it contains double bond so unsaturated Hydrocarbon.

115. Nature of oxides of non-metal is

- (1) Acidic
- (2) Basic
- (3) Amphoteric
- (4) Neutral

**Answer (1)**

**Sol.** Non Metal Oxides are acidic.

116. Stainless steel is an alloy in which following is added along with iron

- (1) Zinc
- (2) Chromium
- (3) Tin
- (4) Cuppor

**Answer (2)**

**Sol.** Stainless Steel is an alloy of Fe+Ni+Cr+very small amount of Carbon

117. Which among the following coal contains highest % of carbon

- (1) Peat
- (2) Bituminous
- (3) Anthracite
- (4) Lignite

**Answer (3)**

**Sol.** Anthracite contains highest % of Carbon

118. Most reactive metal is

- (1) Na
- (2) Mg
- (3) Cu
- (4) Au

**Answer (1)**

**Sol.** Na

119. Zinc and HCl react to form

- (1) H<sub>2</sub>                                      (2) N<sub>2</sub>  
 (3) CO<sub>2</sub>                                      (4) He

**Answer (1)**

**Sol.**  $\text{Zn(s)} + 2\text{HCl(dilute)} \rightarrow \text{ZnCl}_2(\text{aq}) + \text{H}_2(\text{g}) \uparrow$

120. Which among the following non metal is liquid at room temp

- (1) Chlorine                                      (2) Bromine  
 (3) Mercury                                      (4) Phosphorus

**Answer (2)**

**Sol.** Bromine is only Non-Metal liquid at room temperature

121. Which metal forms hydrogen gas when reacts with cold water

- (1) Na    (2) Mg  
 (3) Fe    (4) Zn

**Answer (1)**

**Sol.**  $2\text{Na(s)} + 2\text{H}_2\text{O(cold)} \rightarrow 2\text{NaOH(aq)} + \text{H}_2 \uparrow$

122. Thermosetting plastic is

- (1) Polythene                                      (2) PVC  
 (3) Bakelite                                      (4) Polypropene

**Answer (3)**

**Sol.** Bakelite and Melamine are Thermosetting Plastic as they cannot be remoulded again

123. Lens of spectacles are made from

- (1) Soft glass                                      (2) Hard glass  
 (3) Pyrex glass                                      (4) Flint glass

**Answer (4)**

**Sol.** Lens of Spectacles are made from Flint Glass

124. The reaction that take place in nuclear reactor is

- (1) Nuclear fusion  
 (2) Nuclear fission  
 (3) Controlled nuclear fission  
 (4) Double decomposition

**Answer (3)**

**Sol.** The reaction in Nuclear reactor is Controlled nuclear fission, where an unstable nucleus breaks into two or more daughter Nuclei

125. Renewable source of energy is

- (1) Coal  
 (2) Petroleum  
 (3) Natural gas  
 (4) Energy of flowing water

**Answer (4)**

**Sol.** Energy of flowing water is considered a renewable source of energy.

126. Calcium carbide when reacts with water gives

- (1) Methane gas                                      (2) Ethane gas  
 (3) Ethylene gas                                      (4) Ethyne gas

**Answer (4)**

**Sol.**  $\text{CaC}_2(\text{s}) + 2\text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2(\text{aq}) + \text{C}_2\text{H}_2(\text{g}) \uparrow$

127. What type of colloidal system is fog

- (1) Gas in liquid                                      (2) Liquid in gas  
 (3) Liquid in liquid                                      (4) Solid in gas

**Answer (2)**

**Sol.** Liquid in gas

128. Which of these is not a viral disease -

- (1) Measles    (2) Rabies  
 (3) Polio    (4) Tuberculosis

**Answer (4)**

**Sol.** It is a bacterial disease caused by *Mycobacterium tuberculosis*

129. Marasmus occurs due to -

- (1) Protein deficiency  
 (2) Carbohydrate deficiency  
 (3) Fat deficiency  
 (4) None of these

**Answer (1)**

**Sol.** Marasmus is a Protein energy malnutrition diseases.

130. 'Sonalika' is a variety of

- (1) Rice    (2) Wheat  
 (3) Maize    (4) Bajra

**Answer (2)**

**Sol.** Wheat

131. Blood cell without nucleus are-

- (1) Red blood corpuscles
- (2) White blood corpuscles
- (3) Blood platelets
- (4) None of these

**Answer (1)**

132. Which of the following conclusion is related to Lamarck-

- (1) Survival of the fittest
- (2) Inheritance of acquired character
- (3) Struggle for existence
- (4) Origin of species by natural selection

**Answer (2)**

**Sol.** Lamarck talked about how acquired characters are inherited with the help of Giraffe neck theory

133. Enzyme which is absent in pancreatic juice-

- (1) Amylase
- (2) Lipase
- (3) Pepsin
- (4) Trypsin

**Answer (3)**

**Sol.** Pepsin is present in gastric juice which is released in stomach

134. Chemical used for preserving Jam and Jelly is-

- (1) Sodium Chloride
- (2) Acetic acid
- (3) Citric acid
- (4) Sodium Benzoate

**Answer (4)**

**Sol.** It is meant for preservation of acidic food products like Jams and Jellies

135. Retinol is a common name of

- (1) Vit A
- (2) Vit B<sub>1</sub>
- (3) Vit B<sub>2</sub>
- (4) Vit C

**Answer (1)**

**Sol.** Retinol is the chemical name of Vit A

136. Base which is absent in R.N.A-

- (1) Guanine
- (2) Adenine
- (3) Uracil
- (4) Thiamine

**Answer (4)**

**Sol.** RNA has Uracil Nitrogenous base in place of Thiamine

137. In maize plant the type of pollination is

- (1) Self pollination
- (2) Pollination by air
- (3) Pollination by water
- (4) Pollination by insects

**Answer (2)**

**Sol.** Pollination by air

138. Most primitive mammal is

- (1) BAT
- (2) Rat
- (3) Platypus
- (4) Kangaroo

**Answer (3)**

**Sol.** Platypus

139. Which of the following is not a true fish-

- (1) Silver fish
- (2) Sea horse
- (3) Flying fish
- (4) Eel

**Answer (1) Silver fish**

140. B.C.G. is a vaccine for which disease

- (1) Cholera
- (2) Measles
- (3) Tetanus
- (4) Tuberculosis

**Answer (4)**

**Sol.** This vaccine was designed for curing Tuberculosis

141. In the early Rigvedic period, what was considered to be the most valuable property?

- (1) Land
- (2) Cow
- (3) Grains
- (4) Water

**Answer (2)**

142. The Rath temples at Mahabalipuram were built by-

- (1) Cholas
- (2) Pallavas
- (3) Chedis
- (4) Chalukys

**Answer (2)**

143. Who was the ruler of 'Vatsa' during the time of Buddha-

- (1) Bodhi
- (2) Udayana
- (3) Satavahana
- (4) Nishakshu

**Answer (2)**

144. Who among the following called himself the 'Parrot of India'-

- (1) Amir Hasan
- (2) Jaisi
- (3) Amir Khusrau
- (4) Faizi

**Answer (3)**



145. The famous book "Geet Govind" is written by  
 (1) Jayadev (2) Mahadevi Verma  
 (3) Jaishankar Prasad (4) Kalidas

**Answer (1)**

146. The birth place of Maharani Laxmibai is situated at-  
 (1) Varanasi (2) Kanpur  
 (3) Allahabad (4) Gwalior

**Answer (1)**

147. Who among the following emperors was called 'Qalandar'-  
 (1) Akbar (2) Jahangir  
 (3) Shahjahan (4) Babar

**Answer (4)**

148. Who among the following were the first to bring a printing press in India-  
 (1) Dutch (2) British  
 (3) Portuguese (4) French

**Answer (3)**

149. Who was the leader of 1857 Revolt in Lucknow-  
 (1) Zeenat Mahal (2) Nana Sahab  
 (3) Hazrat Mahal (4) Tantya Tope

**Answer (3)**

150. What was 'Kamagatamaru'-  
 (1) A ship (2) An Industrial centre  
 (3) A harbour (4) An army unit

**Answer (1)**

151. India House in London was established By-  
 (1) Shyamji Krishna Verma  
 (2) Bartullah  
 (3) Virendranath Chattopadheyay  
 (4) Lala Har Dayal

**Answer (1)**

152. Who is famous as 'Deenbandhu'-  
 (1) Vinoba Bhave (2) C.F. Andrewz  
 (3) A.O. Hume (4) Veer Savarkar

**Answer (2)**

153. 'Anand Math' was composed by  
 (1) Bankim Chandra Chatterjee  
 (2) Mahatma Gandhi  
 (3) Swami Dayanand Saraswati  
 (4) Ram Krishna Paramhans

**Answer (1)**

154. Who wrote 'Akbarnama'-  
 (1) Abdur Rahim Khankhana  
 (2) Faizi  
 (3) Abdul Quadir Badauni  
 (4) Abdul Fazl

**Answer (4)**

155. Which one of the following is not correctly matched  
 (1) Blue revolution - fish production  
 (2) Yellow revolution - oil seeds production  
 (3) White revolution - thermal power production  
 (4) Green revolution - food grain production

**Answer (3)**

156. Nasik is located along the river-  
 (1) Narmada (2) Godavari  
 (3) Penganga (4) Mahi

**Answer (2)**

157. In which one of the following states the sun appears the earliest in India  
 (1) Mizoram (2) Assam  
 (3) Arunachal Pradesh (4) Nagaland

**Answer (3)**

158. The highest peak of Indian Peninsula is  
 (1) Oatakmund (2) Anaimudi  
 (3) Dodabeta (4) Mahabaleshwar

**Answer (2)**

159. The capital of Sikkim is-  
 (1) Agartala (2) Imphal  
 (3) Gangtok (4) Itanagar

**Answer (3)**

160. The world population Day is observed on-  
 (1) 4<sup>th</sup> october (2) 31<sup>st</sup> May  
 (3) 10<sup>th</sup> December (4) 11<sup>th</sup> July

**Answer (4)**

161. Which one of the following rivers is longest in the world-  
 (1) Nile (2) Amazon  
 (3) Brahamputra (4) Mississippi

**Answer (1)**



162. In India highest production of Jute comes from

- (1) West Bengal (2) Andhra Pradesh  
(3) Maharashtra (4) Rajasthan

**Answer (1)**

163. Where are diamond mines in India-

- (1) Karnataka (2) Madhya Pradesh  
(3) Uttar Pradesh (4) Tamil Nadu

**Answer (2)**

164. The largest quantity of saffron is produced in-

- (1) Uttar Pradesh (2) Kashmir  
(3) Kerala (4) Goa

**Answer (2)**

165. Which one of the following is caused by the rotation of the earth-

- (1) Tides (2) Change of season  
(3) Day and Night (4) Eclipse

**Answer (3)**

166. Chilika Lake is situated in-

- (1) Punjab (2) Assam  
(3) Tamil Nadu (4) Odisha

**Answer (4)**

167. Which city is dedicated to Lord Shiva-

- (1) Mathura (2) Puri  
(3) Ayodhya (4) Varanasi

**Answer (4)**

168. The Headquarter of Reserve Bank of India is in-

- (1) Delhi (2) Mumbai  
(3) Nasik (4) Kanpur

**Answer (4)**

169. National Dairy Research Institute is established at

- (1) Karnal (2) Hisar  
(3) Anand (4) Jaipur

**Answer (1)**

170. Who is the present President of India-

- (1) Sri Pranab Mukerjee  
(2) Sri Rajnath Singh  
(3) Sri Ramnath Kovind  
(4) Sri Gopal Krishna Gandhi

**Answer (3)**

171. Which part of the Indian constitution deals with citizenship-

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

**Answer (4)**

172. Which one of the following is major feature of the Indian economy-

- (1) A capitalist economy (2) A socialist economy  
(3) A mixed economy (4) None of the above

**Answer (3)**

173. National voter day is celebrated on-

- (1) 15<sup>th</sup> January (2) 25<sup>th</sup> January  
(3) 15<sup>th</sup> February (4) 25<sup>th</sup> February

**Answer (2)**

174. Which one of the following Articles of Indian constitution is related to Indian foreign policy-

- (1) Article 51 (2) Article 60  
(3) Article 50 (4) Article 380

**Answer (1)**

175. Panchayati Raj is included in the-

- (1) Union list (2) Concurrent list  
(3) State list (4) Residuary list

**Answer (3)**

176. The tenure of Rajya Sabha member is-

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

**Answer (2)**

177. International Institution related to labour welfare is-

- (1) UNICEF (2) I.L.O  
(3) F.A.O (4) C.N.T

**Answer (2)**

178. In which year was the 'Pradhan Mantri Awas Yojna' launched-

- (1) 2012 (2) 2014  
(3) 2015 (4) 2017

**Answer (3)**

179. Uttarakhand State was created in

- (1) The year 1999 (2) The year 2000  
(3) The year 2001 (4) The year 2002

**Answer (2)**

180. Who is the author of 'Rebooting India'-

- (1) Shiv Nadar (2) Sundar Pichai  
 (3) Nandan Nilekani (4) Satya Nadel

**Answer (3)**

181. To make  $(x^4 + 4y^4)$  perfect square we have to subtract

- (1)  $4xy$  (2)  $2y^2x^2$   
 (3)  $2yx$  (4)  $4y^2x^2$

**Answer (4)**

**Sol.** Given  $x^4 + 4y^4 + 4x^2y^2 = (x + 2y^2)^2$

$\therefore 4x^2y^2$  is subtracted to make it perfect square

182. The perimeter of a right angled triangle is 24 cm. If its hypotenuse is 10 cm then area of this triangle is

- (1)  $24 \text{ cm}^2$  (2)  $10 \text{ cm}^2$   
 (3)  $12 \text{ cm}^2$  (4)  $48 \text{ cm}^2$

**Answer (1)**

**Sol.** Given  $a + b + c = 24$

Here  $c =$  hypotenuse.

$$c = 10 \text{ cm}$$

$$a + b = 14 \text{ and } a^2 + b^2 = 10^2$$

$$b = (14 - a)$$

$$a^2 + (14 - a)^2 = 100$$

$$a^2 + 196 + a^2 - 28a = 100$$

$$2a^2 - 28a + 96 = 0$$

$$a - 14a + 48 = 0$$

$$a = 6, 8$$

$$\text{If } a = 6, \text{ then } b = 8$$

$$\therefore \text{Area of Triangle} = \frac{1}{2} \times 6 \times 8 = 24 \text{ cm}^2$$

183. Value of  $\sqrt{10 + \sqrt{25 + \sqrt{121}}}$  in the following is

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

**Answer (3)**

**Sol.**  $\sqrt{10 + \sqrt{25 + \sqrt{121}}} = \sqrt{10 + \sqrt{25 + 11}}$

$$= \sqrt{10 + \sqrt{36}}$$

$$= \sqrt{10 + 6} = 4$$

184. If points (1, 2), (3, 5) and (0, b) are co-linear then value of b is

- (1)  $\frac{1}{2}$  (2)  $\frac{7}{2}$   
 (3) 2 (4) -1

**Answer (1)**

**Sol.** A(1,2), B(3,5) and C(0,b) are collinear then

Slope of AB = Slope of BC

$$\frac{5 - 2}{3 - 1} = \frac{b - 5}{0 - 3}$$

$$\Rightarrow \frac{3}{2} = \frac{b - 5}{-3}$$

$$\Rightarrow \frac{-9}{2} + 5 = b \Rightarrow b = \frac{1}{2}$$

185. A polynomial in the following is

- (1)  $7x^2 - 5\sqrt{x} + \sqrt{5}$  (2)  $t^3 - 2t + 1$   
 (3)  $x^2 - \frac{1}{x^2}$  (4)  $\sqrt{y} + 5y - 1$

**Answer (2)**

**Sol.** Clearly  $t^3 - 2t + 1$

186. If the radii of a cone and a cylinder are in the ratio 2 : 3 and their heights are in the ratio 4 : 3 then the ratio of their volumes will be

- (1) 16 : 27 (2) 16 : 81  
 (3) 16 : 9 (4) 27 : 16

**Answer (2)**

**Sol.** Let radii of cone be  $2x$

Let radii of cylinder be  $3x$

Let height of cone be  $4y$

Let height of cylinder be  $3y$

$$\text{Required Ratio} = \frac{\text{Volume of Cone}}{\text{Volume of Cylinder}}$$

$$= \frac{\frac{1}{3} \pi (2x)^2 4y}{\pi (3x)^2 3y} = \frac{\frac{1}{3} \times 4x^2 \times 4y}{9x^2 \cdot 3y} = \frac{16}{81}$$

187. A rectangular piece of paper of length 20 cm and breadth 14 cm is folded about its breadth the curved surface area of the cylinder so formed is

- (1) 180 cm<sup>2</sup>
- (2) 200 cm<sup>2</sup>
- (3) 280 cm<sup>2</sup>
- (4) 190 cm<sup>2</sup>

**Answer (3)**

**Sol.** Folded about breadth then  $h=14\text{cm}$

$$2\pi r = 20 \text{ cm}$$

$$\text{CSA} = 2\pi rh = 20 \times 14 \text{ cm}^2 = 280 \text{ cm}^2$$

188. If an angle is five times its supplementary angle then the angle is

- (1) 75°
- (2) 150°
- (3) 144°
- (4) 40°

**Answer (2)**

**Sol.** Let the angle be  $\theta$

its supplementary angle is  $180 - \theta$

According to Question

Angle = 5(supplementary angle)

$$\Rightarrow \theta = 5(180 - \theta)$$

$$\Rightarrow 6\theta = 900$$

$$\Rightarrow \theta = 150^\circ$$

189. The value of  $K$  for which  $(x - 1)$  is a factor of the polynomial  $x^3 - kx^2 + 11x - 6$  is

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

**Answer (4)**

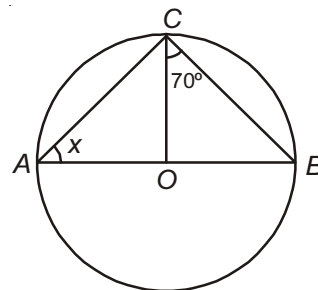
**Sol.** If  $(x - 1)$  is a factor of  $f(x) = x^3 - kx^2 + 11x - 6$

then,  $f(1)=0$

$$\Rightarrow 1^3 - k(1)^2 + 11(1) - 6 = 0$$

$$\Rightarrow k = 6$$

190. If in the given figure  $O$  is the centre of the circle, then the value of  $x$  is



- (1) 90°
- (2) 50°
- (3) 20°
- (4) 40°

**Answer (3)**

**Sol.**  $\angle ACB = 90^\circ$

$$\therefore \angle ACO = 20^\circ$$

$$OA = OC$$

$$\therefore \angle OAC = 20^\circ$$

191. If  $\triangle ABC$  is an obtuse angled triangle in which  $\angle C = 110^\circ$  then which one of the following is true

- (1)  $AB = AC$
- (2)  $AB < AC$
- (3)  $AB > AC$
- (4)  $AB < BC$

**Answer (3)**

**Sol.**  $AB > AC$

192. The number 50 is divided into two parts such that the sum of their reciprocals is  $\frac{1}{12}$  then these parts are

- (1) 30 and 20
- (2) 10 and 40
- (3) 25 and 25
- (4) 15 and 35

**Answer (1)**

**Sol.** Let the first part be  $x$

Let the second part be  $50 - x$

$$\frac{1}{x} + \frac{1}{50 - x} = \frac{1}{12}$$

$$\Rightarrow \frac{50 - x + x}{50x - x^2} = \frac{1}{12}$$

$$\Rightarrow 600 = 50x - x^2$$

$$\Rightarrow x^2 - 50x + 600 = 0$$

$$\Rightarrow x = 30, 20$$

193. Given  $5\cos A - 12\sin A = 0$  evaluate

$$\frac{\sin A + \cos A}{2\cos A - \sin A}$$

(1)  $\frac{19}{17}$                       (2)  $\frac{17}{19}$

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

**Answer (2)**

**Sol.** Given  $5\cos A - 12\sin A = 0$

$$\Rightarrow 5\cos A = 12\sin A$$

$$\Rightarrow \tan A = \frac{5}{12}$$

$$\therefore \frac{\sin A + \cos A}{2\cos A - \sin A} = \frac{\tan A + 1}{2 - \tan A}$$

(one dividing by  $\cos A$ )

$$\Rightarrow \frac{17}{19}$$

194.  $x$  in the following is  $\frac{\sqrt{a+x} + \sqrt{a-x}}{\sqrt{a+x} - \sqrt{a-x}} = b$

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

(3)  $\frac{a + b}{2ab}$                         (4)  $\frac{b^2 + 1}{2ab}$

**Answer (1)**

**Sol.** Given  $\frac{\sqrt{a+x} + \sqrt{a-x}}{\sqrt{a+x} - \sqrt{a-x}} = b$

Apply Componendo and Dividendo

$$\Rightarrow \frac{\sqrt{a+x}}{\sqrt{a-x}} = \frac{b+1}{b-1}$$

$$\Rightarrow \frac{a+x}{a-x} = \frac{(b+1)^2}{(b-1)^2}$$

Again Apply Componendo and Dividendo

$$\Rightarrow \frac{a}{x} = \frac{(b^2 + 1)}{2b} \Rightarrow x = \frac{2ab}{(b^2 + 1)}$$

195. If  $\log_3[\log_4(\log_2 x)] = 0$  then the value of  $x$  is

- (1) 16                              (2) 8  
 (3) 64                              (4) 32

**Answer (1)**

**Sol.**  $\log_3 \log_4 \log_2 x = 0$

$$\Rightarrow \log_4 \log_2 x = 1$$

$$\Rightarrow \log_2 x = 4$$

$$\Rightarrow x = 2^4$$

$$\Rightarrow x = 16$$

196. The present population of a city is 8000 if it increases by 10% during the first year and by 20% during the second year. then population after two years will be

- (1) 12400                        (2) 14400  
 (3) 10560                        (4) None of these

**Answer (3)**

**Sol.** Population after two year =  $8000 \left(1 + \frac{10}{100}\right) \left(1 + \frac{20}{100}\right)$   
 $= 10560$

197. If  $5^p = 7^q = 35^{-r}$  then value of  $\frac{1}{p} + \frac{1}{q} + \frac{1}{r}$  is

- (1) 1                                (2) -1  
 (3) 0                                (4)  $\frac{3}{2}$

**Answer (3)**

**Sol.**  $5^p = 7^q = 35^{-r} = k \Rightarrow 5 = k^{\frac{1}{p}} \Rightarrow 7 = k^{\frac{1}{q}} \Rightarrow 35 = k^{\frac{-1}{r}}$

$$\therefore 35 = 5 \times 7$$

$$k^{\frac{-1}{r}} = k^{\frac{1}{p}} \cdot k^{\frac{1}{q}}$$

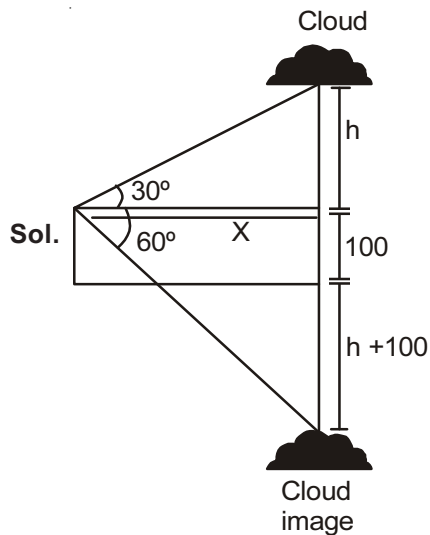
$$k^{\frac{-1}{r}} = k^{\frac{1}{p} + \frac{1}{q}}$$

$$\frac{1}{p} + \frac{1}{q} + \frac{1}{r} = 0$$

198. The angle of elevation of a cloud from a point 100 metre above the surface of a lake is  $30^\circ$  and the angle of depression of its image in the lake is  $60^\circ$  then height of the cloud above the lake is

- (1) 100 m                        (2) 50 m  
 (3) 200 m                        (4) 150 m

**Answer (3)**



$$\tan 30^\circ = \frac{h}{x}, x = \sqrt{3}h$$

$$\tan 60^\circ = \frac{h+200}{x}$$

$$\Rightarrow \sqrt{3}x = h+200$$

$$\Rightarrow \sqrt{3}(\sqrt{3}h) = h+200$$

$$\Rightarrow 3h = h+200$$

$$\Rightarrow 2h = 200$$

$$\Rightarrow h = 100 \text{ m}$$

height of cloud above lake =  $h+100=200$  m

199. The mean height of group of 8 students is 152 cm. Two more students of heights 143 cm and 156 cm join the group. The new mean height of the group is

- (1) 151.5 cm                      (2) 115 cm  
(3) 152 cm                        (4) 200 cm

**Answer (1)**

**Sol.** Mean of 8 student = 152 cm

$$\text{Sum of height of 8 student} = 152 \times 8 = 1216$$

$$\text{Sum of height of 10 students} = 1216 + 143 + 156 = 1515$$

$$\text{Mean height of 10 student} = \frac{1515}{10} = 151.5 \text{ cm}$$

200. If  $0.\bar{6} = \frac{p}{q}$  where  $p$  and  $q$  are relatively prime integers, then value of  $q$  is

- (1) 10                                (2) 3  
(3) 1                                 (4) 9

**Answer (2)**

**Sol.**  $0.\bar{6} = \frac{p}{q}$

$$\text{clearly, } \frac{p}{q} = \frac{2}{3}$$

$$\therefore q = 3$$

