

**STAFF SELECTION COMMISSION**  
**SUB-INSPECTOR IN DELHI POLICE AND**  
**CENTRAL ARMED POLICE FORCES EXAMINATION (PAPER-I)**

**SOLVED PAPER**

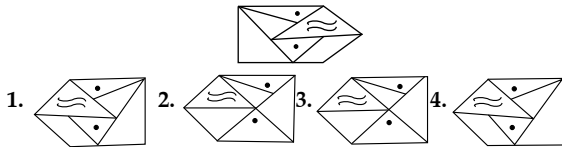
**(12<sup>th</sup> March 2019: Shift-1)**

Time Allotted- 2 hours

Max marks- 200

**General Intelligence and Reasoning**

1. Select the correct mirror image of the given figure when the mirror is placed on the right of the figure.



2. Which two numbers should be interchanged to make the given equations correct?

$$6 \times 3 - 8 \div 2 + 5 = 8 \div 2 + 3 \times 5 - 6$$

1. 6 and 2    2. 8 and 6    3. 3 and 5    4. 5 and 6

3. Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.

Request : Order

1. Summer : Heat                      2. Think : Thought  
 3. Whisper : Shout                    4. Clean : Wash

4. Select the correct alternative to indicate the arrangement of the following words in a logical and meaningful order.

1. Probation                              2. Selection  
 3. Application                            4. Confirmation

5. Appointment

1. 3, 2, 5, 4, 1    2. 4, 1, 3, 2, 5    3. 3, 2, 5, 1, 4    4. 5, 1, 4, 2, 3

6. 'Meat' is related to 'Vegetarian' in the same way as 'Alcohol' is related to '\_\_\_\_\_'

1. Water    2. Smoker    3. Dietician    4. Teetotaler

7. 'Tuesday' is related to 'Mars' in the same way as 'Thursday' is related to '\_\_\_\_\_'

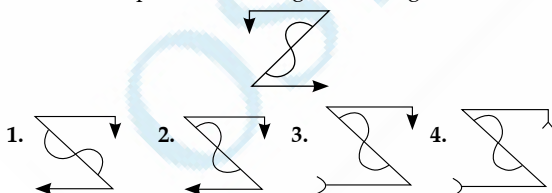
1. Venus    2. Saturn    3. Jupiter    4. Mercury

8. Which letter will replace the question mark (?) in the following series?

M, N, O, L, Q, J, ?, H

1. J    2. R    3. K    4. S

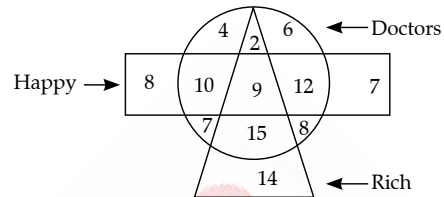
9. Select the correct mirror image of the given figure when the mirror is placed on the right of the figure.



10. In a code language, Q. is written as OPJUTFVR. How will FACTOR be written as in that language?

1. SUPEGB    2. QPUDBE    3. BGDSPU    4. SPUDBG

11. In the following diagram, the triangle represents 'rich', the circle represents 'doctor' and the rectangle represents 'happy' persons. The numbers in different segments show the number of persons.



How many rich doctors are not happy?

1. 15    2. 17    3. 9    4. 26

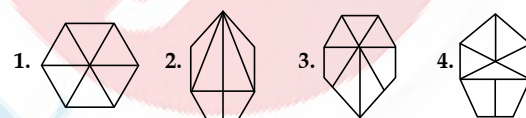
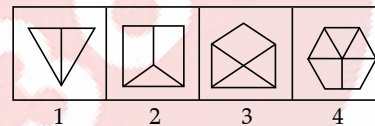
12. Which fraction will replace the question mark (?) in the following series?

1 3 6 10

4, 5, 7, 11, ?

1.  $\frac{17}{27}$     2.  $\frac{17}{21}$     3.  $\frac{15}{19}$     4.  $\frac{15}{23}$

13. Select the figure that will come next in the following figure series.



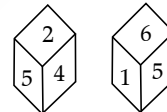
14. Three of the following four number-pairs are alike in a certain way and one is different. Find the odd one out.

1. 14 : 94    2. 12 : 72    3. 6 : 18    4. 8 : 32

15. Three of the following four letter-clusters are alike in a certain way and one is different. Find the odd one out.

1. AEIU    2. ILOU    3. EIOU    4. AIOU

16. Two positions of the same dice are given. Which number will be at the top if '6' is at the bottom?



1. 4    2. 2    3. 1    4. 3

17. Select the option that is related to the third term in the same way as the second term is related to the first term.

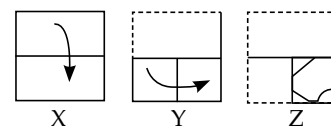
BYWD : DWUF :: AZYB : \_\_\_\_\_

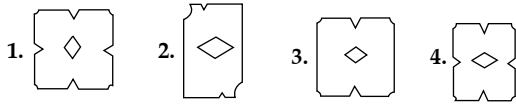
1. CXWD    2. CXVB    3. BZXC    4. BYWE

18. If CAB = 12 and FED = 30, then HIDE =

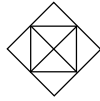
1. 44    2. 52    3. 68    4. 48

19. The sequence of folding a piece of square paper and the manner in which the folded paper has been cut is shown in the 8 figures X, Y and Z. How would this paper look when unfolded?



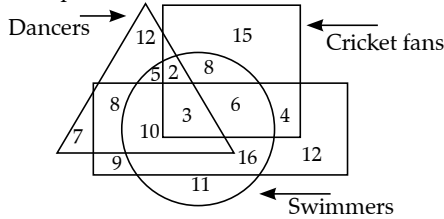


19. How many triangles are there in the following figure?



1. 12      2. 8      3. 14      4. 10

20. In the following diagram, the triangle represents 'dancers', the circle represents 'swimmers', the rectangle represents 'students' and the square represents 'cricket fans'. The numbers in different segments show the number of persons.



How many student dancers are swimmers but not cricket fans?

1. 13      2. 3      3. 15      4. 10
21. Three of the following four number-pairs are alike in a certain way and one is different. Find the odd one out.  
 1. 34 : 7      2. 18 : 9      3. 56 : 11      4. 78 : 13
22. Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

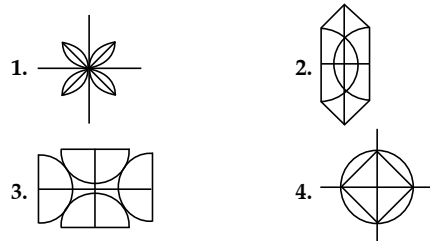
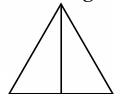
**Statements:**

Some plants are trees. All trees are bushes. Conclusions:

- I. Some bushes are plants.  
 II. All bushes are plants.  
 III. No bush is a plant.

1. Only conclusion I follows.  
 2. Only conclusions II and III follow.  
 3. Only conclusion III follows.  
 4. Only conclusions I and III follow.
23. Three of the following four number-pairs are alike in a certain way and one is different. Find the odd one out.  
 1. 10 : 99      2. 9 : 82      3. 4 : 17      4. 5 : 26
24. Select the set of numbers that is similar to the following set of numbers.  
 {15, 21, 27}
1. {40, 55, 75}      2. {20, 28, 36}      3. {25, 40, 56}      4. {12, 24, 32}
25. Select the set of numbers that is similar to the following set of numbers.  
 {17, 13, 20}
1. {12, 19, 29}      2. {10, 18, 24}      3. {9, 15, 23}      4. {4, 10, 17}
26. Select the word-pair in which the two words are related in the same way as are the two words in the following word-pair.  
 Memory : Amnesia  
 1. Vision : Blindness      2. Oldage : Senility  
 3. Audition : Hearing      4. Cholera : Epidemic

27. Select the option in which the given figure is embedded.



28. Which number will replace the question mark (?) in the following series?

- 7, 10, 16, 19, 25, ?  
 1. 31      2. 29      3. 33      4. 28

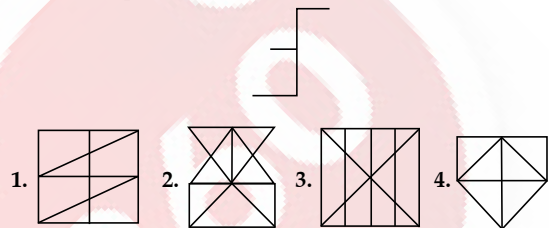
29. Select the word that will be odd in the following series.

1. Ruskin Bond      2. Jaswant Singh  
 3. Javier Moro      4. Preet Singh

30. Select the option that is related to the third number in the same way as the second number is related to the first number.

- 15 : 25 :: 24 : \_\_\_\_\_  
 1. 45      2. 32      3. 35      4. 40

31. Select the option in which the given figure is embedded.



32. Which two signs should be interchanged to make the given equation correct?

- $4 + 8 \times 12 \div 6 - 4 = 8$   
 1. - and +      2. ÷ and -      3. × and +      4. + and ÷

33. Three of the following four number-pairs are alike in a certain way and one is different. Find the odd one out.

1. 8 : 25      2. 5 : 15      3. 9 : 23      4. 14 : 33

34. Select the option that is related to the third number in the same way as the second number is related to the first number.

- 8 : 81 :: 10 : \_\_\_\_\_  
 1. 121      2. 120      3. 111      4. 100

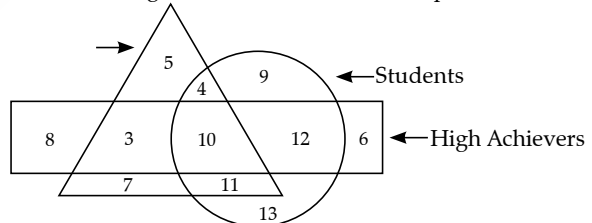
35. Which letter-cluster will replace the question mark (?) in the following series?

- BZD, DXE, GUI, ?, PLR  
 1. LRT      2. KPN      3. KQM      4. MOQ

36. If HECK is coded as 94410 and DIG is coded as 588, then how will BIKE be coded as?

1. 38124      2. 19113      3. 38115      4. 39105

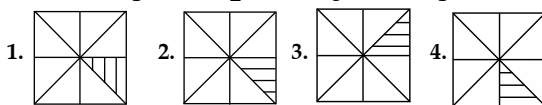
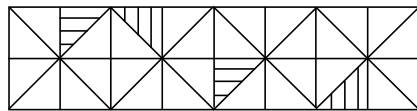
37. In the following diagram, the triangle represents 'players', the circle represents 'students' and the rectangle represents 'high achievers'. The numbers in different segments show the number of persons.



How many high-achieving students are not players?

1. 13      2. 15      3. 3      4. 12

38. Select the option that is related to the third term in the same way as the second term is related to the first term.  
BDFH : DWDS :: TVYZ : \_\_\_\_\_  
1. VEBB      2. UDWA      3. VDWB      4. VEWA
39. Select the correct alternative to indicate the arrangement of the following words in a logical and meaningful order.  
1. Sleep      2. Cold      3. Blanket      4. Winter  
5. Warm      6. Shop  
1. 4, 3, 2, 6, 1, 5      2. 4, 2, 6, 3, 5, 1  
3. 6, 3, 2, 1, 4, 5      4. 4, 3, 6, 2, 1, 5
40. Three of the following four words are alike in a certain way and one is different. Find the odd one out.  
1. Gardening      2. Tailor      3. Blacksmith      4. Carpenter
41. In a code language, BANKER is written as NABREK. How will STRING be written as in that language?  
1. RTSGNI      2. RSTGIN      3. TSIRGN      4. RTGSNI
42. Select the figure that will come next in the following figure series.



43. Which number will replace the question mark (?) in the following series?  
3, 5, 7, 8, 15, ?, 31, 26  
1. 18      2. 14      3. 24      4. 21
44. Which of the following interchanges of signs and numbers would make the given equation correct?  
 $8 \div 2 - 6 \times 4 + 3 = 13$   
1.  $\div$  and  $+$ , 4 and 8      2.  $-$  and  $+$ , 6 and 4  
3.  $\times$  and  $-$ , 2 and 6      4.  $\times$  and  $\div$ , 8 and 6
45. Three of the following four letter-clusters are alike in a certain way and one is different. Find the odd one out.  
1. MKOH      2. CLEH      3. TRVN      4. PYRU
46. Select the number-pair in which the two numbers are related in the same way as are the two numbers of the given number pair: 5 : 9  
1. 10 : 29      2. 12 : 33      3. 25 : 79      4. 17 : 65
47. Two statements are given, followed by three conclusions numbered I, II and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.  
**Statements:**  
Some mangoes are fruits.  
No fruit is vegetable.  
**Conclusions:**  
I. Some mangoes are vegetables.  
II. Some fruits are mangoes.  
III. No vegetable is a mango.  
1. Only conclusions II and III follow.  
2. Only conclusion II follows.  
3. Only conclusion I follows.  
4. Only conclusions I and III follow.
48. Three of the following four words are alike in a certain way and one is different. Find the odd one out.  
1. Weep      2. Jealous      3. Angry      4. Sad
49. Priya's school bus was facing north-west when it reached her school. After starting from her house, the bus took one left turn, one right turn and another left turn to reach her school. In which direction was the bus facing when it left Priya's house?  
1. North-West      2. North-East      3. South-East      4. South-West

50. After starting from her house, Sameera walked a few metres towards the East. From there. She took a right turn and walked 100 m, and then took a left turn and walked 30 m. Finally, she took a left turn again and walked 40 m to reach the market. If the air distance between her house and the market is 100 111. How far did Sameera walk towards the East initially from her house?  
1. 30 m      2. 80 m      3. 60 m      4. 50 m

### General Knowledge and General Awareness

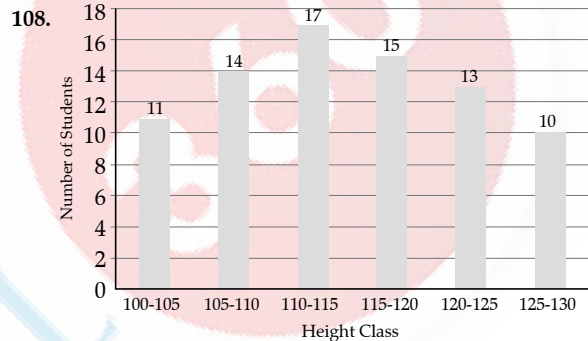
51. In January 2019, the Department of Science and Technology partnered with Doordarshan to launch two free-to-air channels DD Science and an Internet-based channel \_\_\_\_\_ which will offer live, scheduled play and video-on-demand on science topics.  
1. India Science      2. Internet Science  
3. India Technology      4. India Live
52. The smallest Union Territories is \_\_\_\_\_  
1. Puduchery      2. Daman and Diu  
3. Dadra and Nagar Haveli      4. Lakshadweep
53. The Governor of Tamil Nadu Banwarilal Purohit presented the 'Sansad Ratna Awards' in Chetmai in January 2019. Which of the following MPs is NOT a recipient of Sansad Ratna Award?  
1. Supriya Sule      2. Kirit Solanki  
3. N K Premachandran      4. Nishikant Dubey
54. In January 2019, Prime Minister Narendra Modi inaugurated and laid the foundation stone for several development projects at Silvassa in Dadra and Nagar Haveli. Which of the following is NOT one of them?  
1. Door to door waste collection, segregation and processing of solid waste in Dadra and Nagar Haveli digitally  
2. New IT policy for Dadra and Nagar Haveli  
3. A medical college in Dadra and Nagar Haveli  
4. An arts college in Dadra and Nagar Haveli
55. The audible range of sound for human beings is from:  
1. 20 Hz to 200 kHz      2. 10 Hz to 10 kHz  
3. 20 Hz to 20 kHz      4. 10 Hz to 100 kHz
56. The Hindu Prize 2018 for Fiction was awarded to, the English author of 'Requiem in Raga Janki' during the The Hindu Lit for Life 2019.  
1. Neelum Saran Gour      2. Vinayak Vanua  
3. Rajiv Elipe      4. Mamta Nainy
57. Queen Naikidevi is remembered as the woman who defeated \_\_\_\_\_ in 1178 CE.  
1. Muhammad bin Tughlaq      2. Al-Salih Muhammad  
3. Muhammad al-Baqir      4. Muhammad Ghori
58. Where is the Dachigam sanctuary located?  
1. Assam      2. Jammu and Kashmir  
3. Chhattisgarh      4. Karnataka
59. A study by Gitanjali Katlam and Souniya Prasad from Jawaharlal Nein University, Mohit Agatwal from Asian Adventures and Raman Kumar from Nature Science Initiative examined the relationship between \_\_\_\_\_ which was published in the journal 'Oirrent Science'.  
1. different animal species and their food  
2. animal and plant life  
3. animal type and behavior vis-a-vis the risk of plastic ingestion  
4. water scarcity and animals
60. The \_\_\_\_\_ dance form originated as a tribal dance in the forests of Odisha in the 18<sup>th</sup> century and attained the status of a martial art-based dance form in the 19<sup>th</sup> century.  
1. Kalaripayattu      2. Chhobia  
3. Bawai      4. Chhau





2. It will connect artisans to the buyers directly, enabling them to expand to newer customers and markets.
  3. It will help weavers increase their income and earn a sustainable livelihood.
  4. It will showcase signature collections created by the weaver communities.
88. The Nobel Prize is awarded in 6 categories each year. Which of the following is NOT one of them?
    1. Mathematics
    2. Literature
    3. Physics
    4. Economics
  89. In January 2019, the Union Ministry of \_\_\_\_\_ started a 'Know Your Budget' series on its "I Witter handle to educate the 9 general public about the budgetary process.
    1. Corporate Affairs
    2. Human Resource Development
    3. Finance
    4. Commerce and Industry
  90. A not-for-profit organisation 'Youth for Equality' has moved the Supreme Court by Q.ing the constitutional validity of the \_\_\_\_\_ Constitutional Amendment Act which provides 10% quota for economically weaker sections.
    1. 100th
    2. 143rd
    3. 99th
    4. 103rd
  91. In January 2019, the Union Cabinet headed by Prime Minister Narendra Modi approved a capital infusion of ₹ \_\_\_\_\_ in state-owned Export-Import Bank of India (EXIM Bank) to expand its business.
    1. 9,000 crore
    2. 2,000 crore
    3. 6,000 crore
    4. 4,000 crore
  92. Which team has won the inaugural Pro Volleyball League Title held in February 2019?
    1. Ahmedabad Defenders
    2. Black Hawks Hyderabad
    3. Chennai Spartans
    4. Calicut Heroes
  93. The famous festival of 'Tsokun Samai' is celebrated by the people of which state to invoke blessings for a rich harvest?
    1. Nagaland
    2. Meghalay
    3. Mizoram
    4. Assam
  94. As of January 2019, who holds the portfolio of Ministry of Science and Technology?
    1. Manohar Parrikar
    2. Harsh Vardhan
    3. Pivush Goval
    4. Prakash Javadekar
  95. Which of the following states does NOT share a border with Bangladesh?
    1. Tripura
    2. Manipur
    3. Meghalaya
    4. Mizoram
  96. "The Origin of Species" was written by
    1. William Paley
    2. Charles Darwin
    3. Erasmus Darwin
    4. Carolus Linnaeus
  97. The Maharana Pratap Sagar reservoir on the river Beas in Himachal Pradesh is also known as .....
    1. Ukai Dam
    2. Tehri Dam
    3. Pong dam
    4. Dharoi Dam
  98. What was the paternal name of Swami Dayanand Saraswati?
    1. Krishna Shankar
    2. Mool Shankar
    3. Om Shankar
    4. Narayan Shankar
  99. Under which of the following acts did the Government of India set up Telecom Regulatory Authority of India (TRAI)?
    1. Telecom Regulatory Authority of India Act, 2003
    2. Telecom Regulatory Authority of India Act, 2001
    3. Telecom Regulatory Authority of India Act, 1997
    4. Telecom Regulatory Authority of India Act, 2005
  100. In December 2018, \_\_\_\_\_ won the Women's Singles title at the National Squash Championship held in Delhi.
    1. Bhuvaneshwari Kumari
    2. Joshna Chinappa
    3. Sachika Balvani
    4. Aparajitha Balamurukan

102. A sphere of radius 6 cm is melted and recast into spheres of radius 2 cm each. How many such spheres can be made?
  1. 25
  2. 36
  3. 24
  4. 27
103. If the six digit number  $4x4y96$  is divisible by 88, then what will be the value of  $(x + 2y)$ ?
  1. 11
  2. 12
  3. 13
  4. 10
104. If A's income is 40% more than the income of B. then what percentage of B's income is less than income of A?
  1.  $27\frac{4}{7}\%$
  2.  $28\frac{5}{7}\%$
  3.  $27\frac{5}{7}\%$
  4.  $27\frac{4}{7}\%$
105. If a train runs at 60 km/h, it reaches its destination 15 minutes late. But, if it runs at 80 km/h. it is late by 7 minutes only. The right time for the train to cover its journey is:
  1. 17 minutes
  2. 18 minutes
  3. 20 minutes
  4. 21 minutes
106. From the top of a 10 m high building, the angle of elevation of the top of a tower is  $60^\circ$  and the angle of depression of the foot of the tower is  $\phi$ , such that  $\tan \phi = \frac{2}{3}$ . What is the height of the tower to nearest metres?
  1. 35 m
  2. 36 m
  3. 34 m
  4. 33 m
107. A sum of ₹ 20,000 is invested for 15 months at the interest of 10% per annum compounded half yearly. What is the percentage gain, correct to one decimal place, at the end of 15 months?
  1. 13.6%
  2. 13.4%
  3. 13.0%
  4. 12.5%



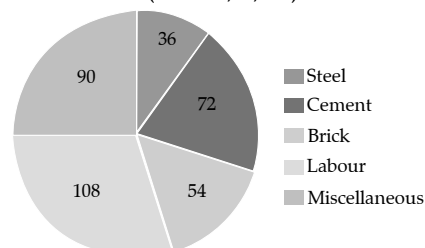
In the given histogram, what is the mean height of all students correct to one decimal place?

1. 116.8 cm
  2. 116.2 cm
  3. 115.6 cm
  4. 114.7 cm
109. PA and PB are two tangents to a circle with centre O. from a point P outside the circle. A and B are points on the circle. If  $\angle APB = 40^\circ$ , then  $\angle OAB$  is equal to:
    1.  $20^\circ$
    2.  $40^\circ$
    3.  $25^\circ$
    4.  $50^\circ$
  110. Two pipes A and B can fill a tank in 6 hours and 9 hours respectively. They are opened alternately for 1 hour each, starting with pipe A first. In how many hours will the tank be filled?
    1. 6
    2. 5
    3. 4
    4. 7

**Instructions:**

Read the given pie-chart and answer the questions below.

**Degree of Cost incurred in different Expenditure (Total ₹4,50,000)**



111. What is the total expenditure (in percent) on labour charges?
  1. 25%
  2. 30%
  3. 18%
  4. 20%

### Quantitative Aptitude

101. The efficiencies of A, B and C are in the ratio 4 : 5 : 6. Working together. They can complete a work in 12 days. In how many days will A alone be able to complete that work?
  1. 30
  2. 45
  3. 40
  4. 36

112. The expenditure on steel is what percent of the expenditure on cement?

1. 55%      2. 40%      3. 50%      4. 45%

113. If  $\triangle ABC \sim \triangle PQR$ ,  $\frac{ar(\triangle ABC)}{ar(\triangle PQR)} = \frac{9}{4}$ ,  $AC = 12$  cm,  $AB = 18$  cm and  $BC = 15$  cm then  $PR$  is equal to:

1. 12 cm      2. 8 cm      3.  $\frac{20}{3}$  cm      4. 10 cm

114. In an examination, 54% of the candidates passed in science and 42% failed in mathematics. If 32% failed in both 14 subjects, what percentage passed in both subjects?

1. 32%      2. 56%      3. 44%      4. 48%

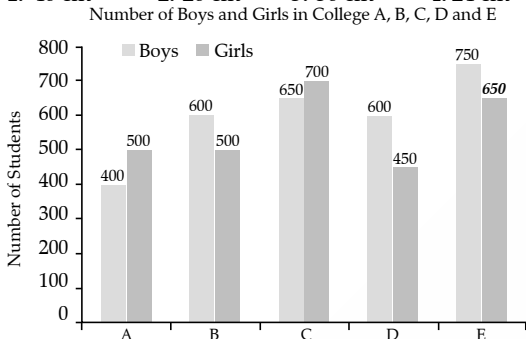
115. A sum of ₹ 15,000 is invested partly at 12% per annum and the remaining at 10% per annum simple interest. If the total interest at the end of 2 years is ₹ 3,344 how much money was invested at 10% per annum

1. ₹ 6,600      2. ₹ 6,400      3. ₹ 6,200      4. ₹ 6,500

116. The side of a rhombus is 5 cm and one of its diagonal is 8 cm. What is the area of the rhombus?

1. 40 cm<sup>2</sup>      2. 20 cm<sup>2</sup>      3. 30 cm<sup>2</sup>      4. 24 cm<sup>2</sup>

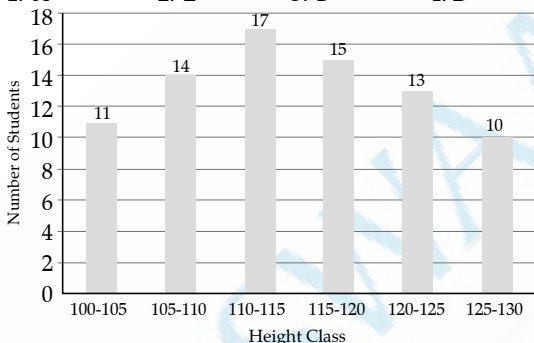
117.



In the given bar graph, in which college the difference between the percentage of boys and girls is maximum, by taking total number of students as base for that college?

1. A      2. E      3. B      4. D

118.



In the given histogram, in which class does the median height of the students lie?

1. 105-110      2. 110-115      3. 115-120      4. 120-125

119. Two numbers are in the ratio 4 : 5. If their HCF is 16. Then the sum of these two numbers is:

1. 150      2. 160      3. 124      4. 144

120.  $4\frac{4}{5} \div \frac{3}{7}$  of  $7 + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$  is equal to:

1.  $\frac{34}{25}$       2.  $\frac{41}{25}$       3.  $\frac{8}{5}$       4.  $\frac{7}{5}$

121. What is the sum of digits of the least number. Which when divided by 15, 18 and 24 leaves the remainder 8 in each case and is also divisible by 13?

1. 18      2. 16      3. 15      4. 17

122. A shopkeeper marks his foods at a price such that after giving a discount of 25 % he gains 20% . If the cost price of the article is ₹ 460, what is its marked price?

1. ₹ 736      2. ₹ 725      3. ₹ 748      4. ₹ 752

123. If  $(x - 5)^3 + (x - 6)^3 + (x - 7)^3 = 3(x - 5)(x - 6)(x - 7)$ , then what is the value of  $x$ ?

1. 7      2. 5      3. 18      4. 6

124. A shopkeeper sold two articles for ₹ 9471 each. On one, he gained 23% and on the other, he lost 23%. What is the overall percentage gain or loss?

1. 5.29% gain      2. 5.29% loss      3. 6.29% loss      4. 6.29% gain

125. In a class of 50 students. 40% are girls. The average weight of the boys is 62 kg and that of the girls is 58 kg. What is the average weight (in kg) of the whole class?

1. 60.4      2. 60.2      3. 60.8      4. 60.6

126. The radius of a cylinder is increased by 150 cm and its height is decreased by 20 cm. What is the percentage increase in its volume?

1. 80%      2. 400%      3. 500%      4. 600%

127. The value of

$$\left[ \frac{\sin^2 24^\circ + \sin^2 66^\circ}{\cos^2 24^\circ + \cos^2 66^\circ} + \sin^2 61^\circ + \cos 61^\circ + \cos 61^\circ + \sin 29^\circ \right]$$

is equal to:

1. 1      2. 3      3. 0      4. 2

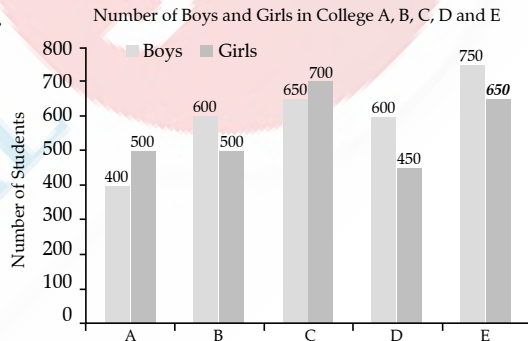
128. If  $\tan x = \cot(45^\circ + 2x)$ , then what is the value of  $x$ ?

1. 45°      2. 20°      3. 15°      4. 45°  
2

129. A, B and C started a business by investing ₹ 55,000, ₹ 65,000 and ₹ 75,000 respectively. A is a working partner and gets 20% of the profit and the remaining is distributed in the proportion of their investments. If total profit is ₹ 87,750, what is the share of A?

1. ₹ 23,000      2. ₹ 37,350      3. ₹ 27,000      4. ₹ 37,500

130.



In the given bar graph, what is the average number of girls in all colleges?

1. 550      2. 560      3. 540      4. 600

131. In  $\triangle ABC$ ,  $\angle A = 50^\circ$ . In sides  $AB$  and  $AC$  are produced to the point  $D$  and  $E$ . If the bisectors of  $\angle CBD$  and  $\angle BCE$  meet at the point  $O$ , then  $\angle BOC$  is equal to:

1. 55°      2. 75°      3. 65°      4. 40°

132. The successive discounts of 20%. 10 % and 15 % is equivalent to a single discount of:

1. 42.2 %      2. 43.5 %      3. 38.8 %      4. 44.5%

133. What is the sum of the mean proportional between 10.8 and 4.8 and the third proportional of 2 and 4?

1. 10.2      2. 11.2      3. 8.2      4. 15.2

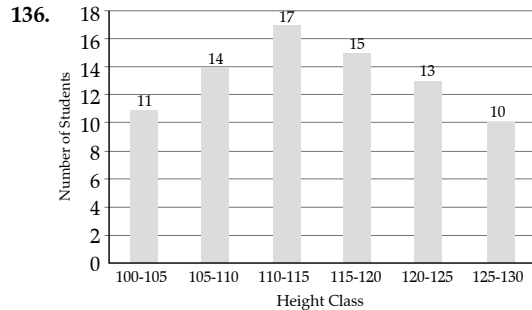
134. The square root of which of the following is a rational number?

1. 6250.49      2. 1250.49      3. 5768.28      4. 1354.24

135. If  $x + \frac{1}{x} = 5$ , then  $x^3 + \frac{1}{x^3}$  is equal to:

1. 125      2. 130      3. 145      4. 110



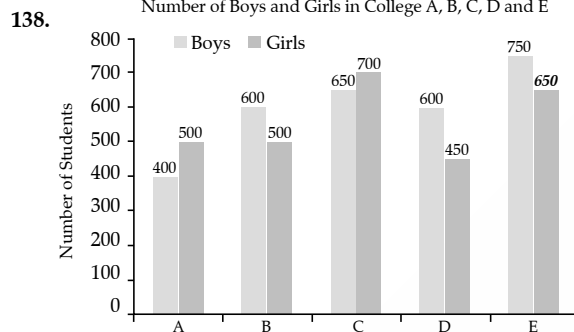


In the given histogram, what percentage of students have height in the interval of 105-110?

1. 17%      2. 16.5%      3. 17.5%      4. 18%

137. The sides of a triangle are 10 cm, 24 cm and 26 cm. At each of its vertices, circles of radius 3.5 cm are drawn. What is the area of the triangle excluding the portion covered by the sectors of the circles? ( $\pi = \frac{22}{7}$ )

1. 100.75 cm<sup>2</sup>      2. 81.5 cm<sup>2</sup>      3. 75.75 cm<sup>2</sup>      4. 78.25 cm<sup>2</sup>



In the given bar graph, what is the ratio of the total boys and girls in all 5 colleges?

1. 13 : 12      2. 14 : 15      3. 15 : 14      4. 12 : 13

139. If  $a^3 - b^3 = 208$  and  $a - b = 4$ , then  $(a + b)^2 - ab$  is equal to:

1. 42      2. 52      3. 32      4. 38

140.  $\frac{675 \times 675 \times 675 + 325 \times 325 \times 325}{67.5 \times 67.5 + 32.5 \times 32.5 - 67.5 \times 32.5}$  is equal to:

1. 10,000      2. 100      3. 1,00,000      4. 1,000

141. A ladder leaning against a wall makes an angle  $\alpha$  with the horizontal ground such that  $\tan \alpha = \frac{3}{4}$ . If the foot of the ladder is 5 m away from the wall, what is the length of the ladder?

1. 4.5m      2. 6.25 m      3. 5.25 m      4. 3.75 m

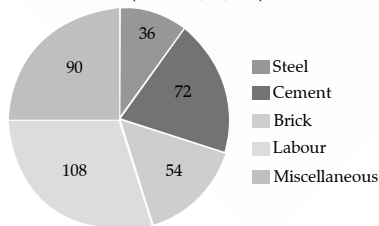
142.  $9\frac{3}{4} \div [2\frac{1}{6} + \{4\frac{1}{3} - (2\frac{1}{2} + \frac{3}{4})\}]$  is equal to:

1. 4      2. 3      3.  $\frac{15}{4}$       4.  $\frac{17}{4}$

143. ABCD is a cyclic quadrilateral such that AB is a diameter of the circle circumscribing it and angle ADC = 140°. Then angle BAC is equal to:

1. 60°      2. 38°      3. 50°      4. 40°

144. Degree of Cost incurred in different Expenditure (Total ₹4,50,000)



In the given pie-chart, what is the ratio of the total expenditure on steel, cement and bricks to the total expenditure on labour and miscellaneous expenses?

1. 4 : 5      2. 9 : 11      3. 3 : 7      4. 3 : 5

145. 24 persons working 8 hours a day can complete 2 units of a work in 10 days. How many persons are required to complete 4 units of that work, if they work 6 hours a day for 16 days?

1. 40      2. 36      3. 48      4. 32

146. The average of 16 numbers is 43. The average of the first 7 numbers is 45 and the average of the next 6 numbers is 52. If the 14<sup>th</sup> number is 11 less than the 15<sup>th</sup> number and is 5 more than the 16<sup>th</sup> number, then the average of the 15<sup>th</sup> and 16<sup>th</sup> number is:

1. 48.5      2. 48      3. 47.5      4. 49

147. Pipes A and B can fill a tank in 6 hours and 9 hours respectively and pipe C can empty the full tank in 12 hours. If all three pipes are opened together when a tank is empty, in how many hours will 35% of the tank be filled?

1. 1.9      2. 1.6      3. 1.1      4. 1.8

148. A boat can go 30 km downstream and 24 km upstream in 2 hours 27 minutes. Also, it can go 20 km downstream and 8 km upstream in 74 minutes. What is the speed of the boat in still water in km/h?

1. 22      2. 18      3. 20      4. 24

149. The price of sugar has decreased by 15%. By what percentage can a person increase the consumption so that there is no change in the expenditure?

1.  $\frac{300}{23}\%$       2.  $\frac{50}{3}\%$       3.  $\frac{20}{3}\%$       4.  $\frac{300}{17}\%$

150. 5 cubes, each of edge 4 cm, are joined end to end. What is the total surface area of the resulting cuboid?

1. 486 cm<sup>2</sup>      2. 526 cm<sup>2</sup>      3. 352 cm<sup>2</sup>      4. 720 cm<sup>2</sup>

### English Comprehension

151. Select the synonym of the given word.

AMPLIFY

1. magnify      2. electrify      3. satisfy      4. supply

152. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No substitution required.

This is the first time anybody have explored into this part of the country.

1. anybody has explored this part  
2. anybody has explored into this part  
3. No substitution required  
4. anybody have explored this part

153. Select the most appropriate meaning of the underlined idiom in the given sentence.

He has set up his business now as he know the ins and outs of it.

1. usefulness      2. importance      3. details      4. difficulties

154. Select the word, which means the same as the group of words given.

the keeper of a museum

1. compere      2. curator  
3. commissioner      4. conservator

155. Select the synonym of the given word.

REPLETE

1. restful      2. occupied      3. full      4. calm

156. Identify the segment in the sentence, which contains the grammatical error.  
In this novel I came across some words which meaning I do not know.
1. came across
  2. which meaning
  3. In this novel
  4. do not know
157. Select the most appropriate word to fill in the blank.  
Our new office is equipped \_\_\_\_\_ all the latest technology.
1. from
  2. about
  3. with
  4. by
158. Select the wrongly spelt word.
1. couragious
  2. precious
  3. curious
  4. victorious
159. Select the word, which means the same as the group of words given.  
A large enclosure for keeping the birds in
1. menagerie
  2. aviary
  3. aquarium
  4. apiary
160. Select the word, which means the same as the group of words given.  
a person who eats human flesh
1. carnivore
  2. tribal
  3. cannibal
  4. scavenger
161. Select the wrongly spelt word.
1. gloomy
  2. gloss
  3. gobbel
  4. glutton
162. Identify the segment in the sentence, which contains the grammatical error.  
To my point of view he should not have behaved in such a manner.
1. should not have
  2. behaved
  3. to my point of view
  4. in such a manner
163. Identify the segment in the sentence, which contains the grammatical error.  
The old man climbed seven floors with hardly no effort at all.
1. climbed
  2. at all
  3. The old man
  4. hardly no effort
164. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No substitution required.  
The cause of the disaster has not yet known but an inquiry has been set up to find out what happened.
1. have not yet been know
  2. No substitution required
  3. was not yet known
  4. is not yet known
165. Select the most appropriate meaning of the underlined idiom in the given sentence.  
A friend is no friend if he leaves you in the lurch.
1. leave for one's own work
  2. take advantage of someone
  3. make a fool of someone
  4. leave someone in a helpless condition
166. Select the antonym of the given word.  
ADVERSITY
1. casualty
  2. calamity
  3. misfortune
  4. prosperity
167. Select the word, which means the same as the group of words given.  
A fortress typically one on high ground above a city
1. tower
  2. citadel
  3. palace
  4. colossus
168. Select the most appropriate meaning of the underlined idiom in the sentence.  
Many people in our country like to feather their own nest from the money they raise for social work.
1. enrich oneself by dishonest means
  2. achieve something and be proud of it
  3. make one's family comfortable
  4. provide comforts in one's house
169. Select the synonym of the given word.  
FOREGO
1. forget
  2. give up
  3. ban
  4. go head
170. Select the antonym of the given word.  
ENTHUSIASM
1. fervor
  2. nervousness
  3. apathy
  4. zeal
171. Select the antonym of the given word.  
VANITY
1. pride
  2. dignity
  3. humility
  4. timidity
172. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No substitution required.  
Every year our association is having a meeting to elect the officers.
1. No substitution required
  2. are having a meeting
  3. has a meeting
  4. having a meeting
173. Select the wrongly spelt word.
1. dissappoint
  2. disappear
  3. disallow
  4. discomfort
- Comprehension:**  
In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each number.  
What does the word scout mean? During a war a soldier is chosen to go \_\_\_\_\_(1) of an army in order to \_\_\_\_\_(2) out where the enemy is. He then \_\_\_\_\_(3) back to the commander all the \_\_\_\_\_(4) he has gathered about the \_\_\_\_\_(5). Such a soldier is known as a scout.
174. Select the most appropriate option to fill in the blank No. 1.
1. behind
  2. before
  3. ahead
  4. after
175. Select the most appropriate option to fill in the blank No. 2.
1. call
  2. bring
  3. carry
  4. find
176. Select the most appropriate option to fill in the blank No. 3.
1. sends
  2. tells
  3. carries
  4. reports
177. Select the most appropriate option to fill in the blank No. 4.
1. information
  2. news
  3. messages
  4. communications
178. Select the most appropriate option to fill in the blank No. 5.
1. commanders
  2. army
  3. soldiers
  4. enemy
179. Select the wrongly spelt word.
1. blister
  2. blossom
  3. blind
  4. blemish
180. Select the wrongly spelt word.
1. estimate
  2. essencial
  3. esteem
  4. establish
181. Identify the segment in the sentence, which contains the grammatical error.  
I thanked him for his advices.
1. him
  2. I thanked
  3. advices
  4. for his
182. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select No substitute required.  
Thirteen miners were trapped inside a coal mine due to flooding from a nearby river yesterday.
1. were trapped into a coal mine
  2. No substitution required
  3. have been trapped inside a coal mine
  4. trapped inside a coal mine
- Comprehension:**  
**Read the following passage and answer the question given after it.**  
Tutankhamun was an Egyptian pharaoh who was buried in a lavish tomb filled with gold artifacts in the Valley of the Kings. His tomb was discovered in 1922 by an archaeological team led by British Egyptologist Howard Carter.



The tomb was mostly intact, an extraordinary find given that most of the tombs in the Valley of the Kings has been looted in ancient times.

But While Tutankhamun's tomb was lavish, historical and archaeological evidence indicates that the young pharaoh was sickly and spent his short rule trying to undo a religious revolution that his father had started.

Tutankhaten (as he was called at birth) was born around the year 1341 B.C. His father was the pharaoh Akhenaten, a revolutionary pharaoh who tried to focus Egypt's polytheistic religion around the worship of the sun disc, the Aten. In his fervor, Akhenaten ordered the names and images of other Egyptian deities to be destroyed or defaced.

Tutankhamun ascended to the throne around 1332 B.C., when he was about 9 years old. Given his young age he would have relied heavily on his advisers. At some point his name was changed to Tutankhamun, removing the word "aten" — a remainder of his father's religious revolution — from his name.

Tutankhamun also condemned his father's actions in a stela (a stone with inscription) found at Karnak, saying that Akhenaten's religious revolution caused the gods to ignore Egypt. Part of the stela reads "the temples and the cities of the gods and the goddesses, starting from Elephantine as far as the Delta marshes ... were fallen into decay and their shrines were fallen into ruin, having become mere mounds overgrown with grass ... The gods were ignoring this land..."

Archaeological evidence indicates that Tutankhamun suffered from ill health. A study of his remains published in 2010 found that he suffered from a variety of maladies, including malaria and Kohler disease (a rare bone disorder of the foot). A number of canes have been found in Tutankhamun's tomb, finds that support the idea that the pharaoh has difficulty walking at times.

It's not known what killed Tutankhamun. There have been numerous hypotheses put forward over the years. It's been suggested that he died from an infection caused by a broken leg or from injuries suffered in a chariot accident.

The boy king died in 1323 B.C. around the age of 18. His death was unexpected, and his tomb appears to have been finished quickly. Microbes found on the wall of the tomb indicate that the paint on the wall wasn't even dry when the tomb was sealed.

Howard Carter's team discovered the tomb's entranceway on November 4, 1922, and on November 26 they got inside.

While the treasures were incredible, the tomb was unusually small for a pharaoh's burial, containing only 110 square meters (1, 184 square feet) of floor space. The tomb's small size may have been because the pharaoh died young and unexpectedly and there wasn't time to carve out a larger tomb.

183. What is the main theme of the passage?

1. The tomb of Tutankhamun
2. The discovery of an incredible treasure
3. The life and death of the boy Pharaoh
4. The death of Tutankhamun and his burial

184. The discovery of a number of canes in the tomb indicates that Tutankhamun:

1. suffered from an infection.
2. has difficulty in walking.
3. suffered from Malaria.
4. has fallen from a chariot.

185. Tutankhamun's father was a revolutionary. What was his revolution.

1. He wanted the Egyptians to worship one God—Aten.
2. Egyptians were asked to have no religion and no god.
3. Images and names of all the Egyptian deities has to be destroyed.
4. He wanted his people to be polytheistic.

186. Tutankhamun had a short rule. Most of his time was used in:

1. looking after the well-being of his people
2. erecting stelas at different places
3. fighting with his own diseases
4. trying to undo the religious revolution of his father

187. Which statement is NOT true according to the passage?

1. Tutankhamun's tomb was lavishly filled with gold artifacts.
2. The tomb was unusually small for a pharaoh's burial.
3. The tomb appears to have been finished quickly as the paint wasn't dry when it was sealed
4. Howard Carter's team discovered the tomb's entranceway on November 26, 1922.

188. Select the word, which means the same as the group of words given.

a medical specialist who administers drugs for relieving pain during surgery

1. anesthetist
2. analgesic
3. nephrologist
4. dermatologist

189. Select the most appropriate word to fill in the blank.

Th assistant in the library picked up the books from the tables and put \_\_\_\_\_ back on the shelves.

1. they
2. its
3. them
4. it

190. Select the synonym of the given word.

MASSIVE

1. thick
2. strong
3. solid
4. huge

191. Select the most appropriate word to fill in the blank.

I looked at my damaged car and \_\_\_\_\_ how much it would cost to repair it.

1. wondering
2. wondered
3. wonder
4. wonders

192. Select the most appropriate meaning of the underlined idiom in the given sentence.

After getting the news of his promotion, he was in high spirits.

1. joyful
2. drunk
3. mad
4. hopeful

193. Select the most appropriate meaning of the underlined idiom in the given sentence.

Don't take it seriously. He was simply pulling your leg.

1. playing a joke with someone
2. scolding someone for nothing
3. trying to comfort someone
4. speaking in a harsh tone

194. Select the most appropriate word to fill in the blank.

You will not be allowed in the Film Festival \_\_\_\_\_ you have a photo ID card.

1. in case
2. unless
3. if
4. whether

195. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select NO substitution required.

Everybody wants to be winning a prize in the arts competition.

1. wants winning
2. wants to have won
3. wants to win
4. No substitution required

196. Identify the segment in the sentence, which contains the grammatical error.

Why she was angry with her son?

1. she was
2. angry with
3. her son
4. why

197. Select the antonym of the given word.

HOLLOW

1. vacant
2. narrow
3. shallow
4. solid

198. Select the synonym of the given word.

HARASS

1. refuse
2. bother
3. help
4. care

199. Select the most appropriate word to fill in the blank.  
 You have travelled a long way. You \_\_\_\_\_ be tried  
 1. should    2. could    3. must    4. can

200. Select the antonym of the given word.  
 LIVELY  
 1. sharp    2. bubbly    3. active    4. sluggish

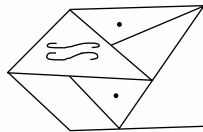
**Answer Key**

1.	(1)	2.	(4)	3.	(3)	4.	(3)	5.	(4)	6.	(3)	7.	(4)	8.	(2)	9.	(4)	10.	(2)
11.	(3)	12.	(2)	13.	(1)	14.	(2)	15.	(1)	16.	(1)	17.	(2)	18.	(3)	19.	(1)	20.	(4)
21.	(4)	22.	(1)	23.	(1)	24.	(2)	25.	(4)	26.	(1)	27.	(4)	28.	(4)	29.	(4)	30.	(4)
31.	(1)	32.	(4)	33.	(1)	34.	(1)	35.	(3)	36.	(1)	37.	(4)	38.	(4)	39.	(2)	40.	(1)
41.	(1)	42.	(2)	43.	(2)	44.	(4)	45.	(1)	46.	(4)	47.	(2)	48.	(1)	49.	(2)	50.	(4)
51.	(1)	52.	(4)	53.	(2)	54.	(3)	55.	(3)	56.	(1)	57.	(4)	58.	(2)	59.	(3)	60.	(4)
61.	(1)	62.	(2)	63.	(3)	64.	(3)	65.	(2)	66.	(4)	67.	(4)	68.	(1)	69.	(4)	70.	(3)
71.	(2)	72.	(4)	73.	(4)	74.	(2)	75.	(2)	76.	(3)	77.	(2)	78.	(2)	79.	(1)	80.	(1)
81.	(4)	82.	(3)	83.	(1)	84.	(1)	85.	(3)	86.	(4)	87.	(1)	88.	(1)	89.	(3)	90.	(4)
91.	(3)	92.	(3)	93.	(1)	94.	(2)	95.	(2)	96.	(2)	97.	(3)	98.	(2)	99.	(3)	100.	(2)
101.	(2)	102.	(4)	103.	(3)	104.	(2)	105.	(1)	106.	(2)	107.	(3)	108.	(4)	109.	(1)	110.	(4)
111.	(2)	112.	(3)	113.	(4)	114.	(3)	115.	(2)	116.	(4)	117.	(4)	118.	(2)	119.	(4)	120.	(2)
121.	(4)	122.	(1)	123.	(4)	124.	(2)	125.	(1)	126.	(2)	127.	(4)	128.	(3)	129.	(2)	130.	(2)
131.	(3)	132.	(3)	133.	(4)	134.	(4)	135.	(4)	136.	(3)	137.	(1)	138.	(3)	139.	(2)	140.	(3)
141.	(2)	142.	(2)	143.	(3)	144.	(2)	145.	(1)	146.	(2)	147.	(4)	148.	(1)	149.	(4)	150.	(3)
151.	(1)	152.	(1)	153.	(3)	154.	(2)	155.	(3)	156.	(2)	157.	(3)	158.	(1)	159.	(2)	160.	(3)
161.	(3)	162.	(3)	163.	(4)	164.	(1)	165.	(4)	166.	(4)	167.	(2)	168.	(1)	169.	(2)	170.	(3)
171.	(3)	172.	(3)	173.	(1)	174.	(3)	175.	(4)	176.	(4)	177.	(1)	178.	(4)	179.	(2)	180.	(2)
181.	(3)	182.	(2)	183.	(3)	184.	(2)	185.	(1)	186.	(4)	187.	(4)	188.	(1)	189.	(3)	190.	(4)
191.	(2)	192.	(1)	193.	(1)	194.	(2)	195.	(3)	196.	(1)	197.	(4)	198.	(2)	199.	(3)	200.	(4)

**Answers with Explanations**

1. Option (1) is correct.

When we place the mirror at the right-hand side then objects which are positioned on the left-hand side will appear on the right-hand side and the objects which are placed at right-hand side will appear on the left-hand side and the position of each element will get changed from left to right.



2. Option (4) is correct.

Using option 4 we get,  
 $6 \times 3 - 8 \div 2 + 5 = 8 \div 2 + 3 \times 5 - 6$   
 On interchanging 5 and 6 we get,  
 $5 \times 3 - 8 \div 2 + 6 = 8 \div 2 + 3 \times 6 - 5$   
 $15 - 4 + 6 = 4 + 18 - 5$   
 $21 - 4 = 22 - 5$   
 $17 = 17$   
 Therefore, LHS = RHS.

Hence, 5 and 6 is the correct answer.

3. Option (3) is correct.

We know that, Request is the antonym of order in the same way and Whisper is the antonym of Shout.  
 Hence, Whisper: Shout is the correct Answer.

4. Option (3) is correct.

It can be clearly seen that the mentioned words are related to stages incurr in a job application process.  
 Before being hired for a job, one must first complete an application(3). After this, candidates are selected(2) and appointed(5), and then they must undergo a probationary period(1) before receiving confirmation(4) of their employment.  
 Hence, (3,2,5,1,4) is the correct answer.

5. Option (4) is correct.

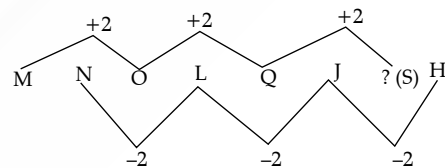
Vegetarian is a person who does not eat meat. Similarly, teetotaler is a person who does not drink alcohol.  
 Hence, teetotaler is the correct answer.

6. Option (3) is correct.

Tuesday is named after Tyr's day, the Norse god of war associated with the planet Mars.  
 Similarly,  
 Thursday is named after Thor's day, the god associated with the planet Jupiter.  
 Hence, Jupiter is the correct answer.

7. Option (4) is correct.

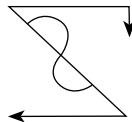
The pattern is that it is a double series and we have to add 2 to get another letter in one series and subtract 2 to get another letter.



Hence, S is the correct answer.

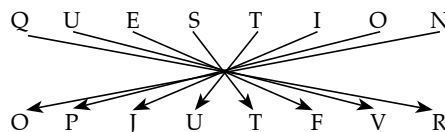
8. Option (2) is correct.

When we place the mirror at the right-hand side then the objects which appear on the left-hand side will appear on the right-hand side and the objects which appear on the right-hand side will appear on the left-hand side and the position of the object will also get change from left to right.

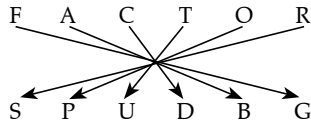


9. Option (4) is correct.

The pattern is



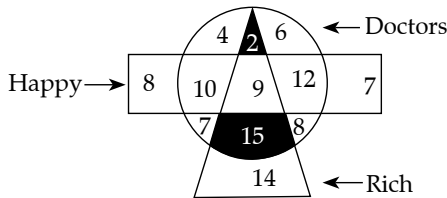
Similarly,



Hence, SPUDBG is the correct answer.

10. **Option (2) is correct.**

Triangle = Rich, Circle = Doctor and Rectangle = Happy.  
Now, we need only rich doctors, hence the area which is covered by the dark region shows happy doctors i.e.  $15 + 2 = 17$



Hence, 17 is the correct answer.

11. **Option (3) is correct.**

The pattern is that in the first series 1, 3, 6, 10

1      3      6      10      15

2      3      4      5

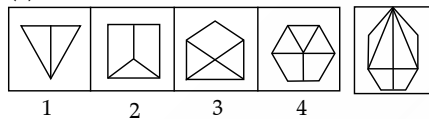
Second Series

4      5      7      11      19

1      2      4      8

Hence,  $\frac{15}{19}$  is the correct answer.

12. **Option (2) is correct.**



The pattern is that in the 1<sup>st</sup> figure, we have 2 parts and then 3 blocks and then 4 blocks etc. So, in the last figure, we need 6 blocks. So, we need a figure which is triangle with perpendicular.

13. **Option (1) is correct.**

The pattern here is

second number is divisible by 1st number.

12:72 → 72 is divisible by 12

6:18 → 18 is divisible by 6

8:32 → 32 is divisible by 8

14:94 → 94 is not divisible by 14,

Hence, this is odd one out.

14. **Option (2) is correct.**

Letters in the option A, C and D are vowels.

In option B, Letter L is consonant.

Hence, option B is the correct answer.

15. **Option (1) is correct.**

We know that 2, 4, 1, 6 is adjacent to 5 so it means 1, 5 cannot be at the bottom.

Similarly, 2, 5 also cannot be at the bottom. They will be on the right side and the left side. Therefore, 4 will be at the bottom when 6 will be at the top.

Hence, 4 is the correct answer.

16. **Option (1) is correct.**

The pattern is as follows:

B Y	W	D	
+2	-2	-2	+2
D W	U	F	

Similarly,

A Z	Y	B	
+2	-2	-2	+2
C X	W	D	

Hence, CXWD is the correct answer.

17. **Option (2) is correct.**

The pattern is  $CAB = 12$ ,  $C = 3$ ,  $A = 1$ ,  $B = 2$  ( $C + A + B$ )  $\times 2 = 6 \times 2 = 12$

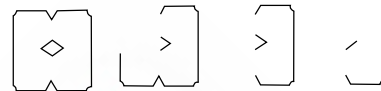
$FED = 30$ ,  $F = 6$ ,  $E = 5$ ,  $D = 4$ ,  $(F + E + D) \times 2 = (6 + 5 + 4) \times 2 = 15 \times 2 = 30$

Similarly  $HIDE$ ,  $H = 8 + 9 + 4 + 5 = 26 \times 2 = 52$

Hence, 52 is the correct answer.

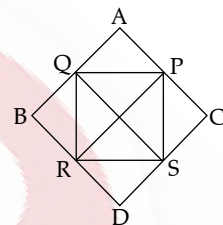
18. **Option (3) is correct.**

The process of unfolding is shown below.



19. **Option (1) is correct.**

We know that when we have a rectangle with diagonals then we have  $2 \times 4 = 8$  triangles and we have such PQRS rectangle. So, we have 8 triangles then count the other random triangles which are AQP, BQR, RDS, PCS.

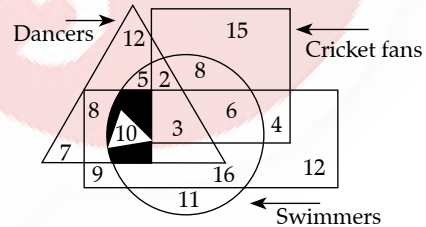


Therefore, we have 12 triangles.

Hence, 12 is the correct answer.

20. **Option (4) is correct.**

We need the part which is of Dancers, Swimmer and Students but not square so that is highlighted in the figure below.



Hence, 10 is the correct answer.

21. **Option (4) is correct.**

The pattern is that the sum of digits of first number = second number.

Option A:  $3 + 4 = 7$

Option B:  $1 + 9 = 9$

Option C:  $5 + 6 = 11$

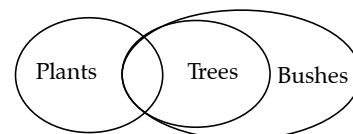
Option D:  $7 + 8 = 15$  Not 13.

Therefore, it should be 15 not 13.

Hence, 78 : 13 is the correct answer.

22. **Option (1) is correct.**

According to the statements given, the Venn diagram is as follows:



From the above Venn Diagram only conclusion I follows.

23. **Option (1) is correct.**

The pattern is  $(1st\ number)^2 + 1 = 2^{nd}\ number$

Except option A, all other follow the same pattern. It should be 101 instead of 99.

Hence, 10 : 99 is the correct answer.



24. **Option (2) is correct.**  
 The pattern is 1<sup>st</sup> number + n = 2<sup>nd</sup> number and 2<sup>nd</sup> number + n = 3<sup>rd</sup> number.

$21 - 15 = 6, 21 + 6 = 27$

Therefore,  $20 + 8 = 28$  and  $28 + 8 = 36$ .

Hence, (20, 28, 36) is the correct answer.

25. **Option (4) is correct.**  
 $\{7, 13, 20\} \rightarrow 13 - 7 = 6, 20 - 13 = 7$

Similarly,

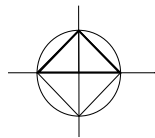
$\{4, 10, 17\} \rightarrow 10 - 4 = 6, 17 - 10 = 7$

Hence, {4, 10, 17} is the correct answer.

26. **Option (1) is correct.**  
 We know that Memory is the antonym of Amnesia. In the same way, Vision is the antonym of Blindness.

Hence, Vision: Blindness is the correct answer.

27. **Option (4) is correct.**  
 The figure is shown below how it is embedded in the given figure.



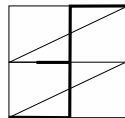
28. **Option (4) is correct.**  
 The pattern is as follows:  
 7      10      16      19      25      28  
       +3      +6      +3      +6      +3

Hence, 28 is the correct answer.

29. **Option (4) is correct.**  
 Except Preet Singh all other are famous authors.  
 Hence, Preet Sing is the correct answer.

30. **Option (4) is correct.**  
 The pattern is  $5 \times 3 = 15$  and is  $5 \times 5 = 25$ .  
 Therefore  $8 \times 3 = 24$  and  $8 \times 5 = 40$   
 Hence, 40 is the correct answer.

31. **Option (1) is correct.**  
 The figure is shown below how it is embedded in the given figure.



32. **Option (4) is correct.**  
 Using option D on interchanging + and ÷ we get  
 $4 \div 8 \times 12 + 6 - 4 = 6 + 6 - 4$   
 $= 12 - 4 = 8$   
 Therefore, LHS = RHS.

33. **Option (1) is correct.**  
 The pattern is 1<sup>st</sup> number  $\times 2 + 5 = 2^{\text{nd}}$  number.  
 Option A:  $8 \times 2 + 9 = 25$   
 Option B:  $5 \times 2 + 5 = 15$   
 Option C:  $9 \times 2 + 5 = 23$   
 Option D:  $14 \times 2 + 5 = 33$   
 Hence, 8:25 is the correct answer.

34. **Option (1) is correct.**  
 The pattern is  $(1^{\text{st}} \text{ number} + 1)^2 = 2^{\text{nd}}$  number.  
 $(8 + 1)^2 = 81$  similarly  $(10 + 1)^2 = 121$   
 Hence, 121 is the correct answer.

35. **Option (3) is correct.**  
 The pattern is  

B	+2	D	+3	G	+4	K	+5	P
Z	-2	X	-3	U	-4	Q	-5	L
D	+2	F	+3	I	+4	M	+5	R

 Hence, QQM is the correct answer.

36. **Option (1) is correct.**  
 The pattern is that add one and subtract one alternatively from the actual number.

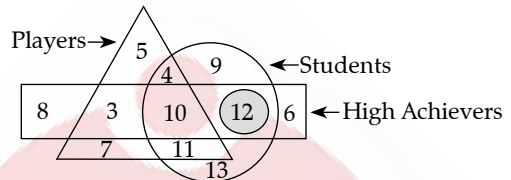
H (8)	E (5)	C (3)	K (11)
+1	-1	+1	-1
9	4	4	10

Similarly, Bike will be coded as follows

B (2)	I (9)	K (11)	E (5)
+1	-1	+1	-1
3	8	12	4

Hence, 38124 is the correct answer.

37. **Option (4) is correct.**  
 The highlighted part shows the students which are high-achieving but not players because no part of players is involved in it.



Hence, 12 is the correct answer.

38. **Option (4) is correct.**  
 The pattern is  

B	+2	D
D	opposite Letter	W
F	-2	D
H	opposite Letter	S

 Similarly,  

T	+2	V
V	opposite letter	E
Y	-2	W
Z	opposite Letter	A

 Hence, VEWA is the correct answer.

39. **Option (2) is correct.**  
 The correct sequence is Winter → Cold → Shop → Blanket → Warm → Sleep  
 Hence, 426351 is the correct answer.

40. **Option (1) is correct.**  
 Carpenter, tailor, and Blacksmith are persons while Gardening is not a person.  
 Hence, Gardening is the correct answer.

41. **Option (1) is correct.**  
 The pattern is as follows:  

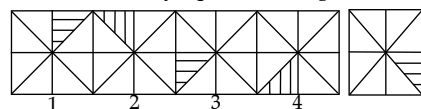
B	A	N	K	E	R
N	A	B	R	E	K

Similarly,  

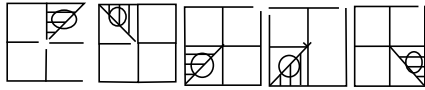
S	T	R	I	N	G
R	T	S	G	N	I

Hence, RTSGNI is the correct answer.

42. **Option (2) is correct.**  
 The pattern is that, every square is being moved by 180°.

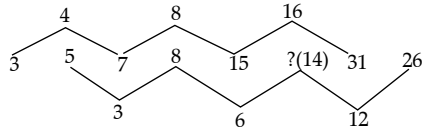


First Rectangle is divided into four squares then the square with lines is being flipped like mirror is placed on the right-hand side.



43. **Option (2) is correct.**

The pattern is that this is double series



Hence, the correct answer is 14.

44. **Option (4) is correct.**

Using option D we get  $8 \div 2 - 6 \times 4 + 3 = 6 \times 2 - 8 \div 4 + 3 = 12 - 2 + 3 = 13$   
Therefore, LHS = RHS.

45. **Option (1) is correct.**

The pattern is

Option 1: MKOH  $\rightarrow$  O-M = 2, K-H = 3

Option 2: CLEH  $\rightarrow$  E-C = 2, L-H = 4

Option 3: TRVN  $\rightarrow$  V-T = 2, R-N = 4

Option 4: PYRU  $\rightarrow$  V-T = 2, R-N = 4

Hence, MKOH is the correct answer.

46. **Option (4) is correct.**

The pattern followed here is:

$5 : 9 \rightarrow 2^2 + 1 : 2^3 + 1$

Similarly,  $17 : 65 \rightarrow 4^2 + 1 : 4^3 + 1$ .

Hence, the correct answer is 17 : 65.

47. **Option (2) is correct.**

We will draw a Venn diagram for this



From the above Venn diagram only, conclusion II follows.

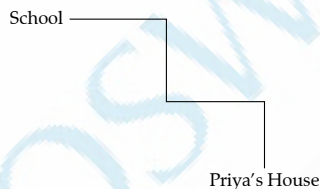
48. **Option (1) is correct.**

Jealous, Angry and sad are emotions while weep is an action of those emotions.

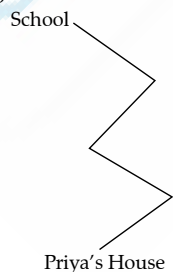
Hence, weep is the correct answer.

49. **Option (2) is correct.**

Let us assume that the bus was facing north when it left Priya's House.



Now, moving anticlockwise by 45°, the bus faces north-west when reaching the school.



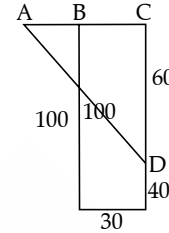
Thus, the bus was facing north-east when it left Priya's house.

Hence, North-east is the correct answer.

50. **Option (4) is correct.**

Let the distance she walks towards is  $n$ .

Then,  $AB + BC = x + 30$



$$(AD)^2 = (AC)^2 + (CD)^2$$

$$\Rightarrow (100)^2 = (AC)^2 + (60)^2$$

$$\Rightarrow (AC)^2 = (100)^2 - (60)^2$$

$$\Rightarrow (AC)^2 = 6400$$

$$\Rightarrow AC = 80$$

$$\Rightarrow AC - BC = AB$$

$$\Rightarrow 80 - 30 = AB \Rightarrow AB = 50$$

Hence, the value of AB is 50.

51. **Option (1) is correct.**

In January 2019, the Department of Science and Technology collaborated with Doordarshan to launch two free-to-air channels, DD Science and India Science, which will provide live, scheduled play, and video-on-demand content on science topics. It is a channel entirely devoted to science. It is accessible via any internet-enabled device, whereas DD Science will be broadcast Monday through Saturday from 5 to 6 p.m. Short films, interviews, discussions, science-based documentaries, and other content will be available on the channels.

52. **Option (4) is correct.**

Lakshadweep is India's smallest union territory. It is made up of 36 islands covering an area of 32 square kilometers. It consists of 12 atolls, 3 reefs, and 5 submerged banks, ten of which are inhabited. Lakshadweep was previously known as the Laccadive Islands. Lakshadweep means "a hundred thousand islands" in Malayalam and Sanskrit. Lakshadweep's capital is Kavaratti. Minicoy is the second-largest and southernmost island in the group, and Andrott Island is the largest. A nine-degree channel separates Minicoy from the rest of Lakshadweep. The Lakshadweep group is separated from the Maldives by an eight-degree channel. Shri Praful Khoda Patel (Administrator, Lakshadweep) (May 2021).

53. **Option (2) is correct.**

In January 2019, the Governor of Tamil Nadu, Banwarilal Purohit, presented the 'Sansad Ratna Awards' in Chennai. Kirit Solanki has not received the Sansad Ratna Award. Supriya Sule, MP from Baramati, Maharashtra, was honored in the categories of overall tally, questions, and women MPs. Nishikant Dubey, MP from Godda, Jharkhand, was recognized for his exceptional performance in private member bills. N K Premachandran, MP from Kollam in Kerala, was chosen for his ability to initiate debates. The awards were first presented in 2010.

54. **Option (3) is correct.**

Prime Minister Narendra Modi inaugurated and laid the foundation stone for several development projects in Dadra and Nagar Haveli in January 2019. Dadra and Nagar Haveli's art college is not one of them. The projects included the establishment of a medical college

in Sayali, the publication of an IT policy, and the digital collection, segregation, and processing of solid waste in Dadra and Nagar Haveli.

**55. Option (3) is correct.**

The audible range of sound is the range of frequencies that an organism can hear. For humans, the audible range of sound is 20 Hz to 20,000 Hz. This range can change with age and environmental factors. Sounds below 20 Hz are referred to as infrasounds, while sounds above 20,000 Hz are referred to as ultrasounds, and neither can be perceived by the human ear. Animals such as elephants can perceive infrasounds (14 Hz to 12,000 Hz) and bats can hear ultrasounds (1000 Hz to 200,000 Hz).

**56. Option (1) is correct.**

The Hindu Prize for Fiction was given to writer Neelum Saran Gour for her book 'Requiem in Raga Janki' in 2018. The award was presented by N.Ravi, Publisher and Former Editor-in-Chief of The Hindu, at the Hindu Lit for Life festival 2019, which took place in Chennai from January 12 to 14, 2019. The Hindu Prize, established in 2010, is an Indian literary award that recognizes fiction written in English. It is given and sponsored by The Hindu Literary Review, a section of The Hindu newspaper. Since 2018, nonfiction has been included in the award.

**57. Option (4) is correct.**

In 1178 AD, Naikidevi, a Goa-born queen of Gujarat, defeated and drove back Muhammad Ghori's invading armies. She was the widow of Rajput Chalukyan (Solanki) ruler Ajaypal, who ruled for only four years beginning in 1171. After her husband's death, Naikidevi became Queen Regent for her son Mularaja II. Queen Naikidevi is remembered for defeating Muhammad Ghori in 1178 CE. She was the widow of the Chalukya/Solanki dynasty ruler King Ajayapala. She was the daughter of the Kadamba ruler, Mahamandalesvara Permadi of Goa. Solankis defeated Mohammad Ghori in the battle of Kayadara near Mount Abu. Her early life is unknown, but she was the daughter of one Paramardi, according to Prabandhachintamani of Merutunga. One theory attributes this Paramardi to Kadamba king Permadi-deva, but historian Ashoke Kumar Majumdar believes she was the daughter of Chandela king Paramardi (reigned c. 1165-1203 CE).

**58. Option (2) is correct.**

Dachigam National Park, with an area of 500 km<sup>2</sup>, is located in the Zabarwan Range of the Western Himalayas, about 22 kilometers from Srinagar, Jammu and Kashmir. The name "Dachigam" means "ten villages," and the park was named after the ten villages that were relocated as a result of the park. The park has been a protected area since 1910, but it was designated a National Park in 1981. It is best known for hangul, or the Kashmir stag, a subspecies of elk. Other animal species found in the park include the Himalayan brown bear, the Himalayan black bear, the Musk deer, the Himalayan serow, the Yellow-throated marten, and the Jackal. Himalayan monal, Black bulbul, Bearded vulture, Babbler, and Cinnamon sparrow are also common bird species.

**59. Option (3) is correct.**

A study published in the journal 'Current Science' by Jawaharlal Nehru University's Gitanjali Katlam and Soumya Prasad, Asian Adventures' Mohit Agarwal, and Nature Science Initiative's Raman Kumar examined the relationship between animal type and behavior concerning the risk of plastic ingestion. According to their findings, modern-day garbage dumps are full of harmful products and chemicals that pose a serious threat to animal and plant life.

**60. Option (4) is correct.**

Chhau is a semi-classical Indian dance form that began as a tribal dance in the forests of Odisha in the 18th century and evolved into a martial art-based dance in the 19th century. There are three types of Chhau, each named after the state in which it is performed: Seraikella Chau in Jharkhand, Mayurbhanj Chau in Odisha, and Purulia Chau in Bengal. The costumes differ depending on the Chhau style. The dance incorporates folk, martial, and tribal traditions and is performed to instrumental music, primarily on a variety of drums including the Dhumba, Dhol, Dhansa, and Nagara.

**61. Option (1) is correct.**

Esow Alben, an Indian teen cyclist, made history in 2018 by winning the country's first medal in track cycling at the world level. He won India's first junior cycling World Cup silver medal in the men's Kerin event at the UCI Junior Track Cycling World Championships in Aigle, Switzerland. He is from the Andaman and Nicobar Islands and won gold at the 2018 Asian Track Cycling Championships in Malaysia.

**62. Option (2) is correct.**

Rayleigh's scattering law: Rayleigh's scattering law states that the intensity of light of wavelength present in scattered light is inversely proportional to the fourth power of, provided the scattering particles are much smaller than the wavelength of the radiation. As a result, the scattered intensity is greatest for shorter wavelengths. The molecules of air and other fine particles in the atmosphere are smaller in size than the visible light wavelength. These are more effective at scattering shorter wavelength light at the blue end than longer wavelength light at the red end. The wavelength of red light is approximately 1.8 times that of blue light. As a result, when sunlight passes through the atmosphere, fine particles in the air scatter blue (shorter wavelengths) more strongly than red (longer wavelengths). The scattering of light causes the sky to appear blue. There would have been no scattering if the Earth did not have an atmosphere. The sky would have appeared dark in that case. The sky appears dark to passengers flying at very high altitudes because scattering is minimal at such altitudes.

**63. Option (3) is correct.**

The Treaty of Sagauli was an agreement signed between the East India Company and the Nepalese Gurkha chiefs that ended the Anglo-Nepalese (Gurkha) War (1814-1816). The treaty was drafted on December 2, 1815, and signed by Raj Guru Gajaraj Mishra (Nepal) and Lieutenant Colonel Paris Bradshaw on March 4, 1816. According to the treaty, some Nepalese territories were given to British India, a British representative in Kathmandu was established, and the British were allowed to recruit Gurkhas for military service.

**64. Option (3) is correct.**

During the First Anglo-Sikh War, Lord Hardinge was the Governor-General of India. The First Anglo-Sikh War lasted from 1845 to 1846. The Second Anglo-Sikh War lasted from 1848 to 1849. From 1844 to 1848, Lord Hardinge was the Governor-General of India. From 1786 to 1793, Lord Cornwallis was the Governor-General of India. From 1848 to 1856, Lord Dalhousie was the Governor-General of India. From 1856 to 1862, Lord Canning was the Governor-General of India.

**65. Option (2) is correct.**

Hima Das is a sprint runner from India who was named Assam's Sports Ambassador in September 2018. She is Assam's first-ever Sports Ambassador. Sarbananda Sonowal, the Chief Minister of Assam, announced after Hima Das won the 400 m final at the World U-20 Championships 2018 on July 12, 2018. She is the first



Indian athlete to win a track gold medal at the IAAF World U20 Championship. She currently holds the Indian National Record for 400 meters with a time of 50.79 seconds set at the 2018 Asian Games in Jakarta.

**66. Option (4) is correct.**

Khanij, Pradhan Mantri The Kshetra Kalyan Yojana uses funds generated by District Mineral Foundations to benefit areas and people affected by mining-related operations (DMFs). The Pradhan Mantri Ujjwala Yojana is a government program that provides LPG connections to women living below the poverty line. Digidhan Pradhan Mantri Vyapar Yojana was created to provide cash incentives to merchants and consumers. The Pradhan Mantri Kaushal Vikas Yojana allows a large number of Indian youth to pursue industry-relevant skill training to secure a better living.

**67. Option (4) is correct.**

Our nose contains olfactory receptors. The human body's olfactory system detects and processes smell. These are also known as smell receptors because they can bind odor molecules. They are members of the G-protein-coupled receptor family. Olfactory receptors (ORs), also known as odorant receptors, are chemoreceptors expressed in the cell membranes of olfactory receptor neurons that detect odorants (for example, compounds with an odor) that give rise to the sense of smell. When olfactory receptors are activated, nerve impulses are sent to the brain, which transmits odor information. These receptors are members of the G protein-coupled receptor class A rhodopsin-like family (GPCRs). The olfactory receptors are a multigene family that includes approximately 800 genes in humans and 1400 genes in mice.

**68. Option (1) is correct.**

Rouf is a popular type of Kashmiri folk music. A combination of Kashmiri folk dance and Kashmiri folk song performed on various occasions by Kashmiri women or girls. Rouf dance originated in Kashmir's Muslim community. It was gradually adopted by everyone in the valley. Visitors are unable to take their gaze away from the performance because it is so elegant. Everyone enjoys being immersed in the allure and blissful music of the lovely valley. Rouf is primarily performed to commemorate the spring harvesting season. Harvesting season is a special occasion for farmers, and women celebrate by dancing in unison. If you visit Kashmir in the spring, you will see not only the blossoming buds swinging with joy but also the Kashmiri women and girls grooving in the spirit of celebration. If you're lucky, you might even catch a Rouf dance performance during Eid.

**69. Option (4) is correct.**

Chintamani Nagesa Ramachandra Rao, an Indian scientist, received the first Sheikh Saud International Prize for Materials Research in January 2019. CNR Rao is a well-known chemist who has worked in solid-state and structural chemistry. The award includes a cash prize of \$100,000 as well as a plaque. CNR Rao has written 50 scientific books and approximately 1600 research papers. Chintamani Nagesa Ramachandra Rao BR (born 30 June 1934) is a chemist from India who specializes in solid-state and structural chemistry. He has received honorary doctorates from 84 universities around the world and has written approximately 1,774 research publications and 54 books. He is described as a scientist who has received every award possible in his field except the Nobel Prize.

**70. Option (3) is correct.**

According to Article 217 of the Indian Constitution, the Judge of a High Court is appointed by the President

after consultation with the Chief Justice of India and the Governor of the state. The Indian Constitution's Article 21 addresses the protection of life and personal liberty. The Indian Constitution, in Article 201, deals with bills reserved for consideration. Article 72 of the Indian Constitution addresses the President's authority to grant pardons, among other things, and to suspend, remit, or commute sentences.

**71. Option (2) is correct.**

Previously, organisms were classified into only two kingdoms: Plantae and Animalia. Every living organism that did not eat, move, or grow continuously throughout its life was classified as a plant. During this time, the animal kingdom included organisms that moved, ate, and stopped growing after a certain size. R. H. Whittaker proposed the Five Kingdom Classification, which simplified the classification of organisms into five different kingdoms—Monera, Protista, Fungi, Plantae and Animalia.

**72. Option (4) is correct.**

The Swadeshi Movement began in India during the Anti-Bengal Partition Movement. On August 7, 1905, it began at the Calcutta Town Hall in Bengal. It also sparked the Boycott Movement. The Khilafat and non-cooperation movement occurred between 1919 and 1922. Gandhi's Champaran Satyagraha took place in the year 1917. In 1919, there was a protest against the Rowlatt Act. The Swadeshi movement was officially launched on August 7, 1905, with the passage of the 'Boycott' resolution at a meeting at the Calcutta town hall, which brought the previously dispersed leadership together.

**73. Option (4) is correct.**

Dadar and Nagar Haveli is a union territory in western India that consists of Dadar, a small town surrounded by Gujarat, and Nagar Haveli, which is located between Maharashtra and Gujarat. Dadra and Nagar Haveli were declared a Union Territory in 1961 by the Tenth Amendment to the Indian Constitution, which went into effect on August 11, 1961. Dadra and Nagar Haveli have a total area of 491 km<sup>2</sup>. Silvassa is its capital.

**74. Option (2) is correct.**

Biofuels are being considered as an alternative to reducing the country's ₹ 7 lakh crore in crude oil imports. They may also be a potential weapon in the fight against rising pollution. Biofuels are renewable energy resources made from waste or organic matter. They contribute to the reduction of CO<sub>2</sub> emissions. These can be made from waste feedstocks, vegetable oils, corn, sugar, and so on.

**75. Option (2) is correct.**

A virus is an infectious agent that replicates only within an organism's living cells. Dmitri Ivanovsky discovered the virus. The tobacco mosaic virus was the first virus discovered. Virology is the scientific study of viruses. Microbiology has a subfield called virology. Dmitri Ivanovsky was a co-founder of virology. A virus is made up primarily of genetic material (DNA or RNA). A protein coat that protects and surrounds the genetic material. A lipid envelope on the outside. Pathology is the study of a disease's causes and effects. The study of children's behavior and development is known as paedology. The study of life and living organisms is known as biology.

**76. Option (3) is correct.**

Apiculture is the science of rearing honey bees in a specially designed wooden box. A smoker, safety suit, moveable hive, honey extractor, and hive tool are all necessary beekeeping equipment. Sericulture is the rearing of silkworms for the production of raw silk.

Honey bees are known for their wax-based perennial colonial nests, large colonies, and surplus honey production and storage, making their hives a prized foraging target for many animals, including honey badgers, bears, and human hunter-gatherers. Only eight surviving honey bee species are recognized, with a total of 43 subspecies, even though historically 7 to 11 species were recognized. Honeybees are only a small subset of the approximately 20,000 bee species known.

**77. Option (2) is correct.**

Satyarup Siddhanta is an Indian mountaineer who, at the age of 36, is the first Indian and youngest mountaineer in the world to climb both the Seven Volcanic Summits and the Seven Summits. On January 15, 2019, he accomplished this feat. He is also the first Indian to climb Mt Sidley, Antarctica's highest volcano, and Mt Giluwe, Papua New Guinea's highest volcano. Mt Wilhelm, Papua New Guinea's highest peak He is also an environmentalist, a technology enthusiast, a motivational speaker, and the President and Founder of the ABETO ("a better tomorrow") foundation.

**78. Option (2) is correct.**

On June 26, 1539, the Afghan Sher Shah Suri and the Mughal emperor Humayun fought the Battle of Chausa. The battle took place at Chausa, a village in modern-day Bihar about 10 miles southwest of Buxar. Sher Shah Suri defeated Humayun and took the title "Farid al-Din Sher Shah". The Battle of Chausa was a significant military engagement between Humayun, the Mughal Emperor, and Sher Shah Suri, the Afghan warlord. It took place on June 26, 1539, 10 miles southwest of Buxar in modern-day Bihar, India. Sher Shah Suri was aided by his allies, the Ujjainiya Rajputs of Bhojpur and Gautam Rajputs led by Gajpati Ujjainia, the commander. Humayun fled the battlefield to save his life. Sher Shah triumphed and was crowned Fard al-Dn Shr Shh.

**79. Option (1) is correct.**

Isaac Newton was the first to explain the spectrum of light. The visible spectrum is the range of wavelengths of electromagnetic radiation to which the human eyes are sensitive. A prism was used by Isaac Newton to create a spectrum from a beam of white light. Invention/Discovery by a Scientist The Atomic Model of Neils Bohr Sir Isaac Newton The color spectrum of light Einstein, Albert The theory of relativity Micrometre Galileo Galilei.

**80. Option (1) is correct.**

According to the JLL City Momentum Index 2019, Bengaluru is the most dynamic city in the world among the 131 major established and emerging business hubs worldwide. It is closely followed in second place by Hyderabad. Other Indian cities in the top ten include Delhi (4th), Pune (5th), and Chennai (7th). JLL's City Momentum Index measures and determines the momentum of 131 of the world's most commercially active cities by identifying the fastest-growing real estate markets and urban economies. It accomplishes this by tracking and analyzing multiple real estate and socioeconomic indicators over three years.

**81. Option (4) is correct.**

Surface tension is the property of a liquid that causes it to try to minimize its free surface area. Because the surface area of a spherical shape is the smallest, raindrops are spherical. A liquid's surface tension can be affected by two factors. The elements are as follows: Temperature: As the temperature rises, the surface tension of a liquid falls. Soluble Impurities: Surface tension decreases with less soluble impurities. However, when highly soluble impurities are present in the liquid, the surface tension rises. For example, when kerosene oil is sprinkled on

the water, the surface decreases, and the mosquito larva dies as a result of sinking in the water. The warm soup tastes good because, at high temperatures, surface tension decreases and the soup spreads evenly across the tongue. Antiseptics have a low surface tension, which allows them to reach the small cracks of the wound and clean the germs. Because soap solution has a lower surface tension than pure water, it cleans clothes more effectively than pure water. When water droplets are dropped onto plane surfaces, they always take on a round shape due to the exertion of surface tension by the molecules.

**82. Option (3) is correct.**

The Export-Import Bank of India (EXIM Bank) is an Indian financial institution that was founded on January 1, 1982, under the Export-Import Bank of India Act 1981. Its primary goal is to provide financial assistance to Indian exporters. It is India's premier export finance institution. The Bank assists Indian businesses in their efforts to expand globally. It is India's primary financial institution for foreign and international trade. It was previously a branch of the IDBI, but as the foreign trade sector grew, it was separated. The Export and Import Bank of India's main function is to provide financial and other assistance to the country's importers and exporters. It also supervises and coordinates the activities of other institutions involved in the import-export sector. The ultimate goal is to increase the country's foreign trade activities.

**83. Option (1) is correct.**

The Automotive Research Association of India (ARAI), based in Pune, conducted a study in which it blended 15% methanol M-15 with petrol and used it in BS-IV standard vehicles. These vehicles were then put through 3,000 kilometers of testing. The goal of this study was to assess the emissions and performance of the vehicles in real-world conditions. It was discovered that carbon dioxide emissions had decreased significantly and that hydrocarbon emissions had decreased marginally.

**84. Option (1) is correct.**

Prime Minister Narendra Modi inaugurated the National Museum of Indian Cinema in Mumbai on January 19, 2019. The Films Division Complex on Peddar Road in Mumbai houses the Museum. The museum exhibits the history of Indian cinema as well as artifacts such as vintage equipment, posters, old cinema magazines, soundtracks, trailers, and so on. The Museum is closed on Mondays and public holidays, but open Tuesday through Sunday from 11 a.m. to 6 p.m.

**85. Option (3) is correct.**

In January 2019, Anurag Thakur received the 'Sansad Ratna Award' for distinguished performance as a parliamentarian. He is the BJP's first MP to receive the Jury Committee Special Award. The awards were established in 2010 at the request of Dr APJ Abdul Kalam.

**86. Option (4) is correct.**

The Competition Commission of India (CCI) approved the Samara Capital-backed Witzig Advisory Services and Amazon joint bid to acquire 'More,' an Aditya Birla Retail Ltd supermarket store, in January 2019. According to the CCI, the transaction involves Witzig acquiring 99.99% of Aditya Birla Retail Ltd's equity share capital. In addition, Amazon's subsidiary Amazon NV Investment Holdings LLC will purchase a 49% stake in Witzig.

**87. Option (1) is correct.**

Re-weave.in is a new e-commerce platform launched by Microsoft India as part of Project ReWeave to assist handloom weavers. Microsoft India (R&D) Pvt. Limited launched Project ReWeave in 2016 to revitalize and support India's handloom weaving industry.



The following are the advantages of the e-commerce platform: It would connect artisans to buyers, allowing them to make connections and expand their network to new customers and markets. The artisans will also be able to showcase their signature collections on the e-commerce platform. It will enable the artisans to be more self-sufficient, increase their income, and earn a sustainable living. These advantages would, in turn, hasten the process of reviving traditional Indian art.

**88. Option (1) is correct.**

The Nobel Prize is a series of annual awards given in recognition of scientific, academic, and cultural achievements in six categories: physics, chemistry, medicine or physiology, economics, peace, and literature. It is not given in the subject of mathematics. Five of the six Nobel Prizes were established in 1895 by Swedish chemist and engineer Alfred Nobel's will. These were in Literature, Physics, Chemistry, Peace, Medicine, or Physiology. Sveriges Riksbank, Sweden's central bank, established the Nobel Prize in Economics in 1968. The first Nobel Prizes were awarded in the original five fields in 1901, and the first Nobel Prize in Economics was awarded in 1969.

**89. Option (3) is correct.**

The Union Ministry of Finance launched a 'Know Your Budget' series on Twitter in January 2019 to educate the general public about the budgetary process. The series, which lasted about a fortnight, explained the importance of the Union Budget and how it is created. The interim Budget for 2019-20 was unveiled by the government on February 1, 2019.

**90. Option (4) is correct.**

'Youth for Equality,' a non-profit organization, has petitioned the Supreme Court to rule on the constitutionality of the 103rd Constitutional Amendment Act, which provides a 10% quota for economically disadvantaged groups. The land boundary agreement between India and Bangladesh was ratified by the 100th Constitutional Amendment Act. The 99th Constitutional Amendment Act added a new Article 124A that specifies the membership of the National Judicial Appointments Commission (NJAC).

**91. Option (3) is correct.**

In January 2019, the Union Cabinet, led by Prime Minister Narendra Modi, approved an Rs. 6,000 crore capital infusion into the state-owned Export-Import Bank of India (EXIM Bank). This was done to help EXIM Bank expand its operations. This capital infusion will happen in two stages, with Rs 4,500 crore coming in 2018-19 and Rs 1,500 crore coming in 2019-20. The government has also approved an increase in the bank's authorized capital from Rs 10,000 crore to Rs 20,000 crore. The EXIM Bank is a premier export finance institution in India that was established in 1982 under the Export-Import Bank of India Act to promote Indian exports.

**92. Option (3) is correct.**

In the Pro Volleyball League or RuPay Pro Volleyball League, Chennai Spartans defeated Calicut Heroes. The Pro Volleyball League is a professional men's indoor volleyball league that debuted in February 2019. The Chennai Spartans were a men's volleyball team from Chennai, Tamil Nadu that competed in India's Pro Volleyball League.

**93. Option (1) is correct.**

Naga people celebrate the famous 'Tsokum Samai' festival to invoke blessings for a bountiful harvest. It is a Khiamnungan tribe festival celebrated in October. It is a one-week-long pre-harvest festival. During the festival, animals such as buffaloes and cows were sacrificed. The seven-day festival takes place during

the first week of October. The festival is celebrated by thanking God for blessing the family with good crops and health. People worship the Almighty and pray for their family's happiness and prosperity. The tradition of sacrificing animals such as Mithun, buffaloes, cows, pigs, and so on and presenting them to their deity is part of the celebration. A portion of the animals' necks and ribs are then collected in the "Morung" as a compulsory donation, followed by the activities of the male folk the next day. The seven-day festival takes place during the first week of October. The festival is celebrated by thanking God for blessing the family with good crops and health. People worship the Almighty and pray for their family's happiness and prosperity. The tradition of sacrificing animals such as Mithun, buffaloes, cows, pigs, and so on is part of the celebration. On the next day of the festival, all male residents of the village participate in the repair of roads and bridges. On their way back to their homes, they also feast and drink together. The meat from the compulsory donated part of the sacrificed animals is included in the feast's menu. The festival also serves as an opportunity for warriors to display their hunted trophies and inform villagers about the many men he has killed during their lifetime. People believe that by celebrating the festival, they are requesting permission to harvest and eat the new crops.

**94. Option (2) is correct.**

Dr. Harsh Vardhan was appointed as the Union Minister of Science and Technology for the second time in January 2019. He was appointed for the first time in 2014. On June 4, 2019, he took over the office. In addition, he is in charge of the Ministries of Earth Sciences and Health and Family Welfare. He is a medical practitioner with an M.S. (ENT).

**95. Option (2) is correct.**

India and Bangladesh share a 4,096-kilometer border that runs through Assam, Tripura, Mizoram, Meghalaya, and West Bengal. Manipur's neighbors include Nagaland, Assam, Mizoram, and Myanmar. Manipur's current chief minister is N Biren Singh. (Aug 2021) Manipur's Governor is Shri La Ganesan. Manipur is a state in Northeast India, with the capital city of Imphal. It is bounded to the north by Nagaland, to the south by Mizoram, and to the west by Assam. It also shares borders with two Myanmar regions: Sagaing Region to the east and Chin State to the south. The state has a total area of 22,327 square kilometers (8,621 sq mi). For over 2,500 years, Manipur has been at the crossroads of Asian economic and cultural exchange. It connects the Indian subcontinent and Central Asia to Southeast Asia, East Asia, Siberia, Arctic regions, Micronesia, and Polynesia, allowing people, cultures, and religions to migrate.

**96. Option (2) is correct.**

The process by which organisms change over time as a result of changes in heritable physical or behavioral attributes, as first expressed in Darwin's book "On the Origin of Species" in 1859, is known as evolution by natural selection. Natural selection evolution is one of the best-supported theories in scientific history, with evidence from a wide range of scientific disciplines, including paleontology, geology, eugenics, and developmental biology. The origin of whales is one of evolution's most fascinating stories and one of the best examples of natural selection that scientists have. Charles Darwin was born in the English town of Shrewsbury in 1809. Darwin published his ideas about evolution and natural selection in "On the Origin of Species" in 1859. It was both famous and contentious. Many people were influenced by the book to believe that species change over time - a long time - implying that the planet was much older than what was commonly believed at the time: six thousand years. Charles Darwin died in 1882, at the age of 73.



**97. Option (3) is correct.**

Pong Dam is another name for the Maharana Pratap Sagar reservoir on the Beas River in Himachal Pradesh. It is situated in the Himachal Pradesh district of Kangra. Ukai Dam is located in Gujarat on the Tapi River. Dharoi Dam is located on the river Sabarmati in Gujarat's Mehsana district. Tehri Dam, located in Uttarakhand, is India's highest dam.

**98. Option (2) is correct.**

Swami Dayanand Saraswati's paternal name was Mool Shankar. Swami Dayanand Saraswati was the founder of the Arya Samaj and an Indian religious leader. On February 12, 1824, he was born in Tankara, Gujarat. On April 7, 1875, he established the Arya Samaj in Bombay.

**99. Option (3) is correct.**

The Telecom Regulatory Authority of India (TRAI) was established by the Government of India under the Telecom Regulatory Authority of India Act, 1997. In 1997, TRAI was established as a regulatory body. It is in charge of India's telecommunications industry. It makes recommendations for improving technical compatibility and efficiency, as well as encourages technological advancements.

**100. Option (2) is correct.**

Joshna Chinappa won her 16th National title, while Mahesh Manganekar narrowly defeated Vikram Malhotra in the 2018 Women's Singles of National Squash. Joshna, who won her first women's title as a 14-year-old in 2000, equaled Bhuvaneshwari Kumari's record of 16 national titles. Joshna Chinappa and Saurav Ghosal win their 18th and 13th National Titles in 2020, respectively. The National Squash Championship is an annual seven-star ranking event. It had been held seven times as of February 2020, usually in February or June. Top-ranked Indian squash players include Dipika Pallikal Karthik, Joshna Chinnappa, and Saurav Ghosal.

**101. Option (2) is correct.**

Total work done (in units) = sum of efficiencies  $\times$  time taken together

Ratio of their efficiencies is 4 : 5 : 6.

Total work done =  $(4 + 5 + 6) \times 12 = 180$  units

A alone will take time =  $\frac{\text{total work}}{\text{A's individual efficiency}}$

=  $\frac{180}{4} = 45$  Therefore, A work done will take 45 days

to finish the job

**102. Option (4) is correct.**

Radius of bigger sphere,  $r_1 = 6$  cm

$\therefore$  Volume of sphere =  $\frac{4}{3}\pi r^3$  [r  $\rightarrow$  radius of sphere]

$\therefore$  Volume of bigger sphere =  $\frac{4}{3}\pi r_1^3 = \frac{4}{3}\pi \times 6^3$  ... (i)

Radius of smaller sphere,  $r_2 = 2$  cm

Volume of smaller sphere =  $\frac{4}{3}\pi r_2^3 = \frac{4}{3}\pi \times 2^3$  ... (ii)

Number of spheres made of 2 cm radius

$$\begin{aligned} &= \frac{\frac{4}{3}\pi \times 6^3}{\frac{4}{3}\pi \times 2^3} \quad \text{[using (i) \& (2)]} \\ &= \frac{216}{8} = 27 \end{aligned}$$

**103. Option (3) is correct.**

Since, the given number  $4x4y96$  is divisible by 88, it has to be divisible by 11 also.

Check divisibility rule for 11.

$$\Rightarrow 4 + 4 + 9 = x + y + 6$$

[sum of even places digits = sum of odd places digits]

$$\Rightarrow x + y = 11$$

Number is also divisible by 8.

So, its last 3 digits must be divisible by 8.

$y96$  must be divisible by 8.

The value of  $y = 2$  (least)

$$\Rightarrow x + 2y = (x + y) + y = 11 + 2 = 13$$

**104. Option (2) is correct.**

Monthly income of A is 40% more than the monthly income of B.

Let us assume that monthly income of B = 100

So, income of A =  $100 + 40\%$  of  $100 = 140$

Percent of B less than A =  $\frac{140 - 100}{140} \times 100\%$

$$= \frac{400}{14} \% = 28\frac{4}{7}\%$$

$\therefore$  B's income is  $28\frac{4}{7}\%$  less than A.

**105. Option (1) is correct.**

Initial speed of train = 60 km/h

Later speed of train = 80 km/h

$\therefore$  Distance =  $\frac{\text{Initial speed} \times \text{later speed}}{\text{Difference between speed} \times \text{difference in time}}$

$$\text{Distance} = \frac{60 \times 80}{20} \times \frac{8}{60} = 32 \text{ km}$$

Time taken by train to cover 32 km with the speed of 60 km/h

$$= \frac{32}{60} = \frac{8}{15} \text{ h} = \frac{8}{15} \times 60 \text{ min} = 32 \text{ min}$$

Train is late by 15 min when running with speed of 60 km/h.

So, Right time for train to cover the journey =  $32 - 15 = 17$  min

**106. Option (2) is correct.**

DC  $\rightarrow$  Height of building = 10 m

AB  $\rightarrow$  Height of tower

By figure,

DC = EB = 10 m

DE = BC =  $x$  (say)

In  $\triangle DEB$

$$\tan \phi = \frac{EB}{ED} = \frac{10}{x}$$

$$\Rightarrow \frac{10}{x} = \frac{2}{3} \quad \left[ \because \tan \phi = \frac{2}{3} \right]$$

$$\Rightarrow x = 15 \quad \dots (i)$$

In  $\triangle ADE$

$$\tan 60^\circ = \frac{AE}{ED}$$

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

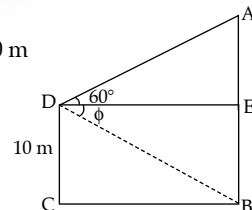
$$\Rightarrow AE = \sqrt{3}x$$

Using equation (1)

$$AE = 15\sqrt{3} \text{ m}$$

Now, height of tower = AB = AE + EB

$$= 15\sqrt{3} + 10$$



$$= 15 \times 1.73 + 10 \quad [\because \sqrt{3} = 1.73]$$

$$= 25.95 + 10$$

$$= 35.95 \approx 36$$

Height of tower = 36 m

**107. Option (3) is correct.**

Given that, principal amount = ₹ 20000

Rate of interest = 10% per annum

Rate of interest = 5% per half year

∴ Interest gain in first 6 months

$$= \frac{20000 \times 5 \times 1}{100} \left[ \because \text{S.I.} = \frac{P \times r \times t}{100} \right] = ₹ 1000$$

Principal amount for next 6 months

$$= 20000 + 1000 = ₹ 21000$$

$$\text{Interest gain in next 6 months} = \frac{21000 \times 5 \times 1}{100} = ₹ 1050$$

∴ Principal amount for last 3 months

$$= 21000 + 1050 = ₹ 22050$$

$$\text{For 3 months, rate of interest} = \frac{5}{2}\% = 2.5\%$$

$$\therefore \text{Interest gain in last 3 months} = \frac{22050 \times 2.5 \times 1}{100}$$

$$= ₹ 551.25$$

$$\text{Total interest} = ₹ 1000 + ₹ 1050 + ₹ 551.25 = ₹ 2601.25$$

$$\text{Gain percentage} = \frac{2601.25}{20000} \times 100\% = 13\%$$

**108. Option (4) is correct.**

Mean height of all the students

$$\frac{100 + 105}{2} \times 11 + \frac{105 + 100}{2} \times 14$$

$$+ \frac{110 + 115}{2} \times 17 + \frac{115 + 120}{2} \times 15$$

$$+ \frac{120 + 125}{2} \times 13 + \frac{125 + 130}{2} \times 10$$

$$= \frac{\quad}{11 + 14 + 17 + 15 + 13 + 10}$$

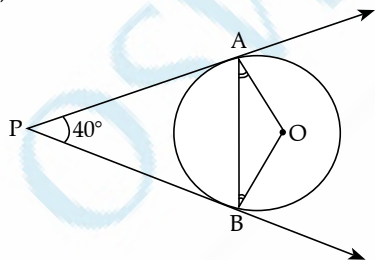
Used direct method to find mean.

$$\frac{\sum x_i f_i}{\sum f_i} = \bar{x}, x_i = \frac{U.C.L. + L.C.L.}{2}$$

$$= \frac{1133 + 1498 + 1921 + 1755 + 1599 + 1270}{80} = \frac{9176}{80}$$

$$= 114.7$$

**109. Option (1) is correct.**



∴ Tangent is perpendicular on radius at point of contact.

$$\Rightarrow \angle PAO = \angle PBO = 90^\circ \quad \dots(i)$$

In quadrilateral PAOB.

$$\angle APB + \angle PBO + \angle AOB + \angle PAB = 360^\circ$$

(By angle sum property)

$$40^\circ + 90^\circ + \angle AOB + 90^\circ = 360^\circ$$

$$\Rightarrow \angle AOB = 360^\circ - 40^\circ - 90^\circ - 90^\circ$$

$$\Rightarrow \angle AOB = 140^\circ \quad \dots(ii)$$

In  $\triangle AOB$   $\angle AOB + \angle OAB + \angle OBA = 180^\circ$

$$\Rightarrow 140^\circ + \angle OAB + \angle OAB = 180^\circ$$

[Since, OA = OB. Angle opposite to equal sides of triangle are also equal]

$$\Rightarrow 2 \angle OAB = 180^\circ - 140^\circ = 40^\circ$$

$$\Rightarrow \angle OAB = \frac{40^\circ}{2} = 20^\circ$$

**110. Option (4) is correct.**

A can fill the tank in 6 hours.

B can fill the tank in 9 hours.

Since both are opened alternately for 1 hour each, starting with A.

$$\text{Part of tank will be filled in 2 hour} = \frac{1}{6} + \frac{1}{9}$$

$$= \frac{3 + 2}{18} = \frac{5}{18}$$

$$\text{Part of tank will be filled in 6 hour} = \frac{3 \times 5}{18} = \frac{15}{18}$$

$$\text{Remaining part to be filled} = 1 - \frac{15}{18} = \frac{1}{6} \text{ th}$$

It will be filled by A in 7<sup>th</sup> hour.

Tank will be filled in total 7 hours.

**111. Option (2) is correct.**

Angle subtended by Labour =  $108^\circ$

∴ Total expenditure on labour charges

$$= \frac{108^\circ}{360^\circ} \times 100\% = 30\%$$

**112. Option (3) is correct.**

Angle subtended by steel =  $36^\circ$

Angle subtended by cement =  $72^\circ$

$$\text{Required percentage} = \frac{36^\circ}{72^\circ} \times 100\% = \frac{1}{2} \times 100\% = 50\%$$

**113. Option (4) is correct.**

∴  $\triangle ABC \sim \triangle PQR$

$$\Rightarrow \frac{\text{ar}(ABC)}{\text{ar}(PQR)} = \left(\frac{AB}{QP}\right)^2 = \left(\frac{AC}{QR}\right)^2 = \left(\frac{BC}{PR}\right)^2 \quad \dots(i)$$

[The ratio of areas of similar triangles is proportional to the square of ratio of their corresponding sides]

$$\therefore \frac{\text{ar}(ABC)}{\text{ar}(PQR)} = \frac{9}{4} \quad \dots(ii) \quad [\text{Given}]$$

From (i) & (ii)

$$\frac{9}{4} = \left(\frac{AB}{QP}\right)^2 = \left(\frac{AC}{QR}\right)^2 = \left(\frac{BC}{PR}\right)^2$$

$$\Rightarrow \frac{3}{2} = \frac{AB}{QP} = \frac{AC}{QR} = \frac{BC}{PR}$$

[Taking square root of both sides]

$$\Rightarrow \frac{3}{2} = \frac{BC}{PR}$$

$$\Rightarrow PR = \frac{2BC}{3} = \frac{2 \times 15}{3} = 10$$

[∵ BC = 15 cm]

∴ PR = 10 cm

**114. Option (3) is correct.**

Percentage of students failed in Science = 46%

Percentage of students failed in Mathematics = 42% [100 - 54]

Total percentage of failed students  
 $= 46\% + 42\% - 32\% = 88\% - 32\% = 56\%$   
 Percentage of students passed in both subjects  $= 100\% - 56\% = 44\%$

**115. Option (2) is correct.**

Total sum to be invested  $= ₹ 15000$

Let sum invested at 10% per annum  $= ₹ x$

$\therefore$  Remaining sum  $= ₹ (15000 - x)$

$\therefore$  Simple interest, S.I.  $= \frac{P \times R \times T}{100}$

[ $P \rightarrow$  Principal amount,  $R \rightarrow$  Rate of interest,  
 $T \rightarrow$  Time period]

According to question,

$$\frac{x \times 10 \times 2}{100} + \frac{(15000 - x) \times 12 \times 2}{100} = 3344$$

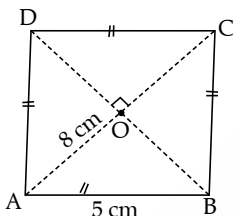
$$\Rightarrow 20x + 24(15000 - x) = 334400$$

$$\Rightarrow 20x + 360000 - 24x = 334400$$

$$\Rightarrow 25600 = 4x$$

$$\Rightarrow x = \frac{25600}{4} = 6400$$

$\therefore$  Sum invested at 10% rate  $= ₹ 6400$

**116. Option (4) is correct.**

$AB = BC = CD = DA = 5 \text{ cm}$

Let  $AC = 8 \text{ cm}$  and  $DB = 2x \text{ cm}$

$\therefore$  Diagonals of rhombus bisect each other at  $90^\circ$ .

$$\Rightarrow AO = OC = \frac{8}{2} \text{ cm} = 4 \text{ cm}$$

$$\text{and } DO = OB = \frac{2x}{2} = x \text{ cm}$$

In right  $\triangle AOB$

$AB^2 = AO^2 + OB^2$  [By Pythagoras theorem]

$$\Rightarrow 5^2 = 4^2 + OB^2$$

$$\Rightarrow OB = 3 \text{ cm}$$

$$\Rightarrow \Delta B = 2 \times OB = 2 \times 3 = 6 \text{ cm}$$

$$\text{Area of rhombus} = \frac{AC \times BD}{2} = \frac{8 \times 6}{2} = 24 \text{ cm}^2$$

**117. Option (4) is correct.**

**College A**

Total number of students  $= 400 + 500 = 900$

Difference between boys & girls  $= 500 - 400 = 100$

$$\begin{aligned} \text{\% of difference to total students} &= \frac{100}{900} \times 100 \\ &= 11.11\% \end{aligned}$$

**College B**

Total number of students  $= 600 + 500 = 1100$

Difference between boys & girls  $= 600 - 500 = 100$

$$\begin{aligned} \text{\% of difference to total students} &= \frac{100}{1100} \times 100 \\ &= 9.09\% \end{aligned}$$

**College C**

Total number of students  $= 650 + 700 = 1350$

Difference between boys & girls  $= 700 - 650 = 50$

$$\begin{aligned} \text{\% of difference to total students} &= \frac{50}{1350} \times 100 \\ &= 3.7\% \end{aligned}$$

**College D**

Total number of students  $= 600 + 450 = 1050$

Difference between boys & girls  $= 600 - 450 = 150$

$$\begin{aligned} \text{\% of difference to total students} &= \frac{150}{1050} \times 100 \\ &= 14.28\% \end{aligned}$$

**College E**

Total number of students  $= 750 + 650 = 1400$

Difference between boys & girls  $= 750 - 650 = 100$

$$\begin{aligned} \text{\% of difference to total students} &= \frac{100}{1400} \times 100 \\ &= 7.14\% \end{aligned}$$

Clearly, % of difference between boys & girls to the total students is maximum in college D.

**118. Option (2) is correct.**

Total number of students  $= 11 + 14 + 17 + 15 + 13 + 10 = 80$

So, the median will be  $\left(\frac{n}{2}\right)^{\text{th}}$  and  $\left(\frac{n}{2} + 1\right)^{\text{th}}$  observations average.

$$\begin{aligned} \therefore \text{Median} &= \left[ \frac{80}{2} + \left( \frac{80}{2} + 1 \right) \right] = \left[ \frac{40 + 41}{2} \right]^{\text{th}} \\ &= 40.5^{\text{th}} \text{ or } 41^{\text{st}} \text{ student} \end{aligned}$$

Number of students who lies  $(100 - 105) = 11$

Number of students who lies  $(105 - 110) = 14 = 12^{\text{th}}$  to  $25^{\text{th}}$

Number of students who lies  $(110 - 115) = 17 = 26^{\text{th}}$  to  $42^{\text{nd}}$   
 So,  $41^{\text{st}}$  student comes in  $(110 - 115)$  height class.

**119. Option (4) is correct.**

$\therefore$  Ratio of number is 4 : 5

HCF of number is 16

$\Rightarrow$  Numbers are  $4 \times 16$  &  $5 \times 16$  i.e., 64 & 80

$\therefore$  Sum of numbers  $= 64 + 80 = 144$

**120. Option (2) is correct.**

$$4 \frac{4}{5} \div \frac{3}{7} \text{ of } 7 + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$$

[We will use BODMAS to solve this question]

$$= \frac{24}{5} \div \left( \frac{3}{7} \times 7 \right) + \frac{4}{5} \times \frac{3}{10} - \frac{1}{5}$$

$$= \frac{24}{5} \times \frac{1}{3} + \frac{6}{25} - \frac{1}{5} = \frac{8}{5} + \frac{6}{25} - \frac{1}{5} = \frac{40 + 6 - 5}{25} = \frac{41}{25}$$

**121. Option (4) is correct.**

Given numbers are 15, 18 and 24.

3	15, 18, 24
2	5, 6, 24
2	5, 3, 12
2	5, 3, 6
3	5, 3, 3
5	5, 1, 1
	1, 1, 1

LCM of (15, 18, 24)  $= 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$

When required number is divided by given numbers then we get 8 as remainder in each case.

$\therefore$  Required number  $= 360 + 8 = 368$

Sum of digits of required number  $= 3 + 6 + 8 = 17$



**122. Option (1) is correct.**

Cost price of the given article = ₹460

Selling price of the given article =  $460 \times \frac{120}{100} = ₹ 552$

Discount percentage = 25%

∴ Marked price =  $552 \times \frac{100}{(100 - 25)} = 552 \times \frac{100}{75} = ₹736$

**123. Option (4) is correct.**

∴ We know that, if  $a + b + c = 0$  then  $a^3 + b^3 + c^3 = 3abc$  and vice versa.

$(x - 5)^3 + (x - 6)^3 + (x - 7)^3 = 3(x - 5)(x - 6)(x - 7)$

$\Rightarrow (x - 5)^3 + (x - 6)^3 + (x - 7)^3 - 3(x - 5)(x - 6)(x - 7) = 0$

$\Rightarrow (x - 5) + (x - 6) + (x - 7) = 0$

$\Rightarrow 3x - 5 - 6 - 7 = 0 \Rightarrow 3x = 18$

$\Rightarrow x = \frac{18}{3} = 6$

**124. Option (2) is correct.**

If two articles are sold at same selling price and getting  $x\%$  gain & loss on them.

So, % of loss =  $\frac{x^2}{100}\%$

[We will get loss in this case always]

∴ Both article are sold at ₹9471. He gained 23% on one and losing 23% on other.

∴ % of loss =  $\frac{23 \times 23}{100}\% = \frac{529}{100}\% = 5.29\%$

**125. Option (1) is correct.**

Total number of students = 50

∴ 40% are girls

∴ Number of girls =  $\frac{40}{100} \times 50 = 20$

$\Rightarrow$  Number of boys =  $50 - 20 = 30$

Average weight of boys = 62 kg

Average weight of girls = 58 kg

∴ Average weight of class

$$= \frac{[\text{Average Boys} \times \text{No. of boys}] + [\text{Average girls} \times \text{No. of girls}]}{\text{Total number of students}}$$

$= \frac{62 \times 30 + 58 \times 20}{30 + 20} = \frac{1860 + 1160}{50} = \frac{3020}{50} = 60.4 \text{ kg}$

**126. Option (2) is correct.**

Let radius of cylinder =  $r$  units

and height of cylinder =  $h$  units

∴ Volume of cylinder,  $V = \pi r^2 h$  ... (i)

New radius of cylinder =  $\frac{250}{100}r = \frac{5}{2}r$  [150% increase]

New height of cylinder =  $\frac{80}{100}h = \frac{4}{5}h$  [20% decrease]

∴ New volume =  $\pi \left(\frac{5}{2}r\right)^2 \times \frac{4}{5}h$

$= \pi \times \frac{5 \times 5}{2 \times 2} r^2 \times \frac{4}{5} h = 5\pi r^2 h = 5V$  [From eqn. (i)]

% increase in volume =  $\frac{5V - V}{V} \times 100\% = 400\%$

**127. Option (4) is correct.**

Formula to be used:  $\sin^2 \theta + \cos^2 \theta = 1$

$\sin(90^\circ - \theta) = \cos \theta$

$\cos(90^\circ - \theta) = \sin \theta$

$\frac{\sin^2 24^\circ + \sin^2 66^\circ}{\cos^2 24^\circ + \cos^2 66^\circ} + \sin^2 61^\circ + \cos 61^\circ \cdot \sin 29^\circ$

$= \frac{\sin^2 24^\circ + \sin^2(90^\circ - 24^\circ)}{\cos^2 24^\circ + \cos^2(90^\circ - 66^\circ)} + \sin^2 61^\circ$

$+ \cos 61^\circ \cdot \sin(90^\circ - 61^\circ)$

$= \frac{\sin^2 24^\circ + \cos^2 24^\circ}{\cos^2 24^\circ + \sin^2 24^\circ} + \sin^2 61^\circ + \cos 61^\circ \cdot \cos 61^\circ$

$= \frac{1}{1} + \sin^2 61^\circ + \cos^2 61^\circ = 1 + 1 = 2$

**128. Option (3) is correct.**

$\tan x = \cot(45^\circ + 2x)$

$\Rightarrow \cot(90^\circ - x) = \cot(45^\circ + 2x)$

[∴  $\tan \theta = \cot(90^\circ - \theta)$ ]

$\Rightarrow 90^\circ - x = 45^\circ + 2x$

$\Rightarrow 90^\circ - 45^\circ = 2x + x$

$\Rightarrow 45^\circ = 3x$

$\Rightarrow x = \frac{45^\circ}{3} = 15^\circ$

**129. Option (2) is correct.**

Total profit = ₹ 87,750

Profit to be distributed among A, B and C

$= \frac{(100 - 20)}{100} \times 87750 = \frac{4}{5} \times 87750 = ₹ 70200$

Ratio of investments of A, B and C = 55000 : 65000 : 75000

= 11 : 13 : 15

Sum of ratio = 11 + 13 + 15 = 39

Profit of A =  $\frac{11}{39} \times 70200 = ₹ 19800$

Total share of A =  $19800 + \frac{20}{100} \times 87750$

$= 19800 + 17550 = ₹ 37350$

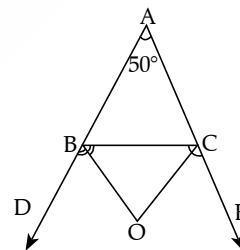
**130. Option (2) is correct.**

Total number of girls in 5 colleges = 500 + 500 + 700 + 450 + 650 = 2800

Average number of girls =  $\frac{\text{Total number of girls}}{\text{Number of colleges}}$

$= \frac{2800}{5} = 560$

**131. Option (3) is correct.**



∴ BO & CO are bisectors of  $\angle DBC$  &  $\angle ECB$  respectively.  
 $\Rightarrow \angle DBO = \angle OBC$  ... (i)

$\angle ECO = \angle OCB$

In  $\triangle ABC$

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

$\Rightarrow 50^\circ + \angle ABC + \angle ACB = 180^\circ$

$\Rightarrow \angle ABC + \angle ACB = 130^\circ$

$180^\circ - \angle DBO + 180^\circ - \angle ECO = \angle ABC + \angle ACB$  ... (ii)

[Linear pairs]

$\Rightarrow 360^\circ - \angle DBO - \angle ECO = 130^\circ$

[Using eqn (ii)]

$\Rightarrow \angle DBO + \angle ECO = 230^\circ$

$$\Rightarrow \frac{\angle DBO}{2} + \frac{\angle ECO}{2} = \frac{230^\circ}{2} = 115^\circ$$

$$\Rightarrow \angle CBO + \angle OCB = 115^\circ \quad [\text{Using eqn (i)}]$$

In  $\triangle BOC$

$$\angle BOC + \angle OBC + \angle OCB = 180^\circ$$

$$\Rightarrow \angle BOC + 115^\circ = 180^\circ \quad [\text{Using eqn (iii)}]$$

$$\Rightarrow \angle BOC = 180^\circ - 115^\circ = 65^\circ$$

**132. Option (3) is correct.**

Successive discount of  $x\%$  of  $y\%$

$$= \left( x + y - \frac{xy}{100} \right) \%$$

So, successive discount of 20% of 10%

$$= \left( 20 + 10 - \frac{20 \times 10}{100} \right) \% = 28\%$$

Now, successive discount of 28% & 15%

$$= \left[ 28 + 15 - \frac{28 \times 15}{100} \right] \% = [43 - 4.2] \% = 38.8\%$$

$\therefore$  Successive discount of 20%, 10% and 15% is equal to single discount of 38.8%.

**133. Option (4) is correct.**

$$\text{Mean proportion of two number } (a \& b) = \sqrt{ab}$$

$$\text{Third proportion of two number } (a \& b) = \frac{b^2}{a}$$

$$\text{Mean proportion of } 10.8 \& 4.8 = \sqrt{10.8 \times 4.8}$$

$$= \sqrt{51.84} = 7.2$$

$$\text{Third proportion of } 2 \& 4 = \frac{4^2}{2} = 8$$

$$\therefore \text{Required sum} = 7.2 + 8 = 15.2$$

**134. Option (4) is correct.**

$$\sqrt{1250.49} = 35.36226\dots$$

$$\sqrt{6250.49} = 79.06004$$

$$\sqrt{1354.24} = 36.8$$

$$\sqrt{5768.24} = 75.9491\dots$$

$\therefore$  Decimal expansion of a rational number is terminating or non-terminating or non-terminating & repeating.

$$\Rightarrow \sqrt{1354.24} = 36.8 \text{ is a rational number.}$$

So, square root of 1354.24 is a rational number.

**135. Option (4) is correct.**

$$(a + b)^3 = a^3 + b^3 + 3ab(a + b)$$

$$\therefore x + \frac{1}{x} = 5$$

Cube both the sides,

$$\Rightarrow \left( x + \frac{1}{x} \right)^3 = 5^3$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3x \cdot \frac{1}{x} \left( x + \frac{1}{x} \right) = 125$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 5 = 125$$

$$\Rightarrow x^3 + \frac{1}{x^3} = 125 - 15 = 110$$

**136. Option (3) is correct.**

$$\text{Total number of students} = 11 + 14 + 17 + 15 + 13 + 10 = 80$$

$$\text{Number of students having weight in range of } 105 - 110 = 14$$

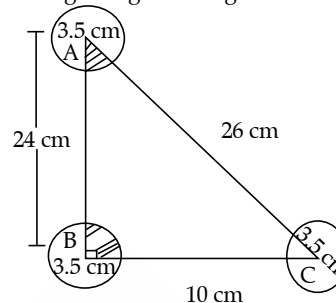
$$\therefore \text{Required percentage} = \frac{14}{80} \times 100\% = 7 \times 2.5\% = 17.5\%$$

**137. Option (1) is correct.**

Sides of triangle are 10 cm, 24 cm, and 26 cm.

$$\therefore 10^2 + 24^2 = 100 + 576 = 676 = 26^2$$

$\Rightarrow$  The given is right angled triangle.



$$\begin{aligned} \text{Area of triangle ABC} &= \frac{1}{2} \times BC \times AB \\ &= \frac{1}{2} \times 10 \times 24 = 120 \text{ cm}^2 \end{aligned}$$

The shaded regions are making three sectors of equal radius.

Radii of each sector =  $r = 3.5$  cm

$$\therefore \text{Area of sector} = \frac{\theta}{360^\circ} \pi r^2$$

[ $\theta \rightarrow$  angle subtended by sector at centre]

$$\text{Area of 3 sectors} = \frac{\angle A}{360^\circ} \pi r^2 + \frac{\angle B}{360^\circ} \pi r^2 + \frac{\angle C}{360^\circ} \pi r^2$$

$$= \left[ \frac{\angle A}{360^\circ} + \frac{\angle B}{360^\circ} + \frac{\angle C}{360^\circ} \right] \pi r^2$$

$$= \left[ \frac{\angle A + \angle B + \angle C}{360^\circ} \right] \pi r^2 = \frac{180^\circ}{360^\circ} \pi r^2$$

[ $\because$  sum of angles of triangle is  $180^\circ$ ]

$$= \frac{1}{2} \times \frac{22}{7} \times 3.5 \times 3.5 = 11 \times 0.5 \times 3.5 = 19.25 \text{ cm}^2$$

$$\therefore \text{Required area} = \text{Area of triangle} - \text{Area of sectors} \\ = 120 - 19.25 = 100.75 \text{ cm}^2$$

**138. Option (3) is correct.**

$$\text{Total number of boys in all colleges} = 400 + 600 + 650 + 600 + 750 = 3000$$

$$\text{Total number of girls in all colleges} = 500 + 500 + 700 + 450 + 650 = 2800$$

$$\therefore \text{Ratio of boys to girls} = \frac{3000}{2800} = \frac{15}{14} = 15 : 14$$

**139. Option (2) is correct.**

$$\text{Given that: } a^3 - b^3 = 208 \text{ and } a - b = 4$$

$$\therefore a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$\Rightarrow 208 = 4(a^2 + ab + b^2)$$

$$\Rightarrow 52 = a^2 + ab + b^2$$

...(i)

$$\text{Now, } (a + b)^2 - ab = a^2 + b^2 + 2ab - ab$$

$$= a^2 + b^2 + ab = 52 \quad [\text{Using eqn (i)}]$$

**140. Option (3) is correct.**

$$\text{Formula using: } a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$\frac{675 \times 675 \times 675 + 325 \times 325 \times 325}{67.5 \times 67.5 + 32.5 \times 32.5 - 67.5 \times 32.5}$$

$$\text{Let } 675 = a \& 325 = b$$

$$\therefore 67.5 = \frac{a}{10} \& 32.5 = \frac{b}{10}$$

So given expression will become

$$\frac{a^3 + b^3}{\frac{a}{10} \times \frac{a}{10} + \frac{b}{10} \times \frac{b}{10} - \frac{a}{10} \times \frac{b}{10}}$$

$$= \frac{(a+b)(a^2-ab+b^2)}{\frac{a^2}{100} + \frac{b^2}{100} - \frac{ab}{100}} = \frac{(a+b)(a^2-ab+b^2)}{\frac{(a^2+b^2-ab)}{100}}$$

$$= 100(a+b) = 100[675+375] \quad [\because a = 675 \text{ \& } b = 375]$$

$$= 100 \times 100 = 10000$$

141. **Option (2) is correct.**  
 AC → Height of wall.  
 AB → Length of ladder.

In right ΔABC

$$\tan \alpha = \frac{AC}{BC}$$

$$\Rightarrow \frac{3}{4} = \frac{AC}{5}$$

$$\Rightarrow AC = \frac{15}{4}$$

In right ΔABC

$$AB^2 = AC^2 + BC^2 = \left(\frac{15}{4}\right)^2 + 5^2 = \frac{225}{16} + 25$$

$$= \frac{225 + 400}{16} = \frac{625}{16}$$

$$\Rightarrow AB = \sqrt{\frac{625}{16}} = \frac{25}{4} = 6.25$$

Length of ladder = AB = 6.25 m

142. **Option (2) is correct.**

We will apply BODMAS to solve given expression.

$$9\frac{3}{4} \div \left[ 2\frac{1}{6} + \left\{ 4\frac{1}{3} - \left( 2\frac{1}{2} + \frac{3}{4} \right) \right\} \right]$$

$$= \frac{39}{4} \div \left[ \frac{13}{6} + \left\{ \frac{13}{3} - \left( \frac{5}{2} + \frac{3}{4} \right) \right\} \right]$$

$$= \frac{39}{4} \div \left[ \frac{13}{6} + \left\{ \frac{13}{3} - \left( \frac{13}{4} \right) \right\} \right] = \frac{39}{4} \div \left[ \frac{13}{6} + \frac{13}{3} - \frac{13}{4} \right]$$

$$= \frac{39}{4} \div \left[ \frac{13}{6} \left( \frac{1}{6} + \frac{1}{3} - \frac{1}{4} \right) \right] = \frac{39}{4} \div \left[ 13 \left( \frac{2+4-3}{12} \right) \right]$$

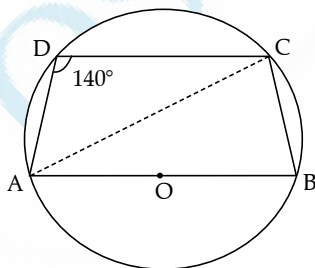
$$= \frac{39}{4} \div \left[ 13 \times \frac{3}{12} \right] = \frac{39}{4} \div \left[ \frac{39}{12} \right]$$

$$= \frac{39}{4} \times \frac{12}{39} = \frac{12}{4} = 3$$

143. **Option (3) is correct.**

ABCD is cyclic quadrilateral.

AB is diameter and ∠ADC = 140°



We know that sum of opposite angles of cyclic quadrilateral is 180°.

$$\therefore \angle ADC + \angle ABC = 180^\circ$$

$$\Rightarrow 140^\circ + \angle ABC = 180^\circ$$

$$\Rightarrow \angle ABC = 180^\circ - 140^\circ = 40^\circ$$

....(i)

In ΔABC

$$\angle ACB = 90^\circ$$

[Angle in semi-circle]

$$\therefore \angle ACB + \angle CBA + \angle BAC = 180^\circ$$

[Angle sum property]

$$\Rightarrow 90^\circ + 40^\circ + \angle BAC = 180^\circ$$

[Using eqn (i)]

$$\Rightarrow \angle BAC = 180^\circ - 90^\circ - 40^\circ = 50^\circ$$

144. **Option (2) is correct.**

$$\therefore \text{Total expenditure} = ₹450000$$

$$\text{Angle made by expenditure on steel, cement and bricks} = 36^\circ + 72^\circ + 54^\circ = 162^\circ$$

Total expenditure on steel, cement and bricks

$$= \frac{162^\circ}{360^\circ} \times 450000 \quad \dots(i)$$

$$\text{Angle made by expenditure on labour and miscellaneous expenses} = 108^\circ + 90^\circ = 198^\circ$$

Total expenditure on labour and miscellaneous expenses

$$= \frac{198^\circ}{360^\circ} \times 450000 \quad \dots(ii)$$

$$\therefore \text{Required ratio} = \frac{\frac{162^\circ}{360^\circ} \times 450000}{\frac{198^\circ}{360^\circ} \times 450000} = \frac{162^\circ}{198^\circ}$$

[Using eqn (i) and (ii)]

$$= \frac{81}{99} = \frac{9}{11} = 9 : 11$$

So, required ratio is 9 : 11.

145. **Option (1) is correct.**

$$\text{Work} = \text{Men} \times \text{Hours} \times \text{Days}$$

Men	Hours	Days	Work
24	8	10	2
?	6	16	4

Let 'x' person needed to complete the give work.

$$\therefore \frac{W_1}{W_2} = \frac{M_1 \times H_1 \times D_1}{M_2 \times H_2 \times D_2}$$

$$\Rightarrow \frac{2}{4} = \frac{24 \times 8 \times 10}{x \times 6 \times 16} \Rightarrow \frac{1}{2} = \frac{20}{x}$$

$$\Rightarrow x = 40$$

Required persons are 40.

146. **Option (2) is correct.**

$$\text{Average} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

Now, Let 14<sup>th</sup> number = x

$$\therefore 15^{\text{th}} \text{ number} = x + 11$$

$$\text{and } 16^{\text{th}} \text{ number} = x - 5$$

$$\text{Sum of all 16 numbers} = 16 \times 48 = 768 \quad \dots(i)$$

$$\text{Sum of first 7 numbers} = 7 \times 45 = 315 \quad \dots(ii)$$

$$\text{Sum of next 6 numbers} = 6 \times 52 = 312 \quad \dots(iii)$$

Using (i) (ii) & (iii),

$$\text{Sum of } 14^{\text{th}}, 15^{\text{th}} \text{ and } 16^{\text{th}} \text{ numbers} = 768 - 315 - 312 = 141$$

$$\text{Also, } 14^{\text{th}} + 15^{\text{th}} + 16^{\text{th}} = x + x + 11 + x - 5$$

$$\Rightarrow 141 = 3x + 6$$

$$\Rightarrow 135 = 3x$$

$$\Rightarrow x = \frac{135}{3} = 45$$

$$\text{Average of } 15^{\text{th}} \text{ \& } 16^{\text{th}} \text{ numbers} = \frac{x + 11 + x - 5}{2}$$

$$= \frac{2x + 6}{2} = x + 3$$

$$= 45 + 3 = 48 \quad [\because x = 45]$$



**147. Option (4) is correct.**

Pipe-A can fill tank alone in 6 hours.

Pipe-B can fill tank alone in 9 hours.

Pipe-C can empty tank done in 12 hours.

They will fill part of tank in 1 hours

$$= \frac{1}{6} + \frac{1}{9} - \frac{1}{12} = \frac{6+4-3}{36} = \frac{7}{36} \text{ th part}$$

They will fill 35%  $\left[ \frac{35}{100} \text{ th part} \right]$  in  $\frac{35 \times 100}{7 \times 36}$  hours

$$= \frac{35 \times 36}{700} \text{ hours} = 1.8 \text{ hours}$$

**148. Option (1) is correct.**Let the speed of boat in still water =  $x$  km/hand the speed of stream (running water) =  $y$  km/h $\therefore$  Speed of boat in upstream.  $(x - y)$  km/hSpeed of boat in downstream.  $(x + y)$  km/h

$$\text{Also, } 2 \text{ hr} + 27 \text{ min} = 2 + \frac{27}{60} = \frac{49}{20} \text{ hr}$$

$$\text{and } 37 \text{ min} = \frac{37}{60} \text{ hr}$$

As per first condition

$$\frac{30}{x+y} + \frac{24}{x-y} = \frac{49}{20} \quad \dots(i) \quad \left[ \because \text{Time} = \frac{\text{Distance}}{\text{Speed}} \right]$$

Also, by second condition

$$\frac{10}{x+y} + \frac{4}{x-y} = \frac{37}{60} \quad \dots(ii)$$

Multiply eq..(ii) by 3 &amp; subtract it from equation (i)

$$\frac{30}{x+y} + \frac{24}{x-y} = \frac{49}{20}$$

$$\frac{30}{x+y} + \frac{12}{x-y} = \frac{37}{20}$$

$$\begin{array}{r} \frac{30}{x+y} + \frac{24}{x-y} = \frac{49}{20} \\ - \left( \frac{30}{x+y} + \frac{12}{x-y} = \frac{37}{20} \right) \\ \hline \frac{12}{x-y} = \frac{12}{20} \end{array}$$

$$\Rightarrow x - y = 20 \quad \dots(iii)$$

Put in equation (i)

$$\frac{30}{x+y} + \frac{24}{20} = \frac{49}{20}$$

$$\Rightarrow \frac{30}{x+y} = \frac{49}{20} - \frac{24}{20} = \frac{25}{20}$$

$$\Rightarrow x + y = \frac{30 \times 20}{25} = 6 \times 4 = 24 \quad \dots(iv)$$

Add equation (iii) &amp; (iv)

$$x + y + x - y = 24 + 20$$

$$\Rightarrow 2x = 48$$

$$\Rightarrow x = 24$$

So, speed boat is 24 km/h

and speed of stream is 2 km/h

$$\Rightarrow \text{Speed of boat in upstream} = 24 - 2 = 22 \text{ km/h}$$

**149. Option (4) is correct.**Percentage decrease in price =  $x = 15\%$ 

Percentage increase in consumption

$$= \left[ \frac{x \times 100}{100 - x} \right] \% = \left[ \frac{15 \times 100}{100 - 15} \right] \%$$

$$= \frac{15 \times 100}{85} \% = \frac{300}{17} \%$$

To make same expenditure, sugar consumption will be increase by  $\frac{300}{17} \%$ .

**150. Option (3) is correct.**

Edge of each cube = 4 cm

By joining five such cubes, we will get cuboid of length =  $5 \times 4 = 20$  cm, breadth = 4 cm, and height = 4 cm.i.e.,  $l = 20$  cm

$$b = 4 \text{ cm}$$

$$h = 4 \text{ cm}$$

 $\therefore$  Total surface area of cuboid =  $2[lb + bh + hl]$ 

$$= 2[20 \times 4 + 4 \times 4 + 4 \times 20]$$

$$= 2[80 + 16 + 80] = 2 \times 176 = 352 \text{ cm}^2$$

**151. Option (1) is correct.**

This question tests a student's vocabulary. The word "amplify" means increase the volume of (sound), especially using an amplifier. Example: "The accompanying chords have been amplified in our arrangement." Hence, the synonym for "amplify" is "magnify".

**152. Option (1) is correct.**

This question tests a student's grammar. The pronoun "anyone" is singular, thus it should be followed by a singular verb "has".

**153. Option (3) is correct.**

This question tests a student's understanding of phrases and verb. "Ins and outs" is a plural noun phrase referring to technicalities, details, nuances, or ramifications.

**154. Option (2) is correct.**

This question tests a student's vocabulary. The keeper of a museum is called a curator. Compere is a person who introduces the performers or contestants in a variety show. Commissioner is a representative of the supreme authority in an area. Conservator is a person responsible for the repair and preservation of things of cultural or environmental interest, such as buildings or works of art.

**155. Option (3) is correct.**

This question tests a student's vocabulary. The word "replete" means filled or well-supplied with something. Example: "Sensational popular fiction, replete with adultery and sudden death." The synonym of "replete" is "full".

**156. Option (2) is correct.**

There is an error in the usage of pronoun in the given question. The pronoun "which" hear refers to "words". The word "which" is used to refer to the nature of an object. For referring "word" the correct word is "whose".

**157. Option (3) is correct.**

The correct idiomatic expression is "equipped with something".

**158. Option (1) is correct.**

This question tests a student's vocabulary. The word "couragious" is incorrectly spelled. It should be 'courageous,' which means brave.

**159. Option (2) is correct.**

This question tests a student's vocabulary. A large enclosure for keeping birds is known as an "aviary". Menagerie is a collection of wild animals kept in captivity for exhibition. Aquarium is a place where fishes are kept. Apiary is a place where bees are kept; a collection of beehives.

**160. Option (3) is correct.**

This question tests a student's vocabulary. A person who eats human flesh is called a cannibal.

- 161. Option (3) is correct.**  
This question tests a student's vocabulary. The wrongly spelled word is "gobbel". It should be "gobble", which means to eat (something) hurriedly and noisily.
- 162. Option (3) is correct.**  
The sentence has an error in the first part of the sentence. "To my point of view" is incorrect expression. It should be "in my opinion".
- 163. Option (4) is correct.**  
The sentence has an error in the later part of the sentence. "Hardly" is a negative word and it should not be used with another negative word (here "no"). So, change "hardly no efforts" to "hardly any efforts".
- 164. Option (1) is correct.**  
The subject of the sentence is the cause, which is singular so we have to use a singular verb. So, option (1) is ruled out. We need our sentence to be in passive form (as our subject is incapable to perform an action on its own) hence, 'is not yet known' would be the correct passive form. Thus, the original sentence is also incorrect. And option (2) is also ruled out.  
Correct sentence: The cause of the disaster is not yet known but an enquiry has been set up to find out what happened.
- 165. Option (4) is correct.**  
This question tests a student's understanding of phrases and idioms. To leave someone in lurch means to leave someone in difficult situation.
- 166. Option (4) is correct.**  
This question tests a student's vocabulary. The word "adversity" means a difficult or unpleasant situation. Example: "She overcame many adversities". The antonym of adversity is prosperity.
- 167. Option (2) is correct.**  
Explanation: This question tests a student's vocabulary. Citadel is a fortress, typically one on high ground above a city. Example: "Citadels of private economic power is well known all around the world." Palace is a large and impressive building forming the official residence of a ruler, pope, archbishop, etc. Colossus is a statue that is much bigger than life size.
- 168. Option (1) is correct.**  
Explanation: This question tests a student's understanding of idioms and phrases. Feather one's own nest means to make yourself rich, especially in a way that is unfair or dishonest.
- 169. Option (2) is correct.**  
Explanation: This question tests a student's vocabulary. Forego means to give up the enjoyment or advantage of something.
- 170. Option (3) is correct.**  
Explanation: This question tests a student's vocabulary. Enthusiasm means intense and eager enjoyment, interest, or approval. Example: "Few expressed enthusiasm about the current leaders". The antonym of enthusiasm is "apathy". Fervour is intense and passionate feeling. Zeal is willingness to do something.
- 171. Option (3) is correct.**  
This question tests a student's vocabulary. Vanity means excessive pride in or admiration of one's own appearance or achievements. Examples: "It flattered his vanity to think I was in love with him". The antonym of vanity is humility.
- 172. Option (3) is correct.**  
The sentence has an error in tense. To express a habitual actions and recurring actions we always use simple present tense. Thus, in this sentence use of continuous tense is incorrect. The correct sentence should be: Every year our association has a meeting.
- 173. Option (1) is correct.**  
This question tests a student's vocabulary. The wrongly spelled word is "dissappoint". It should be "disappointed".
- 174. Option (3) is correct.**  
The paragraph describes "scout". The sentence defines the word "scout" by mentioning that a scout is someone who walks before the army. So, the apt word in the blank is "ahead".
- 175. Option (4) is correct.**  
The paragraph describes "scout". The previous sentence defines scout and the sentence carries forward the idea by mentioning that the purpose of a scout is walking ahead of the army to check where the enemy is. Thus, the most suitable word for the blank is "find".
- 176. Option (4) is correct.**  
The paragraph is about scout. The sentence tells that after gaining information about the enemy army, the scout goes back to his army officer and informs about the whereabouts of the enemy. Thus, the best word in the blank is "reports".
- 177. Option (1) is correct.**  
Since the sentence mentions the details gathered by the scout, the best word to fill in the blank is "information".
- 178. Option (4) is correct.**  
The paragraph is about scout. The sentence tells that after gaining information about the enemy army, the scout goes back to his army officer and informs about the whereabouts of the enemy. The best word in the blank is "enemy".
- 179. Option (2) is correct.**  
This question tests a student's vocabulary. The wrongly spelled word is "blossum". It should be "blossom," which means produce flowers or masses of flowers.
- 180. Option (2) is correct.**  
This question tests a student's vocabulary. The wrongly spelled word is "essencial". It should be essential.
- 181. Option (3) is correct.**  
There is an error of word usage in the given sentence. The word "advice" is an uncountable noun, so it can't be treated as plural number. It should be read as "advice".
- 182. Option (2) is correct.**  
The sentence is grammatically correct. Hence, no substitution is required.
- 183. Option (3) is correct.**  
The paragraph discusses birth, life details, and death of a pharaoh Tutankhamun. Thus, the main theme for the passage is "the life and death of the boy pharaoh". Rest of the options are related to the passage, but aren't the main point of the passage.
- 184. Option (2) is correct.**  
From the last three lines of the paragraph six, option (2) is a clear answer.
- 185. Option (1) is correct.**  
From the second line of the third paragraph, it is clear that Tutankhamun's father was a revolutionary and wanted the Egyptians to worship only one God "Aten".
- 186. Option (4) is correct.**  
From the last line of the second paragraph, we can say that most of his time during his rule he tried to undo the religious revolution done by his father.
- 187. Option (4) is correct.**  
All the options are mentioned in the passage except option (4). Howard Carter's team discovered the entrance way on 4th November 1922.
- 188. Option (1) is correct.**  
A medical specialist who administer drugs for relieving pain during surgery is known as anaesthetist. An

analgesic is a type of drug that stops you from feeling pain. A nephrologist is a type of doctor who specializes in treating diseases that effect the kidneys. A dermatologist is a type of doctor that diagnoses and treats conditions that affect your hair, skin, and nails.

**189. Option (3) is correct.**

The blank needs a word that refers back to the noun mentioned in the sentence. "books". Since, books are plural, we need a plural pronoun to refer. The best pronoun in this context is "them".

**190. Option (4) is correct.**

This question tests a student's vocabulary. The synonym of "massive" is huge. Example: Massive crowds are expected in the event.

**191. Option (2) is correct.**

The sentence is in simple past tense, so the blank will also be filled up with a verb which is in past tense.

**192. Option (1) is correct.**

This question tests a student's understanding of idiom and phrases. "In high spirit" means happy and upbeat, often due to some success or positive occurrence. Example: Ellen's been in high spirits ever since she found out she got the lead in the school play.

**193. Option (1) is correct.**

This question tests a student's understanding of idiom and phrases. "To pull someone's leg" means deceive someone playfully; tease someone. Example: I love pulling my sister's leg.

**194. Option (2) is correct.**

Unless is a subordinating conjunction. We use unless to say that there may be an exception and that this exception will change the situation. The sentence asserts that you won't be permitted in the film fare, if you don't have a photo id. Unless means "if not", which is apt in the given context.

**195. Option (3) is correct.**

The sentence is about a generic fact, which is universal. The sentence should be in simple present tense.

**196. Option (1) is correct.**

According to the rule of interrogation, wh-word(why, how, when, etc.) + Verb + Subject is grammatically the correct structure of an interrogative sentence in which a question is asked). Hence, the sentence should be: Why was she angry with her son?

**197. Option (4) is correct.**

This question tests a student's vocabulary. Hollow means having a hole or empty space inside. The antonym of hollow is solid.

**198. Option (2) is correct.**

This question tests a student's vocabulary. Harass means to annoy or upset someone over a period of time, to bother someone.

**199. Option (3) is correct.**

The sentence mentions an outcome of a particular action. The suitable modal in this context is "must".

**200. Option (4) is correct.**

This question tests a student's vocabulary. Lively means bubbly, full of life. The antonym of lively is sluggish.

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