

Please check the examination details below before entering your candidate information

Candidate Name

Class

Section

# BLOOM Reasoning & Aptitude Olympiad (BRAO)

Question Paper 2024-25

Class  
**12**

Total Questions **50 + 5** (Tie-Breaking Section)


**Total Time Allotted :**  
60 minutes

**Total Marks**  
60

## Instructions

1. There are **50 Multiple Choice Questions** in this booklet having 4 options out of which **ONLY ONE** is correct.
2. There are two sections in the Question Paper; Section A having 40 Questions carrying 1 Mark each & Section B having 10 Higher Difficulty Order Questions carrying 2 Marks each.
3. All questions are compulsory. There is **NO negative** marking for incorrect answers.
4. Total time allotted to complete the paper is 60 minutes.
5. Please fill in your details in the space provided on this page before attempting the paper.

## OMR Sheet Instructions

1. Before starting the paper, fill in all the details in the OMR Sheet.
2. Additional 10 minutes will be provided to fill up the OMR sheet, before the start of the exam.
3. Use HB Pencil to darken the circle of the correct Option in OMR sheet. The correct way to darken the circle in OMR sheet is shown below.  

4. Use black or blue ball point pen/HB pencil to fill the information in the OMR sheet. Partially filled OMR sheet will not be checked.
5. Return the OMR sheet to the invigilator after the exam.

CODE #193

**R12**



## Bloom Reasoning & Aptitude Olympiad Class 12

### Section A (1 Mark)

- If the digits of the number 984573312 are arranged in increasing order then which digit comes at the fifth position from the left?  
(a) 3 (b) 5  
(c) 7 (d) 4
- In a certain code language, "ABACUS" is coded as "282" and "VIOLIN" is coded as "486". What is the code for "FLOWER"?  
(a) 474 (b) 562  
(c) 456 (d) 346
- A and B invest 1600 and 1800 respectively in a business. After 6 months C joins the business and invests 2000 in the same business. If A withdraws his investment after 6 months then what will be the profit ratio after one year between A, B and C?  
(a) 4 : 5 : 9 (b) 9 : 4 : 5  
(c) 12 : 13 : 11 (d) 4 : 9 : 5
- If the ratio of two numbers is 6 : 7 and the HCF of the numbers is 5. Then find the numbers.  
(a) 30 : 35 (b) 25 : 30  
(c) 36 : 42 (d) 78 : 91
- Select the letter cluster that will replace the question mark (?) and complete the series.  
FNLO, HQPP, JTTQ, LWXR, NZBS, ?  
(a) PDGT (b) PCTG  
(c) QCFU (d) PCFT
- Select the letters from the alternatives that will replace the question mark (?) complete the series.  
CB \_ W V \_ SP \_ NLIHG \_ B A \_ XU  
(a) XUOFY (b) XUOEZ  
(c) XUOEY (d) ZUOEZ
- Write 0.6363..... in the form of p/q.  
(a) 5/11 (b) 7/11  
(c) 8/13 (d) 9/7

- Four birds chirp simultaneously at the starting and intervals of 8 sec, 16 sec, 20 sec and 24 sec respectively. How many times are they chirping together in 2 h?  
(a) 32 (b) 34  
(c) 31 (d) 28

- Seven buses P, Q, R, S, T, U and V are arranged in different directions. Bus P is 7 m North of Q. R is 4 m North of S. U is 5 m South of T. U is 4 m East of V. Bus Q is 8 m West of R. T is 10 m West of S.

Bus Q is in which direction to V?

- (a) North (b) North-East  
(c) South-East (d) South-West

- Pointing to the picture of a man, a woman said, "He is the brother of my mother's sister's only sister's son's son."

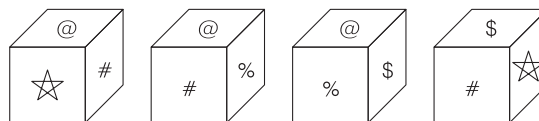
How is the man related to a woman?

- (a) Maternal Aunt (b) Grandmother  
(c) Paternal Aunt (d) Grandfather

- If the 5-digit number 872ab is divisible by 5 and 11, then what is the value of  $(8a + 5b)$ ?  
(a) 81 (b) 89  
(c) 90 (d) 73

- If the price of sugar increased by 20%, by what percentage should it be reduced to bring it back to the original level?  
(a) 12.25% (b) 20%  
(c) 25% (d) 16.67%

- The rotated positions of a single solid are shown below. The various faces of the solid are marked with different symbols. Which of the symbols is opposite to the one that contains "\*"?



- (a) # (b) &  
(c) % (d) \$

14. In a certain code language, "The light is golden" is coded as "\$#@\*" and "gold is golden too" is coded as "\$&^#" and "this is wonderful book" is coded as "%#!)". What is the code for "golden is wonderful"?

(a) #\$\$ (b) \$#%  
(c) \$!# (d) Cannot be determined

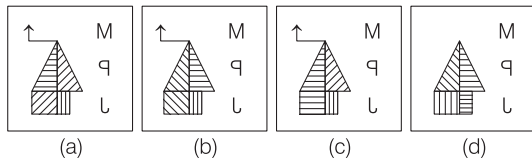
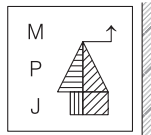
15. Mr. Alok spends 15% of his monthly income on house rent, 25% on food, 14% on clothes, 6% on education, 7% on travel and 20% on medicine, and saves the remaining amount of ₹ 2600. What is the total monthly expenditure on medicine and education together?

(a) 5200 (b) 4500  
(c) 7400 (d) 3400

16. If  $(\cot 35^\circ \times \cot 25^\circ - 1) / y(\cot 35^\circ + \cot 25^\circ) = \cos 30^\circ$ , then what is the value of  $y$ ?

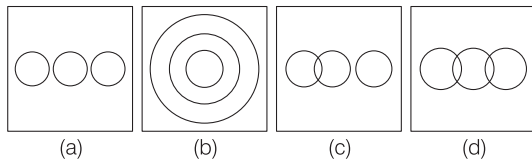
(a)  $\frac{1}{3}$  (b) 1 (c)  $\frac{2}{3}$  (d) 2

17. Select the alternative that closely resembles the mirror image of the given figure when the mirror is placed on the right side of the figure.



18. Identify the Venn diagram that best represents the relationship between the given classes.

Mother, Father, Son



19. In  $\triangle ABC$ ,  $\angle A = 90^\circ$ ,  $AB = 6$  cm,  $AC = 8$  cm. If  $AD$  is perpendicular to  $BC$ , then  $AD$  is equal to

(a) 4.6 cm (b) 4.4 cm  
(c) 4.8 cm (d) 3.8 cm

20. The radii of the internal and external surfaces of the metallic spherical shell are 7 cm and 8 cm respectively. This metallic spherical shell is melted and recast into a solid right circular cylinder of height 3 cm; the diameter of base of the cylinder is

(a) 5.4 (b) 17.33  
(c) 7.8 (d) 16.49

21. A cube is painted blue colour and cut into 64 smaller cubes of equal size. How many cubes have no coloured surface?

(a) 10 (b) 8  
(c) 12 (d) 16

22. In a family get-together, three members of the family Ramesh, Radha and Reena try to remember the retirement date of their grandfather. Ramesh remembers that his grandfather's retirement date was after the 14th of November but before the 18th of November. Radha remembers that her grandfather's retirement date was after the 15th of November but before the 19th of November and Reena remembers that his grandfather's retirement date was after the 16th of November but before the 20th of November.

(a) 17th November  
(b) 16th November  
(c) 18th November  
(d) Cannot be determined

23. A, B and C can complete a work in 12 days, 15 days and 20 days respectively. They worked on it on a rotation basis, with A starting it, B worked on the second day and C worked on it on the third day, and so on. Find the time taken to complete the job.

(a) 20 (b) 12  
(c) 16 (d) 15

24. The ratio of the incomes of A and B is 5: 7. If they spend 50% and 70% of their incomes respectively, then what is the ratio of their savings?
- (a) 5 : 8 (b) 23 : 25  
(c) 25 : 21 (d) 21 : 25
25. A trader sold an article at a profit of 15%. Had it been sold for 200 more, he would have got a profit of 20%. What is the cost price of the article?
- (a) 4000 (b) 4200  
(c) 5400 (d) 4500
26. On a certain amount a simple interest of 2500 in five years. If the rate of interest had been 2% points more, how much more interest would have been earned on the amount?
- (a) 2500 (b) 2800  
(c) 3200 (d) Cannot be determined
27. In a class of 340 students, all the students sat in a row facing North direction. Neha's rank is 235th from the left and Riya is 82 from the right. If Neha shifted to 10 positions in the right direction and then exchanged her position with Riya, what is Riya's position from the left?
- (a) 245th (b) 92nd  
(c) 236th (d) 231st
28. How many pairs of letter in the word "UNDERSTAND" as in English alphabetical order in both backward and forward directions?
- (a) 5 (b) 6  
(c) 7 (d) 4
29. If (1, 2) is the solution for the linear equation and  $3x + 4y = A$ , then what is the value of "A"?
- (a) 10 (b) 11  
(c) 9 (d) 8
30. One-fifth of Ramesh's marks in a Hindi test equals to the one-fourth of his marks in an English test. If the sum of his marks in both tests is 216, then find his marks in Hindi.
- (a) 124 (b) 180  
(c) 140 (d) 120
31. Select the pair of words that follow the same relation as given in the question.  
Endocrinologists : Metabolism :: Nephrologists : ?
- (a) Kidney (b) Liver  
(c) Heart (d) Eyes
32. Select the odd letter cluster from the given alternatives.
- (a) GTVE (b) MNPK  
(c) BYBX (d) HSUF
33. If  $a = 1/(2 - \sqrt{5})$ ,  $b = 1/(2 + \sqrt{5})$ , then what is the value of  $\frac{1}{a} + \frac{1}{b} + \frac{1}{ab}$ ?
- (a) 4 (b) -4  
(c) 3 (d) -3
34. In how many different ways the letters of "PILOT" can be arranged?
- (a) 936 (b) 720  
(c) 120 (d) 136
35. A box contains 52 cards and all these cards are mixed in this box. What is the probability of getting a numbered card when a card is drawn from the pack of 52 cards?
- (a) 9/11 (b) 9/13  
(c) 1/6 (d) 2/5
36. Select the odd pair of numbers from the given alternatives.
- (a) 345 : 171 (b) 281 : 123  
(c) 321 : 38 (d) 747 : 326
37. Arrange all the words in a logical order and select the correct answer from the alternatives.
1. Clarification
  2. Centrifugation
  3. Gradation & Packing
  4. Extraction of Juice
  5. Evaporation
- (a) 4, 1, 5, 3, 2  
(b) 4, 5, 1, 2, 3  
(c) 4, 1, 2, 5, 3  
(d) 4, 1, 5, 2, 3

38. In the morning Amar started walking in the South direction and then turned left and after moving in the same direction he again took one more left turn and stopped.

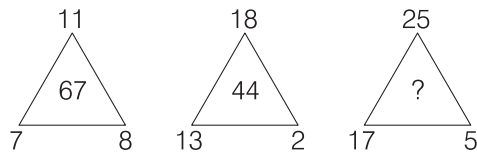
The shadow of Amar falls in which direction?

- (a) North (b) East  
(c) West (d) No shadow

39. Due to heavy rain and storm a pole is broken into two parts and the top part of the pole touches the ground and makes an angle of  $60^\circ$ . If the distance between the bottom of the pole and the top part that touches the ground is 20m. Then, find the height of the pole.

- (a)  $10 + 20\sqrt{3}$  (b)  $12 + 20\sqrt{3}$   
(c)  $20\sqrt{3}$  (d)  $30\sqrt{3}$

40. Select the number from the alternatives that will replace the question mark (?) and complete the question figure.



- (a) 110 (b) 120 (c) 122 (d) 134

## Section B (2 Marks)

41. Select the correct pair of numbers that follow the same relation as given in the question.  
 $89 : 146 :: ? : ?$   
(a) 47 : 66 (b) 23 : 80  
(c) 34 : 108 (d) 14 : 67
42. At what point does the line  $4x - 7y = 12$  cut the X-axis?  
(a)  $(-3, 0)$  (b)  $(3, 0)$   
(c)  $(2, 0)$  (d)  $(-2, 0)$
43. Seven persons E, F, G, H, I, J and K have different numbers of cars. F has 3 more cars than E and the sum of the cars of E and F is 39. K has 2 fewer cars than H.

F has 6 more cars than H. The sum of the cars of G and J is 33 and G has more cars than J. I have 9 cars and J has one more car than J.

What is the sum of the cars of G and K?

- (a) 36 (b) 34  
(c) 25 (d) 56

44.  $P \# Q$  means P is greater than Q.

$P * Q$  means P is equal to Q.

$P \& Q$  means P is less than Q.

$P \% Q$  means P is greater than or equals to Q.

$P \$ Q$  means P is less than or equal to Q.

Which of the following conclusion (s) follows according to the given statement?

**Statement**

$A \% G * M \$ S \# Y \& H$

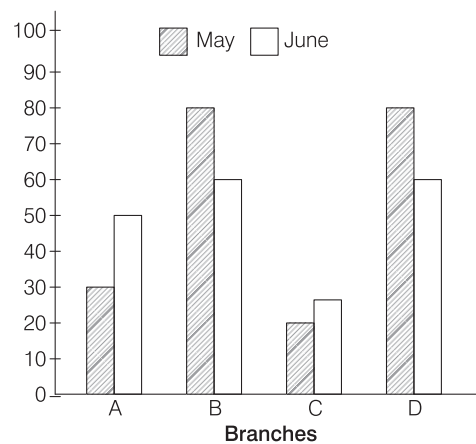
**Conclusions**

I.  $G \$ S$

II.  $S \# H$

- (a) Only I follows (b) Only II follows  
(c) None follows (d) Both I and II follow

**Directions** (Q. Nos. 45 and 46) Study the following bar graph and answer the following questions.



45. What is the ratio of the total sales of A and B in May month to the total sales of A and B in June month?  
(a) 1 : 1 (b) 1 : 2  
(c) 2 : 3 (d) None of these

46. What is the difference between the average sales in May month and the average in June month?
- (a) 3755 (b) 3500  
(c) 3525 (d) 3750
47. A # B means A is the sister B.  
A \$ B means A is the husband of B.  
A @ B means A is the mother of B.  
How X related to K in the following statement?

**Statement**

X \$ A @ S # N @ K

- (a) Grandfather (b) Grandmother  
(c) Mother (d) Father
48. In each of the questions below are given some statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

**Statements**

45% glass are papers.  
100% papers are eraser.  
0% erasers are book.  
0% books are cable.

**Conclusions**

- I. Atleast some glasses are erasers.  
II. No paper is book.  
III. No book is glass.  
IV. 50% cables are erasers.  
(a) Both II and III follow  
(b) All follow  
(c) Only I and II follow  
(d) Only I, II and IV follow

49. Which of the following symbols and numbers should interchanged to make the equation correct?

$$35 - 52 \times 5 + 7 \div 12 = 65$$

- (a) (52, 5), (+, ×)  
(b) (7, 52), (÷, -)  
(c) (7, 52), (÷, ×)  
(d) (52, 5), (+, -)
50. Select the group of numbers that share the same relationship as given in the question.
- (48, 23, 96)  
(92, 45, 184)  
(a) (69, 12, 231)  
(b) (34, 12, 98)  
(c) (52, 25, 104)  
(d) (72, 67, 103)



## Tie-Breaking Section

### Instructions

1. This section consists of 5 Questions.
2. The score achieved in this section will not be included in the total marks.
3. If overall marks of two or more students are same, winner will be decided based on the score in this section.
4. Participation in this section is optional, and students may choose to attempt it or not.

1. Prashant, Kamal, Rishi, Sunita, Tanvi, Vimal, Wazir and Yogita are sitting at a square table in such a way that four of them are sitting at four corners of the table, while the other four are sitting in the middle of each of four sides of the table. The four who are sitting at the corners of the table are facing the centre, whereas those who are sitting in the middle of the sides of the table are facing outside. Prashant, who is facing the centre, is sitting third to the right of Vimal. Tanvi, who is facing the centre, is not an immediate neighbour of Vimal. Only one person is sitting between Vimal and Wazir. Sunita sits second to the right of Kamal. Kamal is facing the centre. Rishi is not an immediate neighbour of Prashant. Which of the following statements regarding Kamal is true?

- (a) Kamal is an immediate neighbour of Yogita
- (b) Kamal is an immediate neighbour of Vimal
- (c) Kamal is sitting the immediate right of Tanvi
- (d) Kamal is an immediate neighbour of both Tanvi and Sunita

2. A 4# B means A is 8 km North of B.  
A 3\$ B means A is 6 km South of B.  
A 5@ B means A is 10 km East of B.  
A 2% B means A is 4 km West of B.  
S is in which direction to W according to the following statements?

#### Statement

S 7%T 6# U 7@ V 2# W

- (a) North
- (b) South
- (c) East
- (d) West

**Directions** (Q. Nos. 3 and 4) *Observe the data given in the table and answer the following questions.*

Employees	Salary	Increment	Expenses
Amar	3500	20%	70%
John	4500	25%	30%
Riya	8500	10%	45%
Asha	9000	8%	30%

3. What is the sum of the salaries of Amar and Asha after increment?  
(a) 13920 (b) 14920  
(c) 15342 (d) 17340
4. What is the sum of expenses for John and Riya after the salary increment?  
(a) 5789 (b) 5895  
(c) 6745 (d) 2350
5. Ten persons sit in two parallel rows. In rows 1 - P, Q, R, S and T and all of them face South direction in row 2: E, F, G, H and I and all of them face North direction. Persons sitting in row 1 face the persons sitting in row 2. All the information is not necessarily in the same order. T sits diagonally opposite of E. I sit opposite the person who is second to the right of T. R sits third to the left of Q. H sits immediately right of F. G does not face P.  
Who sits opposite to the person who is second to the right of G?  
(a) Q (b) S (c) P (d) R

