Please check the examination details below before entering your candidate information

Candidate Name	Class	Section

BLOOM Reasoning & Aptitude Olympiad (BRAO)

Question Paper 2023-24

Class 11

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 1 having 40 Questions carrying 1 Mark each & Section 2 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 #1

R11

BLOOM CAP

Founded by | arihant

Section 1 (1 Mark)

1. In a class there are p students. Out of them q are boys. What part of class is composed of girls?

(a) $\frac{q}{p}$ (b) $\frac{p}{q}$

(c) $1-\frac{q}{p}$ (d) $\frac{q}{p}-1$

2. A man arranges 1936 chairs is a room such that, there are as many rows in the room as the columns. The number of rows is

(a) 46 (b) 44

(c) 48 (d) 12

3. If $3a+b=5$ and $4a-3b=2$, then the ratio $b:a$ is

(a) 14 : 17 (b) 13 : 14

(c) 7 : 8 (d) 9 : 11

4. The width of a block of wood with rectangular cross section is a cm. Its height is $\frac{2}{3}$ of its width and its length is 4 times its height. What is its volume in cm^3?

(a) $\frac{9}{16}a^3$ (b) $\frac{15}{4}a^3$

(c) $\frac{1}{4}a^3$ (d) $\frac{16a^3}{9}$

5. Find the next term of the given series.

A – 1, D – 64, H – 512, ?

(a) M – 2197

(b) N – 2744

(c) L – 1278

(d) None of these

6. In the given series, find the element which is 3rd to the right of 5th element from the left.

R * V X T 7 $ M J 9 A O 7 C @ U δ 1 4 % Y

(a) 7 (b) M

(c) J (d) $

7. If 295y5 is divisible by 11, then the value of y is

(a) 4 (b) 3

(c) 2 (d) 1

8. The population of a city is 250000. It is increasing at the rate of 2% per year. The growth in the population after 2 yr is .....

(a) 10100 (b) 12100

(c) 13100 (d) None of these

9. Find the missing term in the given series

48, 46, 49, 47, 50, ?

(a) 48 (b) 52 (c) 53 (d) 47

10. Select the combination of numbers to form a meaningful word.

G H A R A O T U P

1 2 3 4 5 6 7 8 9

(a) 761234589 (b) 587614392

(c) 136785429 (d) None of these

11. Find the number that will replace the '?'

123 : 36 :: 421 : ?

(a) 49 (b) 94

(c) 52 (d) None of these

12. Choose the odd group of letters from the following group of letters.

(a) AB – CF (b) MN – OR

(c) PQ – RS (d) CD – EH

13. If $y=\frac{1}{\sqrt{2}+1}$, then the value of $y+2$ is

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

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

14. If the total surface area of a cube is 96 cm^2, then its volume is

(a) 64 cm^3 (b) 38 cm^3

(c) 41 cm^3 (d) 21 cm^3

15. Find the word that will replace the '?'

Goitre : Throat :: Eczema : ?

(a) Bones
(b) Heart
(c) Skin
(d) None of these

16. Find the odd pair of numbers from the given numbers

(a) 7 – 50 (b) 8 – 65
(c) 9 – 82 (d) 10 – 99

17. The cost price of 18 chairs is equal to the selling price of 16 chairs. Find the gain percentage.

(a) 12% (b) 13%
(c) 12.5 % (d) 18%

18. The marked price of a sector is ₹ 1200 and the shop keeper allows a discount of 5% on it. Find the selling price of the scooter.

(a) 1140 (b) 1230
(c) 1110 (d) 1010

19. Study the following statements and choose the conclusion that follows

Statements Doctors marry only tall girls.

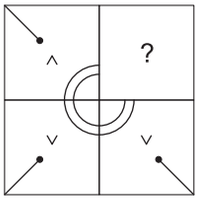
Leela is a tall girl.

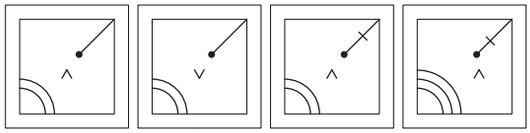
Conclusions

I. Leela is married to a doctor.
II. Leela is not married to a doctor.

(a) Only I follows
(b) Only II follows
(c) Both follow
(d) Either I or II follows

20. Choose the figure which will complete the following pattern.





(a) (b) (c) (d)

21. Find the area of a rhombus one side of which measures 10 cm and one diagonal 12 cm.

(a) 95 m^2 (b) 96 m^2
(c) 92 m^2 (d) 94 m^2

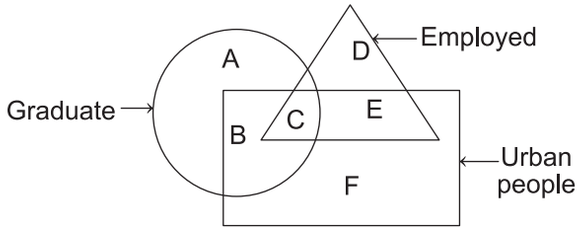
22. Find the value of $(50625)^{1/4} - (3375)^{1/3}$

(a) 0 (b) –1
(c) 1 (d) 1/2

23. What was the day of the week on 19 February 2012?

(a) Sunday (b) Tuesday
(c) Saturday (d) Friday

24. In the following diagram which letter represents employed graduate?



(a) C (b) F (c) E (d) D

25. In the following a number series is given and find out the value of $A^2 - 4 = ?$

4, 7, 12, 19, 28, A, 52

(a) 1365 (b) 1353
(c) 1517 (d) 1435

26. In ΔPQR, the bisectors of $\angle Q$ and $\angle R$ intersect at inside the triangle at point S.

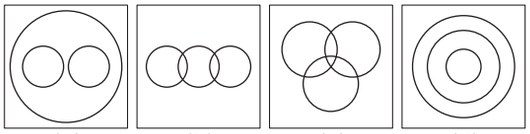
If $\angle QPR = 128°$, then what is the measure of $\angle QSR$?

(a) 26° (b) 78°
(c) 154° (d) 82°

27. At what time between 2 O'clock and 3 O'clock will the two hands of the clock meet at an angle of 60° ?

(a) 21 min 49 sec (b) 19 min 33 sec
(c) 22 min 14 sec (d) 23 min 15 sec

28. Select the venn diagram that best represents the relationship between Japan, China, Asia.



(a) (b) (c) (d)

29. The solutions of equation $9(y+9)^2 = 441$ are

(a) 8, 7 (b) –2, 8
(c) –2, – 16 (d) 16, 2

30. The price of a fridge is ₹ 50000. If the price is increased by 20%, then what will be the new cost of fridge?

(a) ₹ 55000 (b) ₹ 70000
(c) ₹ 60000 (d) ₹ 120000

31. Vimmi and Amin are the sisters of Gaurik. Ashish is father of Vimmi.

Aman is the son of Amin.

How is Ashish related to Aman?

(a) Maternal grandfather
(b) Uncle
(c) Paternal grandfather
(d) Maternal uncle

32. P, Q, R, S, T and U are sitting in a row facing South. Q sits 5th to the right of R. P sits immediately to the right of R. U is the neighbour of S and T. S sits 3rd to the right of P. Find who sits at the extreme ends of the line.

(a) T, R (b) R, Q
(c) T, Q (d) Q, T

33. If $\sin\theta = \frac{6}{10}$, then $\cot\theta = ?$

(a) $\frac{1}{2}$ (b) $\frac{10}{4}$ (c) $\frac{8}{6}$ (d) $\frac{1}{3}$

34. If $5\tan\theta = 4$, then $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$ is equal to

(a) $\frac{1}{6}$ (b) $\frac{1}{7}$
(c) $\frac{1}{9}$ (d) $\frac{1}{2}$

35. Raman is the brother of Sheela. Sheela is the mother of Rohit. Mahesh is the brother of Rohit. How is Mahesh related to Raman?

(a) Nephew (b) Father
(c) Brother (d) Cousin

36. If in a certain code language PRINTER is coded as 1345623 and NEST is coded as 5286, then how will 'RENT' be coded in that code language?

(a) 3256 (b) 5253
(c) 6523 (d) None of these

37. The sum of squares of first 50 natural numbers is

(a) 40000 (b) 58725
(c) 42925 (d) 25505

38. *PQRS* is a cyclic quadrilateral and where *QS* is the diameter of the circle. If $\angle SQR = 29^\circ$, then $\angle QSR = ?$

(a) 61° (b) 120°
(c) 118° (d) 199°

39. If in a code language MEN is written as 9 and NIGHT is written as 25, then how will 'PRINTS' be written in that code language?

(a) 25 (b) 36
(c) 18 (d) 33

40. After starting from a point, Raghu walk 4 km towards West, turns to the right and move 7 km. After this, he again turns to the right and move 8 km. Which is the correct direction in which he moves from his starting point.

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

Section 2 (2 Marks)

41. Study the following statements and choose the conclusions that follows

Statements Some peas are flees.

Some flees are fruits.

All flees are goats.

Conclusions

I. Some goats are peas.

II. Some fruits are goats.

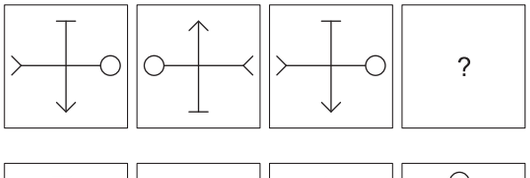
(a) Both follows

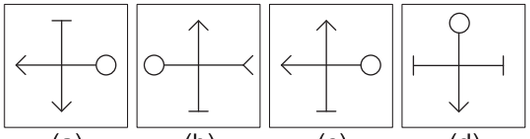
(b) Only I follows

(c) None follows

(d) Either I or II follows

42. Choose the figure which will complete the following figure series.





(a) (b) (c) (d)

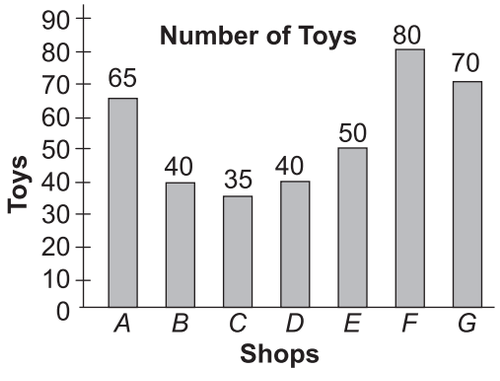
43. Find the missing term of the following series.

a_ba_caad_aa_ea

(a) babbb (b) babbd

(c) babbc (d) bacde

Directions (Q. Nos. 44-46) *The following bar graph shows the number of toys sold by 7 shops (A, B, C, D, E, F and G).*



44. Which shop sold the second highest number of toys?

(a) *F* (b) *B* (c) *G* (d) *D*

45. What is the ratio of the number of toys sold by shop *C* to shop *G*.

(a) 2 : 1 (b) 1 : 2 (c) 4 : 7 (d) 7 : 4

46. The number of toys sold by shop *F* were greater than that of shop *B* by

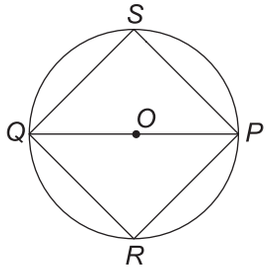
(a) 50% (b) 150% (c) 200% (d) 100%

47. The height of a right circular cone is 8 cm. If diameter of its base is 12 cm, then what will be the curved surface area of the cone?

(a) $\frac{1320}{7}\text{ cm}^2$ (b) $\frac{1481}{9}\text{ cm}^2$

(c) $\frac{1721}{8}\text{ cm}^2$ (d) $\frac{121}{4}\text{ cm}^2$

48. In the following figure $\angle PRQ = 135°$, and the radius of the circle is 7.5 cm, then the length of chord *QP* is .....



(a) 10.6 cm (b) 11.9 cm

(c) 12 cm (d) 13.8 cm

49. In a row of girls, Anushka is 9th from left while Suman is 17th from the right. Both of them interchanged their position such that Anushka becomes 22nd from left. What is the total number of students in the class.

(a) 40 (b) 39 (c) 38 (d) 37

50. Rajan drives 6 km West from his house and turns left and drives 3 km and then turns left again and drives 10 km and reached his office. What is the shortest distance between Rajan's house and office?

(a) 5 km (b) 9 km

(c) 10 km (d) 4 km

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. If each vowel of the given word is changed to next consonant and each consonant is changed to previous consonant. Then, which letter is third from the right end of the word.

MISUNDERSTAND

(a) F (b) D (c) C (d) B

2. P + Q means "P is the wife of Q".

P – Q means "P is the father of Q".

P × Q means "P is the son of Q".

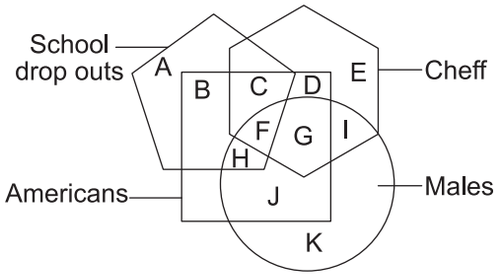
P ÷ Q means "P is the brother of Q".

If A + B – C + D ÷ E × F + G, then which of the following statement is correct.

(a) C is the daughter of F (b) A is the mother of D

(c) G is the father of D (d) B is the father of E

3. Observe the following venn diagram and answer the question



How many "American cheff" are ''School dropouts'' but not males.

(a) F + G + H

(b) D + E

(c) B + C + D

(d) C

4. If $\frac{3}{10}$ part of a pole is in mud, $\frac{3}{5}$ part is in water and the remaining 5 m is above the level of the water, then what is the length of the pole?

(a) 50 m

(b) 52 m

(c) 54 m

(d) 48 m

5. Two trains of equal lengths are running on paraller tracks in the same direction at 46 km/h and 36 km/h, respectively. The faster train passes the slower train in 36 sec. Find the length of each train is

(a) 80 m

(b) 50 m

(c) 72 m

(d) 82 m