Time : 1 Hr. Max. Marks : 60

CLASS24

PAPER CODE	-
FORM NUMBER	

IMO (STAGE-2) MOCK TEST

(ACADEMIC SESSION 2023-2024)

Pre Foundation Division

CLASS VII

MOCK TEST # 01

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

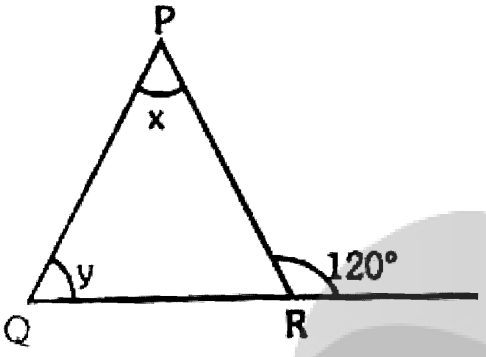
1. Answers are to be given on a separate OMR sheet.
2. This test contains Mathematical Reasoning (45 Questions) and Achievers Section (5 Questions). Total questions are **50**. Duration of test is **1 Hr**.
3. Each question in **Achievers Section carries 3** marks whereas all other questions carry 1 mark. There is no negative marking for wrong answers. Total marks are **60**.
4. Mark your answers for questions 1–50 on the OMR sheet by darkening the circles.
5. If you do not know the answer to any question, do not waste time on it and pass on to the next one. Time permitting, you can come back to the questions, which you have left in the first instance and attempt them.
6. Since the time allotted for this question paper is very limited you should make the best use of it by not spending too much time on any one question.
7. Rough work can be done anywhere in the booklet but not on the OMR sheet/loose paper.

MATHEMATICS

1. $(12)^{2.5} \div (18)^{2.5} \times (24)^{2.5} = 2^p$, then the value of p is

(1) 5 (2) 10 (3) 15 (4) 20

2. In the adjacent figure, find $\angle x$ and $\angle y$, if $\angle x - \angle y = 10°$,



(1) 45°, 35° (2) 55°, 45°

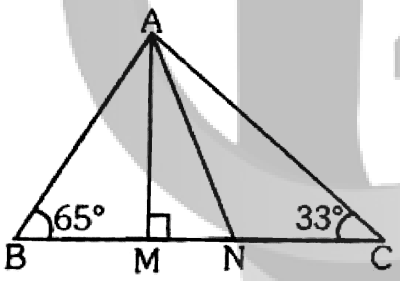
(3) 65°, 55° (4) 60°, 60°

3. Find the value of x :

$$\frac{x-2}{5} - \frac{x-3}{6} = \frac{3}{10}$$

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

4. In the given figure. AM $\perp$ BC and AN is the bisector of $\angle A$. Then $\angle MAN$ is



(1) 16° (2) $32\frac{1}{2}°$ (3) $16\frac{1}{2}°$ (4) 110°

5. On the following number line, find value of $C + G + I$

(1) 0 (2) 10 (3) 8 (4) 6

6. The product of additive identity of -10 and multiplicative identity of 5

(1) -5 (2) 15 (3) 0 (4) -10

7. Let $x = (-1)^{2021}$, $y = (-1)^{2022}$, $z = (-1)^{2023}$, then find the value of $(x + y) \times z$

(1) -1 (2) 0 (3) 1 (4) 2

8. Simplify :

$$\left[3\frac{1}{4} \div \left\{1\frac{1}{4} - \frac{1}{2}\left(2\frac{1}{2} - \overline{\frac{1}{4} - \frac{1}{6}}\right)\right\}\right] \div \left(\frac{1}{4} \text{ of } 4\frac{1}{3}\right)$$

(1) 18 (2) 36 (3) 39 (4) 72

9. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process beings?

(1) –10°C (2) 10°C (3) 20°C (4) –5°C

10. If $x = 1 - \dfrac{1}{2 - \dfrac{1}{3 - \dfrac{1}{2}}}$, then value of $2x + \frac{1}{4}$ is

(1) 0 (2) 1 (3) 2 (4) 3

11. If 2A = 3B and 4B = 5C, then A : C = ?

(1) 4 : 3 (2) 8 : 15 (3) 15 : 8 (4) 3 : 4

12. A hall is 36 m long and 24 m broad allowing 80 m^2 for doors and windows. The cost of painting the walls at Rs. 8.40 per m^2 is Rs. 9408. The height of the hall is_____.

(1) 12 m (2) 5 m (3) 10 m (4) 8 m

13. The value of 20% of 40% of 60% of 1000 is :

(1) 24 (2) 125 (3) 96 (4) 48

14. In ΔABC, $\angle A = x$, $\angle B = 4x$, $\angle C = y$.

If $y = 4x$, then it is a _____ triangle.

(1) Obtuse (2) Equilateral

(3) Isosceles (4) Right angle

15. The mean of 10 numbers is 7. If each number is multiplied by 12. then the mean of new set of numbers is

(1) 82 (2) 48 (3) 78 (4) 84

16. Solve : $0.01x + 0.05(4 - x) = -1$

(1) 20 (2) 30 (3) 40 (4) 50

17. I am three times as old as my son. Five years later, I shall be two and a half time as old as my son. How old am I and how old is my son

(1) 60, 20 (2) 54, 18

(3) 30, 10 (4) 45, 15

18. If x is 20% of y and z is 25% of y, then percentage x of z is

(1) 70% (2) 80% (3) 60% (4) 75%

19. If the cost price of 12 pens is equal to the selling price of 8 pens, the gain percent is

(1) 25% (2) $33\frac{1}{3}\%$

(3) 50% (4) $60\frac{2}{3}\%$

20. Mallika is x years old. Her sister is (2x + 4) years old. Find the difference in their age.

(1) x – 4 (2) 4 – x (3) x + 3 (4) x + 4

21. If simple interest on Rs. 600 increases by Rs. 30 when the rate percentage increases by 4% per annum, then the time

(1) 1 year (2) $1\frac{1}{4}$ years

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

22. Rakesh borrowed Rs.16000 from PNB at simple rate of interest. After 3 years he paid Rs.7000 and at the end of 7 years he paid Rs.12570 to repay the loan. What is the rate of interest charged by the bank?

(1) 4.25 % (2) 5 % (3) 4.5% (4) 3.75%

23. Two friends Ram and Krishna had same candies each. One of them had 15 candies more than the other. Then the candies with Ram was 60% of the total candies with them. How many candies did each have?

(1) 40, 25 (2) 47, 32

(3) 45, 30 (4) 49, 34

24. What percentage of numbers from 1 to 30 has 1 or 9 in the unit's digit

(1) 12 (2) 15 (3) 20 (4) 22

25. A dishonest shopkeeper pretends to sell his goods at cost price but uses false weights and gain $11\frac{1}{9}\%$. What is the false weight he is using instead of 1 kg weight.

(1) 800 gm (2) 850 gm

(3) 900 gm (4) 950 gm

26. Let A, B and C represent the number –4, 0 and 5 respectively on the number line. Point M, N, P are between B and C such that $BM = MN = NP = PC$, which rational number P represent

(1) $\frac{15}{4}$ (2) $\frac{5}{2}$ (3) $\frac{9}{4}$ (4) $\frac{5}{4}$

27. If $\frac{1}{4}\times\frac{2}{6}\times\frac{3}{8}\times\frac{4}{10}\times\frac{5}{12}\times....\times\frac{31}{64}=\frac{1}{2^x}$, then value of x is

(1) 31 (2) 32 (3) 36 (4) 37

28. In which of the following solid has least number of vertices

(1) Cone (2) Cylinder

(3) Cube (4) Pyramid

29. The shape formed by rotating a right triangle about its height is

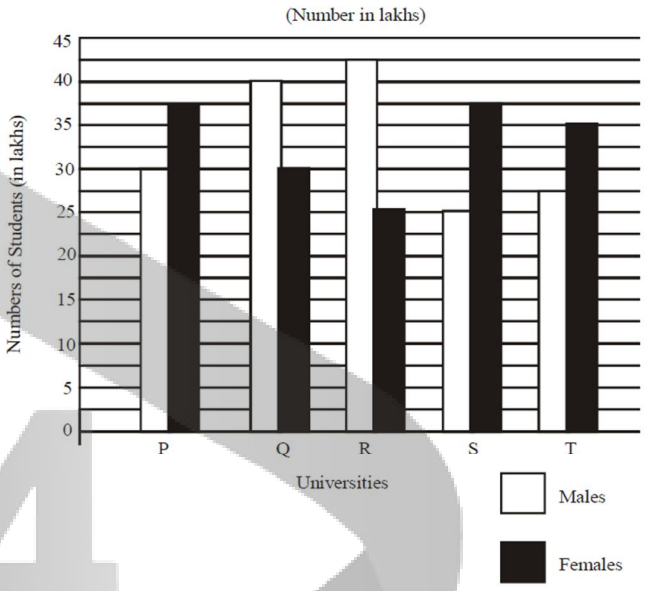
(1) Sphere (2) Cylinder

(3) Cone (4) Cuboid

30. The number of lines of symmetry of the figure 卐 is

(1) 2 (2) 4 (3) 0 (4) 1

Direction (Q.31 to Q.32) Study the following graph carefully and answer the questions given below.



31. What is the ratio of the number of females from universities P and Q together to the number of males in universities R and T together ?

(1) 27 : 32 (2) 27 : 28

(3) 25 : 28 (4) 28 : 27

32. The number of males in University Q are what percent of the total number of students in university S ?

(1) 62 (2) 66

(3) 64 (4) 48

33. A bag contains 10 marbles of which 8 are red. One marble is drawn at random. The probability that it is not red is :

(1) $\frac{8}{10}$ (2) $\frac{6}{10}$

(3) $\frac{4}{10}$ (4) $\frac{2}{10}$

34. If x, y are two positive real numbers and $x^{1/3} = y^{1/4}$, then which of the following relations is true?

(1) $x^3 = y^4$ (2) $x^3 = y$

(3) $x = y^4$ (4) $x^{20} = y^{15}$

35. If $a+b+c=15$ and $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=\frac{71}{abc}$, then the value of $a^3+b^3+c^3-3abc$ is

(1) 160 (2) 180

(3) 200 (4) 220

36. If $\left(8x^3-27y^3\right)\div\left(2x-3y\right)$ $=\left(Ax^2+Bxy+Cy^2\right)$, then value of $\left(2A+B-C\right)$ is

(1) 4 (2) 6

(3) 5 (4) 3

37. The sides of a rectangular plot are in the ratio 5:4 and its area is equal to 500 sq. m. The perimeter of the plot is :

(1) 80 m (2) 100 m

(3) 90 m (4) 95 m

38. If $3^{x+8}=27^{2x+1}$, then value of x is

(1) 7 (2) 3 (3) –2 (4) 1

39. The difference between the length and breadth of a rectangle is 23m. It its perimeter is 206 m, then its area is

(1) $1520\,m^2$ (2) $2420\,m^2$

(3) $2480\,m^2$ (4) $2520\,m^2$

40. If 50% of $\left(p-q\right)=30\%$ of $\left(p+q\right)$, then $p:q$ is equal to

(1) 5 : 3 (2) 4 : 1

(3) 3 : 5 (4) 1 : 4

41. The diagonal of a square A is $\left(a+b\right)$. The diagonal of a square whose area is twice the area of square A is

(1) $2\left(a+b\right)$ (2) $2\left(a+b\right)^2$

(3) $\sqrt{2}\left(a-b\right)$ (4) $\sqrt{2}\left(a+b\right)$

42. If $a=b^p,\ b=c^q,\ c=a^r$, then pqr is

(1) 1 (2) 0

(3) –1 (4) abc

43. If $\left(3x-10\right).\left(4x+4\right)=Ax^2+Bx-40$, then $A+B$ is

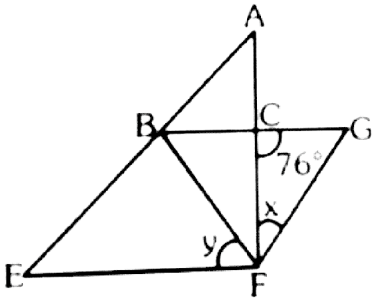
(1) 16 (2) –16

(3) 40 (4) –28

44. The sides of a triangle are in the ratio $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$ and its perimeter is 104 cm, then largest side of triangle

(1) 52 (2) 48 (3) 32 (4) 26

45. In the given figure (not drawn to scale), EFA is a right angled triangle with ∠EFA = 90° and FGB is an equilateral triangle, find 2y – 3x.



(1) 8° (2) 2°

(3) 20° (4) 16°

ACHIEVERS SECTION

46. Read the statements and state "T" for true and "F" for false.

(a) A median of a triangle divides it into two triangles of equal areas.

(b) Each side of an equilateral triangle is 8 cm, then its altitude is $2\sqrt{3}$ cm.

(c) In a ΔABC in which $AB=AC$, the altitude AD bisects BC

(d) A triangle cannot have two obtuse angles

	a	b	c	d
(1)	T	T	F	T
(2)	F	F	T	T
(3)	F	T	F	T
(4)	T	F	T	T

47. Match the column with A and B

Column I	Column-II
(P) $\frac{(-9)^3\times(-3)^5\times(27)^3}{3\times(-81)^4}$	(i) 20
(Q) $3^{2^0}+2^{3^0}+1^{2^3}$	(ii) –27
(R) $-36+\{5-(7-\overline{6+5})\}$	(iii) 27
(S) $2^x=4^y=16$	(iv) 6

Then x^2+y^2 is

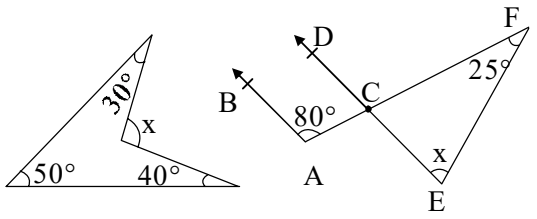
(1) P → (i), Q → (ii), R → (iii), S → (iv)

(2) P → (iii), Q → (ii), R → (iv), S → (i)

(3) P → (iii), Q → (iv), R → (ii), S → (i)

(4) P → (iv), Q → (iii), R → (i), S → (ii)

48. Find the unknown angle x in the given figure.



I II

In fig AB||CD

	I	II
(1)	120°	90°
(2)	55°	120°
(3)	120°	50°
(4)	120°	55°

49. Simplify

(I) $\left[5\left(8^{1/3}+27^{1/3}\right)^3\right]^{1/4}$

(II) $\left(\sqrt[3]{4}\right)^{2x+\frac{1}{2}} = \frac{1}{32}$

Then x = _____

	I	II
(1)	5	5
(2)	5	–4
(3)	–4	–4
(4)	–4	5

50. Mr. Tiwari earns Rs. 25000 per month. He spends $\frac{1}{5}$ of his income on food, $\frac{3}{10}$ of the remainder on house rent and $\frac{9}{28}$ of remainder on the education of children. How much money is still with him.

(1) Rs. 10000 (2) Rs. 8500

(3) Rs. 10500 (4) Rs. 9500