This Question Paper contains 12 printed pages.
(Section - A, B, C & D)

Sl.No.

18 (E)

(MARCH, 2023)

Time : 3 Hours] ***[Maximum Marks : 80***

Instructions :

1) **Write in a clear legible handwriting.**
2) **This question paper has four Sections A, B, C & D and Question Numbers from 1 to 39.**
3) **All Sections are compulsory. Internal options are given.**
4) **The numbers to the right represent the marks of the question.**
5) **Draw neat diagrams wherever necessary.**
6) **New sections should be written in a new page. Write the answers in numerical order.**
7) **Use of calculator, smart watch or digital watch is not allowed.**

SECTION - A

■ **Answer the following as per instructions given: (Questions 1 to 16) (Each carries one mark)** **[16]**

■ **Write True or False for the following questions: (1 to 4)**

1) HCF (17, 23) = 1 **[1]**

2) If $p(x) = x^2 - 7x + 10$, then the number of zeroes are 3. **[1]**

3) If $\sin A = 1$, then $A = 90°$. [1]

4) The values of $\sin A$ and $\cos A$ never be greater than 1. [1]

■ **Select the most appropriate answer from the given alternatives: (5 to 10)**

5) If p and q are positive integers where $p = ab^2$ and $q = a^3b$ where a & b are prime numbers then LCM(p, q) = _____. [1]

(A) ab (B) a^2b^2

(C) a^3b^2 (D) a^3b^3

6) Graphically, the pair of linear equations $6x - 3y + 10 = 0, 2x - y + 9 = 0$ represents two lines which are _____. [1]

(A) intersecting at exactly one point

(B) intersecting at exactly two points

(C) coincident

(D) parallel

7) If the roots of quadratic equation $ax^2 + bx + c = 0, a \neq 0$ are real and distinct, then _____. [1]

(A) $b^2 - 4ac < 0$ (B) $b^2 - 4ac = 0$

(C) $b^2 - 4ac > 0$ (D) $b^2 - 4ac \neq 0$

8) If A(0, 6) and B (0, –2), then the distance between A & B is _____. [1]

(A) 6 (B) 8

(C) 4 (D) 2

9) Probability of getting 80 marks out of 80 in maths paper is _____. [1]

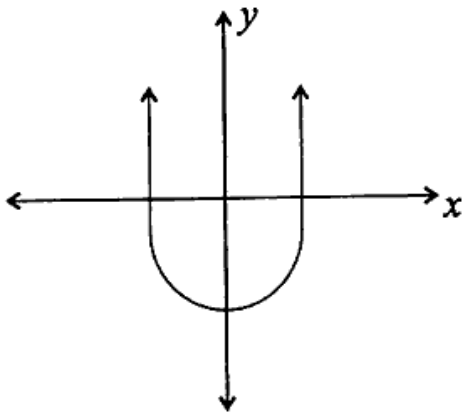
(A) $\frac{79}{80}$

(B) $\frac{1}{80}$

(C) $\frac{1}{81}$

(D) $\frac{79}{81}$

10) For the given figure, if $y = p(x)$, then number of zeroes are _____. [1]



(A) 1 (B) 2

(C) 3 (D) 0

■ **Fill up the blanks: (11 to 16)**

11) The abscissa of the point of intersection of the less than type and of the more than type cumulative frequency curves of a grouped data gives its _____. [1]

[Mean, Median, Mode]

12) Probability of a sure event is _____. [1]

[0, 1, 2].

13) A tangent to a circle intersect it in _____ point. [1]

[0, 1, 2].

14) A circle which touches all the sides of a quadrilateral ABCD, if AB = 7, BC = 3, CD = 4, then AD = _____. [1]

[8, 7, 11]

15) Length of minor arc is _____. [1]

$\left[\frac{\pi r\theta}{180}, \frac{\pi r^2\theta}{360}, \frac{\theta}{360}\right]$

16) If the radius of a circle is doubled, then its area becomes _____ times. [1]

[2, 3, 4]

SECTION - B

■ **Solve the following: (17 to 26) (Each carries 2 marks)** [20]

17) Find the zeroes of the quadratic polynomial $x^2 + 2x - 8$. [2]

OR

17) Find the quotient and remainder:- [2]

$(3x^2 - x^3 - 3x + 5) \div (x - 1 - x^2)$

18) Find a quadratic polynomial whose sum and product of its zeroes given respectively [2]

$\left(\frac{1}{4}, -1\right)$.

19) How many 3-digit numbers are divisible by 3? [2]

20) Evaluate:- [2]

$2\tan^2 45° + \cos^2 30° - \sin^2 60°$

OR

20) If $\sin 3A = \cos (A - 26°)$, where 3A is an acute angle, find the value of A. [2]

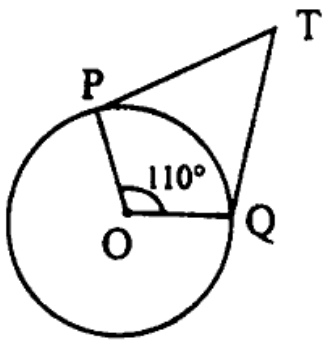
21) Find the value of y for which the distance between the points P(2, –3) and Q(10, y) is 10 units. [2]

22) An observer 1.5m tall is 28.5m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 45°. What is the height of the chimney? [2]

23) From a point Q, the length of the tangent to a circle is 24cm and the distance of Q from the centre is 25cm, then find the radius of the circle. [2]

OR

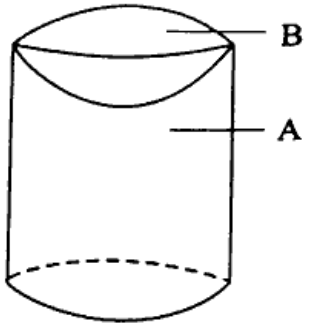
23) In the given figure, if TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110°$, then find $\angle PTQ$. [2]



24) The edge of a cube is 5cm. then find the total surface area of cube. **[2]**

OR

24) A solid shown in the figure is made up of a cylinder (A) with a hemispherical depression (B). Then write the formula for finding the total surface area of a solid. **[2]**



25) If $\sum f_i d_i = -26$, $a = 30$, $\sum f_i = 13$, find $\bar{x}$. **[2]**

26) A box contains 3 blue, 2 white and 4 red marbles. Alok drawn a marble at random from the box, what is the probability that it will be **[2]**

i) white

ii) not red

SECTION - C

■ **Answer the following as asked with calculations: (27 to 34) (Each carries 3 marks)** **[24]**

27) Solve the linear pair of equations by elimination method:- **[3]**

$2x + 3y = 46$ & $3x + 5y = 74$.

OR

27) The difference of two natural numbers is 5 and the difference of their reciprocals is $\frac{1}{10}$, find the numbers. **[3]**

28) Find the nature of the roots of the given quadratic equation. If the real root exist find them. [3]

$2x^2 - 6x + 3 = 0$

OR

28) A train travels 360km at a uniform speed. If the speed had been 5km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train. [3]

29) Find the sum of the first 40 positive integers divisible by 6. [3]

30) Find the 20^{th} term from the last term of the A.P. : 3, 8, 13, ..., 253. [3]

31) Find the value of "k" for which the points are collinear. [3]

(8, 1), (k, – 4), (2, – 5)

OR

31) In what ratio does the point (– 4, 6) divide the line segment joining the points A(– 6, 10) and B (3, – 8)? [3]

32) The table below shows the daily expenditure on food of 25 households in a locality. [3]

Daily expenditure (in ₹)	100-150	150-200	200-250	250-300	300-350
Number of households	4	5	12	2	2

Find the mean daily expenditure on food by a suitable method.

33) A die is thrown once. Find the probability of getting [3]

i) a prime number.

ii) a number lying between 2 and 6.

iii) an odd number.

34) One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting [3]

i) a king of red colour.

ii) not a spade.

iii) the queen of hearts.

SECTION - D

■ **Solve the following: (35 to 39) (Each carries 4 marks)** **[20]**

35) State and prove Pythagoras theorem. [4]

OR

35) Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides. [4]

36) If the median of the distribution given below is 28.5, find the values of P and Q. **[4]**

Weight in kg.	0-10	10-20	20-30	30-40	40-50	50-60	Total
Number of students	5	P	20	15	Q	5	60

37) Draw a triangle ABC with side BC = 6cm, AB = 5cm and $\angle ABC = 60°$. Then construct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the triangle ABC. **[4]**

OR

37) Construct a tangent to a circle of radius 4 cm from a point on the concentric circle of radius 6cm and measure its length. **[4]**

38) A survey conducted on 20 households in a locality by a group of students resulted in the following frequency table for the number of family members in a household: **[4]**

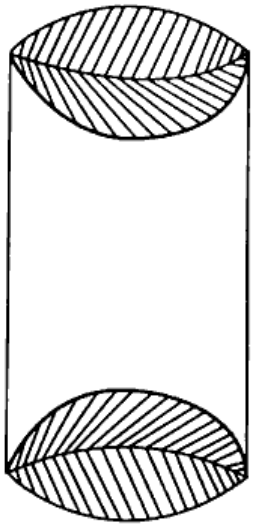
Family size	1-3	3-5	5-7	7-9	9-11
Number of families	7	8	2	2	1

Find the mode of this data.

39) A metallic sphere of radius 4.2cm is melted and recast into the shape of a cylinder of radius 6cm. Find the height of the cylinder. [4]

OR

39) A wooden article was made by scooping out a hemisphere from each end of a solid cylinder as shown in figure. If the height of the cylinder is 10cm and its base is of radius 3.5cm, find the total surface area of the article. [4]



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