

*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 $A = 90^\circ$. [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 $\text{LCM}(p, q) = \underline{\hspace{2cm}}$. [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]

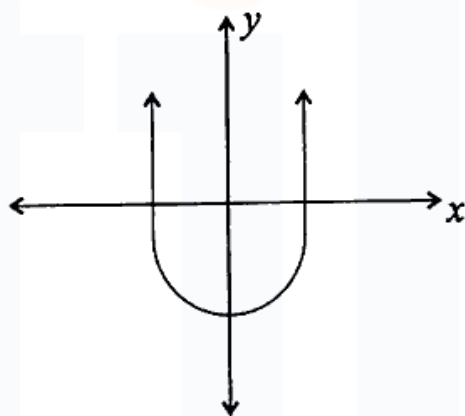
(A) $\frac{79}{80}$

(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]

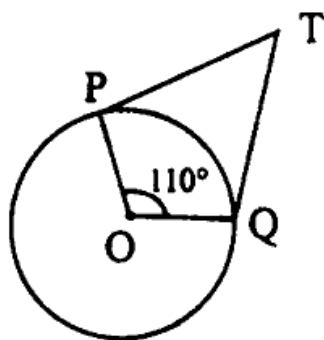
$$2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$$

OR

- 20) If $\sin 3A = \cos (A-26^\circ)$, 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

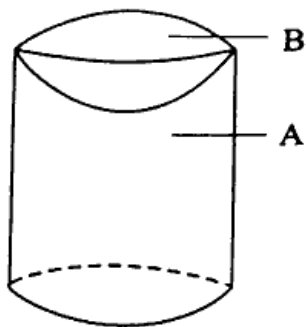
- 23) In the given figure, if TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then find $\angle PTQ$. [2]



- 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 20th 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 $BC = 6\text{cm}$, $AB = 5\text{cm}$ and $\angle ABC = 60^\circ$. 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]

