EDUTECH ®
ACADEMY
NURTURING THE FUTURE....

— SCHOOL SECTION —

CBSE CLASS 10 – MATHEMATICS Qs PAPER 2025_26

Series JMS/2

SET - 2

Code No. **2/4/10**

Roll No. | | | | | | | |

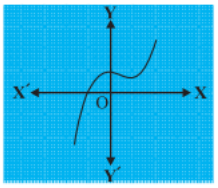
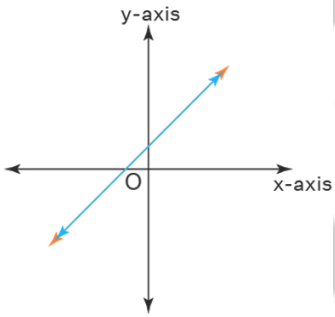
Candidates must write the Code on the title page of the answer-book

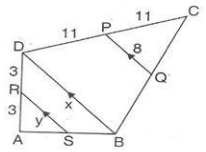
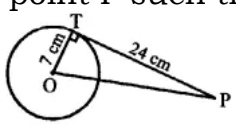
General Instructions:

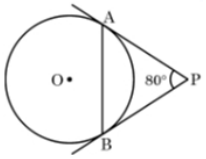
1. This question paper contains 38 questions.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Questions no. 1 - 18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion - Reason based questions of 1 M each.
4. In Section B, Questions no. 21 - 25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Questions no. 26 - 31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Questions no. 32 - 35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Questions no. 36 - 38 are case study - based questions carrying 4 marks each with sub - parts of the values of 1,1 and 2 marks each respectively.
8. All Questions are compulsory. However, an internal choice in 2 Questions of Section B, 2 Questions of Section C and 2 Questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required.
10. Take $\pi = 22/7$ wherever required if not stated.
11. Use of calculators is not allowed.

MATHEMATICS (041)

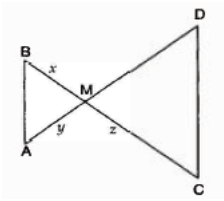
Time allowed : 3 hours *Maximum Marks : 80*

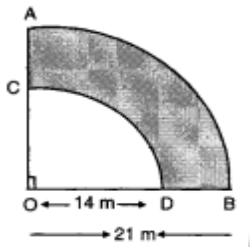
	Section A	
1	If the HCF of two positive integers a and b is 1, then their LCM is: a) a b) b c) ab d) $a + b$	**[1]**
2	Find the number of zeroes of p(x) in the graph given below.  a) 1 b) 3 c) 0 d) 2	**[1]**
3	A system of linear equations is said to be consistent, if it has  a) exactly one solution b) one or many solutions c) no solution d) two solutions	**[1]**
4	If x = 3 is a solution of the equation $3x^2 + (k - 1)x + 9 = 0$ then k = ? a) 11 b) - 11 c) 13	**[1]**

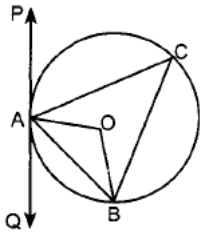
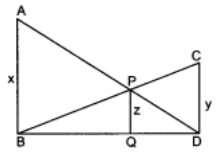
	d) - 13	
5	If a_n denotes the nth term of the AP 3, 8, 13, 18,... then what is the value of (a_{30} - a_{20})? a) 36 b) 40 c) 50 d) 56	**[1]**
6	The distance of a point from the y - axis is called a) ordinate b) origin c) abscissa d) Scale	**[1]**
7	The point P which divides the line segment joining the points A(2, - 5) and B(5, 2) in the ratio 2 : 3 lies in the quadrant. a) III b) I c) IV d) II	**[1]**
8	In the adjoining figures$RS \mid \mid DB \mid \mid PQ$. If CP= PD= 11 and DR= RA= 3. Then.  a) x = 10, y = 7 b) x = 14, y = 6 c) x = 12, y = 10 d) x = 16, y = 8	**[1]**
9	In a circle of radius 7 cm, tangent PT is drawn from a point P such that PT = 24 cm. If O is the centre of the circle, then length OP = ?  	**[1]**

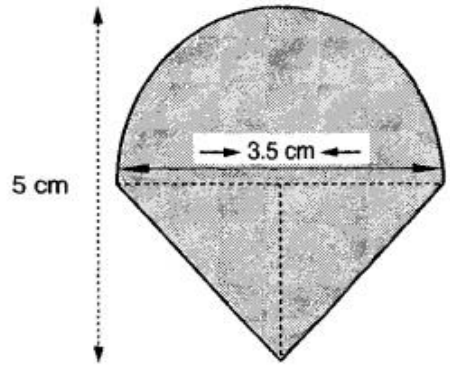
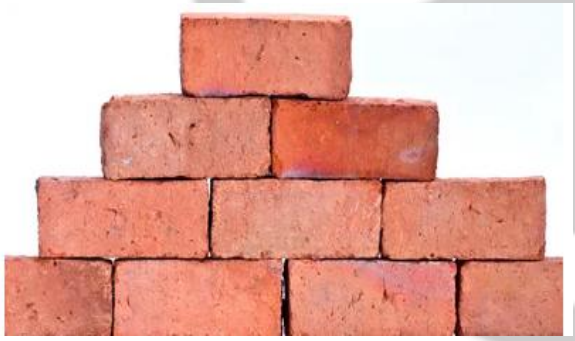
	a) 28 cm b) 18 cm c) 25 cm d) 30 cm	
10	In the given figure, tangents PA and PB drawn from P to circle are inclined to each other at an angle of 80^o . The measure of ∠ PAB is  a) 80^o b) 40^o c) 50^o d) 60^o	**[1]**
11	sec^4 A - sec^2 A is equal to a) tan^2 A - tan^4 A b) tan^2 A + tan $^{$ A c) tan^4 A + tan^2 A d) tan^4 A - tan^2 A	**[1]**
12	$\frac{2\tan 30°}{1+\tan^2 30°}$ = a) $cos60°$ b) $sin60°$ c) $cot60°$ d) $tan60°$	**[1]**
13	Two persons are metres apart and the height of one is double that of the other. If from the middle point of the line joining their feet, an observer finds the angular elevation of their tops to be complementary, then the height of the shorter post is a) $\frac{a}{2\sqrt{2}}$ b) $a\sqrt{2}$	**[1]**

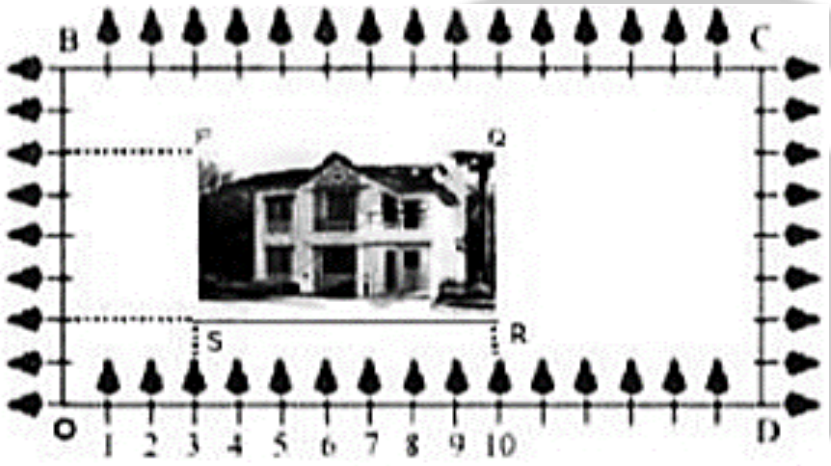
	c) $\frac{a}{4}$ d) $\frac{a}{\sqrt{2}}$	
14	The area of the sector of a circle of radius 12 cm is60π cm ^{2} . The central angle of this sector is: a) 6^o b) 150^o c) 75^o d) 120^o	**[1]**
15	A sector of a circle of radius 8 cm contains an angle of 135. Find the area of the sector. a) 20π cm ^{2} b) 14π cm ^{2} c) 24π cm ^{2} d) 25π cm ^{2}	**[1]**
16	One card is drawn at random from a well shuffled deck of 52 playing cards. What is the probability of getting **4 of hearts** ? a) $\frac{1}{13}$ b) $\frac{1}{52}$ c) $\frac{1}{26}$ d) $\frac{1}{6}$	**[1]**
17	Which of the following cannot be the probability of aevent? a) 3% b) 0.1 c) $\frac{17}{16}$ d) $\frac{1}{3}$	**[1]**
18	If the mean and the mode of a distribution are 17 and 20 respectively, then the median of the distribution, using empirical formula, is:	**[1]**

	a) $\frac{31}{3}$ b) 17 c) 20 d) 18	
19	**Assertion (A):** If we join two hemispheres of same radius along their bases, then we get a sphere. **Reason (R):** Total Surface Area of a sphere of radius r is $3\pi r^2$. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
20	**Assertion (A):** Sum of natural number from 1 to 100 is 5050. **Reason (R):** Sum of n natural number is $\frac{n(n+1)}{2}$. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
	Section B	
21	Prove that$4 + \sqrt{2}$ is irrational. **OR** Prove that$6 + \sqrt{2}$ is irrational.	**[2]**
22	In FigureΔ AMB $\sim \Delta$ CMD; determine MD in terms of x, y, and z.  	**[2]**
23	A right triangle ABC, right angled at A, is circumscribing a circle. If AB = 6 cm and BC = 10 cm, find the radius of the circle.	**[2]**

24	Prove $\frac{\cos A-\sin A+1}{\cos A+\sin A-1}$ =cosec A + cot A,using the identity cosec ^{2} A = 1 + cot ^{2} A.where the angles involved are acute angles for which the expressions are defined. **OR** Prove the trigonometric identity: $$\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}+\sqrt{\frac{1-\cos\theta}{1+\cos\theta}}=2cosec\theta$$	**[2]**
25	ABCD is a flower bed. If OA =21 m and OC = 14 m, find the area of the bed. 	**[2]**
	Section C	
26	105 goats, 140 donkeys and 175 cows have to be taken across a river. There is only one boat which will have to make many trips in order to do so. The lazy boatman has his own conditions for transporting them. He insists that he will take the same number of animals in every trip and they have to be of the same kind. He will naturally like to take the largest possible number each time. Can you tell how many animals went in each trip?	**[3]**
27	Find a quadratic polynomial, sum and product of whose zeroes are 5 and - 6, respectively. Also, find the zeroes of the polynomial so obtained.	**[3]**
28	The following table shows the age distribution of patients of malaria in a village during a particular month: **Age(in years)** | 5 - 14 | 15 - 24 | 25 - 34 | 35 - 44 | 45 - 54 | 55 - 64 **Number of cases** | 6 | 11 | 21 | 23 | 14 | 5 Find the average age of the patients.	**[3]**
29	Solve the pair of linear equations0.2x + 0.3y = 1.3and0.4x + 0.5y = 2.3 by substitution method. **OR** Draw the Graphs of the equations x = 3, x = 5 and 2x - y - 4 = 0. Also find the area of the quadrilateral formed by the lines and the x - axis.	**[3]**
30	If $\sin\theta=\frac{12}{13}$, find the value of $\frac{\sin^2\theta-\cos^2\theta}{2\sin\theta\cos\theta}\times\frac{1}{\tan^2\theta}$.	**[3]**

31	PAQ is a tangent to the circle with centre O at a pointA as shown in figure. If∠ OBA = 35°, find the value of ∠ BAQ and ∠ ACB.  **OR** If the sides of a quadrilateral touch a circle, prove that the sum of a pair of opposite sides is equal to the sum of the other pair.	**[3]**
	Section D	
32	The following data gives the information about the lifetimes (in hours) of 225 neon lamps: **Lifetime (in hours)** | **Number of lamps** 1500 - 2000 | 10 2000 - 2500 | 35 2500 - 3000 | 52 3000 - 3500 | 61 3500 - 4000 | 38 4000 - 4500 | 29 Find the median lifetime of a lamp.	**[5]**
33	In figure AB‖ PQ ‖ CD, AB = x units, CD = y units and PQ = z units, prove that $\frac{1}{x}+\frac{1}{y}=\frac{1}{z}$  	**[5]**
34	In a flight of 2800 km, an aircraft was slowed down due to bad weather. Its average speed is reduced by 100 km/h and by doing so, the time of flight is increased by 30 minutes. Find the original duration of the flight. **OR** Solve:$\frac{1}{x-2}+\frac{2}{x-1}=\frac{6}{x}; x\neq 0,1,2$	**[5]**
35	Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a	**[5]**

	cone surmounted by a hemisphere. The entire top is 5 cm in height and the diameter of the top is 3.5 cm. Find the area he has to colour. (Take$\pi = \frac{22}{7}$).  **OR** A solid toy is in the form of a hemisphere surmounted by a right circular cone. Height of the cone is 2 cm and the diameter of the base is 4 cm. If a right circular cylinder circumscribes the solid. Find how much more space it will cover.	
	Section E	
36	**Read the following text carefully and answer the questions that follow:** Akshat's father is planning some construction work in his terrace area. He ordered 360 bricks and instructed the supplier to keep the bricks in such as way that the bottom row has 30 bricks and next is one less than that and so on.  The supplier stacked these 360 bricks in the following manner, 30 bricks in the bottom row, 29 bricks in the next row, 28 bricks in the row next to it, and so on. 1. In how many rows, 360 bricks are placed? (1) 2. How many bricks are there in the top row? (1) 3. How many bricks are there in 10^{th} row? (2) **OR** If which row 26 bricks are there? (2)	**[4]**

37	**Read the following text carefully and answer the questions that follow:** Using Cartesian Coordinates we mark a point on a graph by how far along and how far up it is. The left - right (horizontal) direction is commonly called X - axis. The up - down (vertical) direction is commonly called Y - axis. In Green Park, New Delhi Suresh is having a rectangular plot ABCD as shown in the following figure. Sapling of Gulmohar is planted on the boundary at a distance of 1 mfrom each other. In the plot, Suresh builds his house in the rectangular area PQRS. In the remaining part of plot, Suresh wants to plant grass.  1. Find the coordinates of the midpoints of the diagonal QS. (1) 2. Find the length and breadth of rectangle PQRS? (1) 3. Find Area of rectangle PQRS. (2) **OR** Find the diagonal of rectangle. (2)	**[4]**
38	**Read the following text carefully and answer the questions that follow:** Totem poles are made from large trees. These poles are carved with symbols or figures and mostly found in western Canada and northwestern United States. In the given picture, two such poles of equal heights are standing 28 m apart. From a point somewhere between them in the same line, the angles of elevation of the top of the two poles are 60 ^{o} and 30 ^{o} respectively.	**[4]**

1. Draw a neat labelled diagram. (1)
2. Find the height of the poles. (1)
3. If the distances of the top of the poles from the point of observation are taken as p and q, then find a relation between p and q. (2)

OR

Find the location of the point of observation. (2)

ALL THE BEST