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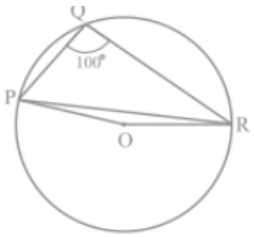
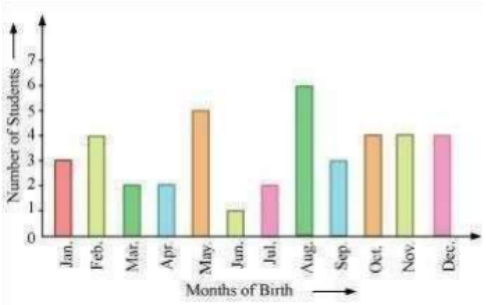
SAMPLE QUESTION PAPER
Term 2 2021-22
CLASS 9
SUBJECT MATHEMATICS

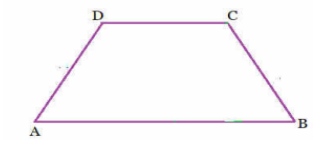
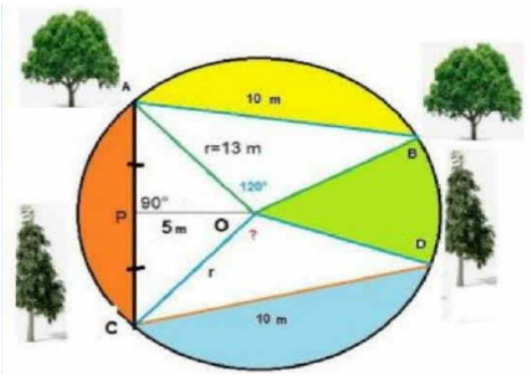
TIME : 2 Hrs. **M.M. 40**

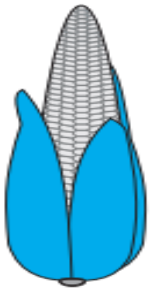
General Instructions 1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. All questions are compulsory.
3. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
4. Section B comprises of 4questions of 3 marks each. Internal choice has been provided in one question.
5. Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

SECTION A

Q No		MARKS
1	Find the value of k, if (x+1) is a factor of $4x^3+3x^2+5x+K$ **OR** Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $x - 1$	2
2	The curved surface area of a right circular cylinder of height 14 cm is 88 cm2 . Find the diameter of the base of the cylinder.	2
3	Construct the angle of 135^0 with the help of ruler and compass.	2
4	The angles of a quadrilateral are (x+1), (5x + 4), (x – 2) and (3x + 7). Find all the angles of the quadrilateral. **OR** ∠ PQR = 100°, where P, Q and R are points on a circle with centre O. Find ∠ ORP & Reflex ∠POR . 	2
5	1500 families with 2 children were selected randomly, and the following data were recorded: Number of girls in a family: 2 | 1 | 0 Number of families: 475 | 814 | 211 Compute the probability of a family, chosen at random, having (i) 2 girls (ii) atleast 1 girl	2

6	In a particular section of class IX ,40 students were asked about the months of their birth and the following graph was prepared for the data so obtained:  Find the probability that a student of the class was born in August.	2
	SECTION B	
7	(a)Find the zeroes of the polynomial $x^2 - x - 6$ (b) Evaluate the following product without multiplying directly: 103 × 107	3
8	**Factorise** **(i)** $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$ **(ii)** $27 - 125a^3 - 135a + 225a^2$	3
9	Construct a triangle PQR in which QR = 6cm, ∠Q = 60° and PR – PQ = 2cm **OR** Construct a triangle ABC in which BC = 8cm, ∠B = 45° and AB – AC = 3.5 cm.	3
10	A hemispherical dome of a building needs to be painted (see Fig.). If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given the cost of painting is ₹ 5 per 100 cm^2 . 	3
	SECTION C	
11	Divide the polynomial $3x^4 - 4x^3 - 3x - 1$ by x – 1. **OR** Factorise : $x^3 + 13x^2 + 32x + 20$	4

12	Case study 1 During Math Lab Activity each student was given four broomsticks of lengths 8cm, 8cm, 5cm,5cm to make different types of quadrilaterals. 8cm 8cm 5 cm 5 cm (a)Draw different possible quadrilaterals that can be formed using these sticks and write their names. (b)In a trapezium ABCD, DC||AB and $\angle A=\angle B=45^0$, the teacher asked the student to find $\angle D$, one student answered it is …….also find $\angle C$ 	2 + 2
13	CASE STUDY 2 A farmer has a circular garden as shown in the picture below. He has a different type of trees, plants and flower plants in his garden. In the garden, there are two mango trees A and B at a distance of AB=10m.Similarly has two Ashok trees at the same distance of 10m at C and D as shown . AB subtends $\angle AOB=120^0$ at the center O, The perpendicular distance of AC from center is 5m .The radius of the circle is 13m.  Q.1 what is the value of $\angle COD$? Q.2 Find the distance between mango tree A and Ashok tree C. Q.3 Farmer wants to plant a rose bush at point P (at the mid of A & B). Find the distance of P from the center.	1+1.5+1.5

14	A corn cob (see Fig.), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm. If each 1 cm2 of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob. 	4