

CLASS 10
TERM-II
PRELIMINARY EXAMINATION- II
Mathematics Standard (041)

Duration: 2Hrs.

Max. Marks: 40

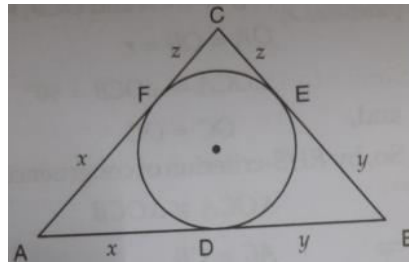
GENERAL INSTRUCTIONS:

1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
3. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
4. 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		Marks												
Q. N.														
1.	If $x=2$ and $x=3$ are roots of the equation $3x^2-2kx+2m=0$, find the value of k and m . OR Solve for x : $\sqrt{3}x^2+10x+7\sqrt{3}=0$	2												
2.	The dimensions of a metallic cuboids are: 100 cm x 80 cm x 64 cm. It is melted and recast into a cube. Find the surface area of the cube.	2												
3.	Calculate the median of the following data. <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Marks</th> <th style="padding: 5px;">0-20</th> <th style="padding: 5px;">20-40</th> <th style="padding: 5px;">40-60</th> <th style="padding: 5px;">60-80</th> <th style="padding: 5px;">80-100</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Number of students</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">30</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">2</td> </tr> </tbody> </table>	Marks	0-20	20-40	40-60	60-80	80-100	Number of students	5	15	30	8	2	2
Marks	0-20	20-40	40-60	60-80	80-100									
Number of students	5	15	30	8	2									
4.	Find four terms of AP whose sum is 20 and the sum of whose squares is 120.	2												
5.	A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.	2												
6.	Prove that the tangents drawn at the ends of a diameter of a circle are parallel. OR Prove that A tangent to a circle is perpendicular to the radius through the point of contact.	2												
SECTION B														
7.	Find the sum of all natural numbers between 250 and 1000 which are exactly divisible by 3.	3												
8.	Solve for x : $9x^2-9(a+b)x+(2a^2+5ab+2b^2)=0$ OR A train travels 300 km at a uniform speed. If the speed had been 5 km/h more, it would have taken 2 hour less for the same journey. Find the original speed of the train.	3												

9. A well is to be dug with 4 m inside diameter and 10 m in depth. Find the quantity of earth to be excavated. The earth taken out is spread all around to a width of 4 m to form an embankment. Find the height of the embankment. 3

10. A circle is inscribed in a ΔABC having sides 8 cm, 10 cm, and 12 cm as shown in figure. Find AD, BE and CF. 3



SECTION C

11. Construct two concentric circles of radii 3 cm and 7 cm. Draw two tangents to the smaller circle from a point P which lies on the bigger circle.
OR
Let ABC be a right triangle in which $AB=3$ cm, $BC=4$ cm and $\angle B=90^\circ$. BD is the perpendicular from B on AC. The circle through B, C, D is drawn. Construct the tangent from A to this circle. 4

12. A class teacher has the following absentee record of 60 students of a class for the whole term. Find the mean and modal number of days a student was absent. 4

No. of days	No. of students
0-10	9
10-20	12
20-30	15
30-40	10
40-50	14
Total	60

13. **CASE STUDY BASED QUESTIONS.**

CASE STUDY-1

Your elder brother wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of Rs 1,18,000 by paying every month starting with the first instalment of Rs 1000. If he increases the instalment by Rs 100 every month, answer the following:

13.



13.1 The amount paid by him in 30th installment is

2

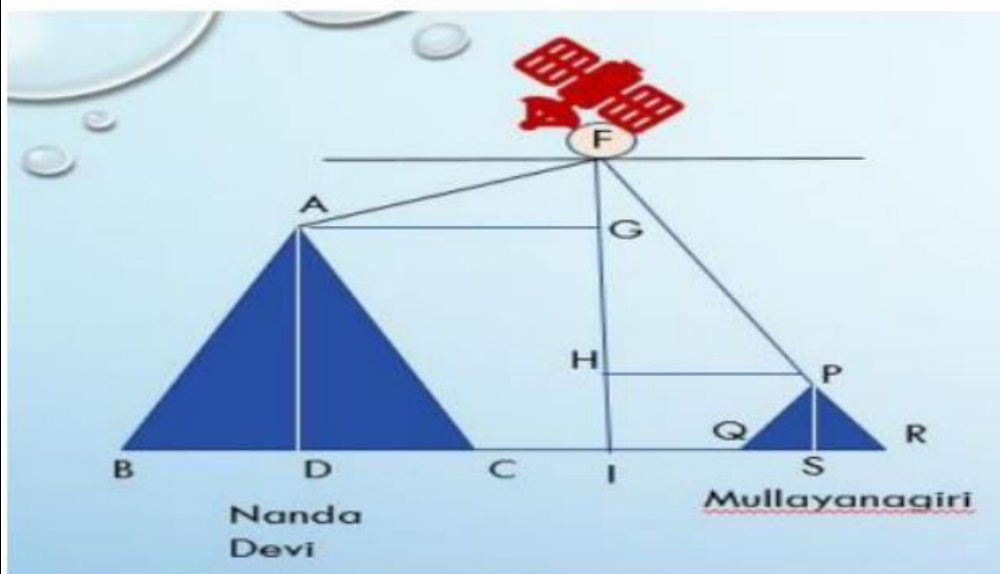
13.2 The amount paid by him in the 30 installments is

2

14

CASE STUDY-2

A Satellite flying at height h is watching the top of the two tallest mountains in Uttarakhand and Karnataka, them being Nanda Devi (height 7,816m) and Mullayanagiri (height 1,930 m). The angles of depression from the satellite, to the top of Nanda Devi and Mullayanagiri are 30° and 60° respectively. If the distance between the peaks of the two mountains is 1937 km, and the satellite is vertically above the midpoint of the distance between the two mountains.



14.1 The distance of the satellite from the top of Nanda Devi is

2

14.2 The distance of the satellite from the ground is

2