

GREENLAWNS HIGH SCHOOL

Final Examination MATHEMATICS

Date: 26-02-2023

Grade: IX

Time: $2\frac{1}{2}$ h

Marks: 80

(Two hours and a half)

Answers to this Paper must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is to be spent in reading the question paper.

The time given at the head of this Paper is the time allowed for writing the answers.

Attempt all questions from Section A and any four questions from Section B.

All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer.

Omission of essential working will result in loss of marks.

The intended marks for questions or parts of questions are given in brackets [].

Mathematical tables are provided.

Section A

(Attempt all questions from this section)

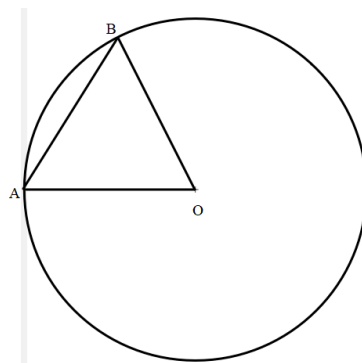
Question 1

[15]

Choose the correct answer to the questions from the options given below.

- i. If you deposit ₹ 500 in a saving account that offers 8% interest rate compounded yearly find the interest earned after first 6 months
 - a) Rs. 40
 - b) Rs. 20
 - c) Rs. 60
 - d) Rs. 50
- ii. If $y - \frac{1}{y} = 4$ then the value of $y^2 + \frac{1}{y^2}$ is
 - a) 20
 - b) 16
 - c) 15
 - d) 18
- iii. $8(a + 5b)^2 - 3a - 15b$ in the form of factors is
 - a) $(a + 5b)^2(8a + 40b - 3b)^2$
 - b) $(a + 5b) (8a + 40b - 3b)^2$
 - c) $(a + 5b) (8a + 40b - 3b)$
 - d) $(a + 5b)^2(8a + 40b - 3b)$

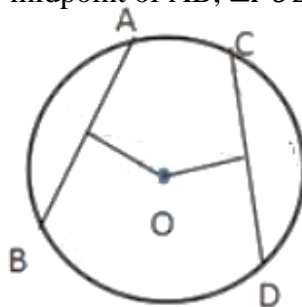
- iv. A chord of length 14 cm is drawn in a circle of radius 25 cm, its distance from the centre of the circle will be_____
- 22cm
 - 24cm
 - 20cm
 - 23cm
- v. If $\sin A = \frac{3}{5}$, then the value of $\operatorname{cosec} A - 1$ is
- $\frac{3}{2}$
 - $\frac{2}{3}$
 - $\frac{4}{3}$
 - $\frac{1}{3}$
- vi. A person deposited ₹ 500 in an account and earned a total of ₹ 80 as compound interest after 1 year, the annual interest rate will be
- 8%
 - 12%
 - 16%
 - 13%
- vii. The Range of the data 8,9,1,10,7,6,9,11 is
- 8
 - 9
 - 10
 - 7
- viii. In the expansion of $(2x - 3y - 4z)^2$, the coefficient of term yz is
- 4
 - 24
 - 12
 - 16
- ix. The Factors of $36a^2 - 49b^2$ are
- $(6a - 7b)(6a + 7b)$
 - $(6a - 7b)(6a \times 7b)$
 - $(6a \times 7b)(6a + 7b)$
 - $(6a \div 7b)(6a - 7b)$
- x. In the Given figure, O is the centre of the circle, AB is the side of a regular octagon then $\angle AOB$ will be.
- 45°
 - 20°
 - 25°
 - 75°



- xi. The diameter of a circle is 6cm, if the diameter is increased by 12 cm, then the circumference of the resulting circle will become _____ the original circle.
- three times
 - double
 - four times
 - half
- xii. If $2 \sin 3A = 1$ then A will be
- 10°
 - 20°
 - 30°
 - 40°
- xiii. The distance between the origin and (-15,8) is
- 13
 - 12
 - 11
 - 17
- xiv. In a cuboid of length 3cm breadth 4cm and height 5cm, the length of its diagonal is
- $3\sqrt{5}$
 - $5\sqrt{2}$
 - $4\sqrt{3}$
 - $2\sqrt{2}$
- xv. Find x if the mean of 12,15,18, x is 16
- 14
 - 16
 - 19
 - 22

Question 2

- i. Find the value of $4(\sin^2 60^\circ + \cos^2 30^\circ) - 3(\sin^2 90^\circ - \tan^2 30^\circ)$ (4m)
- ii. In the given figure, AB and CD are two equal chords of a circle with centre O, If E is the midpoint of CD and F is the midpoint of AB, $\angle FOE = 120^\circ$, Find $\angle AFE$ (4m)



- iii. Given if $a + \frac{1}{a} = 3$ and $a \neq 0$, then find. (4m)
- $a^2 + \frac{1}{a^2}$
 - $a - \frac{1}{a}$

Question 3

- If $2\cos^2\theta - 1 = 0$, find the value of θ , hence find the value of $\sin^2\theta + \tan^2\theta$. (4m)
- If ₹ 2000 is invested at 6% p.a compound interest, calculate the compound interest after 2 years. (4m)
- Prepare a frequency polygon using histogram for the following data. (5m)

Class Intervals	1-10	11-20	21-30	31-40	41-50
Frequency	5	8	12	10	5

Section B

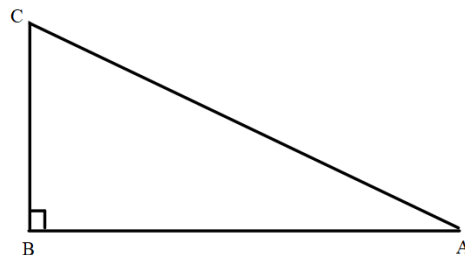
(Attempt any 4 questions from this section)

Question 4

- Evaluate $\sec 25^\circ \sin 65^\circ + \cos 65^\circ \operatorname{cosec} 25^\circ$ (3m)
- Two cubes of volume 64 cm^3 are joined end to end, find the total surface area of the resulting cuboid. (3m)
- If the Simple interest on a principal amount for 2 years at a rate of 4% is ₹ 200, calculate the compound interest on the same sum and at the same rate for 2 years. (4m)

Question 5

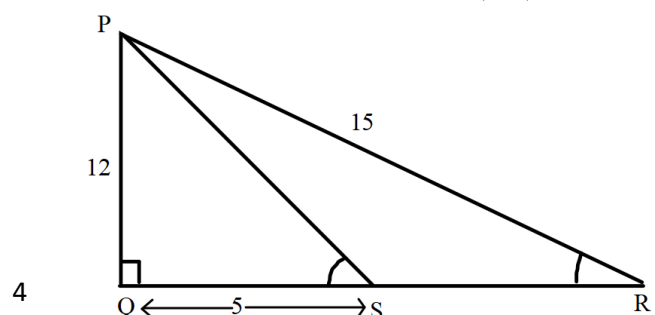
- From the given figure If $10\cos A = 8$, find the value of.
a) $\sin A$
b) $\tan C$



- What is the time period required for a principal amount of ₹ 1000 to grow to ₹ 1331 at an interest of 10%? (3m)
- Use distance formula to show that the points A (3, -2), B (5,2) and C (8,8) are collinear (4m)

Question 6

- The marks obtained (out of 100) by 30 students in a mathematics test are as follows
5,65,62,48,5,23,17,40,30,30,30,51,17,17,5,39,23,48,40,65,65,62,5,5,17,62,51,23,48,40.
a) Make a frequency distribution table taking class intervals as 0-10, 10-20 and so on.
b) Which class interval has the lowest frequency. (3m)
- Use the figure to find.
a) $\cos x^\circ$
b) $\sin y^\circ$ (3m)



- iii. The mean of 50 observation was 200, it was detected that the value of 198 was wrongly copied as 48, find the correct mean. (4m)

Question 7

- i. Study the table drawn below and answer the questions that follow. (3m)

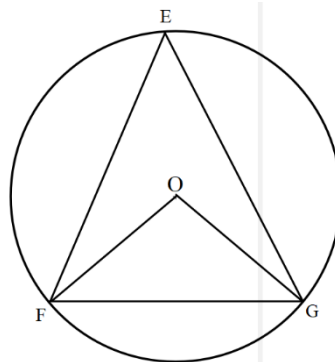
Class intervals	Frequency
20-24	3
25-29	4
30-34	10
35-39	8
40-44	1
45-49	7

- a) The size of the third class.
 b) The lower limit of the fifth class.
 c) Prepare the cumulative frequency distribution table.
- ii. If the Median of the observation 11, 12, 14, 18, $x + 2$, $x + 4$, 30, 32, 35, 41 arranged in ascending order is 24, find the value of x . (3m)
- iii. Factorize $(b^2 - 4b)(b^2 - 4b + 7) + 12$ (4m)

Question 8

- i. In the given figure, O is the centre of the circle and $\triangle EFG$ is an equilateral triangle, then find. (3m)

- a) $\angle FOG$
 b) $\angle OFG$



- ii. If the point P (a, 0) is equidistant from the point (3, 8) and (-1, 4), then find the coordinates of P. (3m)
- iii. The perimeter of a rhombus is 80 cm, if one of the diagonals is 24 cm find. (4m)
- a) length of the other diagonal
 b) Its area.

*****End of Paper*****