ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110 054

Std. 8 **Time : 2½ hrs.**

17-2-2024 **Final Examination in MATHEMATICS** **Max. Marks : 60**

General Instructions:

i) This Question Paper contains 16 questions. All questions are compulsory.
ii) Question paper is divided into Five sections – Sections A, B, C, D and E.
iii) In section A – question number 1 have multiple choice questions (MCQs) of 1 mark each.
iv) Section B – question number 2 to 7 are Very Short Answer type questions of 2 marks each.
v) Section C – question number 8 to 10 are Short Answer (SA) type questions of 3 marks each.
vi) Section D – question number 11 to 13 are Long Answer (LA) type questions of 5 marks each.
vii) Section E – question number 14 to 16 are sourced based/ case study questions carrying 4 marks each. Internal choice is provided in 2 marks question in each source based / case study questions.
viii) There is no overall choice. However, an internal choice has been provided in 1 question in Section B, 1 question in Section C and 2 questions in Section D.
ix) Draw neat figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.
x) Use of calculators is NOT allowed.

Section – A

Question 1 consists of Multiple Choice Questions (I – XII) of 1 mark each.

1.

I. The additive inverse of $\frac{-5}{9}$ is

a) $\frac{-5}{9}$ b) 0 c) $\frac{5}{9}$ d) $\frac{9}{5}$

II. If $2x - 3 = x + 2$ then x =

a) 1 b) 3 c) 5 d) 7

III. The two diagonals are not necessarily equal in a

a) Rectangle b) Square
c) Rhombus d) Isosceles trapezium

IV. Numbers 1 to 12 are written on 12 separate slips (one number on one slip) kept in a box and mixed well. One slip is chosen from the box without looking into it. What is the probability of getting a number greater than or equal to 8

a) 1/3 b) 5/12 c) 7/12 d) 2/3

V. The value of $\sqrt{0.09}$ is

a) 0.3 b) 0.03 c) 0.33 d) 0.94

VI. By what least number should 648 be multiplied to get a perfect cube?

a) 3 b) 6 c) 9 d) 8

VII. 3:5 expressed in % is

a) 30% b) 40% c) 45% d) 60%

VIII. The sum of 8ab, -5ab and -6ab is

a) 19ab b) -3ab c) 3ab d) 240ab

IX. The area of a rhombus is 240 cm^2 and one of the diagonals is 16cm. Find the other diagonal.

a) 10 cm b) 20 cm c) 15cm d) 30cm

X. When 27,60,00,000 is expressed in standard form, it is

a) 276 x 10^6 b) 2.76 x 10^8 c) 27.6 x 10^7 d) 2.76 x 10^{-8}

XI. The common factors of $16x^3$, $-4x^2$, $32x^5$

a) 4x b) $4x^2$ c) $32x^5$ d) 4

XII. Observe the table given below and choose which proportion it is.

Speed(x)	60 km/hr	75 km/hr
Time(y)	5 hrs	4 hrs

a) Direct Proportion b) Inverse Proportion

c) both Direct and Inverse Proportion d) None of these

Section – B

Questions 2 to 7 Very Short Answer type questions of 2 marks each.

2. Evaluate: $\frac{3}{5} + \frac{7}{3} + \frac{-11}{5} + \frac{-2}{3}$.

3. Two adjacent angles of a parallelogram are $(3x - 4)^o$ and $(3x + 16)^o$. Find the value of x and hence find the measure of each of its angles.

4. Is 1188 a perfect cube? If not, by which smallest number should 1188 be divided so that the quotient is a perfect cube?

5. Find the value of **m** for which $7^m \div 7^{-2} = 7^{11}$.

6. An electric pole, 14 metres high, casts a shadow of 10 metres. Find the height of a tree that casts a shadow of 15metres under similar conditions.

(OR)

A farmer has enough food to feed 28 animals in his cattle for 9 days. How long would the food last, if there were 8 more animals in his cattle.

7. Factorise: 15pq + 15 +9q + 25p

Section – C

Questions 8 to 10 is short answer type questions of 3 marks each.

8. Solve the following:

a) $2y + \frac{5}{3} = \frac{26}{3} - y$ b) $\frac{x-5}{3} = \frac{x-3}{5}$

9. If Chameli had Rs. 600 left after spending 75% of her money, how much did she have in the beginning?

(OR)

The population of a city was 20,000 in the year 1997. It increased at the rate of 5% per annum. Find the population at the end of the year 2000.

10. Subtract : $3a(a + b + c) - 2b(a - b + c)$ from $4c(-a + b + c)$.

Section - D

Questions 11 to 13 is long answer type questions of 5 marks each.

11. The data on the mode of transport used by 720 students are given below:

Mode of Transport	Bus	Cycle	Train	Car	Scooter
Number of students	120	180	240	80	100

Represent the above data by a pie chart.

12. What least number must be added to 5607 to make the sum a perfect square? Find this perfect square. Also find its square root.

(OR)

Find the smallest number by which 396 must be multiplied so that the product becomes a perfect square. Also find the new number and its square root.

13. Factorise the following expressions and divide them as directed.

a) $4yz(z^2 + 6z - 16) \div 2y(z + 8)$

b) $12xy(9x^2 - 16y^2) \div 4xy(3x + 4y)$

(OR)

Factorise : a) $a^4 - 625$ b) $(p + q)^2 - 4pq$

Section – E

Questions 14 to 16 is sourced based/case study questions of 4 marks each.

14. On the occasion of festivity season, a shopkeeper offers discount to attract customers. Simran went to the shop to purchase some dresses. T-shirt with marked price Rs 600 were available at a discount of 10%, Jeans with marked price Rs 2000 were available at a discount of 20% and Saree with marked price Rs 3000 at a discount of 40%.

i) If she purchases a saree what will be the discount she gets?

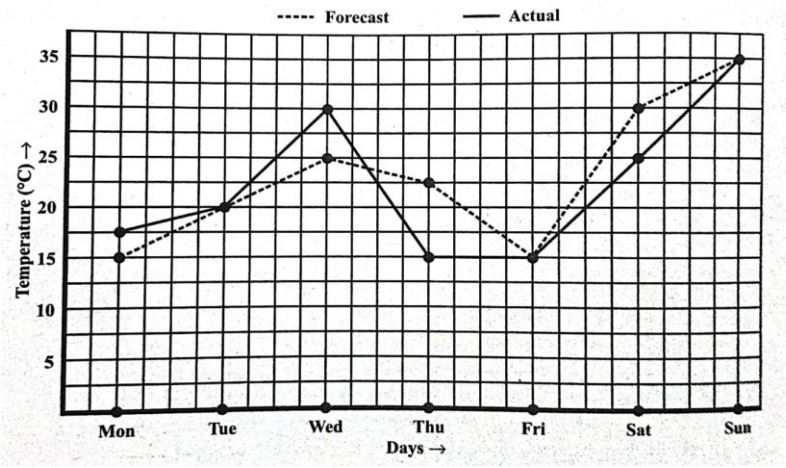
ii) For purchasing a Jeans how much she has to pay?

iii) What will be her total bill if she purchases one Saree and 2 T-shirts?

(OR)

What will be her total bill if she purchases 3 Jeans and 1 T-shirt?

15. The following graph shows the temperature forecast and the actual temperature for each day of a week.



i) On which days was the forecast temperature the same as the actual temperature?

ii) What is the maximum actual temperature of the week?

iii) Find the percentage rise in the actual temperature from Tuesday to Wednesday?

(OR)

Find the ratio between forecast temperature and the actual temperature on Saturday.

16. A well is in the shape of a vertical open cylinder of radius 1.4m and height 10m. The well contains water upto a height of 3m. (use $\pi = \frac{22}{7}$)

i) Find the volume of the well.

ii) Find the area of the base of the well.

iii) Find the volume of water present in the well in litres.

(OR)

What will be the total cost of plastering the walls of the well, if cost of plastering is Rs 80 for 1 m^2?

-x-x-x-x-x-x-