



HAMDARD PUBLIC SCHOOL
FIRST ASSESSMENT EXAMINATION
SESSION: 2025-2026
SUBJECT: MATHEMATICS
CLASS: X

Aditi Khan

Time Allowed: 3 hours

M.M : 80

General Instructions :

1. This Question Paper has 5 Sections A-E.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

SECTION A (Section A consists of 20 questions of 1 mark each.)

- Q1 The HCF and LCM of 12, 21, 15 respectively are :
 (a) 3,420 (b) 3,515 (c) 4,420 (d) 4,525
- Q2 The ratio of LCM and HCF of the least composite number and the least prime number is :
 (a) 3:2 (b) 2:7 (c) 2:1 (d) 1:2
- Q3 If $\text{LCM}(x, 18) = 36$ and $\text{HCF}(x, 18) = 2$, then $x =$
 (a) 2 (b) 3 (c) 4 (d) 6
- Q4 A number is selected at random from first 50 natural numbers. Then the probability that it is a multiple of 3 and 4 is:
 (a) $7/50$ (b) $4/25$ (c) $1/25$ (d) $2/25$
- Q5 The number of zeroes of the polynomial from the graph is
 (a) 0 (b) 1 (c) 2 (d) 3
- 
- Q6 If one zero of the polynomial $6x^2 + 37x - (k - 2)$ is reciprocal of the other, then, what is the value of k ?
 (a) 4 (b) -6 (c) 6 (d) -4
- Q7 The zeroes of the quadratic polynomial $f(x) = x^2 + 99x + 127$ are
 (a) both negative (b) both positive (c) both equal (d) none
- Q8 The number of polynomials having zeroes -3 and 5 is
 (a) 1 (b) 2 (c) 3 (d) more than 3
- Q9 **Assertion (A) :** The HCF of two numbers is 5 and their product is 150, then their LCM is 30.
Reason (R) : For any two positive integers a and b , $\text{HCF}(a, b) \times \text{LCM}(a, b) = a \times b$.
 (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
 (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 (c) Assertion (A) is true but reason (R) is false.
 (d) Assertion (A) is false but reason (R) is true.
- Q10 **Assertion (A) :** If the perimeter of a circle is double the area of the circle then the radius of the circle is 4 units.
 $2\pi r \times 2 = \pi r^2$
Reason (R) : The areas enclosed by an arc and a chord is called segment of the circle.
 (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
 (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 (c) Assertion (A) is true but reason (R) is false.
 (d) Assertion (A) is false but reason (R) is true.
- Q11 The pair of equation $5x - 1.5y = 8$ and $3x - 9y = 24/3$ has.
 (a) Infinite solution (b) Unique solution (c) No solution (d) Two solution

- Q12 If $2x + 3y = 0$ and $4x - 3y = 0$ then the value of $(x + y)$ is -
 (a) 0 (b) -1 (c) 1 (d) 2
- Q13 Sum of two numbers is 35 and their difference is 13, then the numbers are.
 (a) 24 and 12 (b) 24 and 11 (c) 12 and 11 (d) None of these
- Q14 The value of k for which the system of equations $x + 2y - 3$ and $5x + ky + 7 = 0$ has no solution is.
 (a) 10 (b) 6 (c) 1 (d) 3
- Q15 Perimeter of sector of a circle having angle 90° and radius 14 cm is
 (a) 11cm (b) 22cm (c) 154cm (d) 50cm
- Q16 If the length of an arc of a circle subtending an angle of 60° is 22 cm then the radius of circle is
 (a) 22 cm (b) 20 cm (c) 21 cm (d) None of these
- Q17 The perimeter of a quadrant of a circle of radius r is
 (a) $R^2/2$ (b) $\pi + 4$ (c) $R/2$ (d) $\pi/2(\pi + 4)$
- Q18 A letter is chosen at random from the letters of the word 'ASSASSINATION'. The probability that the letter chosen is vowel
 (a) $4/13$ (b) $5/13$ (c) $6/13$ (d) $7/13$
- Q19 The probability of getting 53 Fridays in a leap year.
 (a) $1/7$ (b) $2/7$ (c) $3/7$ (d) 1
- Q20 Two coins are tossed simultaneously. What is the probability of getting at most one head?
 (a) $3/4$ (b) $1/2$ (c) $1/4$ (d) 1

Section B (Section B consists of 5 questions of 2 marks each.)

- Q21 Explain why $5 \times 7 \times 11 + 7 \times 5$ is a composite numbers.

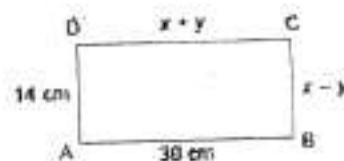
OR

If HCF and LCM of 96 and 120 is 24 find its LCM.

- Q22 If $2x + y = 23$ and $4x - y = 19$, find the value of $(5y - 2x)$.

OR

In the given Figure, ABCD is a rectangle. Find the values of x and y .



- Q23 Two rails are represented by the equations $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$. Will the rails cross each other? Give reason for your answer.

- Q24 The length of the minute hand of a clock is 6cm. Find the area swept by it when it moves from 5:25 pm to 6:00 pm.

- Q25 An arc of a circle is of length 5π cm and the sector it bounds has an area of 20π cm². Find the radius of the circle.

Section C (Section C consists of 6 questions of 3 marks each.)

- Q26 144 cartons of Coke cans and 90 cartons of Pepsi cans are to be stacked in a canteen. If each stack is of the same height and if it equally contains cartons of the same drink, what would be the greatest number of cartons each stack would have?

OR

The LCM of two numbers is 9 times their HCF. The sum of LCM and HCF is 500. Find the HCF of the two numbers.

- Q27 Given that $\sqrt{3}$ is irrational, prove that $5 + 2\sqrt{3}$ is irrational.

- Q28 A part of monthly hostel charges in a college is fixed and the remaining depends on the number of days one has taken food in the mess. When a student 'A' takes food for 22 days, he has to pay ₹1380 as hostel charges; whereas a student 'B', who takes food for 28 days, pays ₹1680 as hostel charges. Find the fixed charges and the cost of food per day.

Q29 Find the zeroes of $p(x) = 4x^2 + 24x + 36$ quadratic polynomials and verify the relationship between the zeroes and their coefficients.

Q30 A card is drawn at random from a well shuffled deck of 52 playing cards. Find the probability that the card drawn is

- a card of spade or an ace
- neither a jack nor a king
- a face card

Q31 A chord of a circle of radius 10 cm subtends an angle of 60° at the centre. Find the areas of the corresponding minor sector and segment of the circle. (Use $\pi = 3.14$ and $\sqrt{3} = 1.73$)

OR

Find the area of the segment of a circle of radius 14 cm, if the length of the corresponding arc is 22 cm. [Use $\pi = 22/7$]

Section D (Section D consists of 4 questions of 5 marks each.)

Q32 A horse is tied to a peg at one corner of a square shaped grass field of side 20 m by means of a 7 m long rope. Find the area of that part of the field in which the horse can graze. Also find the increase in the grazing area if the rope were 14 m long instead of 7 m

OR

A round table cover has six equal designs as shown in Fig. If the radius of the cover is 28 cm, find the cost of making the designs at the rate of ₹ 0.35 per cm^2 . (Use $\sqrt{3} = 1.7$)



Q33 If α, β are zeroes of polynomial $p(x) = 5x^2 + 5x + 1$ then find the values of

- $\alpha^2 + \beta^2$
- $1/\alpha + 1/\beta$
- $\alpha^3\beta^2 + \alpha^2\beta^3$

Q34 A child's game has 8 triangles of which 3 are blue and rest are red, and 10 squares of which 6 are blue and rest are red. One piece is lost at random. Find the probability that it is a

- triangle
- square
- square of blue colour
- triangle of red colour
- a triangle of red colour or a square of red colour

Q35 A train covered a certain distance at a uniform speed. If the train would have been 6 km/h faster, it would have taken 4 hours less than the scheduled time. And, if the train were slower by 6 km/hr, it would have taken 6 hours more than the scheduled time. Find the length of the journey.

OR

Solve the following system of equations graphically $x + 3y = 6$; $2x - 3y = 12$. Shade the region between both lines and Y-axis. Also write the co-ordinates of the vertices of the triangle formed.

Section E (Case study based questions are compulsory.)

Q36 Computer-based learning (CBL) refers to any teaching methodology that makes use of computers for information transmission. At an elementary school level, computer applications can be used to display multimedia lesson plans. A survey was done on 1000 elementary and secondary schools of country and they were classified by the number of computers they had. One school is chosen at random. Then



$$\begin{array}{r} 290 \\ 180 \\ + 280 \\ \hline 750 \end{array}$$

$$\begin{array}{r} 290 \\ 180 \\ + 80 \\ \hline 550 \end{array}$$

Number of Computers	1-10	11-20	21-50	51-100	101 and more
Number of Schools	250	200	290	180	80

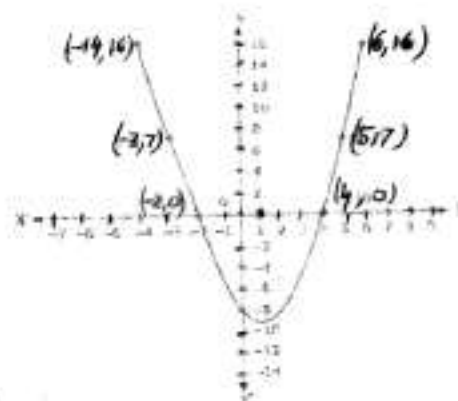
- (i) Find the probability that the school chosen at random has more than 100 computers. (1)
 (ii) (a) Find the probability that the school chosen at random has 50 or fewer computers. (2)

OR

- (b) Find the probability that the school chosen at random has more than 20 computers. (2)
 (iii) Find the probability that the school chosen at random has 10 or less than 10 computers. (1)

Q37

A student was given a task to prepare a graph of quadratic polynomial.
 To draw this graph, he take seven values of y corresponding to different values of x.
 After plotting the points on the graph paper with suitable values, he obtain the graph as shown below.



Based on the above graph, solve the following questions:

- (i) What is the shape of graph of a quadratic polynomial? (1)
 (ii) Find the zeroes of given quadratic polynomial. (1)
 (iii) (a) Write the polynomial represented by these zeroes. (2)

OR

- (b) Find the value of $\alpha + \beta$ and $\alpha\beta$ (2)

Q38

A morning walk may help improve your mental clarity and ability to focus throughout the day. A recent study found that amongst older adults, those who started their days with a morning walk improved their cognitive function, compared to those who remained sedentary. Walking may also help you think more creatively. In a morning walk three students step off together, their steps measure 80 cm, 85 cm and 90 cm respectively.



- (i) What is the HCF of 80 and 90? (1)
 (ii) What is the product of exponents of 85? (1)
 (iii) (a) What is the minimum distance each should walk so that he can cover the distance in complete steps? (2)

OR

- (b) Find the sum of exponents of the prime factors of total distance. (2)

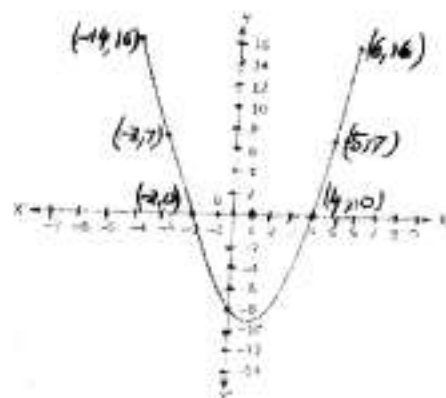
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$$\begin{array}{r} 290 \\ 180 \\ + 80 \\ \hline 550 \end{array}$$

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