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JAGADGURU INTERNATIONAL SCHOOL, LOHEGAON, PUNE
TERM - I (2025-26)

Class: X A
Subject: Math (041)
Roll No:

Date: 20/08/2025
Total Marks: 80
Time: 3 hrs

SET A

General Instructions :

1. This Question paper contains five sections A, B, C, D, E
2. Section A has 18 MCQs and 02 Assertion – Reason based questions of 1 mark each.
3. Section B has 5 Very Short Answer (VSA) type questions of 2 marks each.
4. Section C has 6 Short Answer (SA) type questions of 3 marks each.
5. Section D has 4 Long Answer (LA) type questions of 5 marks each.
6. Section E has 3 Case study type questions of 4 marks each with sub parts.
7. All questions are compulsory. However, an internal choice in 2 questions of 5 marks. 2 Q's of 3 marks and 2 Q's of 2 marks has been provided. An internal choice has been provide in the 2 marks Q's of Section E.

SR.NO	QUESTIONS	MARKS
SECTION A		
1.	If $1080 = 2^p \times 3^q \times 5$, then $(p - q)$ is equal to (a) 6 (b) 95 (c) 87 (d) 93	1
2.	Which of the following statements is true for a polynomial $p(x)$ of degree 3 (a) $p(x)$ has atmost 2 distinct zeros. (b) $p(x)$ has atleast 2 distinct zeroes (c) $p(x)$ has exactly 3 distinct zeroes. (d) $p(x)$ has atmost 3 distinct zeroes.	1
3.	Which of these is the solution for the pair of equations $x + y = 6$ and $px + qy = r$? (a) $x = 2, y = 4$ (b) $x = 4, y = 2$ (c) $x = 3, y = 2$ (d) We cannot say for sure as the values of p & q are not known.	1
4.	The smallest positive value of k for which the equation $x^2 + kx + 9 = 0$ has real roots, is: (a) -6 (b) 6 (c) 36 (d) 3	1
5.	The 4 th term from the end of the A.P. -11, -8, -5,....., 49 is : (a) 37 (b) 40 (c) 43 (d) 58	1
6.	The midpoint of the line segment joining the points $P(-4, 5)$ & $Q(4, 6)$ lies on: (a) x-axis (b) y-axis (c) origin (d) neither x-axis nor y-axis	1
7.	E and F are points on the sides AB and AC respectively of a $\triangle ABC$ such that $\frac{AE}{EB} = \frac{AF}{FC} = \frac{1}{2}$. Which of the following relation is true? (a) $EF = 2BC$ (b) $BC = 2EF$ (c) $EF = 3BC$ (d) $BC = 3EF$	1
8.	Which of the following is a rational number between root 3 and root 5 (a) 1.414238795..... (b) 2.32666..... (c) 3.14..... (d) 1.857142	1
9.	How many zero(es) does the polynomial $293x^2 - 293x$ have? (a) 0 (b) 1 (c) 2 (d) 3	1
10.	The value of k for which the system of equations $2x + ky = 12, x + 3y = 4$ is inconsistent (a) $\frac{21}{4}$ (b) $\frac{21}{6}$ (c) 6 (d) $\frac{4}{21}$	1
11.	Which of the following is a quadratic equation (a) $x^2 + 2x + 1 = (4 - x)^2 + 3$ (b) $-2x^2 = (5 - x)(2x - 2/5)$ (c) $(k + 1)x^2 + (3/2)x = 7$ where $k = -1$ (d) $x^3 - x^2 = (x - 1)^3$	1
12.	If the first term of an AP is -5 and the common difference is 2, then the sum of the first 6 terms is (a) 0 (b) 5 (c) 6 (d) 15	1
13.	Three points lie on a vertical line. Which of the following could be those points? (a) $(-8, 3), (-8, 8), (8, 7)$ (b) $(-8, 7), (-8, -8), (-8, -100)$ (c) $(4, 3), (5, 3), (-12, 3)$ (d) $(0, 4), (4, 0), (0, 0)$	1
14.	If in two triangles $\triangle DEF$ and $\triangle PQR$, $\angle D = \angle Q$ and $\angle R = \angle E$, then which of the following is not true (a) $\frac{EF}{PR} = \frac{DF}{PQ}$ (b) $\frac{DE}{PQ} = \frac{EF}{RP}$ (c) $\frac{DE}{QR} = \frac{DF}{PQ}$ (d) $\frac{EF}{RP} = \frac{DE}{QR}$	1

15.	If the zeros of the polynomial $ax^2 + bx + \frac{2a}{b}$ are reciprocal of each other then the value of b is (a) 2 (b) $\frac{1}{2}$ (c) -2 (d) $-\frac{1}{2}$	1
16.	Consider the equation shown: $ax + by = ab$ and $2ax + 3by - 3b$ Which of there is the value of y terms of a ? (a) $y = 5 - 3a$ (b) $y = 3 - 2a$ (c) $y = 9a - 35$ (d) $y = 2ab - 3b$	1
17.	The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is (a) 5 (b) 12 (c) 11 (d) $7 + \sqrt{5}$	1
18.	If a pair of linear equations is consistent, then the lines will be (a) always coincident (b) parallel (c) always intersecting (d) intersecting or coincident	1

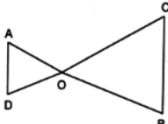
In the following questions a statement of **assertion** is followed by a statement of **reason**.

Mark the correct choice as:


- (a) Both **assertion** and **reason** are true and **reason** is the correct explanation of **assertion**.
 (b) Both **assertion** and **reason** are true but **reason** is not the correct explanation of **assertion**.
 (c) **Assertion** is true but **reason** is false. (d) **Assertion** is false but **reason** is true.

19.	Assertion : for two prime number x and y ($x < y$), $HCF(x, y) = x$ and $LCM(x, y) = y$ Reason : $HCF(x, y)$ where x,y are any two natural number	1
20.	Assertion: Common difference of the A.P. 5, 1, -3, -7... is 4. Reason: Common difference of the A.P. $a_1, a_2, a_3, \dots, a_n$ is obtained by $d = a_n - a_{(n-1)}$	1

SECTION B


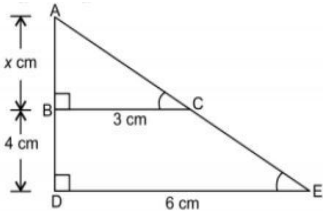
21.	Two numbers are in ratio 4:5 and their HCF is 11. Find these numbers.	2
22.	If α and β are the zeros of the quadratic polynomial $f(x) = 3x^2 - 5x - 2$, then evaluate $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$	2
23.	Solve the following system of linear equations $7x - 2y = 5$ and $8x + 7y = 15$ and verify your answer.	2
24.	In the given figure, $\frac{OA}{OC} = \frac{OD}{OB}$. Prove that: $\angle A = \angle C$ and $\angle B = \angle D$. 	2
25.	P(x,y), Q(-2,-3) and R(2,3) are vertices of right angled $\triangle PQR$ right angled at P. Find the relationship between x and y. Hence, find all possible values of x for which $y = 2$.	2

SECTION C

26.	Prove that, if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.	3
27.	A two-digit number is such that product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.	3
28.	If $p(x) = ax^2 - 8x + 3$, where 'a' is a non-zero real number. One zero of p(x) is three times the other zero. (a) Find the value of a. Show your work. (b) What is the shape of the graph of p(x)? Give reason for your answer.	3
29.	Solve the equations $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ graphically.	3
30.	In an A.P., sum of first ten terms is -150 and the sum of its next ten terms is -550. Find the A.P.	3
31.	In the given figure, $\angle ACB = 90^\circ$ and $CD \perp AB$. Prove that $CD^2 = BD \times AD$ 	3

SECTION D

32.	On reversing the digits of a two digit number, number obtained is 9 less than three times the original number. If difference of these two numbers is 45, find the original number.	5
33.	Sides AB and AC and median AD of a triangle ABC are respectively proportional to	5

	sides PQ and PR and median PM of another triangle PQR. Show that $\Delta ABC \sim \Delta PQR$.	
34.	The sum of four consecutive numbers in A.P. is 32 and the ratio of the product of the first and last term to the product of the middle terms is 7: 15. Find the number.	5
35.	A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hr more, it would have taken 30 minutes	5
SECTION E		
36.	<p>India is competitive manufacturing location due to the low cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year. Based on the above information, answer the following questions:</p> <p>a) Find the production during 8th year. b) Find the production during first 3 years. c) In which year, the production is Rs 29,200.</p> <p>Or Find the difference of the production during 7th year and 4th year.</p>	4
37.	<p>A scale drawing of an object is the same shape as the object but a different size. The scale of a drawing is a comparison of the length used on a drawing to the length it represents. The scale is written as a ratio. The ratio of two corresponding sides in similar figures is called the scale factor Scale factor = length in image / corresponding length in object If one shape can become another using resizing, then the shapes are similar. Hence, two shapes are similar when one can become the other after a resize, flip, slide or turn. In the photograph below showing the side view of a train engine. Scale factor is 1:200 This means that a length of 1 cm on the photograph above corresponds to a length of 200cm or 2 m, of the actual engine. The scale can also be written as the ratio of two lengths.</p>  <p>a) If the length of the model is 11cm, then find the overall length of the engine in the photograph above, including the couplings. b) What is the actual width of the door if the width of the door in photograph is 0.35cm? c) If two similar triangles have a scale factor 5:3 which statement regarding the two triangles is true? a) The ratio of their perimeters is 15:1 b) Their altitudes have a ratio 25:15 c) Their medians have a ratio 10:4 d) Their angle bisectors have a ratio 11:5 Or The length of AB in the given figure:</p> 	4
38.	<p>Students of a school are standing in rows and columns in their school play ground for parade practice for Republic Day Celebration. A, B, C and D are the positions of four students as shown in the figure? Now answer the following questions:</p> <p>(i) What is the distance between the position of A and B? (a) 4 units (b) $4\sqrt{2}$ units (c) 8 units (d) $3\sqrt{2}$ units</p>	4

(ii) Does the Quadrilateral ABCD forms a particular shape?

(a) Square (b) Rectangle

(c) Rhombus (c) Trapezium

(iii). what would be the position of a point which is equidistant from all four points

A, B, C and D, where a flag will be placed?

(a). (4, 4) (b) (3, 7) (c) (5, 8) (d) (7, 5)

