Grade IX | **Sub: Mathematics**

Time: $2\frac{1}{2}$ hrs | **Assessment- I** | **MM - 80**

Instructions : Students 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.
Read the question paper carefully. Write neatly and legibly with correct question numbers.
Do not over write. Check the answers before submitting the answer sheet

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Attempt **all questions from Section A** and **any four** questions from **Section B.**
The intended marks for questions or parts of questions are given in brackets [ ].

SECTION – A
(Attempt all the questions)

Question 1 : Choose the correct option **[15]**

i) Which of the following numbers has a terminating decimal representation.

a) $\frac{2}{7}$ b) $\frac{1}{3}$

c) $\frac{3}{5}$ d) $\frac{5}{11}$

ii) The compound interest on ₹ 1000 at 10 % p.a compounded annually for 2 years is

a) ₹ 190 b) ₹ 200

c) ₹ 210 d) ₹1210

iii) If 2a + 3b =7 and ab =2 then $4a^2 + 9b^2$ =

a) 49 b) 25

c) 24 d) 73

iv) The value of $\sqrt{8} + \sqrt{18}$ is

a) $\sqrt{26}$ b) $5\sqrt{2}$

c) $6\sqrt{2}$ d) $2(\sqrt{2} + \sqrt{3})$

v) Factorize $3 - 12(a-b)^2$

a) $4(1+2a-2b)(1-2a-2b)$ b) $3(1+2a+2b)(1-2a-2b)$

c) $3(1+2a-2b)(1-2a-2b)$ d) $3(1+2a-2b)(1-2a+2b)$

vi) The roots of the given equation $x^2 + 5x - 14 = 0$ are :

a) -2 , 10 b) -7 , 2

c) 7 , 2 d) 5 , -2

vii) Simplify $\left[\left((625)^{\frac{-1}{2}}\right)^{\frac{-1}{4}}\right]^2$

a) $5^{\frac{1}{4}}$ b) 5

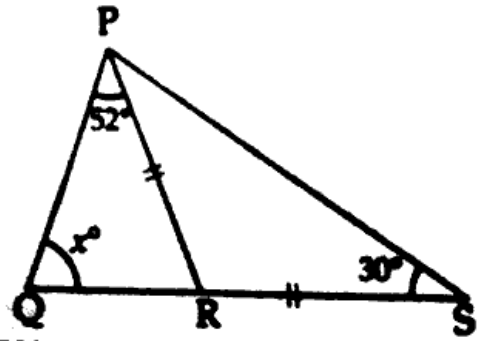
b) $5^{\frac{1}{8}}$ d) $5^{\frac{-1}{4}}$

viii) Evaluate $x^{1/2}.y^{-1}.z^{2/3}$ when x=9,y=2 and z=8 :

a) 6 b) 12

c) 36 d) 18

(ix) From the figure, find the value of x:



a) 58° b) 68°

c) 78° d) 88°

x) Point (-5, 6) lies in the

a) first quadrant b) second quadrant

c) third quadrant d) fourth quadrant

xi) If a ladder 10 m long reaches a window 8 m above the ground, then the distance of the foot of the ladder from the base of the wall is :-

a) 18 m b) 8 m

c) 6 m d) 4 m

xii) The distance between the points (2 , 9) and (5 , 5):

a) 7 b) 5

c) 4 d) 6

xiii) Which of the following is not a criterion for congruency of triangles ?

a) SAS b) ASA

c) SSA d) SSS

xiv) Find the coordinate of the points whose abscissa is -3 and lies on x-axis :

a) (0,3) b) (0,-3)

c) (-3,0) d) (3,0)

xv) In ΔABC AB= 3cm BC =4 cm and CA = 5 cm. If D and E are mid-points of AB and BC respectively, then the length of DE is –

a) 1.5 cm b) 2 cm

c) 2.5 cm d) 3.5 cm

Question 2:

(a) Draw the graph of the line $x-5y-4=0$ **[4]**

(b) How much will ₹ 25000 amount to in 2 years, at compound interest , if the rates for the successive years are 4% and 5% per year ? **[4]**

(c) If $a = 2 + \sqrt{3}$, then find the value of $a - \frac{1}{a}$ **[4]**

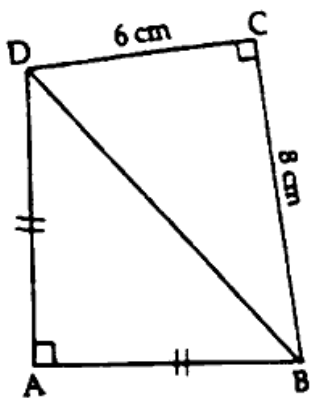
Question 3

(a) Prove that $\sqrt{5}$ is an irrational number. **[4]**

(b) Using standard formulae factorise : (i) $(3x-1)^2-(3x-2)(3x+1)$

(ii) $2x^2-7x+6$ **[4]**

(c) In the figure given below, ABCD is a quadrilateral in which AB = AD , $\angle A = 90° = \angle C$, BC = 8 cm and CD = 6 cm. Find AB and calculate the area of ΔABD **[5]**



SECTION B
(Attempt any Four questions from this Section)

Question 1:

a) $\left(\frac{81}{16}\right)^{\frac{-3}{4}} \times \left[\left(\frac{25}{9}\right)^{\frac{-3}{2}} \div \left(\frac{5}{2}\right)^{-3}\right]$ **[3]**

b) Express $5.\overline{2}$ in the form $\frac{p}{q}$, where p and q are both integers and q≠0. **[3]**

c) The value of a property decreases every year at the rate of 5%. If its present value is ₹411540, what was the its value three years ago? **[4]**

Question 2 :

a) Using distance formula, show that the points A(3 , 1), B(6 , 4) and C(8 , 6) are collinear. **[3]**

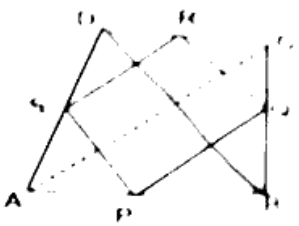
b) Evaluate for x : $\left(\sqrt{\frac{3}{5}}\right)^{x+1} = \frac{125}{27}$ **[3]**

c) In the adjoining figure, ABCD is a quadrilateral in which P, Q, R, and S are mid-points of AB, BC, CA and DA respectively. AC is its diagonal. Show that

(i) SR ∥ AC and SR = $\frac{1}{2}$AC

(ii) PQ = SR

PQRS is a parallelogram. **[4]**



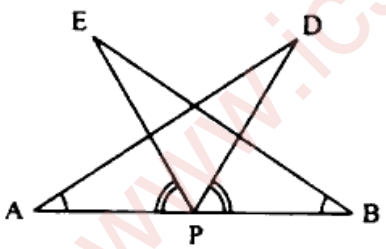
Question 3 :

a) Solve the following equation : (i) $x(2x+5) = 25$

(ii) $3x - \frac{8}{x} = 2$ **[3]**

b) In a right-angled triangle, if hypotenuse is 20 cm and the ratio of the other two sides is 4 : 3, find the sides. **[3]**

c) c) In the adjoining figure, AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that ∠BAD= ∠ABE and ∠EPA= ∠DPB. Show that (i) ΔDAP ≅ΔEBP (ii) AD = BE **[4]**



Question 4:

a) Simplify by rationalising the denominator : $\frac{3-2\sqrt{2}}{3+2\sqrt{2}}$ **[3]**

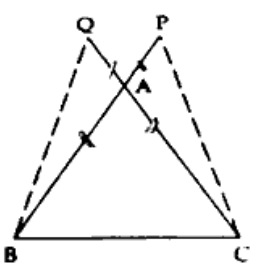
b) If $x+\frac{1}{x} = 4$ find the value of i) $x^2 + \frac{1}{x^2}$ ii) $x^4 + \frac{1}{x^4}$ **[3]**

c) In the adjoining figure, AB = AC and AP = AQ. Prove that **[4]**

(i) $\Delta APC \cong \Delta AQB$

(ii) CP = BQ

(iii) $\angle APC = \angle AQB$



Question 5 :

a) If $x^4y^2z^3 = 49392$, find the values of x, y and z, where x, y and z are different positive primes. **[3]**

b) If $x^2 + \frac{1}{25x^2} = 8\frac{3}{5}$ find $x + \frac{1}{5x}$ **[3]**

c) Draw the graph of $5x+6y-30=0$ and use it to find the area of the triangle formed by the line and the coordinate axis. **[4]**

Question 6:

a) If Q (0,1) is equidistant from P (5, -3) and R (x, 6), find the value of x **[3]**

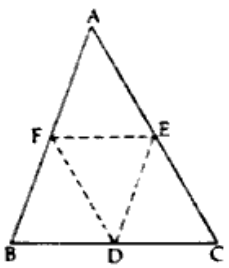
b) Factorise : i) $6xy^2- 3xy-10y +5$ **[3]**
ii) $34x^4 – 500 x$

c) If D, E and F are mid-points of the sides AB, BC and CA respectively of an isosceles triangle ABC, prove that ΔDEF is also isosceles. **[4]**

Question 7:

a) A sum compounded annually becomes $\frac{25}{16}$ times of itself in two years. Determine the rate if interest per annum. **[3]**

b) In the following figure D,E,F are the mid-points of the sides BC,CA and AB respectively of ΔABC. If AB = 6 cm , BC= 4.8 cm and CA= 5.6 cm, find the perimeter of the triangle DEF. **[3]**



c) If point A(4,3) and B (x, 5) are on a circle with centre C(2,3), find the value of x. **[4]**