Father Agnel.

SUMMATIVE ASSESSMENT – I, 2015-16
MATHEMATICS
Class – IX

Time Allowed: 3 hours **Maximum Marks: 90**

General Instructions:

1. All questions are **compulsory**.
2. The question paper consists of **31** questions divided into **four sections A, B, C and D**. **Section-A** comprises of **4** questions of **1 mark** each; **Section-B** comprises of **6** questions of **2 marks** each; **Section-C** comprises of **10** questions of **3 marks** each and **Section-D** comprises of **11** questions of **4 marks** each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION-A

Question numbers **1** to **4** carry one mark each.

1 Simplify : $3(3)^{\frac{1}{3}} - \sqrt[3]{3}$ 1

2 Find the remainder when $x^3 + 2x - 8$ is divided by $x - 4$. 1

3 Find a in the given figure : 1

4 Write coordinates of a point whose ordinate is 5 and abscissa is -4. 1

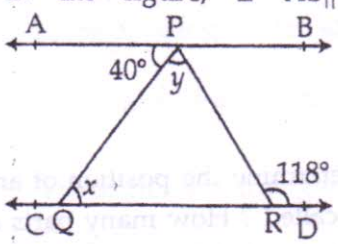
SECTION-B

Question numbers **5** to **10** carry two marks each.

5 Simplify : $\sqrt[4]{16} - 6\sqrt[3]{343} + 18 \times \sqrt[5]{243} - \sqrt{196}$ 2

6 Find the value of 103×107 using suitable identity. 2

7 In the figure, if AB||CD, $\angle APQ = 40°$ and $\angle PRD = 118°$, find x and y. 2



8 In a triangle ABC, $\angle A = 45°$ and $\angle B = 70°$. Name the shortest and largest sides of the triangle.

9 Draw a quadrilateral whose vertices are (3, 2), (2,3) ,(−4, 5) and (5, −3). 2

10 Find the area of an equilateral triangle whose perimeter is 18 cm, using Heron's formula. 2
(Use $\sqrt{3} = 1.73$)

SECTION-C

Question numbers **11** to **20** carry three marks each.

11 Represent $\sqrt{10.5}$ on the number line. 3

12 Find six rational numbers between 3 and 4. 3

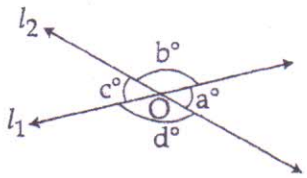
13 Simplify : $(2x-5y)^3-(2x+5y)^3+250y^3$ 3

14 Using a suitable identity, evaluate $(42)^3-(18)^3-(24)^3$. 3

15 In a triangle ABC, X and Y are the points on AB and BC respectively. If $BX = \frac{1}{2}AB$ and $BY = \frac{1}{2}BC$ and $AB = BC$. Show that $BX = BY$. 3

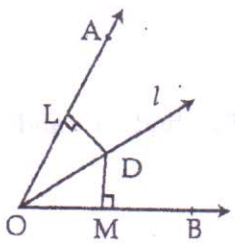
16 Prove that in a ΔABC, if AB > AC and D is any point on the side BC, then AB > AD. 3

17 In the figure, lines l_1 and l_2 intersect at O forming angles as shown in the figure. If a = 35, find the values of b, c and d. 3



18 In the figure, line l is the bisector of $\angle AOB$. D is a point on l. DL⊥OA and DM⊥OB. Prove that : 3

(i) $\Delta OMD \cong \Delta OLD$ (ii) DM = DL



19 What are the names of horizontal and vertical lines drawn to determine the position of any point in the cartesian plane ? What is their point of intersection called ? How many parts of the coordinate plane are formed by these two lines and what are they called ? 3

20. A park is in the shape of a quadrilateral ABCD in which AB = 9 m, BC = 12 m, CD = 5 m, AD = 8 m and $\angle C = 90°$. Find the area of the park. 3

SECTION-D

Question numbers **21** to **31** carry four marks each.

21 Express in the form of $\frac{p}{q}$: 4

$0.\overline{38}+1.2\overline{7}$

22 Give two rational numbers whose : 4

(i) difference is a rational number

(ii) sum is a rational number

(iii) product is a rational number

(iv) division is a rational number

Justify also.

23 Simplify : $\sqrt{\frac{(x^2+3x+2)(x^2+5x+6)}{x^2(x^2+4x+3)}}$ 4

24 If $a+b+c=0$, then prove that $\frac{(b+c)^2}{3bc}+\frac{(c+a)^2}{3ac}+\frac{(a+b)^2}{3ab}=1$ 4

25 Verify if 1 and -3 are zeroes of the polynomial $3x^3+5x^2-11x+3$. If yes, then factorise the polynomial. 4

26 Factorise : $y^3-2y^2-29y-42$ using factor theorem. 4

27 There is a triangular park PQR whose angles P, Q and R are in ratio 2 : 3 : 5 respectively. Three friends Rashmi, Sita and Geeta go daily on morning walk and walk along these three side PQ, QR and PR respectively. Who walks maximum distance among these three ? Who walks least ? Why morning walk is necessary for us ? 4

28 Solve the equation $x+25=40$ and state which axiom you use here. Also give two more axioms other than the axiom used in the above situation. 4

29 A transversal intersects two parallel lines. Prove that the bisectors of any pair of corresponding angles so formed are parallel. 4

30 The angles of a triangle are in the ratio 2 : 4 : 3. Find the smallest angle of the triangle. 4

31 The angles of a triangle are $(x-40)°$, $(x-20)°$ and $\left(\frac{x}{2}-10\right)°$. Find the value of x and then the angles of the triangle. 4