Mar ThomaResidential School,Tiruvalla

StdIX — 1st Terminal Examination 2017-18 — Marks : 80

Mathematics — Time : 2½hrs

Section A

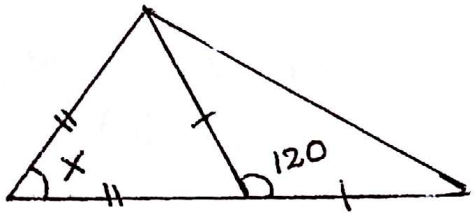
Answer All Questions

Question 1

a) Insert a rational and an irrational number between 7 and 8 — 3

b) Find the compound interest on Rs. 80,000 for 3 years if the rates for the 3 years are 4 %, 5 % and 10 % respectively — 4

c) Calculate x — 3



Question 2

a) If $a + b = 8$ and $ab = {}^{-}9$ find (i) $a - b$ (ii) $a^2 - b^2$ — 3

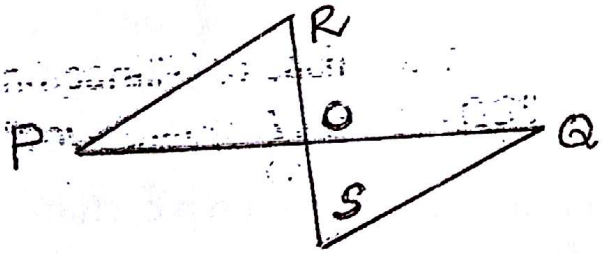
b) Factorise (i) $x^2 + 3x - 18$ (ii) $a(a-3) - a + 3$ — 4

c) Find the value of **m** and **n** if $\frac{2+5\sqrt{3}}{7+4\sqrt{3}} = m + n\sqrt{3}$ — 3

Question 3

a) Find the amount of Rs. 50,000 in 1 ½ years at 8 % per annum compounded half yearly.

b)



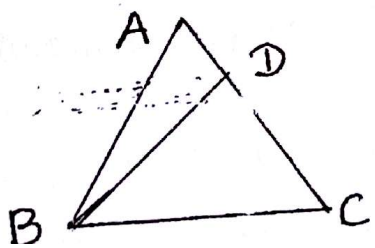
In the figure PR and SQ are equal and parallel to each other prove that (i) $\triangle POR \cong \triangle QOS$

(ii) PQ and RS bisect each other.

c) If $a = 16$, $b = {}^{-}7$, $c = {}^{-}9$, find the value of $a^3 + b^3 + c^3$ without actual calculation

Question 4

a)



In the figure AB = AC, $< C = 58^\circ$ and $\angle ABD = 12^\circ$, Show that BC = CD

[PTO]

b) Expand (i) $(a + 2b)^3$ (ii) $(3x - 5y + 4)(3x + 5y + 4)$

c) Simplify $\frac{5}{2\sqrt{3} - 3\sqrt{2}} + \frac{1}{2\sqrt{3} + 3\sqrt{2}}$

Section B

Answer any 4questions only

Question 5

a) Write the lowest rationalising factor of (i) $2\sqrt{5}$ (ii) $\sqrt{98}$ (iii) $3\sqrt{2} - 2$

b) A man borrows ₹1000 at 10 % p.a simple interest for 3 years. He immediately lends this money out at compound interest at the same rate and for the same time. What is his gain at the end of 3 years.

c) If $a^2 + \frac{1}{a^2} = 47$, find the value of $a^3 + \frac{1}{a^3}$

Question 6

a) In triangle ABC, AB = AC and $\angle A : \angle B = 4 : 7$ find each angle.

b) If $a^2 + {}^1/_{a^2} = 14$. find (i) $a + {}^1/_a$ (ii) $a - {}^1/_a$ (iii) $a^2 - {}^1/_{a^2}$

c) Find the square of $(a + {}^1/_{2a} - 2)$

Question 7

a) Prove that Δ ABC is isosceles if altitude BE is equal to altitude CF.

b) A man invests ₹3000 for three years at compound interest. After one year, the money amounts to ₹3240. Find the rate of interest and the amount (to the nearest rupee) due at the end of 3 years.

c) If $a^2 + b^2 + c^2 = 45$ and $ab + bc + ca = 33$ find $a + b + c$.

Question 8

a) Factorise : (i) $125 - 8x^3$ (ii) $32a^3 - 2a$ (iii) $9a^2 - 49b^2 + 3a - 7b$

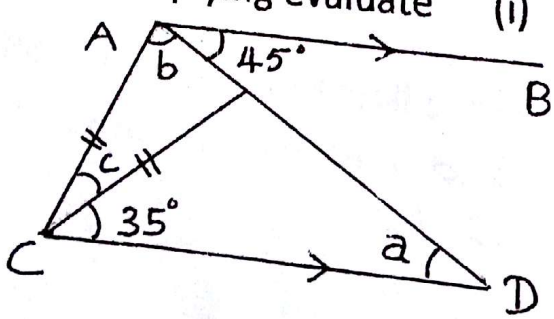
b) Compare (i) $\sqrt[6]{5}$ and $\sqrt[3]{4}$ (ii) $7\sqrt{2}$ and $2\sqrt{23}$

Question 9

a) The difference between the simple and compound interest on a certain sum of money for 3 years at 5 % p.a is ₹ 61. Find the sum.

b) Without multiplying evaluate (i) $[1003]^2$ (ii) $[98]^2$

c)



Find the valuesof a, b, c