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SET B



**INDIAN SCHOOL MUSCAT
FIRST MID TERM EXAMINATION
MATHEMATICS**

CLASS: IX

Sub. Code: 041

Time Allotted: 3 Hrs

24.09.2018

Max. Marks:80

General Instructions:

1. All questions are **compulsory**.
2. The question paper consists of **30** questions divided into **four sections A, B, C and D**. **Section-A** comprises of **6** 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 **8** questions of **4 marks** each.
3. There is no overall choice in this question paper.
4. Use of calculator is not permitted.

SECTION - A

- 1 Simplify $(5 + \sqrt{7}) \times (5 - \sqrt{7})$. 1
- 2 What is the degree of the polynomial $(m^2 + 3) \times (m^5)$. 1
- 3 Two angles measure $(30^\circ - a)$ and $(125^\circ + 2a)$. If each one is the supplement of the other, then find the value of a. 1
- 4 What is the mirror image of $(-3, -4)$ with respect to x – axis? 1
- 5 Write SAS congruence rule for two triangles. 1
- 6 The area of a triangle of altitude 12 cm is 72 cm^2 . Find its base. 1

SECTION - B

- 7 If $a = 2$ and $b = 3$, then find the value of $a^b + b^a$. 2
- 8 Write any 2 irrational numbers between 0.7 and 0.77. 2
- 9 Find the value of k if $x - 2$ is a factor of $p(x) = x^2 + kx - 4k$. 2
- 10 If $p(m) = m^2 - 3m + 4$, then what is the value of $p(1) + p(2)$? 2
- 11 Solve the equation $x + 4 = 10$ and state Euclid's axiom used here. 2
- 12 The semi perimeter of a triangle is 45 cm and the product of the differences of semi perimeter and its respective sides (in cm) is 4500. Find the area of the triangle 2

SECTION - C

- 13 Express $0.24\bar{3}$ in the form of $\frac{p}{q}$ where 'p' and 'q' are integers and $q \neq 0$. 3

OR

If $a = 1 + \sqrt{2}$, find the value of $\left(a^2 - \frac{1}{a^2}\right)$.

- 14 Represent $\sqrt{3}$ on the number line. 3

- 15 Find the remainder, when $m^3 + m^2 + m + 1$ is divided by $\left(m - \frac{1}{2}\right)$ using remainder theorem. 3

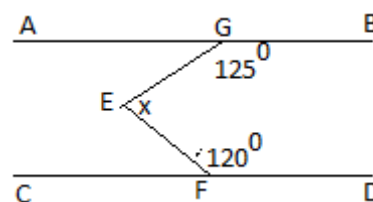
OR

By actual division, find the quotient and remainder when $x^4 - 4x^3 + 4x^2 - 3x + 4$ is divided by $(x - 1)$.

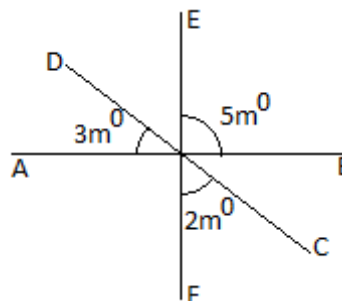
- 16 Factorize: $x^4 - 125xy^3$ 3

- 17 M and N are the two points lying between P and Q such that M is the midpoint of PQ and N is the midpoint of PM. Prove that $PN = \frac{1}{4} PQ$. Explain it by drawing a figure. 3

- 18 In the figure, $AB \parallel CD$. Find the value of x, if $\angle BGE = 125^\circ$ and $\angle DFE = 120^\circ$. 3



- 19 In the given figure, line segments AB, CD and EF meet at O. Find the value of m and hence find all the three indicated angles. 3

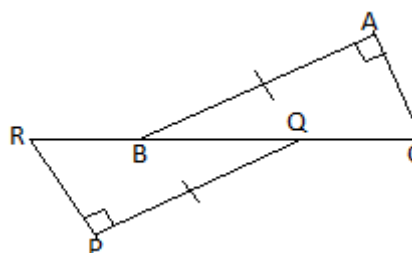


OR

Prove that, if one angle of a Δ is equal to the sum of the other 2 angles, then the Δ is right angled Δ . Also find the measure of each of the other 2 angles if they are equal.

- 20 Which Quadrant or axis do the following points lie: $(0, -2)$, $(1, 1)$, $R(-2, -4)$, $(-3, 7)$, $(6, -4)$ and $(5, 0)$? 3

- 21 In the given figure, $BA \perp CA$, $RP \perp QP$, $AB = PQ$ and $BR = CQ$. Prove that $AC = PR$. 3



- 22 AC is a diagonal of a quadrilateral ABCD. Prove that $AB + BC + CD + DA > 2AC$. 3

OR

Prove that angles opposite to equal sides of an isosceles triangle are equal.

SECTION - D

- 23 Find the value of a and b if $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = a + b\sqrt{15}$ 4

- 24 Evaluate using suitable identities: (i) 103×105 (ii) $(98)^3$ 4

- 25 Factorize : $9m^3 - 3m^2 - 5m - 1$. 4

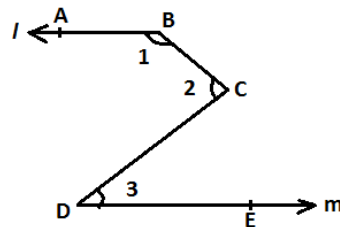
OR

Using factor theorem, find the value of 'p' if $x^3 - px^2 - 14x + 24$ is exactly divisible by $(x - 2)$. Hence factorize the polynomial.

- 26 State and prove angle sum property of a triangle. 4

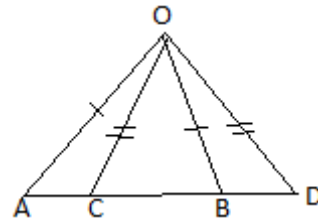
OR

In the figure, $l \parallel m$. Show that $\angle 1 + \angle 2 - \angle 3 = 180^\circ$



- 27 Plot $(-2, -1)$, $(5, -1)$ and $(0, 4)$ on Cartesian plane. Name the figure formed by joining these points and find the area of the figure so obtained. 4

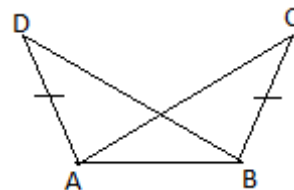
- 28 In the figure, $OA = OB$, $OC = OD$ and $\angle AOB = \angle COD$. Prove that $AC = BD$. 4



- 29 Sides AB, BC and median AD of $\triangle ABC$ are respectively equal to sides PQ, QR and median PM of $\triangle PQR$. Prove that $\triangle ABC \cong \triangle PQR$. 4

OR

In the figure, ABC and ABD are such that $AD = BC$, $\angle CAD = \angle DBC$ and $\angle CAB = \angle DBA$. Prove that $BD = AC$.



- 30 The sides of a triangular park are in the ratio 3:5:7 and its perimeter is 300m. Find the cost of leveling the park at the rate of ₹10 per m^2 (Take $\sqrt{3} = 1.73$). 4

End of the Question Paper