



INDIAN SCHOOL MUSCAT
SECOND TERM EXAMINATION
MATHEMATICS (041)

CLASS: IX

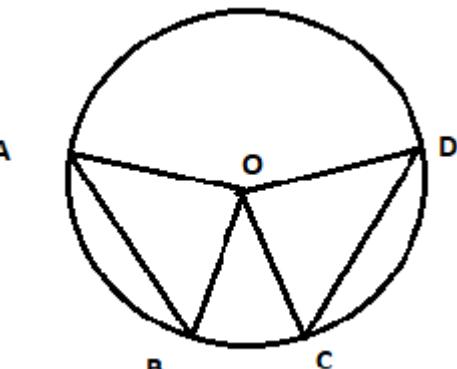
TERM II

Time Allotted: 2 Hrs.

17.02.2022

Max. Marks: 40

MARKING SCHEME- SET- A/B/C

Q No	SET-A	Marks
Section -A (2 Marks)		
1.	$P(2) = 0$ $(2)^2 + 2k + 2k = 0$ $4k + 4 = 0$ $k = -1$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
2.	$\angle D + \angle C = 180$ $75 + x = 180$ $x = 105$ $x = y = 105$ (alternate interior angles) $x + y = 210$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
3.	Given, fig, construction Proof $\Delta AOD \cong \Delta BOD$ $\angle AOD = \angle BOD$  OR $\angle A = (2x + 4)^\circ + (4x - 64)^\circ = 180$ (Cyclic quadrilateral) $6x - 60 = 180$ $6x = 240$ $x = 40$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$

4.	<p>Volume = base area x height $= 606 \times 200$ $= 121200 \text{ cm}^3$</p> <p style="text-align: center;">OR</p> <p>SA = $4\pi r^2 = 616$ $r^2 = 49$ $r = 7 \text{ cm}$ $d = 2r = 14 \text{ cm}$</p>	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
5.	<p>(i) $\frac{35}{200}$ (ii) $\frac{25+40+42}{200} = \frac{107}{200}$</p>	$\frac{1}{2} + \frac{1}{2}$
6.	<p>(i) $\frac{220}{600}$ (ii) $\frac{380}{600}$</p>	$\frac{1}{2}$ $\frac{1}{2}$
Section- B(3Marks)		
7.	$\begin{aligned} 250x^3 - 432y^3 &= 2(125x^3 - 216y^3) \\ &= 2 \{(5x)^3 - (6y)^3\} \\ &= 2(5x - 6y)(25x^2 + 30xy + 36y^2) \end{aligned}$ <p style="text-align: center;">OR</p> $9x^2 + y^2 + z^2 - 6xy + 2yz - 6xz = (-3x + y + z)^2 = (3x - y - z)^2$ <p>When x = 1 , y = 2 and z = -1 the value is $(3 - 2 + 1)^2 = 4$</p>	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
8.	$\angle OPQ = \angle OQP = x$ (OP = OQ, radius) $\angle POQ = 180 - 2x$ (angle sum property) $\angle POQ = 2\angle PRQ$ (Reason –theorem) $180 - 2x = 2y$ $180 = 2x + 2y$ $x + y = 90$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
9.	$L = x, B = 2x, H = 3x$ $SA = 2[LB + BH + LH] = 352$ $2[2x^2 + 6x^2 + 3x^2] = 352$ $11x^2 = 176$ $x^2 = 16$ $x = 4$ $Volume = LBH = 4 \times 8 \times 12 = 384 \text{ cm}^3$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$

10.	$P(x) = x^3 + x^2 + x + 1$ Remainder is $P\left(\frac{1}{2}\right)$ ---- By remainder theorem. $P\left(\frac{1}{2}\right) = \frac{1}{8} + \frac{1}{4} + \frac{1}{2} + 1$ $= \frac{15}{8}$	$\frac{1}{2}$ $1 + \frac{1}{2}$ $\frac{1}{2}$
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Section-C(4Marks)

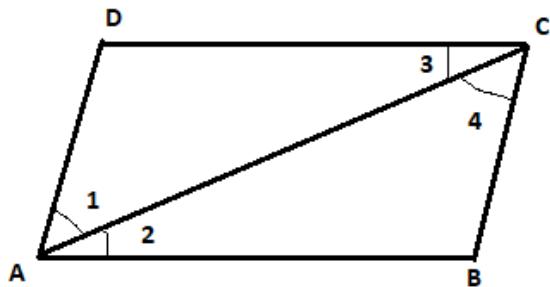
11.	$P(2) = p \Rightarrow p = 8a - 8$ $Q(2) = q \Rightarrow q = 6 + a$ $p - 2q = 4 \Rightarrow 6a - 20 = 4$ $\Rightarrow a = 4$	$1 + 1$ $1 + 1$
	OR Let $P(x) = x^3 + 2x^2 - 5x - 6$ $P(-1) = 0$ $(x+1)$ is a factor of $P(x)$ $\Rightarrow P(x) = (x+1)(x^2 + x - 6)$ [synthetic division] $= (x+1)(x+3)(x-2)$	$1 + 1$ $1 + 1$
12.	Neat construction with correct measurements	4

CASE BASED QUESTIONS

13.	(a) Capacity $= \pi r^2 h$ $= \pi \times \frac{7}{2} \times \frac{7}{2} \times 10 = 385 \text{ cm}^3$ (b) Area of sheet $= \text{TSA} = 2[\text{LB} + \text{BH} + \text{LH}]$ $= 2[5 \times 4 + 4 \times 15 + 5 \times 15]$ $= 310 \text{ cm}^2$	$\frac{1}{2}$ $1\frac{1}{2}$ $\frac{1}{2}$ $1\frac{1}{2}$
14.	(a) OA = OD = 50 m, diagonals are equal and bisect each other. (b) Yes they are equal as $\Delta AOB \cong \Delta COD$	$1 + 1$ $1 + 1$

SET - B

1.	ΔAOB is equilateral $\Rightarrow \angle AOB = 60^\circ = 2\angle ACB$ $\Rightarrow \angle ACB = 30^\circ$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
5.	Given To prove, figure	$\frac{1}{2} + \frac{1}{2}$



$$\angle 1 = \angle 2 \text{ (Given)} \quad \angle 3 = \angle 4 \text{ (Given)}$$

$$\angle 1 = \angle 4 \text{ (alternate int. angles)}$$

$$\Rightarrow \angle 1 = \angle 3$$

$$\Rightarrow AD = CD$$

\Rightarrow ABCD is a rhombus

$$\frac{1}{2} + \frac{1}{2}$$

6.	$4a^2 - 9b^2 - 2a - 3b = (2a - 3b)(2a + 3b) - (2a + 3b)$ $= (2a + 3b)(2a - 3b - 1)$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
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$$\frac{1}{2} + \frac{1}{2}$$

10.	$\Delta ODB \cong \Delta ODC \text{ (SAS, RHS} \cong\text{)}$ $\Rightarrow \angle BOD = \angle COD \text{ (c.p.c.t)}$ $\angle BOC = 2\angle BAC$ $\Rightarrow 2\angle BOD = 2\angle BAC$ $\Rightarrow \angle BOD = \angle BAC$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
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$$\frac{1}{2} + \frac{1}{2}$$

11.	Neat construction with correct measurements	4
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$$4$$

14.	$(a) \text{Amount of material} = 5 \times \text{TSA} = 5 \times 2\pi r(h + r) = 5 \times 297$ $= 1485 \text{ cm}^2$ $(b) \text{Capacity} = L \times B \times H = 300 \text{ cm}^3$	$1 + 1$ $1 + 1$
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$$1 + 1$$

SET - C

3.	$OA = OB \Rightarrow \angle OAB = \angle OBA = 20^\circ \text{ (radii, equal base angles)}$ $OA = OC \Rightarrow \angle OAC = \angle OCA = 30^\circ$ $\Rightarrow \angle BAC = 50^\circ$ $\angle BOC = 2\angle BAC$ $x = 2 \times 50 = 100^\circ$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
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$$\frac{1}{2} + \frac{1}{2}$$

4.	$(i) \quad \frac{220}{600}$ $(ii) \quad \frac{380}{600}$	1
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$$1$$

5.	$\begin{aligned}x^4y^4 - 256z^4 &= ((xy)^2)^2 - (16z^2)^2 \\&= (xy + 4z)(xy - 4z)[(xy)^2 + (16z^2)]\end{aligned}$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
6.	Let $\angle A = (3x - 2)^\circ$, $\angle C = (63 - 2x)^\circ$ in parallelogram ABCD $\Rightarrow 3x - 2 = 63 - 2x$ $\Rightarrow x = 13$ $\Rightarrow \angle A = \angle C = 37^\circ$ $\Rightarrow \angle B = \angle D = 143^\circ$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$
8.	$\begin{aligned}375x^3 - 648y^3 &= 3(125x^3 - 216y^3) \\&= 3 \{(5x)^3 - (6y)^3\} \\&= 3(5x - 6y)(25x^2 + 30xy + 36y^2)\end{aligned}$ OR $9x^2 + y^2 + z^2 - 6xy + 2yz - 6xz = (-3x + y + z)^2 = (3x - y - z)^2$ When $x = -1$, $y = 2$ and $z = 1$ the value is $(3 + 2 + 1)^2 = 36$	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $1 + 1$ 1
9.	$P(x) = x^3 + x^2 + x + 1$ Remainder is $P(-\frac{1}{2})$ ----- By remainder theorem. $P(-\frac{1}{2}) = -\frac{1}{8} + \frac{1}{4} - \frac{1}{2} + 1$ $= \frac{5}{8}$	1 $1 + \frac{1}{2}$ $\frac{1}{2}$
10.	Area painted = $\frac{\text{Total cost}}{\text{Rate}} = \frac{18000}{10} = 1800 \text{ m}^2$ Area of 4 walls = Base perimeter \times height $1800 = 300 \times h$ $h = 6 \text{ m}$	1 1 1
11.	Neat construction with correct measurements	4
12.	$P(2) = a \Rightarrow a = 8p - 8$ $Q(2) = b \Rightarrow b = 6 + p$ $p - 2q = 4 \Rightarrow 6p - 20 = 4$ $\Rightarrow p = 4$	$1 + 1$ $1 + 1$
	End of the Marking Scheme	