NAME		ROLL NO.	

	INDIAN SCHOOL MUSCAT MIDDLE SECTION HALF YEARLY EXAMINATION 2019–20	
	SUBJECT – MATHEMATICS	Code:MXM05
CLASS :8		Time Allotted: 2 ½ hrs
23.09.2019		Max .Marks: 80

General Instructions.
1.The question paper comprises of three sections **A ,B, C** and **D**. You have to **attempt all** the sections.
2. All the questions are **compulsory.**
3. All the answers should be written in the **answer sheet** provided.

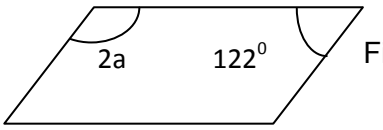
Q.NO1	**SECTION 'A'–('1' MARK EACH) – TOTAL – 20 MARKS**	Marks
(a)	Each exterior angle of a regular polygon with 15 sides is _____ b)24^0	1
(b)	$\sqrt[3]{343}+\sqrt{169}$ =_____ c)20	1
(c)	If two quantities 'r' and 's' vary inversely, then the constant of proportion is _____ a) r × s	1
(d)	A quadrilateral PQRS with PQ=QR=RS=SP and PR $\neq$ QS is a _____ b) Rhombus	1
(e)	The property used in $\frac{-1}{6}\times(-6)$ = (-6)× $\frac{-1}{6}$ = 1 is _____a) Multiplicative Inverse	1
(f)	Rational number not in between $\frac{1}{3}$ and $\frac{1}{2}$ is _____ d) 2	1
(g)	The number of non-perfect square numbers between 75^2 and 76^2 is _____ d) 150	1
(h)	Which of the following is a square number as well as a cube number c)729	1
(i)	The least number by which $3^2\times7^3\times5$ should be multiplied to make the resulting product a perfect cube is _____ d) 75	1
(j)	The product of 17*x* and 2*xy* is _____ b)34 x^2y	1
(k)	Find the sum of $1\frac{2}{3}$ and its additive inverse Ans-0	1
(l)	Find the measure of each exterior angle of a regular octagon Ans-$360\div8=45^0$	1
(m)	Express 5.067×10^{-3} in usual form Ans-0.005067	1
(n)	Write the multiplicative inverse of$(-5)^{-3}$ Ans-$(-5)^3$	1
(o)	Write the coefficient of "xy^2" in the expression $7x-6xy^2+5y+3$ is Ans-(-6)	1
(p)	Find the cost of 20 stamps, if the cost of 15 stamps is Rs 300 $\frac{20}{x}=\frac{15}{300}$	1

	$\frac{20\times300}{15}$ =Rs 400	
(q)	Find $\sqrt[3]{0.000216}$ Ans-0.06	1
(r)	Find the value of $(-5)^{-1}\times(3)^{-1}$ Ans-$(-15)^{-1}=\frac{-1}{15}$	1
(s)	Find the value of $\frac{1}{4}x^2y\,(12x - 4y^2)$ ---$3x^3y-x^2y^2$	1
(t)	By what least number should 54 be divided to make it a perfect cube? 54=2×3×3×3 The least number to be divided=2	1

Q.NO	**SECTION 'B'–('2' MARKS EACH) – TOTAL – 12 MARKS**	Marks
(2)	Find the each interior angle of a regular nonagon Each interior angle= sum ÷ Number=$\frac{(9-2)\times180}{9}=140^0$ _____(1+1)	2
(3)	Find the square root of 2009 by long division 47 4 | 2209 16 87 | 669 669 0 $\therefore \sqrt{2209}$ =47------ $\left(\frac{1}{2}\right)$ Proper division ---------- $\left(1\frac{1}{2}\right)$	2
(4)	Simplify (2ab+5a)-(6ab+3a)+(18ab-2a) 2ab+5a-6ab-3a+18ab-2a=14ab----------(1+1)	2
(5)	Find the value of 'a' if $7^{-a+3}=\frac{1}{343}$ $7^{-a+3}=7^{-3}$ ---------- $\left(\frac{1}{2}\right)$ -a+3=-3 ---------- $\left(\frac{1}{2}\right)$ -a=-6 ---------- $\left(\frac{1}{2}\right)$	2

	a= 6 ----------$\left(\frac{1}{2}\right)$	
(6)	Find the cube root of 5832 2 | 5832 2 | 2916 2 | 1458 3 | 729 3 | 243 3 | 81 3 | 27 3 | 9 3 | 3 1 Proper division ----------$\left(1\frac{1}{2}\right)$ $\therefore \sqrt[3]{5832} = 18$ ---- $\left(\frac{1}{2}\right)$	2
(7)	If 14 men can do a piece of work in 39 days. How many men will do it in 26 days. Since these quantities are in inverse proportion, 14×39=x×26 ---------$\left(\frac{1}{2}\right)$ x= $\frac{14\times39}{26}$ =7×3----------(1) =21 ---------$\left(\frac{1}{2}\right)$	2

Q.NO	**SECTION 'C'–('3' MARKS EACH) – TOTAL – 24 MARKS**	Marks
(8)	Find the number of diagonals of a regular polygon with each exterior angle 40^0 No.of sides= 360÷40=9----------(1) No.of diagonals=n(n-3)÷2---------$\left(\frac{1}{2}\right)$ =9(9-3)÷2---------$\left(\frac{1}{2}\right)$ =9×6÷2---------$\left(\frac{1}{2}\right)$ =9×3=27---------$\left(\frac{1}{2}\right)$	3

(9)	Find the least number to be added with 6784 to make it as a square number 83 8 | 6784 64 163 | 384 489 489- 384 105 Proper division ----------$\left(2\frac{1}{2}\right)$ Therefore the least number to be added with 6784 to make it as a perfect square=105-------$\left(\frac{1}{2}\right)$	3
(10)	b+6  2b + 2 Find the values of 'a' and 'b' for the given parallelogram(give reason) 2b+2=b+6(opposite sides are equal) 2b-b=6-2 b =4 -------$\left(1\frac{1}{2}\right)$ 2a+122=180 (Adjacent angles are supplementary) 2a=58 a= 29 -------$\left(1\frac{1}{2}\right)$	3
(11)	Check if 3528 is a cube number. If not, find the least number must be multiplied with 3528 to make it as a cube number. 2 | 3528 2 | 1764 2 | 882 3 | 441 3 | 147 7 | 49 7 | 7 1 $3528=2^3\times3^2\times7^2$-------$\left(1\frac{1}{2}\right)$ 3528 is not a cube number -----$\left(\frac{1}{2}\right)$ The least number to be multiplied=3×7=21----------(1)	3

(12)	If $x \propto \frac{1}{y}$,find the value of 'm' and 'n' | x | m | 100 | 50 | | y | 40 | n | 20 | Since $x \propto \frac{1}{y}$, m×40=100×n=50×20 m×40=50×20 m=50×20÷40 =25-----$\left(1\frac{1}{2}\right)$ 100×n=50×20 n=50×20÷100 =10-----$\left(1\frac{1}{2}\right)$	3
(13)	Simplify using properties: $\left(\frac{-3}{8}\times\frac{-2}{7}\right)-\frac{1}{21}-\left(\frac{5}{8}\times\frac{-2}{7}\right)$ $\frac{-2}{7}\times\left[\frac{-3}{8}-\frac{5}{8}\right]-\frac{1}{21}$ $\frac{-2}{7}\times\frac{-8}{8}-\frac{1}{21}=\frac{-2}{7}\times-1-\frac{1}{21}$ ---$\left(1\frac{1}{2}\right)$ $=\frac{2}{7}-\frac{1}{21}$ $=\frac{6}{21}-\frac{1}{21}=\frac{5}{21}$ ---$\left(1\frac{1}{2}\right)$	3
(14)	Simplify by using laws of exponents $\left[\left(7^3\right)^4\div\left(7^9\right)\right]+\left[3^2\times5^0\right]$ = $(7^{12}\div7^9)+3^2\times1$----------(1) = $7^{12-9}+3^2$----------$\left[\frac{1}{2}\right]$ =7^3+3^2----------$\left[\frac{1}{2}\right]$ =343+9----------$\left[\frac{1}{2}\right]$ =352----------$\left[\frac{1}{2}\right]$	3
(15)	Find the product of $(5m+6m^2n)$ and $(2mn-3)$ $(5m+6m^2n)\times(2mn-3)$ --------$\left[\frac{1}{2}\right]$	3

	=5m×2mn-5m×3+6m^{2}n×2mn-6m^{2}n×3----------(1) =10m^{2}n-15m+12m^{3}n-18m^{2}n----------(1) =-8m^{2}n-15m+12m^{3}n--------$\left[\frac{1}{2}\right]$	

Q.NO	**SECTION 'D'–('4' MARKS EACH) – TOTAL – 24 MARKS**	Marks
(16)	a) Find 4 rational numbers in between $\frac{2}{5}$ and $\frac{3}{7}$ $\frac{2\times7}{5\times7}=\frac{14}{35}$ *and* $\frac{3\times3}{7\times3}=\frac{9}{35}$ 4 Rational numbers between (any four)----------(2) b) Represent $\frac{3}{-4}$ on the number line Correct number line and representation----------(2)	4
(17)	Subtract (3y-8)(5y-1) from (40y+15y^2) Step-1: (3y-8)(5y-1)=15y^2-3y-40y+8----------(1) =15y^2-43y+8----------$\left[\frac{1}{2}\right]$ Step-2: (40y+15y^2)-(15y^2-43y+8)----------(1) =40y+15y^2-15y^2+43y-8----------(1) =83y-8----------$\left[\frac{1}{2}\right]$	4
(18)	a)Find the least number to be subtracted from 9900 to make it a perfect square 99 9 | 9900 81 189 | 1800 1701 99 $\therefore$ The least number to be subtracted=99 Proper division ----------$\left(1\frac{1}{2}\right)$ Conclusion----------$\left[\frac{1}{2}\right]$	4

	b) Find the Pythagorean triplet if one of the members is 12 $2m=12$; $m^2-1=6^2-1=35$; $m^2+1=6^2+1=37$-------$\left(1\frac{1}{2}\right)$ $m=6$ $\therefore$ The Pythagorean triplet is (12,35,37) ----------$\left[\frac{1}{2}\right]$	
(19)	8 taps having the same rate of flow fill a tank in $1\frac{1}{2}$ hour. If two taps go out of order how long the remaining taps will take to fill the tank? Let us take 'x' as the number of pipes and 'y' as the time taken in minutes x | 8 | 6 y | 90 | ? Forming table and units----------(2) $x \propto \frac{1}{y}$, $x \times y = k$ $8\times90=6\times a$----------$\left[\frac{1}{2}\right]$ $a= 8\times90\div6=120$----------(1) $\therefore$ It takes 2 hours to fill the tank----------$\left[\frac{1}{2}\right]$	4
(20)	Find the smallest square number which is divisible by 5, 15 and 50. 5 | 5,15,50 5 | 1,3,10 | 1,3,2 Proper division----------(2) L.C.M=$5\times5\times3\times2$----------$\left[\frac{1}{2}\right]$ The least square number divisible by 5,15 and 50=$5\times5\times3\times2\times3\times2$----------(1) =900----------$\left[\frac{1}{2}\right]$	4
(21)	Find the value of the following by using laws of exponents a) $\frac{2^{-1}\times10^3\times m^7}{5^2\times m^{-1}}$ $b)\left[\frac{1}{6}\right]^{-3}+\left[\frac{1}{4}\right]^{-3}$	4

$$\frac{m^1 \times 2^3 \times 5^3 \times m^7}{2^1 \times 5^2} \quad \text{----------} \left[\frac{1}{2}\right]$$

$m^{1+7} \times \frac{2^3}{2^1} \times \frac{5^3}{5^2}$ ----------(1)

$m^8 \times 2^{3-1} \times 5^{3-2}$ ---------- $\left[\frac{1}{2}\right]$

$m^8 \times 2^2 \times 5^1 = 20m^8$ ---------- $\left[\frac{1}{2}\right]$

b)$6^3+4^3=216+64=280$ ---------- $\left(1\frac{1}{2}\right)$

End of the question paper.