St. Lawrence High School
A JESUIT CHRISTIAN MINORITY INSTITUTION
1ST Term Examination – 2019
Model Answer

Sub: Arithmetic **Class: 8** **F.M: 80**

Group A

1 x 5 = 5

i) Choose the Correct answers

1. $-\frac{32}{56}$ expressed as a ratonal number with numerator 4 is:

   a. $\frac{4}{7}$ b. $\frac{4}{-7}$

   c. $\frac{4}{14}$ d. $\frac{4}{-14}$

2. What number should be added to $-\frac{13}{20}$ to get $-\frac{1}{60}$?

   a. $-\frac{19}{30}$ b. $\frac{8}{-15}$

   c. $\frac{19}{30}$ d. $\frac{8}{15}$

3. The value of $\frac{\sqrt{0.0032}}{\sqrt{0.32}}$

   a. 0.0001 b. 0.001

   c. 0.01 d. 0.1

4. In a digital display which digit can display all 10 digits from 0 to 9

   a. Nine b. Zero

   c. Six **d. Eight**

5. Which of the following is the cube of an odd number?

   a. 2744 **b. 12167**

   c. 8000 d. 32768

ii) State which of the following statements are true or false.

1 x 5 = 5

1. The square of every natural number is always greater than itself. (T)
2. $x \div (y + z) = x \div y + x \div z$ where x, y and z are rational numbers.(F)
3. If n(A) = n(B) then A=B (F)
4. A given polynomial will be a perfect square if it has even number of terms.(F) $\{x : x \in N, 4 < x < 5\}$ is a finite set (F)
5. $\{1,3,5\} = \{5, 1, 3\}$ (T)

iii) Fill in the blanks

1 x 5 = 5

1. $A \cup A = A$
2. $A \cap \varphi = \varphi$
3. The absolute value of $\frac{-21}{-29} = \frac{21}{29}$
4. The rational number which is neither positive nor negative is 0
5. $\sqrt{144} = 12$

Group B

iv) Answer the following questions

2 x 5 = 10

Very Short Answer Type Questions.(Answer all the questions)

i) If A={collection of all odd numbers}, B={collection of all even numbers} and N is the set of natural numbers then determine the set $(A \cup B) \cap N$.

Ans: N

ii) Which smallest whole number should be multiplied with 675 to make it a perfect cube number?

Ans : $625 = 5^2 \times 3^3$. Hence 5 to be multiplied.

iii) Nabarun donated $\frac{5}{6}$th of his total pocket money to an NGO. If he is left with Rs.500.00 then what amount has he donated?

Ans: He is left with $\frac{1}{6}$th. Hence $\frac{1}{6}$th is equal to Rs. 500.00, so whole = Rs. (500 x 6) = Rs. 3000.00

Hence the amount he donated is = Rs. (3000-500) = Rs. 2500.00

iv) Simplify : $-\frac{2}{3} \times \left(\frac{4}{7} + \frac{-11}{14}\right)$

Ans: $\frac{1}{7}$.

v)   Find out the square root of 0.003969

Ans: 0.063

v)   **Answer the following questions (any 5)**   **3 x 5 = 15**

i)   During "Expression – 2019" practice, $\frac{9}{10}$ th of the total students of our school were present one day. If 120 students were absent, how many were present?

Ans: $\frac{1}{10}$ th = 120. So $\frac{9}{10}$ th = 1080.

ii)   If P={1,3,5,7}, Q={2,4,6,8} and set R is the universal set of P and Q where R={whole number less than 11}, then find $(P \cup Q)'$.

Ans: $(P \cup Q)' = \{9, 10\}$

iii)   List the elements of the set D={$(2n - 1)| n \in W; n \le 4$}

Ans { -1,1, 3, 5, 7 }

iv)   Determine the least number that must be subtracted from 63520 to make it a perfect square number.

Ans: 252^2 = 63504. So the required number = 63250 – 63504 = 16

v)   Find the least perfect square number which is also divisible by each of 12, 15 and 30.

Ans: LCM of 12,15 and 30 is 60. Again 60 = 4 X15. So 15 to be multiplied.

Required number is 15 X 60 = 900.

vi)   A post card is $10\frac{2}{5} cm$ long and $7\frac{4}{5} cm$ wide. Find its area.

Ans: Area = length X width = $\frac{2028}{25}$ sqcm. = $81\frac{3}{25} cm^2$ or $81.12\ cm^2$

vii)   If X={perfect square numbers in between 2 and 30} and Y={collection of all odd natural numbers}, then find set Z when Z=X ∩Y.

Ans: X = { 4, 9, 16, 25} and Y = { 1,3,5,7.............}. So, Z=X ∩Y = {9, 25}

Group C

VI.   **Answer the following questions(any 8)**   **5 x 8 = 40**

i)   **Find four rational numbers between $\frac{1}{6}$ and $\frac{1}{3}$.**

Ans: $\frac{1}{6} = \frac{10}{60}$ and $\frac{1}{3} = \frac{20}{60}$. So write any four numbers with denominator 60 and numerator between 10 and 20.

ii.   **The sum of the digits of two digitednumber is 9. The number is 6 times the units digit. Find the number.**

Ans: x + y = 9 and 10x + y = 6y. Solving x= 3 and y = 6. Hence the number is 36.

iii.   **If A= { $\frac{x^2}{2}$ | $0 \le x < 6$; $x \in N$} and B= { 2y | $0 \le y \le 5$; y∈ W}. Find A∩B.**

Ans: A= $\left\{\frac{1}{2}, 2, \frac{9}{2}, 8, \frac{25}{2}\right\}$ B={ 0,2, 4, 6, 8, 10}. So (A∩B) = { 2, 8}

iv.   **A = { factors of 24} , B = { factors of 36 }. Find n(A U B).**

Ans: A= {1, 2, 3, 4, 6, 8, 12, 24} and B= { 1, 2, 3, 4, 6, 9, 12, 18, 36}.

So (A U B) = { 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36}. n(A U B) = 11.

v.   **Find the set A such that A= { y : $\frac{5y}{3} - 3 \le 13$, y is a prime number}.**

Ans: Solving, we get $y \le 9.6$ Hence, A= {2, 3, 5, 7 }

vi.   **If B = { x = 5x + 6 = 1 ; x ∈ N} , then find B ∩ ∅.**

Ans: ∅

vii.   **A certain number between 10 and 100 is 8 times the sum of its digits, and if 45 be subtracted from it the digits will be reversed. Find the number.**

Ans: 10x + y = 8(x + y) , or, 2x = 7y..............(1)

$10x + y - 45 = 10y + x$, or, $x - y = 5$ ....(2)

Solving $x=7$ and $y= 2$. Number is 72.

viii. **The mean of five observations is 20. If one number is excluded, mean of the remaining numbers becomes 23. Find the excluded number.**

Ans: In given data total of 5 observations is $= 5 \times 20 = 100$.

After excluding the sum becomes $4 \times 23 = 92$.

Hence the number is 8.

ix. **Find the mean of the following distribution**

x :	4	6	69	10	15	
f:	5	10	10	7	8	where f = frequency
Ans: xf:	20	60	690	70	120	total= 840

Total frequency = 40.

Hence mean $= \dfrac{840}{40} = 21$.

x. **Find the least number by which 11664 must be divided, so as to make the quotient a perfect cube. Also find the cube root of the quotient.**

Ans: $11664 = 2^4 \times 9^3$. Hence 11664 to be divided by 2 to get 18^3.