ST. LAWRENCE HIGH SCHOOL

Second Term Examination

Sub: Arithmetic   **Class: VII**   **FM: 90**

Duration: 2 hrs 30mins   **Model Answers**   **Date: 01.08.19**

Group- A

(I) Choose the correct option:-   (1 X 5 = 5)

1. The cardinal number of the set of the letters of the word " SCHOOL " is (b) 5
2. The least possible value of A for which 40 x A is a perfect cube is (a)200
3. The floor of a room is of size 4m x 3m and its height is 3m. The walls and ceiling of the room require painting, the area to be painted is (b) 54 m^2
4. The ratio between two numbers is 11 : 9. If the sum of these two numbers is 40, what is the product of the numbers? (a) 396
5 If 5 men can finish a piece of work in 4 days, how many men could be required to finish in 1 day? (c) 20

(II) Fill in the blanks :-   (1 X 5 = 5)

1) positive   2) { 2 }   3) 3   4) 1   5) 125 cu cc

(III) Write True or False :-   (1 X 5 = 5)

1) All fractions are rational numbers. (T)
2) All equivalent sets are equal sets. (T)
3) If a , b , c are in continued proportion , then a^2 = bc. (F)
4) The capacity of a solid is called the volume of the solid (T)
5) 1L = 1 cu dm. (T)

(IV) Match the following : -   (1 X 5 = 5)

1)The universal set of { 0, 3, 6, 9, 12, 15 }	e)
2) Mean proportional between 81 and 100	a)
3) Volume of the cuboid whose dimensions are 8cm x 2.5cm x 4cm is	d)
4) Cube root of 125 x 1331	c)
5) Cardinal number of square numbers less than 6	b)

(V) Answer on one word:-   (1 X 5 = 5)

1) A fraction whose numerator is greater than or equal to the denominator. : (Improper fraction)
2) Collection of well defined objects. : (Set)
3) An equation that states that two ratios are equal. : (Proportion)
4) A rectangular solid whose all edges are equal. : (Cube)
5) The capacity of a solid . : (Volume)

Group – B

(I) Answer the following questions:-   (2 X 5 = 10)

1. A rectangular water tank is 5m high, 3m long and 3m wide. How many litres of water can it hold?
   Ans: Vol of tank = (5 x 3 x 2) m^3. 30 m^3 which is equal to 30 x 1000 L = 30,000L

2. Find the square root of 9604, by factor method.
   Ans: 9604 = 2 x 2 x 7 x 7 x 7 x 7 = 2^2 x 7^2
   Therefore Sq.root is = 2 x 7^2 = 98

3) Find the cube root of 0.064.
   Ans: cube root of 0.064 = cube root of (4|10)^3 = 4/10 = 0.4

4) List the following in Roster form:-
A = { x I x is a square number less than 20 }
   Ans :   Ans : A = { 1 , 4 , 9 , 16 }

5) If x : y = 3 : 5, and y : z = 15 : 27, find x : z.
   Ans : From the relation we get x/y = 3/5 and y/z = 15/27, Therefore x : z = (x/y) x (y/z) = (3/5) x (15/27) = 1 : 3

(II) Answer the following questions:- (Any 5)   (3 X 5 = 15)

1) Simplify: $\frac{121}{100} + \frac{100}{11} + \frac{(-63)}{10} + \frac{17}{50}$

Ans: { $\frac{121+17\,x\,2+(-63\,x\,10)}{100} + \frac{100}{11}$, or $\frac{-475}{100} + \frac{100}{11} = \frac{4775}{1100} = 4\frac{15}{44}$

2) Simplify: $(12^2 - 5^3) \times \frac{(-1)^{40}}{19}$

Ans : (144 – 125) /19 = 19/19 = 1

3) Find the cardinal number of the set B = { x : x is an integer and $-8 \leq x < 2$ }

Ans: 10

4) The salary of Prakash increases in the ratio 4 : 7. His original salary was ₹ 8000. Find his new salary.

Ans: Increase in salary = 4 : 7.

Hence new salary = (7/4) of 8000 = ₹14000

5) If it would take 15 hours for cleaning the tress from some land by 4 people , then how many people will be needed to complete the job in 6 hours.

Ans: Time   People

         15   4

         06   x

Here it is inversely related. Therefore x = $\frac{15\,x\,4}{6}$ = 10

6) The following table show the votes received by the students who stood for the election of the class monitor

Name	Anik	Sounak	Rishav	Ritam	Bappa
No of votes	2	4	6	5	3

Find the measure of the central angle of each.

Ans :

Name	Anik	Sounak	Rishav	Ritam	Bappa
No of votes	2	4	6	5	3
Measure of central angle	$\frac{2}{20}\,x\,360 = 36°$	$\frac{4}{20}\,x\,360 = 72°$	$\frac{6}{20}\,x\,360 = 108°$	$\frac{5}{20}\,x\,360 = 90°$	$\frac{3}{20}\,x\,360 = 54°$

7) A swimming pool is 22m in length , 18m in breadth , 4m in depth. Find the cost in cementing its floor and walls at the rate of ₹ 15 per square metre.

Ans: Areas of floor = l x b = 396 m^2

Area of four walls = 2 x h (l + b) = 320 m^2

Total are to be cemented = 396 + 320 = 716 m^2 and its cost is = ₹ (15 x 716) = ₹ 10,740

Group – C

(III) Answer the following questions:- (Any 8)   (5 x 8 = 40)

1) Rebanta earns ₹ 125.84 an hour. If he earned ₹ 4530.24 last week, how many hours did she work?

Ans: Rebanta's earning in an hour = ₹ 125.84 and Total earning in a week = ₹ 4530.24

So no. of hours worked last week = ₹ 4530.24 / ₹ 125.84 = 36 hours

2) Find the smallest number by which 980 should be multiplied to make it a perfect square. Find the perfect square so obtained and also its square root.

Ans: Making pairs of prime factors, we see factor 5 does not exist in pair. To make the number a perfect square we need to multiply the given number by 5.

Perfect square obtained : 980 x 5 = 4900

Therefore $\sqrt{4900} = 70$

3) Find the smallest number by which 8640 should be divided to make the quotient a perfect cube. Also find the cube root of the quotient.

Ans: Forming triplets, we see that we have 5 as an extra factor. So we divide 8640 by 5.

Therefore perfect cube : 1728 = $2^6 x\, 3^3$. Therefore $\sqrt[3]{1728} = 2^2\,x\,3 = 12$

4) Solve the following equations:

a)   x + 1 = 0, x being a positive integer.   Ans: $\emptyset$, as it is said that x is being a positive integer.

b)   3x + 7 = 0, x being a whole number.   Ans: $\emptyset$, as x is being a whole number.

5) Find the third proportional to 3.6 ,1.8
   Ans: Let the third proportion be x.
   Therefore $\frac{3.6}{1.8} = \frac{1.8}{x}$, or x = 0.9

6) A farmer has enough hay to feed 5 horses for 6 days. How long would the hay last for 3 horses?
   Ans: The length of time for which the horses can be fed is inversely proportional to the number of horses to be fed. So 5 horses : 3 horses : : x : 6
   Solving we get x = 10. So 3 horses can be fed for 10 days.

7) A water tank can be filled by a tap in 12 hours and emptied by an outlet pipe in 18 hours. How long will it take to fill the cistern if both the tap and the pipe are opened together?
   Ans : The work done by the tap in 1 hour = 1/12 and the work done by the outlet pipe in 1 hour = 1/18
   So, the work done by the tap and the outlet pipe = $\frac{1}{12}$ + (- $\frac{1}{18}$) = 1/36
   So, when both opened the tank can be filled in 36 hours.

8) The data given below shoes the number of students opting for different subjects in a college

Subjects	English	Maths	Physics	Chemistry	Commerce
No. of students	50	60	45	25	40

Construct the bar graph for the above data on a graph paper.
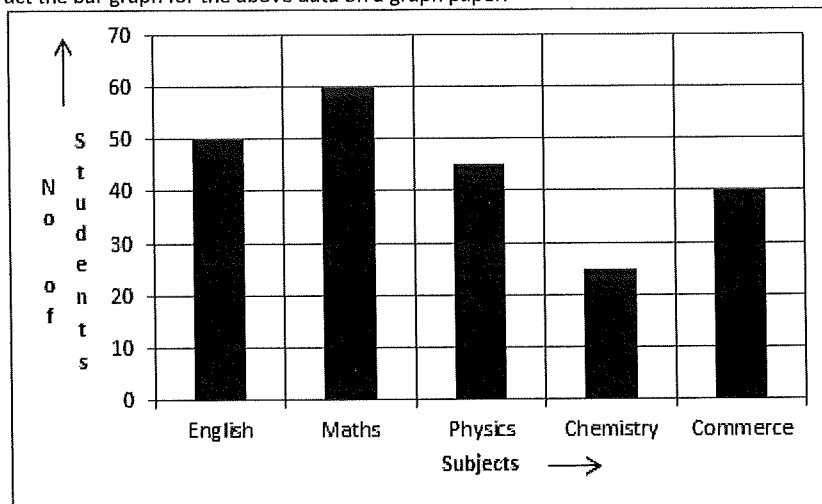
Ans:

9) A hall has dimensions 34m x 24m x 8m. Find the cost of white washing the four walls at the rate of ₹10 per m^2
   Ans: Area of 4 walls = 2(l + b) h = 928 m^2
   So cost of white washing the four walls @ ₹10 per m^2 = ₹ 928 x 10 = ₹ 9280.

10) A village has a water tank measuring 25 m by 16m by 8m, which is full of water. How many persons can use the water, if each person requires 200 litres of water?
    Ans: Vol of water tank = (25 x 16 x 8) = 3200 m^3. So vol = 3200 x 1000L
    Water reqd by one person = 200L
    Therefore no. of people who can use the tank = $\frac{3200 \, x \, 1000}{200}$ = 16,000