

II SEMESTER EXAMINATION 2017-2018

Std. : IX

Marks: 40

Date: 06-04-18

Sub: MATHS I [ALGEBRA]

Time: 2 hrs.

Q.1] A] Write the correct alternative for each of the following questions (5)

1. $P = \{1, 2, \dots, 10\}$, What type of set is P?
a. Null set b. Infinite set c. Finite set d. None of these
2. What is the degree of the following polynomial: $3x^2 + 5x^4 - 7$?
a. 2 b. 4 c. 0 d. 7
3. What is the ratio of 1mm to 1cm?
a. 1 : 100 b. 10 : 1 c. 1 : 10 d. 100 : 1
4. When 5 is subtracted from length and breadth of the rectangle, the perimeter becomes 26. What is the mathematical form of the statement?
a. $x - y = 8$ b. $x + y = 8$ c. $x + y = 23$ d. $2x + y = 21$
5. A person has earned his income during the financial year 2017 – 18. Then his assessment year is _____.
a. 2016 – 17 b. 2018 – 19 c. 2017 – 18 d. 2015 – 16

B] Solve the following (Any 5) (5)

1. Find the class mark of the class 35 – 40.

Ans: Class mark = $\frac{35 + 40}{2}$
= $\frac{75}{2}$
= 37.5

2. Calculate the education cess of 2% on the taxable income of Rs. 1,27,500.
3. Write two solutions of the equation $2x + y = 18$
4. What is the mean proportional of 4 and 25?
5. Find the value of the polynomial $2x^2 - 3x + 5$ when $x = 2$.
6. Write the following set using listing method: $Y = \{x \in \mathbb{N} \text{ and } x \text{ is divisible by } 7\}$

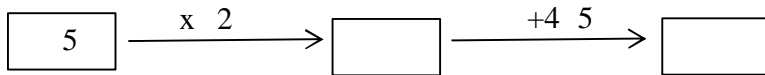
Q.2 Solve the following (Any 4)

(8)

1. Represent the union of two sets by Venn diagram for the following sets:

$$A = \{3, 4, 5, 7\} \text{ and } B = \{1, 4, 8\}$$

2. Fill in the blanks given below:



3. Factorise: $4x^2 - 25$

4. Find the ratio of circumference of the circle with radius 'r' to its area.

5. Alka spends 90% of the money that she receives every month and saves Rs.120. How much money does she get monthly?

6. Multiply the given polynomials: $y^5 - 1$; $y^3 + 2y^2 + 2$

Q.3 Solve the following (Any 3)

(9)

1. The ratio of two numbers is 5 : 7. If 40 is added in each number, then the ratio becomes 25 : 31, find the numbers.

Ans. Let the first number be $5x$ and the second number be _____.

From the given condition,

$$\frac{\text{---}}{\text{---}} = \frac{\text{---}}{\text{---}}$$

$$\text{---} (5x + 40) = 25 (7x + 40)$$

$$155x + 1240 = \text{---} 1000$$

$$1240 - \text{---} = 175x - 155x$$

$$240 = 20x$$

$$x =$$

The given numbers are _____ and _____.

2. Solve the following simultaneous equations: $2x - y = 5$; $3x + 2y = 11$

3. Mr. Pandit is 75 years of age. Last year his annual income was 13,25,000 rupees. How much is his taxable income? How much tax does he have to pay?

$$\text{Ans. } 13,25,000 - 10,00,000 = \text{---}$$

According to the table, he must first pay ₹ 1,10,000 as income tax. In addition, on 3,25,000 rupees he has to pay 30% income tax.

$3,25,000 \times \frac{30}{100} = \boxed{}$ rupees

Therefore, his total income tax amounts to $\boxed{} + \boxed{} = \boxed{}$

Besides this, education cess will be 2% of income tax = $\boxed{} \times \frac{2}{100} = \boxed{}$ rupees

A secondary and higher education cess at 1% of income tax = $\boxed{} \times \frac{1}{100} = \boxed{}$

rupees Total income tax = Income tax + education cess + secondary and higher education cess
 = $\boxed{} + \boxed{} + \boxed{}$
 = $\boxed{}$

4. Complete the following cumulative frequency table:

Class (Height in cm)	Frequency (No. of students)	Less than type cumulative frequency	More than type cumulative frequency
150 – 153	05		
153 – 156	07		
156 – 159	15		
159 – 162	10		
162 – 165	05		
165 – 168	03		
	Total N = 45		

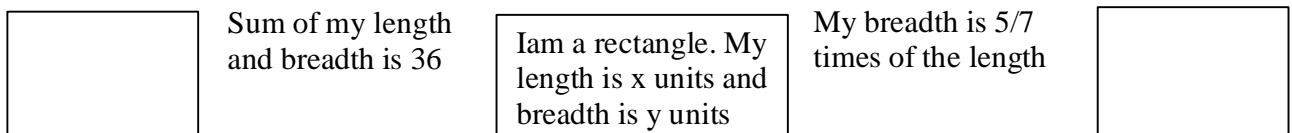
5. If the mean of the following data is 20.2, then find the value of p .

x_i	10	15	20	25	30
f_i	6	8	p	10	6

Q.4 Solve the following (Any 2)

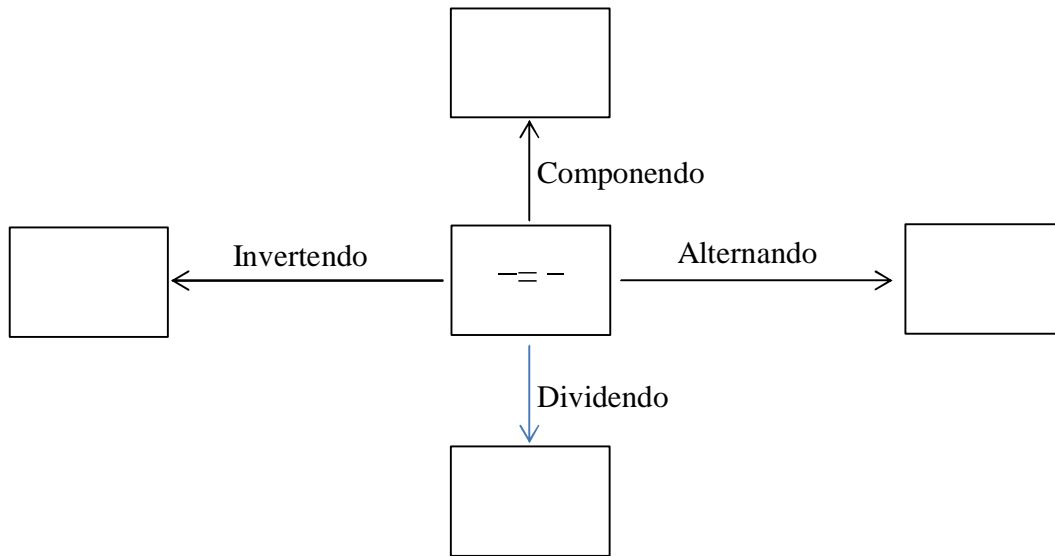
(8)

1. There are instructions written near the arrows in the following diagram. From this information, form suitable equations and write in the boxes indicated by arrows. Also compute the solution. (Hint: Solve the equations simultaneously)





2. Fill in the blanks according to the information given below:



3. The following table shows the number of buses and trucks in nearest lakh units. Draw a percentage bar-diagram. (Approximate the percentages to the nearest integer)

Year	No. of Trucks	No. of Buses
2005 – 2006	47	9
2007 – 2008	56	13
2008 – 2009	60	16
2009 – 2010	63	18

Q.5 Solve the following (Any 1)

(5)

- The sum of the digits in a two – digit number is 9. The number obtained by interchanging the digits exceeds the original number by 27. Find the two – digit number.
- Mr.Hiralal invested Rs.2,15,000 in a mutual fund. He got Rs.3,05,000 after 2 years. Mr.Ramniklal invested Rs.1,40,000 at 8% compound interest for 2 years in a bank. Find out the percentage gain of each of them. Whose investment was more profitable?