

## Quarterly Examination 2017-2018

Std. : IX  
Subject : Mathematics

Full Marks : 80  
Time : 2½hrs.+15min

### SECTION-A

(Answer all the questions)

- I. (a)** A certain sum of money is invested at the rate of 5% P.a. C.I. If the difference between the interest of third year and first year in Rs. 102.50 find the sum.
- (b) If  $a+b+c = 0$  find the value of  $\frac{(b+c)^2}{bc} + \frac{(c+a)^2}{ca} + \frac{(a+b)^2}{ab}$  [3]
- (c) Factorise (i)  $x^3 + x^2 - \frac{1}{x^2} + \frac{1}{x^3}$  [3]  
(ii)  $24x^3 - 81$
- II. (a)** Solve for x and y [4]  
 $41x + 53y = 135$   
 $53x + 41y = 147$
- (b) Solve for x and y [3]  
 $8^{x+1} = 16^{y+2}$   
 $\left(\frac{1}{2}\right)^{3+x} = \left(\frac{1}{4}\right)^{3y}$
- (c) ABC is an isosceles triangle with  $AB = AC = 12$  cm and  $BC = 8$  cm. Find the altitude on BC and hence. Calculate its area. [3]
- III. (a)** If the length and breadth of a room are increased by 1 metre, the area is increased by 21 m<sup>2</sup>. If the length is increased by 1m and breadth is decreased by 1m, the area is decreased by 5m<sup>2</sup>. Find Perimeter of the room. [4]
- (b) Find Mean and Median of all positive factor's of 48. [3]
- (c) If  $x = 3 + 2\sqrt{2}$  [3]  
find  $x^3 - \frac{1}{x^3}$
- IV. (a)** Madhu deposits Rs. 240 per month for 2 years in R. D. account in a bank. If at the time of maturity she gets Rs. 6300 find the rate of interest. [4]
- (b) The annual growth in population of a city was 5% p.a. Present Population is 9261, what was the population 3 years ago. [3]

- (c) Evaluate using  $a^3 + b^3$  [3]

$$\frac{(128)^3 + (273)^3}{(128)^2 - 128 \times 272 + (272)^2}$$

**SECTION-B**

**(Answer any four questions only)**

- V. (a)** The daily wages of 160 workers are below : [6]

Wage	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of workers	12	20	30	38	24	16	12	8

Estimate (i) median wage of workers

(ii) Inter quartile range

(iii) % of workers who earn more than Rs. 45 a day.

- (b)** A rectangle of area  $105 \text{ cm}^2$  has its length equal to  $x \text{ cm}$ . Write down its breadth in terms of  $x$ , given that its perimeter is  $44 \text{ cm}$ , write down an equation in  $x$  and solve for  $x$ . [4]

- VI. (a)** Draw the histogram and estimate the mode, and also modal class. Draw the frequency polygon in the same histogram. [6]

Classes	0-10	10-20	20-30	30-40	40-50	50-60
frequency	2	8	10	5	4	3

- (b)** Factorise (i)  $2(x+y)^2 - (x+y) + 6$  [4]

(ii)  $x^2 + 12x + 35 + px + 5p$

- VII. (a)** Find the mean by step-deviation method. [4]

Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Person	5	15	20	23	17	11	9

- (b)** Solve for  $x$  and  $y$  [4]

$$\frac{3}{x+y} + \frac{2}{x-y} = 3$$

$$\frac{3}{x+y} + \frac{3}{x-y} = \frac{11}{3}$$

- VIII. (a)** Draw a right angled  $\triangle ABC$  with BC hypotenuse =  $6.4 \text{ cm}$  and the altitude from A to BC =  $2.5 \text{ cm}$ . Draw the circum circle and measure its radius. [5]

- (b)** The simple interest in 3 years and the compound interest in 2 years on a certain sum at the same rate are Rs. 1200 and Rs. 832 find : [5]

- (i) rate of interest
- (ii) the principal
- (iii) the difference between C.I and S.I for 3 years.

**IX. (a)** Priya has a R. D. account in a bank for 6 years. If she gets Rs. 53712 at the time of maturity find (i) rate of interest  
(ii) Amt of interest

**(b)** How many square tiles of side 20cm will be needed to pave a footpath which is 2m wide and surrounds a rectangular plot 40m by 22m. [3]

**(c)** Use formulae and Evaluate  $(27)^3 + (-17)^3 + (-10)^3$  [3]

**X. (a)** If O is any point in the interior of a rectangle ABCD. Prove that  $OA^2 + OC^2 = OB^2 + OD^2$  [5]

**(b)** Find the missing frequencies  $f_1$  and  $f_2$  given the sum of frequencise 120 and mean of the distribution is 50. [5]

x	10	30	50	70	90
f	17	$f_1$	32	$f_2$	19

**XI. (a) Factorise**

**(a) (i)**  $x^6 - 7x^3 - 8$  [2x2]

If  $x - \frac{2}{x} = 5$  find the value of  $x^3 - \frac{8}{x^3}$

**(b)** Solve for x [3]

$$5^{2x-1} = 25^{x-1} + 100$$

**(c)** If  $x^2 + \frac{1}{25x^2} = 8 \frac{3}{5}$  [3]

find  $x^3 + \frac{1}{125x^3}$