Quarterly Examination 2017-2018

Std. : IX **Full Marks : 80**

Subject : Mathematics **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]

$8^{x+1} = 16^{y+2}$

$(\frac{1}{2})^{3+x} = (\frac{1}{4})^{3y}$

(c) ABC is an isoceles triangle with AB = AC = 12 cm and BC = 8 cm. Find the attitude 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^2. If the length is increased by 1m and breadth is decreased by 1m, the area is decreased by $5m^2$. 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 the 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 cm^2 has its length equal to x cm. Write down its breadth in terms of x, given that its perimeter is 44 cm, write down an equation is 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 ΔABC with BC hypotonus = 6.4 cm and the attitude from A to BC = 2.5cm. 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 $x - {}^2/x = 5$ find the value of $x^3 - {}^8/_{x^3}$

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