Half Yearly Examination 2016-2017

Std. : VIII **Full Marks : 80**

Subject : Mathematics **Time : 2 Hrs.+15mins. reading time**

Section - A [40 marks]
Attempt all the questions

Q1. a) Calculate the difference between the compound interest & the simple interest on Rs. 12000 at 9% p.a. in 2 years. [4]

b) Solve the following system of simultaneous linear equn. [3]

$\frac{x}{3} + \frac{y}{4} = 4$; $\frac{5x}{6} - \frac{y}{8} = 4$

c) Find the square root of 98.2 correct to two decimal places. [3]

Q2. a) Make 'S' as the subject of the formula $v = \sqrt{u^2 + 2as}$. [4]

Find 'S' when v = 15 u = 20 and a = – 2

b) If $x - \frac{1}{x} = \sqrt{5}$, find the values of [3x2]

(i) $x^2 + \frac{1}{x^2}$ (ii) $x + \frac{1}{x}$ (iii) $x^3 + \frac{1}{x^3}$

Q3. a) Solve the following equation for x. [3]

$2^3 (5^O + 3^{2x}) = 8 \frac{8}{27}$

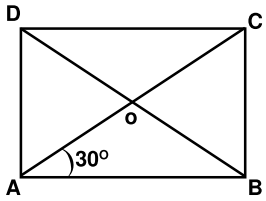
b) There are 38 coins in a collection of 20p. coints and 25 p. coins. If the total value of the collection is Rs. 8.50, how many of each are there ? [4]

c) The width of sudha's garden is 2/3 of its length. If its perimeter is 40m. find its dimensions. [3]

Q4. a) In a rectangle ABCD, diagonals intersect at 0. If $\angle OAB = 30^O$, find

(i) $\angle ACB$ (ii) $\angle ABO$ (iii) $\angle COD$ (iv) $\angle BOC$

(Give reasons)



b) Solve the following pair of simulteneous linear equations graphically [3]

3x – y = 7 and 2x + 5y + 1 = 0

c) Factorise : $9x^2 - 4a^2 + 4ay - y^2$ [3]

Section - B [40 marks]
Answer any <u>four</u> questions.

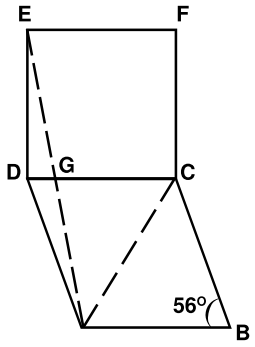
Q5. a) i) Solve : 83x – 67y = 383 [3]

67x – 83y = 367

ii) Solve $\frac{2x+1}{10} - \frac{3-2x}{15} = \frac{x-2}{6}$. Hence find the value of y if $\frac{2}{x} + \frac{5}{y} = 5$ [5]

b) Construct a triangle PQR such that PQ = 3.3 cm, QR = 4cm and $\angle Q = 120^{O}$. [3]

Q6. a) In the adjoining figure, ABCD is a rhombus and DCFE is a square. If $\angle ABC = 56^{O}$, find (Give reasons) [4]



i) $\angle DAG$ ii) $\angle FEG$

iii) $\angle GAC$ iv) $\angle AGC$

b) Find the least natural number of four digits which is perfect square. [3]

c) Factorise : $a(2a - b) - b^2$ [3]

Q7. a) A man invests Rs. 46875 at 4% per annum compound interest for 3 years. Calculate : [4]

i) the interest for the first year.

ii) the amount standing to his credit at the end of second year.

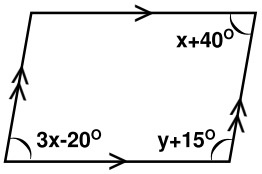
iii) the interest for the third year.

b) Solve the following equations — [3x2]

i) $\frac{1}{x-1} - \frac{2}{x+1} = \frac{3}{2(x^2-1)}$

ii) $2 + \frac{2x-3}{2x+3} = \frac{3x+4}{x+2}$

Q8. a) In the adjoining figure, ABCD is a parallelogram. Find the values of x and y. [3]



b) Six years hence a man's age will be three times his son's age, and three years ago he was nine times as old as his son. Find their present ages. [4]

c) Simplify : $\left(\frac{27}{8}\right)^{2/3} - \left(\frac{1}{4}\right)^{-2} + 5^{O}$ [3]

Q9. a) i) If $2a - 3b = 3$ and $ab = 2$, find the value of $8a^3 - 27b^3$

ii) By using suitable identities, evaluate the following $(9.8)^2$; $(10.1)^2$ [6]

b) 100 students of class VIII in a school have heights as tabulated below :

Height (in cm)	120-130	130-140	140-150	150-160	160-170	170-180
No. of students	12	16	30	20	14	8

construct a combined histogram and frequency polygon for the above data.

Q10. a) i) Simplify $\frac{37.85 \times 37.85 - 12.15 \times 12.15}{37.85 - 12.15}$ [3]

ii) Evaluate $(8.7)^2 - (1.3)^2$

b) Construct a triangle ABC given that AB = 5.4 cm $\angle A = 60^{\circ}$ and $\angle B = 75^{\circ}$. Measure $\angle C$. From C, draw a perpendicular to AB. [4]

c) Factories — i. $2x^4 - 32$

ii. $x - 1 - (x-1)^2 + ax - a$ [3]