FUSCO'S SCHOOL (I.C.S.E)

Indiranagar, Bangalore

HALF YEARLY EXAMINATION 2016-17

Subject: Mathematics

Time: 2 $^1/_2$ hrs.

Class: VIII **Marks: 80**

Section – A

Question 1

a) A field is 60 m long and 40m wide. Find the ratio between its : 3

i. Breadth and length ;

ii. Iength and perimeter ;

b) Factorise; 3

i. $4x^2 - 81y^2$

ii. $x^2 + 6x + 8$

c) If $3x + \frac{1}{3x} = 3$, find : 4

i. $9x^2 + \frac{1}{9x^2}$

ii. $27x^3 + \frac{1}{27x^3}$

Question 2

a) Use direct method to evaluate : 3

i. $(x + 8)(x + 6)$

ii. $(5a + 16)(3a - 7)$

b) Factorise ; 3

i. $2x^3b^2 - 4x^5b^4$

ii. $a^2 - ab - ca + bc$

c) The ratio of the number of boys to the number of girls in a school of 672 students is 5:7. When some new boys and girls are admitted, the number of girls increases by 8 and the ratio of boys to girls changes to 3:4. Calculate the number of new boys admitted. 4

Question 3

a) Find the fourth proportional of 5,6 and 7 correct to two places of decimal. 3

b) How many men must be engaged to do a piece of work in 16 days which 24 men can do in 40 days ? 3

c) Expand :

i. $(3a + b - c)^2$ 4

ii. $(x + 5y)^3$

Question 4

a) Evaluate : 3

i. $(a + 1)(a - 1)(a^2 + 1)$

ii. $(7x + 15y)(5x - 4y)$

b) Factorise completely 3

i. $a^4 - b^4$

ii. $625 - x^4$

c) Divide 770 into four parts proportional to 2:3:4:5. 4

Section B

Question 5

a) Factorise; 3

$a^3 - a^2 - ab + a + b - 1$

b) Find the mean proportion between 12 and 192. 3

c) Concrete consists of $1\frac{1}{2}$ parts of lime, 4 parts of gravel and $2\frac{1}{2}$ parts of sand . 4
Out 480 kg of concrete; how much is lime?

Question 6

a) Factorise :

i. $7b^2 - 8b + 1$ 4

ii. $(2a + b)^2 + 5(2a + b) + 6$

iii. $x^2 - y^2 - 2x + 2y$

b) Find $a^2 + b^2 + c^2$, If $a + b + c = 9$ and $ab + bc + ca = 24$. 3

c) A factory requires 42 machines to produce a given number of articles in 63 days . How many machines would be required to produce the same number of articles in 54 days? 3

Question 7

a) If A: B = 3 : 4 and B: C = 6 :7, find : 3

i. A : B : C ii A : C

b) Use the formula to evaluate 3

i. 33×27

ii. $(208)^2$

c) Factorise: 4

i. $(x+y)(a+b) + (x-y)(a+b)$

ii. $x^2 - (a - 3)x - 3a$

Question 8

a) If $3x + 2y = 9$ and $xy = 3$, find: $27x^3 + 8y^3$ 4

b) Factorise: 6

i. $12abc - 6a^2b^2c^2 + 3a^3b^3c^3$

ii. $(a + 2b)(3a + b) - (a + b)(a + 2b) + (a + 2b)^2$

iii. $3x^5 - 6x^4 - 2x^2 + 4x^2 + x - 2$