PART A

Instruction: Answer any five questions in this part, each question carries five(5) marks.

1. Let f: A B be a function where A = R – {5} and R the set of real numbers be defined by F(x) = x – 3 find f-1(x).

x – 5

1. Find the state of the line 7x+5y+8 = 0 and the intercept of the y-axis.
2. Given that m = 2 and n = -3, find the value of 3n2 – 2n3

n

1. Let the operation be defined on R, the set of real number defined by a b = a b + 2ab. Evaluate
   1. 1 2
   2. 3 4
   3. (3 4) 5
   4. 3 (4 5).
2. Evaluate 4B3D16 + E5AD16
3. a. If R is the set of real numbers and f: R R is a function defined by

2x2 + 3 x > 5

f(x) = 4x – 3 -3 ≤ x ≤ 5

2x + 5 x < -3

Find: (i) f(6)

(ii) f(3)

(iii) f(1)

(iv) f(-4)

(v) f(-2)

b. Evaluate EBCD16 – BBBB16

1. Given that sin A = 3/5 and that A is acute angle, find without using tables, the value of
   1. sin2A
   2. cos2A
   3. tan2A
2. a. Show that the quadrilateral whose vertices are (-6,6), (0,-4) and (4,12) and (4,12) are

indeed, the vertices of a square

b. Differentiate between a mapping and function.

1. If Sin A = 4/5 and cos B = 12/13, find the values of
   1. sin (A + B)
   2. sin (A – B)
   3. cos (A + B)
   4. cos (A – B).
2. a. Let f : R R be defined by f(x) = x2 and g : R R be defined by g(x) = 2x + 5 then find:
   1. (gof)(x)
   2. (fog)(x)
   3. (gof)(2)
   4. (fog)(3)

b. Use the method of successive division to change the following numbers from base ten to base indicated

a. 3421 to base 8

b. 185 to base 3

c. 7415 to base 9.

1. a. The seventh and ninth terms of an AP is 346 and 328 respectively. Find the second term.

b. Find the equation of a straight line which passes through the points (-2,3) and (4,-5).

1. a. Simplify by reducing to a single term
2. tan200 + tan250

1 – tan200 tan250

ii. sin220cos380 + cos320sin380.

b. Give two types of mapping with relevant examples each.

1. a. Two functions, f and g are defined on R, the set of real numbers, by f(x) = x2 – 5 and g(x) = 3x – 1. Find f(g(x)).

b. Find the complements of each of the following numbers i. 3462 ii. 5781 iii. 6253 iv. 386.