**JOUST**

**KOSELE**

**SMA200: CALCULUS I**I.

**QUESTION 1 [30MKS]:[COMPULSORY]:**

1. (a) Evaluate the integral (3mks)

(b)Evaluate the following integrals:

(i) (3mks).

(ii) (4mks)

(c) Find the area between the curves **f(y) = (3- )** and **g(y)=(y+1).**(4mks).

(d) Find the intercepts of f(x) = and show that f’(x) =0 at

some point between the two curves. (5mks).

(e)Find the volume of the solid formed by revolving the

region bounded by **f(x)=(2-** and g(x)=1 about the line **y=1.**(5mks).

(f) Find the arc length of the curve given by **f(x) = x1.5+**(6mks).

**QUESTION 2.[20MKS]:**

(a).Find the area of the surfaceobtained by revolving the curve

f(x)=x3 on the interval 0about the x-axis. (7mks).

(b) Evaluate the integral:

(6mks).

(c) Express as the following fractions as a sum of partial fractions :

**(i)**

(ii) (7mks).

**QUESTION 3[20MKS]:**

(a) Evaluate the (3mks).

(b) Using the change of variable **t=**; Find(6mks).

(c)TakingIn **=**; show that **=In-2,**(11mks).

Where n

**QUESTION 4. (20MKS):**

(a).(i) Prove that **= -**(4mks).

(ii) (6mks).

(b) (6mks).

(c) If f(x) =(5- ), find all c in the interval(1, 4) such that

f’(c) = (4mks).

**QUESTION 5 [20MKS]:**

(a) Evaluate the following:

(i) (5mks)

(ii) Find the approximate value of (5mks)

(b) (i)Using the first four terms ,show that the approximate value of

= 1+x+++……..(5mks)

(ii) Calculate the volume of the solid formed by revolving the region

Bounded by the curve y= and y=(6mks).