

TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF HEALTH AND APPLIED SCIENCES DEPARTMENT OF MATHS & PHYSICS

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN ELECTRICAL & ELECTRONIC ENGINEERING

AMA1250 ENGINEERING MATHEMATICS 3

END OF SEMESTER EXAMINATION

SERIES: APRIL / MAY 2016 SERIES

TIME: 2HRS

DATE: APRIL / MAY 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID Mathematical table, calculator, no mobile phone This paper consists of FIVE questions. Attempt question ONE (Compulsory) and any other TWO questions. Do not write on the question paper.

QUESTION ONE

a) (i) if
$$f(x) = 4x^3 - 2x^2 - 3x + 1$$
 Find $f(1+b) - f(1)$

(3Mks)

ii) If
$$fx = 3x^2 + 2x - 9$$
 find

$$\frac{f(3+a)-f(3)}{9}$$

(3Mks)

b) (i) Find x from the equation

$$9 \cos x + 23 \sinh x + 54 = 0$$

(4Mks)

ii) If $\sin hx = 2$, what is thx

(3Mks)

c) Integrate

i)
$$I = \frac{7xdx}{\frac{5}{2} \cdot \frac{2}{4}}$$
 by putting

$$Z = 8\overline{x^2 + 4}$$

(4Mks)

ii)
$$I = x(3-2x)^4 dx$$

(3Mks)

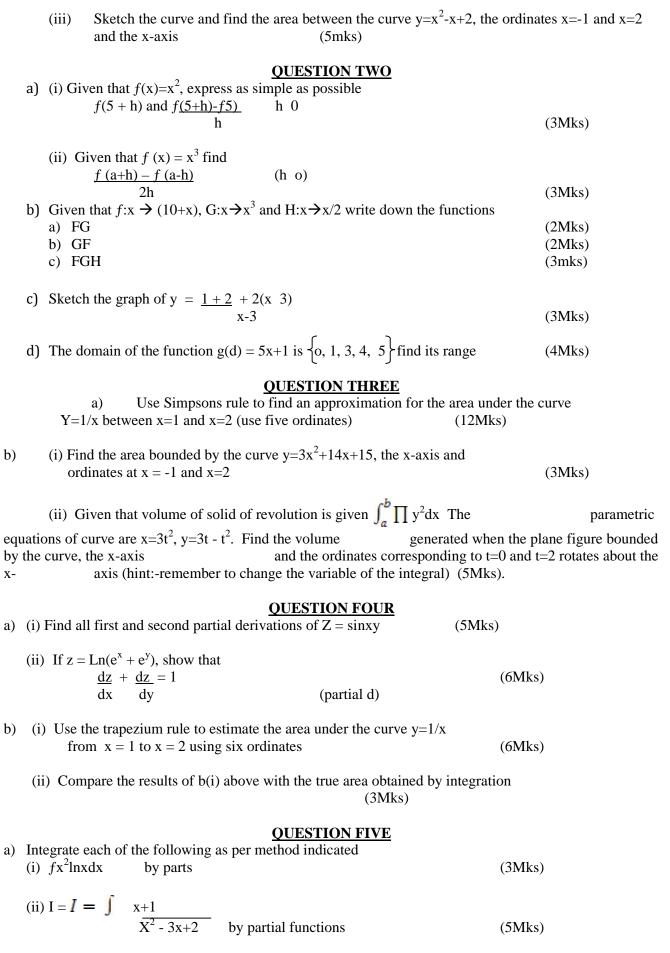
d) Determine the following (i) $3y^{1.3}dy$

(i)
$$3y^{1.3}dy$$

(2Mks)

(ii)
$$\int_{2}^{3} (p-1)^{2} dp$$

(3Mks)



(iii) $I = \cos^3 x dx$ by trigonometrick formation (3Mks)

b) Evaluate the following
(i)
$$I = \int_{1}^{2} \int_{0}^{\Pi} 3 + Sin\Theta d\Theta dr$$
 (4Mks)

(ii)
$$I = \int_{1}^{2} \int_{0}^{3} p^{2} + q^{2} - r^{2}) dp dq dr$$
 (5MKs)