ELIZADE UNIVERSITY, ILARA-MOKIN, ONDO STATE

FACULTY: Social and Management Sciences
First SEMESTER EXAMINATIONS
2014 / 2015 ACADEMIC SESSION

COURSE CODE: MSS 201

COURSE TITLE: BUSINESS MATHEMATICS

DURATION: 2 HOURS 15 MINUTES

HOD's SIGNATURE

INSTRUCTION:

(i) Read ALL instructions on the Answer Booklet carefully

(ii) Accuracy and neatness will be taken into account in the award of marks.

(iii) Each answer must begin on a new page.

(iv) Telephone, books, papers or unapproved documents *shall not be* brought into the Examination Hall.

(v) ONLY approved examination documents and writing materials i.e. ball point pen, pencil, ruler etc. may be brought in.

(vi) Attempt four (4) questions in ALL.

(vii) Question one (1) is COMPULSORY

Long Answer Questions (60 marks)

Question No.	Question	Marks
1	A manufacturing company run, three production plants, each capable of producing three co-different products X, Y and Z. The first plant produced a unit of product X, 2 units of product Y and 4 units of product Z at a total cost of #7 million naira. The second plant produced 3units of X, a unit of Y and 2 units of Z at a total cost of #6 million naira. While the third plant produced 9 units of product X, 2 units of product Y and 2 units of product Z at a total cost of #14 million. You are required to assist the company to determine the cost of producing each brand of the product, using the inverse matrix method.	15
2	(i) The marginal cost function of LARID EDGE Enterprises in manufacturing x units of its product is given $6x^2$-4x+16.If there is no fixed cost. Find the total cost function. (ii) EU Cafeteria determines that the marginal cost of preparing x plate of its Jollof rice is MC=10.6x.The fixed cost is #50.The selling price is #250 per plate. Find: Total revenue function. (iii) Identify and briefly explain five (5) assumptions and properties of Linear Programming.	15
3	(a). Obtain the second derivative of each of the following functions: (i) x2+ 4x+7 (ii) 2x3+x2+7x+11 (b). Obtain the derivative of each of the function below: (i) 2x2-x+5 ii. (11x2+45x+4)(3x-2) (c). If Z=100-x2-y2-14x+8y, find the values of x and y for which Z is a maximum. What is the maximum value of Z? (d). The profit per week (in thousand Naira) in producing x (in hundred) unit of cabinet in F & F Company production process is modelled by P =7+9x-3x2. Determine the maximum profit and the associated units produced.	15
4	A total profit of EU staff club was found to depend mostly on the amount spent on promotion and the quality of preparation of food (measured in terms of salaries paid to chefs). The manager of the EU staff club found that if he pays his chefs 'x' naira per hour and spends 'y' naira a week on promotion, the EU staff club's weekly profit (in naira) will be $Z = 412x + 806y - x^2 - y^2 - xy$ (i) What hourly wages should the manager pay his chefs (ii) How much should the manager spend on promotion , so as to maximize the EU staff club's profit	15
5	(a) Differentiate Y = 1/4x + 3; using the first principle. (b) If $Y = (3x^2 + 2)(5x - 1)$, find the derivative of y with respect to x, using the product rule technique. (c) Discuss two (2) types of matrix algebra known to you.	15