SOUTHWESTERN UNIVERSITY NIGERIA

KM 20, SAGAMU-BENIN EXPRESSWAY, OKUN-OWA, IJEBU ODE, OGUN STATE.

FACULTY OF SOCIAL & MANAGEMENT SCIENCES

DEPARTMENT OF BUSINESS ADMINISTRATION

2018/2019 SECOND SEMESTER EXAMINATIONS

COURSE CODE: BUS 316 **COURSE TITLE:** Quantitative Techniques

Instruction: Answer question 1, and any other 3 questions. **TIME:** 2Hrs

1. Lady Gaga is the MD of Gag Ventures, a company that produces oil she has been advised to apply quantitative techniques to her business process in order to maximize profit. She has identified her cost function as $C = 100 + 2x^2$ and revenue function as $R = 100 \times 3x^2$ She has therefore contacted you, a quantitative analyst, for advice.
   (a) Using the method of quadratic equation, advise lady Gaga on:
      (i) The quantities of oil to the produced in order to breakeven
      (ii) The quantities to be produced for a maximum profit
   (b) Using the method of differential Calculus, advise lady Gaga on the quantities to be produced for a maximum profit.

2. (a) What is the meaning of SLOPE of a function
   (b) What is the meaning of INTERCEPT of a function
   (c) In Gbogbolowo Nigeria Limiteds store, some data have been collected on the sales of one product, and two equations derived:

$$Qd = 100 - 10p$$
$$Qs = 25 + 2p$$

   Where: Qd is the quantity demanded of the product
   Qs if the quantity supplied
   P is the price charged per unit.
   (i) Why in both causes is Q expressed as a function of P?
   (ii) Why is it logical for the demand function to have a negative slope?
   (iii) Why is it logical for the supply function to have a positive slope?
   (iv) Why is it logical for the supply function to have a negative intercept?
   (v) At what price will Qd and Qs be the same?

3. (a) Seidu International, a small firm, manufactures a particular product on a weekly basis, the accountant has indicated that overheads are N15,000. The product cost s N20 per unit on average to produce. The firm has a long-term contract with a major marketer, who has agreed tobuy all the firms output at a price of N22.50 per unit.
   (i) How many units of the product does Seidu International need to produce tobreakeven on a weekly basis?
   (b) A car rental firm charges a dailyrate of N20 plus N0.20 per mile. Arinka, a frequent traveller, has gone to this firm to rent a car for a day for a journeyof 500 miles.
   (i) How much is the total bill of Arinka for the day?
   (ii) What is the meaning of breakeven point?
   (iii) Differentiate between linear equation and quadratic equation.

4. Using the Assumed Mean Method, calculate the mean for the following data of weekly