NATIONALUNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF INDUSTRIAL TECHNOLOGY

DEPARTMENT OF INDUSTRIAL AND MANUFACTURING ENGINEERING

B-Eng Hons Industrial and Manufacturing Engineering

<u>Main Examination</u>

COURSE   :   **PRODUCTION PLANNING AND CONTROL**

CODE   :   **TIE 5102**

DATE   :   **JANUARY 2013**

DURATION   :   **3 HOURS**

INSTRUCTIONS AND INFORMATION TO CANDIDATE

1. Answer ALL **questions in Section A** and one (1) **question** in section B.
2. All questions carry <u>**25 marks**</u> each.
3. This paper contains six **(6)** questions.
4. There are three **(3)** printed pages.

QUESTION 1

a) What are the major Specific Functions of Operations Management in an organisation?[5]
b) Outline the role played by Operations Management in dealing with the two main concerns of Resource Depletion and Environmental Pollution. [10]
c) Discuss the main contributions done by the following gurus toward the Operations Management function.
    i)   Fredrick Taylor [5]
    ii)   James Womack [5]

QUESTION 2

a) What role does Strategic Capacity Planning play in an organisation? [5]
b) A company manufacturing farming implements is developing a plan for the next two (2) years. Explain and advise the company how you would arrive at the decision of whether to Produce-to-Order or Produce-to-Stock. [14]
c) Explain the three (3) Principles of Production Planning and Control. ie. Investigation, Co-ordination and Evaluation. [6]

QUESTION 3

Discuss the main policies that an organisation can use to smooth out capacity during Phase 2 of the Aggregate Production Planning process.   Use an example of an organisation. [25]

SECTION B

QUESTION 4

a) Compare and contrast the MRP and JIT principles. [5]

b) Table Q4 gives the gross requirements for final product A. Each unit of A requires one unit of B. Each unit of B requires two units of C. Each unit of C requires three units of D. The lead time for items B and C is one week, and the lead time for item D is two weeks. At the beginning of week 1, we have 50units of A, 20units of B, 40 units of C, and 80 units of D. At the beginning of week 2, 40 units of B, C, and D are scheduled for receipt.

Table Q4 : Gross Requirements for final Product A.

	WEEK							
	1	2	3	4	5	6	7	8
Product A	20	30	40	10		20	50	60

Using the lot-for-lot method, determine the MRP record for each item. [20]

QUESTION 5

The following are five tasks that management need to tackle in the new thinking towards Supply Chain Management. Discuss strategies that can be used for each of these.

a) Designing the Supply Chain for Strategic advantage   [5]
b) Implementing collaborative relationships   [5]
c) Forging Supply Chain Partnerships   [5]
d) Managing Supply Chain Information   [5]
e) Removing waste from the Supply Chain   [5]

QUESTION 6

a) Define productivity and why organizations should be worried more about productivity than production?   [10]
b) ABC company wishes to plan labour material for each quarter. Table Q6 shows the demand for 3 most recent years per quarter.

Table Q6. Demand per quarter for ABC company

Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4
8	520	730	820	530
9	590	810	900	600
10	650	900	1000	650

Use this data and apply linear regression to determine the demands in the four quarters in year 11.   [15]

END OF EXAM