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The Open University of Sri Lanka
Faculty of Engineering Technology

Study Programme	:	Postgraduate Diploma in Technology (Industrial Engineering)
Name of the Examination	:	Final Examination
Course Code and Title	:	**MEX7215 Production Planning and Materials Management**
Academic Year	:	2012/13
Date	:	18th August 2013
Time	:	0930 hours -1230 hours
Duration	:	3 hours

General instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of 6 questions. All questions carry equal marks.
3. Answer any 5 questions only.

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1)

a) Explain general and specific objectives of purchasing?

(10 marks)

b) Discuss special characteristics of capital equipment purchasing?

(10 marks)

2)

a) Explain the importance of incoming inspection of purchased items.

(03 marks)

b) How do you plan inspection?

(02 marks)

c) Production plants at X, Y, Z have the cost structures as shown below. The product is expected to sell at Rs 150/=.

i) Find the most economical plant for an expected volume of 4500 units per year.

(05 marks)

ii) What is the expected profit if the plant selected in (i) is used?

(05 marks)

iii) For what output range is each location is best.

(05 marks)

Plant	Fixed cost/Year Rs.	Variable cost/unit Rs.
X	150,000/-	100/-
Y	300,000/-	75/-
Z	450,000/-	60/-

3)

a) Explain advantages of application of ergonomics in the mechanical engineering design.

(08 marks)

b)

i) What are the limitations of the usage of re-order level of an inventory system?

(06 marks)

ii) Explain four reasons for carrying goods in stock.

(06 marks)

4)

a) Explain following production related costs.

i) Inventory holding cost.
ii) Change over cost.
iii) Ordering cost.
iv) Shortage cost.
v) Hiring and Firing cost.

(3x5 = 15 marks)

b) Explain possible ways of improving productivity in a manufacturing system.

(05 marks)

5)

a) Explain what is line balancing in a production plant.

(05 marks)

b) Time taken for each of operation of a production set up is given below.

Operation	Time Taken (minutes)
1	1.80
2	1.90
3	1.00
4	0.90
5	0.89
6	0.95
7	1.00
8	0.92

Assume that you have got 10 equally skilled people.

i) Balance the line with required people for each operation.

ii) What is the maximum output in a 9 hours working shift?
(Assume that 30 minutes lunch and 15 minutes two tea breaks are given and Fatigue and other allowances are included in the given time.)

(15 marks)

6) A firm has developed the forecast in units (as shown in table below) for an item which has a demand influenced by seasonal factors. Available working days per month are also given in the table.

a) Prepare a chart showing the daily demand and cumulative demand.

b) Prepare a production plan to meet the demand without having shortages.
(Assume that maximum output per day is 16.)

Month	Forecast Demand	Working days
January	410	26
February	384	24
March	554	27
April	256	20
May	390	25
June	390	25
July	395	26
August	395	26
September	400	26
October	400	26
November	405	25
December	421	24

(20 marks)

END