

**THE OPEN UNIVERSITY OF SRI LANKA**  
**POST GRADUATE DIPLOMA IN TECHNOLOGY/ MASTER OF TECHNOLOGY**  
**FINAL EXAMINATION– 2014/2015**  
**TTI7137 – PRODUCTION PLANNING**  
**DURATION – THREE HOURS**



**DATE: 19<sup>th</sup> September 2015**

**TIME: 0930 - 1230 HOURS**

**Total number of questions = 06**

**Number of questions to be answered = 05**

**All questions carry twenty (20) marks each.**

- Q1. (a) What do you mean by the term “production”? (03 marks)  
 (b) Briefly explain the concept of production planning. (04 marks)  
 (c) What are the objectives of production planning? (05 marks)  
 (d) Write a comprehensive note on the activities of a production planning department of a garment factory. (08 marks)
- Q2. (a) Briefly explain the importance of forecasting. (03 marks)  
 (b) Briefly explain the steps of the forecasting process. (05 marks)  
 (c) By using the regression analysis, calculate the forecast for Year the 2016. The sale figures of garments for years 2011 to 2015 is given below. (12 marks)

| Year | Sales  |
|------|--------|
| 2011 | 51,000 |
| 2012 | 65,000 |
| 2013 | 78,000 |
| 2014 | 89,000 |
| 2015 | 96,000 |

Q3. The following table gives you the actual sales figures of past 15 months of the company ABC.

- (a) Calculate the sales forecast for the year 2016 by using simple moving average method. (08 marks)
- (b) Calculate the sales forecast for the year 2016 by using weighted average method using the given weighted averages. Take the weighted averages for last month is as 4, two months ago is as 3 and three months ago is as 2. (12 marks)

| Month          | Sales (in rupees 1,000,000) |
|----------------|-----------------------------|
| October 2014   | 230                         |
| November 2014  | 220                         |
| December 2014  | 210                         |
| January 2015   | 210                         |
| February 2015  | 210                         |
| March 2015     | 230                         |
| April 2015     | 220                         |
| May 2015       | 280                         |
| June 2015      | 290                         |
| July 2015      | 310                         |
| August 2015    | 310                         |
| September 2015 | 310                         |
| October 2015   | 280                         |
| November 2015  | 270                         |
| December 2015  | 240                         |

- Q4. (a) What do you mean by "master production schedule? Explain the importance of the preparation of a master production schedule. (04 marks)
- (b) Write a short note on the factors, which should be considered when planning the capacity. (04 marks)
- (c) Briefly explain why line balancing is an important concept in improving the productivity. (04 marks)

(d) (I) By using the given data calculate the number of standard work places required.

(II) Allocate the number of operators required for the calculated work places.

(III) Calculate the balancing loss for the initial allocation as well.

| Operation | Standard time in minutes |
|-----------|--------------------------|
| 1         | 2.01                     |
| 2         | 3.85                     |
| 3         | 1.90                     |
| 4         | 6.05                     |
| 5         | 4.02                     |
| 6         | 1.95                     |

(IV) Improve the balancing loss by reallocating the operators by considering their efficiencies. (08 marks)

Q5. Monthly sales of the ABC Company are as follows for the years 2014 and 2015.

Forecast the demand for each month of the year 2016 by using seasonal indices assuming that the forecast for the whole year 2016 is 22,000. (20 marks)

| Month     | Demand in 2014 | Demand in 2015 |
|-----------|----------------|----------------|
| January   | 1100           | 1300           |
| February  | 1150           | 1400           |
| March     | 1250           | 1500           |
| April     | 1200           | 1300           |
| May       | 1400           | 1600           |
| June      | 1400           | 1600           |
| July      | 1450           | 1650           |
| August    | 1500           | 1700           |
| September | 1600           | 1800           |
| October   | 1550           | 1700           |
| November  | 1400           | 1500           |
| December  | 1200           | 1250           |

Q6. A garment factory has a weekly capacity of 200,000 standard minutes. There are 120 operators organized in two lines. Calculate the load of each and every contract given in the table. (20 marks)

| Contract | No of garments | SMV per Garment | Week Due |
|----------|----------------|-----------------|----------|
| A        | 8,000          | 40              | 6        |
| B        | 20,000         | 30              | 6        |
| C        | 4,000          | 40              | 6        |
| D        | 2,000          | 30              | 6        |
| E        | 12,000         | 30              | 10       |
| F        | 4,000          | 50              | 10       |
| G        | 6,000          | 40              | 10       |