



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2016/2017**

**TERBUKA**

COURSE NAME : TOTAL QUALITY MANAGEMENT  
COURSE CODE : BPB 20803  
PROGRAMME CODE : BPA  
EXAMINATION DATE : DECEMBER 2016 / JANUARY 2017  
DURATION : 2 HOURS AND 30 MINUTES  
INSTRUCTION : ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

- Q1** (a) Assess by using the x-bar and R control chart, for the ten times of temperature measurement for the 12 machines, as shown in **Table Q1**.

Fill-in the empty cells in the table, then detach this page and attach it to your answering booklet.

(8 marks)

**Table Q1**

| MC# | x1  | x2  | x3  | x4  | x5  | x6  | x7  | x8  | x9  | x10 | Sum | x-bar | R |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|---|
| 1   | 102 | 99  | 103 | 102 | 100 | 101 | 99  | 102 | 101 | 103 |     |       |   |
| 2   | 104 | 101 | 102 | 99  | 101 | 105 | 103 | 100 | 101 | 99  |     |       |   |
| 3   | 104 | 102 | 100 | 103 | 101 | 100 | 103 | 99  | 104 | 101 |     |       |   |
| 4   | 97  | 100 | 103 | 100 | 102 | 103 | 99  | 101 | 100 | 98  |     |       |   |
| 5   | 100 | 103 | 101 | 100 | 104 | 102 | 103 | 99  | 101 | 101 |     |       |   |
| 6   | 102 | 104 | 100 | 101 | 100 | 99  | 102 | 101 | 100 | 101 |     |       |   |
| 7   | 101 | 104 | 102 | 99  | 100 | 101 | 100 | 103 | 101 | 99  |     |       |   |
| 8   | 98  | 102 | 103 | 101 | 100 | 97  | 100 | 101 | 104 | 99  |     |       |   |
| 9   | 103 | 98  | 101 | 102 | 104 | 99  | 101 | 103 | 100 | 102 |     |       |   |
| 10  | 101 | 106 | 100 | 101 | 99  | 103 | 98  | 98  | 100 | 102 |     |       |   |
| 11  | 102 | 100 | 99  | 102 | 105 | 101 | 99  | 101 | 103 | 99  |     |       |   |
| 12  | 101 | 104 | 102 | 99  | 100 | 101 | 101 | 100 | 99  | 103 |     |       |   |
|     |     |     |     |     |     |     |     |     |     | Σ   |     |       |   |

- (b) Given  $A'_2 = 0.31$ ,  $D_3 = 0.22$  and  $D_4 = 1.78$

Calculate:

- i) x-double bar
- ii) R-bar
- iii) LCL x-bar
- iv) UCL x-bar
- v)  $LCL_R$
- vi)  $UCL_R$



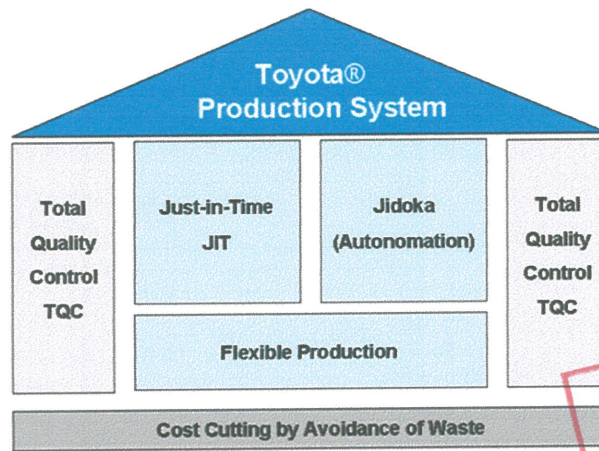
(12 marks)

- Q2** (a) Explain **THREE (3)** major quality management principles of ISO 9000 series that serve as the framework to guide oraganisation towards improved performance.

(15 marks)

- (b) State **FIVE (5)** benefits of implementing ISO 14000 certification for multinational companies. (5 marks)

**Q3** Lean management is represented by specific proven approaches to manage an organization that supports the concept of continuous improvement. This long-term approach works systematically to seek in achieving small, incremental changes in processes in order to improve efficiency and quality, as the one shown by Toyota Production System in **Figure Q3**.



**Figure Q3**

- (a) Elaborate the relationship between JIT, flexible production and cost cutting by avoidance of waste, as shown in the figure above. (9 marks)
- (b) State **FIVE (5)** steps for the method of 5S in establishing an efficient workplace and excellent organisational environment. (5 marks)
- (c) Sketch a schematic diagram that shows the mistake-proofing concept of Poka-Yoke in an assembly process. (6 marks)
- Q4** (a) The introduction of benchmarking concept dated back to the 1980's when Xerox, Motorola and Ford champion the practice in the USA. Subsequently in 1990's, Toyota benchmarked Ford when Taiichi Ohno adopted Ford business system in its operation and built upon it to develop the Toyota Production System. (Source: Goetsch and Davis, 2003)

Now, you are a quality manager at Proton (average performance) and planning to benchmark with Toyota (best-in-class performance) car quality achievement.

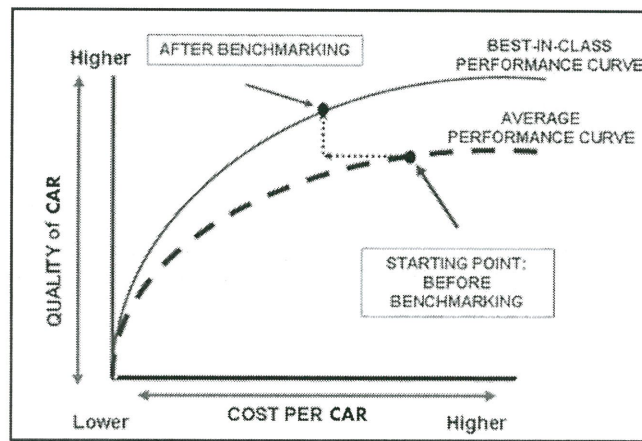


Figure Q4

Describe **FOUR (4)** steps that Proton could initiate action on process changes for successfully benchmarking with Toyota, as the shown diagram in **Figure Q4**.

(8 marks)

(b) List **FOUR (4)** types of benchmarking approach that you could adopt to improve your organisation's performance.

(4 marks)

(c) Elaborate these typical obstacles to successful benchmarking.

- (i) Unrealistic timetable
- (ii) Poor team composition
- (iii) Settling for "Ok-in-class"
- (iv) Insensitivity to partners



(8 marks)

**Q5** (a) Elaborate the House of Quality (HOQ), including the diagram sketch, for embedding quality into new products.

(8 marks)

(b) Explain **FOUR (4)** benefits of QFD implementation.

(8 marks)

(c) List **FOUR (4)** types of data from the voice of the customers.

(4 marks)

- END OF QUESTIONS -