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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016**

COURSE NAME : AUTOMOTIVE MANUFACTURING I
COURSE CODE : BNG 30903
PROGRAMME CODE : BNG
EXAMINATION DATE : JUNE / JULY 2016
DURATION : 3 HOURS
INSTRUCTION : ANSWERS ALL QUESTIONS

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

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- Q1**
- (a) List **THREE (3)** concepts of advanced manufacturing engineering used nowadays.
(3 marks)
 - (b) Differentiate **THREE (3)** types of production; job production, batch production and mass production.
(6 marks)
 - (c) In manufacturing processes, there are six processes involved that are primary shaping, machining, metal forming, joining, surface finishing and processes effecting change in properties. Compare the differences between machining, metal forming and surface finishing process and give two example of each process.
(6 marks)
 - (d) Describe what is simplification and standardization in product manufacturing.
(2 marks)
 - (e) Sketch the example of design simplification that consists of original design, revised design and final design.
(3 marks)
- Q2**
- (a) Identify **THREE (3)** important factors while planning for installation of new plant.
(3 marks)
 - (b) Analyze **SIX (6)** basic requirements of a good plan layout.
(6 marks)
 - (c) Outline **FIVE (5)** major merits of having a good plant layout in automotive industry.
(5 marks)
 - (d) There are **FOUR (4)** types of layout that may be categorized in current industry that are fixed or position, process or functional, line or product and combination or group layout. Evaluate **THREE (3)** advantages and **THREE (3)** disadvantages of line or product layout.
(6 marks)

- Q3** (a) Discuss **FOUR (4)** objectives of industrial safety in automotive factory. (4 marks)
- (b) Based on your understanding of types of accidents, categorize and explain **FIVE (5)** common accidents. (5 marks)
- (c) In automotive industry, there are lots of processes involved during vehicle manufacturing and lots of accidents may happen. Determine **SIX (6)** sources of accidents in vehicle manufacturing. (6 marks)
- (d) Good housekeeping is essential in order to make and maintain a clean and neat factory work in its surroundings. Identify **FIVE (5)** advantages of good housekeeping. (5 marks)
- Q4** (a) The Industrial Ecology was used as a tool for the environmental accounting of the automotive manufacturing facilities and activities. Define the industrial ecology according to Gradel, 1995. (2 marks)
- (b) Explain **THREE (3)** aspect required for quantitative ecology analyses. (3 marks)
- (c) Explain **THREE (3)** concepts of industrial sustainability. (3 marks)
- (d) The painting process consumes on average 50-60% of the total energy within an automotive production facility. Its output, hazardous air pollutants (HAPs) in the form of NO_x, SO_x, CO₂, CO, and VOC, besides waste water, and solid paint waste. Determine **FOUR (4)** ways to reduce the painting process environmental footprint. (12 marks)

- Q5** (a) The most important control and monitoring strategy for a running production line is based on standardizing the work procedures. Categorize the typical standard work sheets for better describe the work procedure. (5 marks)
- (b) Outline the issues that OEM should decide on a supply strategy before the supplier selection process. (8 marks)
- (c) List **FOUR (4)** criteria of the supplier that OEM need to consider regarding product quality point of view. (4 marks)
- (d) Identify **THREE (3)** automotive quality tool used in the industry. (3 marks)

- **END OF QUESTIONS** -