

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA****FINAL EXAMINATION  
SEMESTER II  
SESSION 2016/2017**

COURSE NAME : REVERSE AND CONCURRENT  
ENGINEERING

COURSE CODE : BDD 40503

PROGRAMME : 4 BDD

EXAMINATION DATE : JUNE 2017

DURATION : 3 HOURS

INSTRUCTIONS : ANSWER ANY **FIVE (5)** QUESTIONS  
FROM SIX (6) QUESTIONS ONLY

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

- Q1** (a) In complexity of manufacturing system, please justify with **FIVE (5)** reasons why we need 'Concurrent Engineering'?
- (10 marks)
- (b) With the help of sketches, please discuss the definition and principles of 'Concurrent Engineering'?
- (10 marks)
- Q2** (a) In product life cycle activities, 'After Sales' is one of the main activities that significantly effects the customer satisfaction. With help of sketch, please justify the important of 'After Sales in the product life cycle activities.
- (10 marks)
- (b) Digital mock-up (DMU) is an alternative to construct the physical prototypes for any new and modified product development. List and justify **THREE (3)** functions of DMU.
- (10 marks)
- Q3** (a) The generic process of reverse engineering is a three-phase process as depicted in *Figure Q3(a)*. The three phases are scanning, point processing and application-specific geometric model development. With help of sketch and explanation, please justify the principles and procedures involved in the 'Scanning' process.
- (10 marks)
- (b) Please justify and give **FIVE (5)** reasons why 'Reverse Engineering' is needed in particularly for any new and modified product development.
- (10 marks)

**Q4** (a) The computer-aided reverse engineering (CARE) has been significantly used in the automated of Reverse Engineering (RE) processes. With help of sketch and explanation, please justify the principles and procedures involved in the 'CARE' process.

(10 marks)

(b) Coordinate measuring machine (CMM) technology is the first effort to automate the Reverse Engineering (RE) process particularly in measurement aspects. please justify the principles and procedures involved in the 'CMM' process.

(10 marks)

**Q5** Reverse Engineering (RE) hardware is used for RE data acquisition, which for 3D modeling, is the collection of geometric data that represent a physical object. There are three main technologies for RE data acquisition: contact, noncontact and destructive. *Figure Q5* presents a classification of noncontact RE hardware based on data acquisition techniques. Please justify with advantages and disadvantages the 'noncontact methods' compared to contact methods.

(20 marks)

**Q6** (a) List and justify **FIVE (5)** 'Potential Benefits of Product Life Cycle Management (PLM)'

(10 marks)

(b) Product Lifecycle Management (PLM) extends the scope of Digital mock-up (DMU). Please discuss the PLM activities of 'Upstream' and 'Downstream'.

(10 marks)

- END OF QUESTION -

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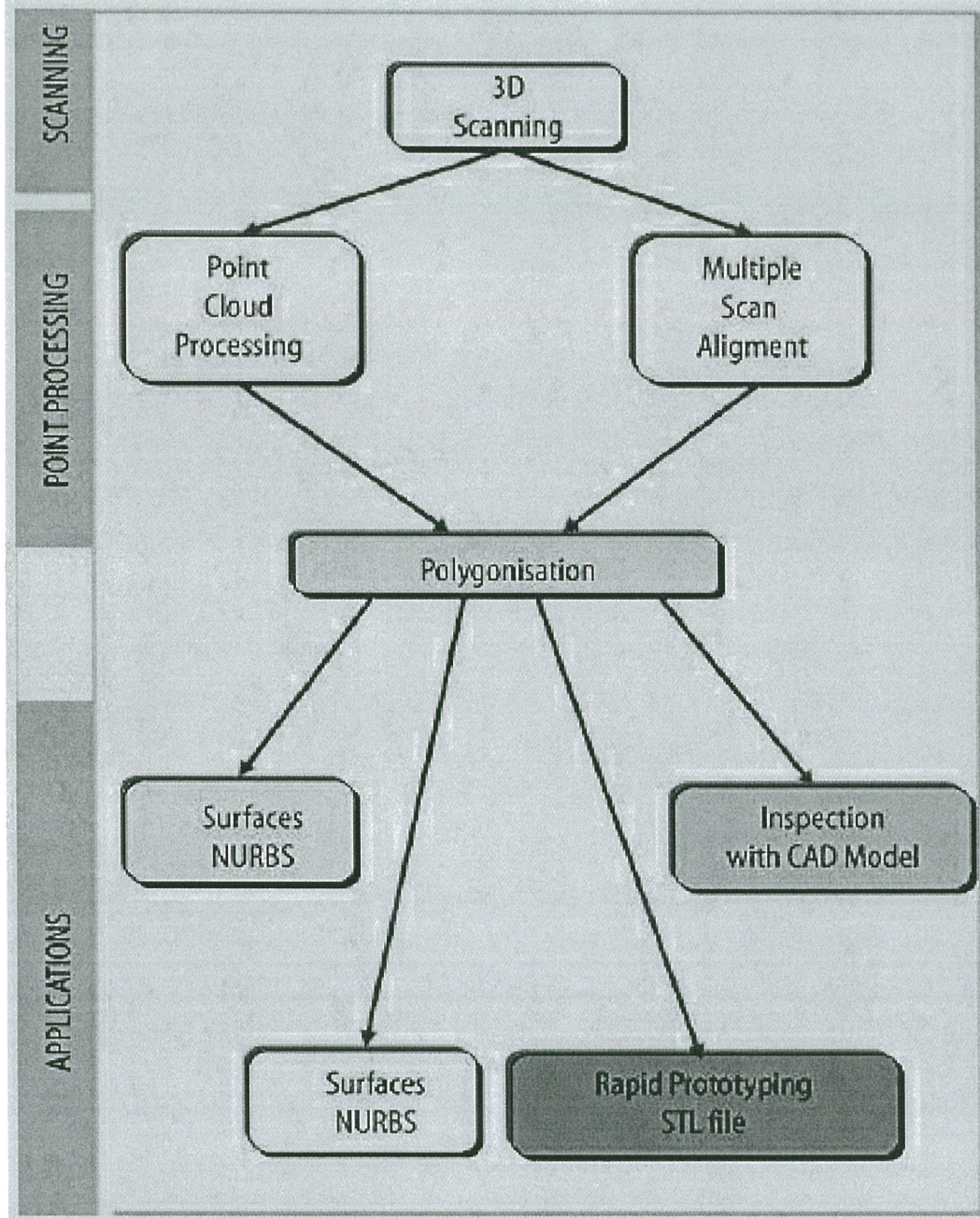
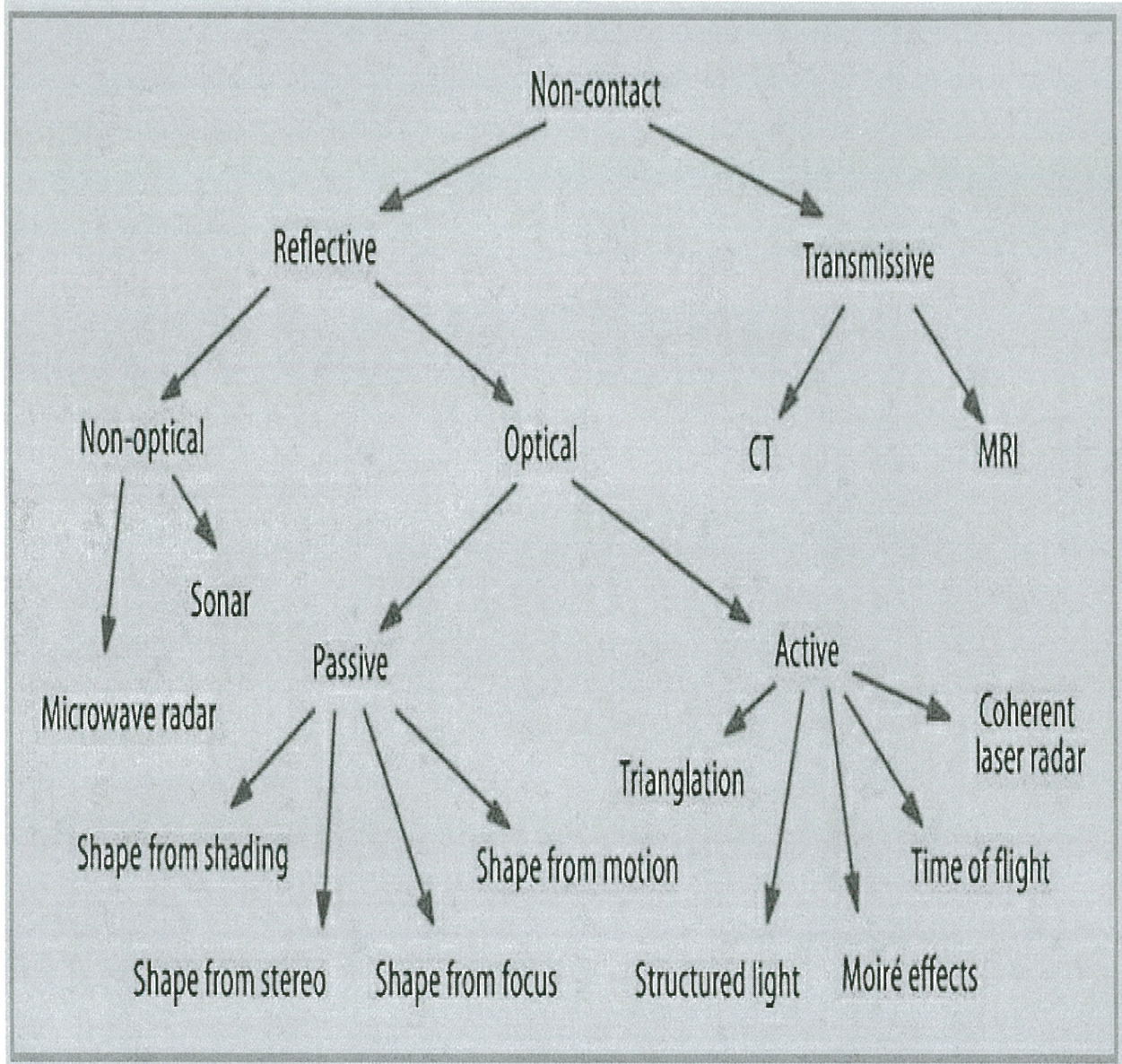


Figure Q3 (a)

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*Figure Q5*

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