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**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER I  
SESSION 2013/2014**

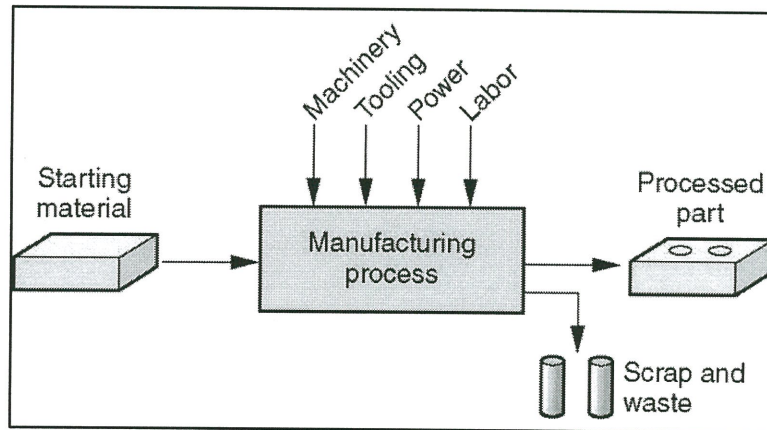
COURSE NAME : MATERIALS TECHNOLOGY  
AND SELECTION  
COURSE CODE : BPC 21903  
PROGRAMME : 4 BPB  
EXAMINATION DATE : DECEMBER 2013/JANUARY 2014  
DURATION : 3 HOURS  
INSTRUCTION : ANSWER ALL QUESTIONS

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

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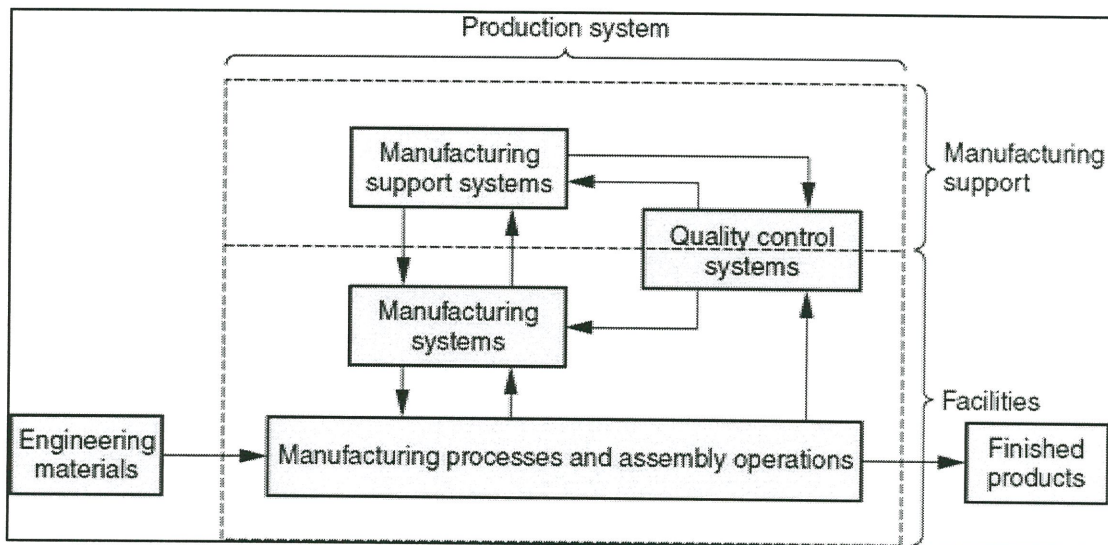
**Q1** (a) Discuss **FIVE (5)** groups of engineering materials with appropriate example and application of each group. (10 marks)

(b) Explain the role of engineering materials in a manufacturing process based on the figure **Q1(b)**. (5 marks)



**Figure Q1(b)**

(c) Justify the importance of Materials Technology and Selection course for Production and Operation Management students based on Figure **Q1(c)**. (10 marks)



**Figure Q1(c)**

- Q2**
- (a) Describe composite materials with appropriate examples. (6 marks)
  - (b) Discuss **FIVE (5)** limitations of composite materials in engineering applications. (10 marks)
  - (c) Demonstrate **FIVE (5)** differences between Portland Cement Concrete and Reinforced Concrete. (10 marks)
- Q3**
- (a) Suppose you want to renovate kitchen floor of your newly bought house with new flooring material. You are considering ceramic tiles and vinyl (polymer) tiles.  
Discuss **FOUR (4)** advantages of ceramic tiles over vinyl tiles. (8 marks)
  - (b) Discuss **FIVE (5)** ceramic properties and their applications. (10 marks)
  - (c) Discuss **THREE (3)** reasons that ceramics are typically processed as powder as illustrated in Figure **Q3(c)**. (6 marks)

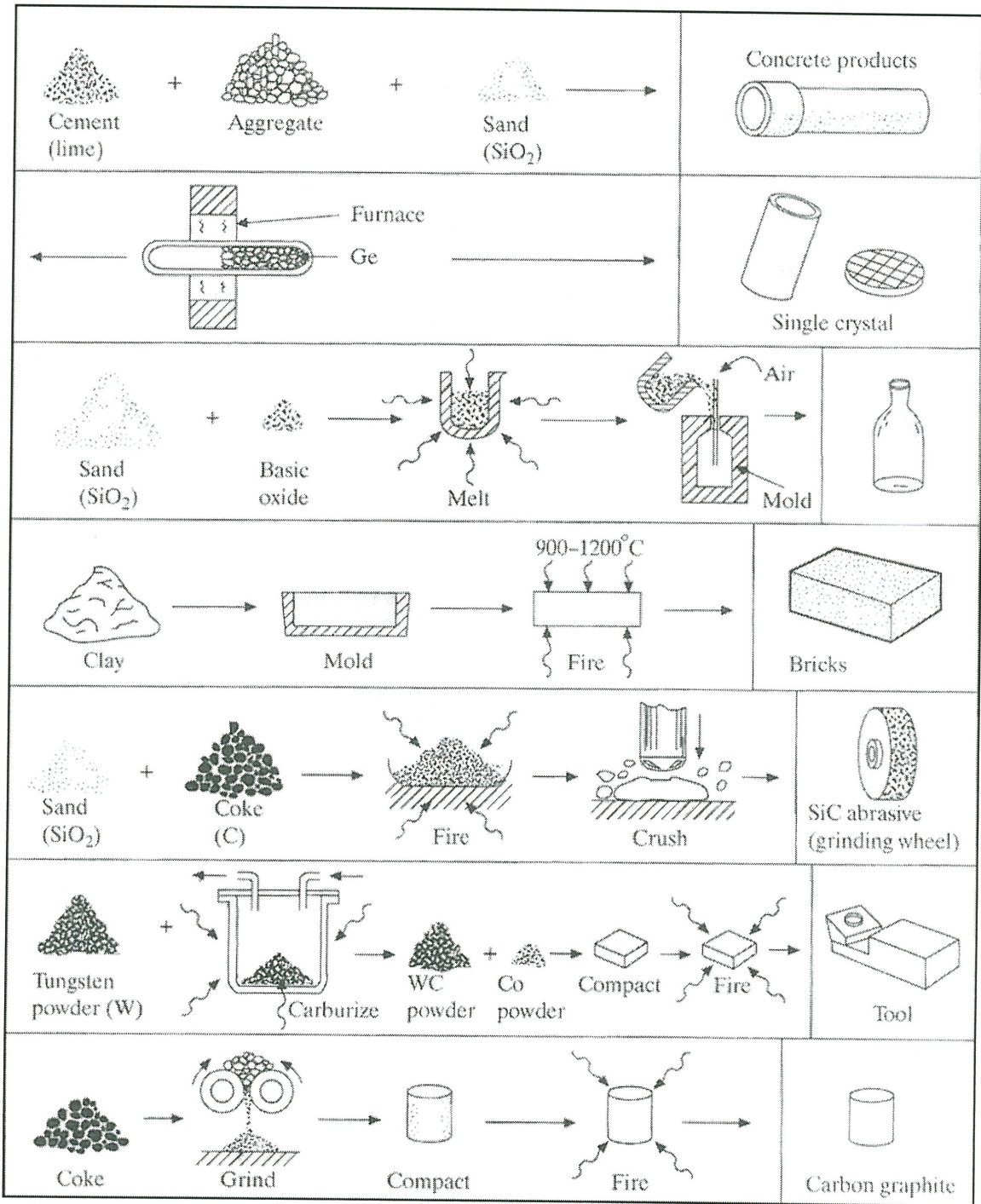


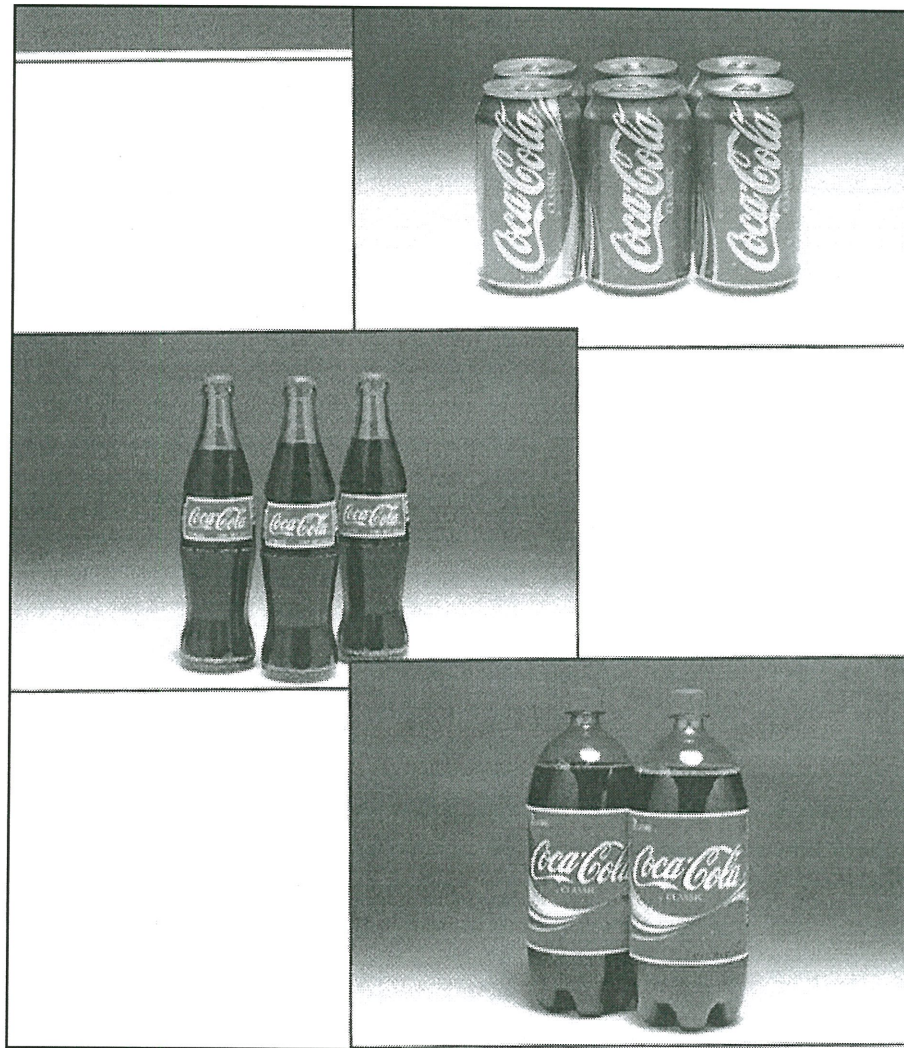
Figure Q3(c)

**Q4**

Figure Q4 shows a famous brand of soft drink which containers are made from three different types of materials: aluminum (metal) cans, glass (ceramic) bottles, and plastic (polymer) bottles.

Compare the advantages and disadvantages of each materials used based on factors in Materials Selection Process.

(25 marks)



**Figure Q4**

**- END OF QUESTION -**