



**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2017/2018**

COURSE NAME : PRODUCT DEVELOPMENT  
COURSE CODE : BPC 32403  
PROGRAMME CODE : BPB  
EXAMINATION DATE : JUNE / JULY 2018  
EXAMINATION DURATION : 3 HOURS  
INSTRUCTION : ANSWER ALL QUESTIONS



THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

- Q1** (a) Describe the following statements:
- (i) Product concept generation.
  - (ii) Product concept for the DeWalt nailing machine.
  - (iii) Product concept for the Makita nailing machine.
- (6 marks)
- (b) Discuss the following failures of new product concepts:
- (i) Launching of the New Coke in 1985.
  - (ii) Launching of the new Ford Pinto in 1975.
- (6 marks)
- (c) Describe each functional decomposition of a nailing machine (nailer):
- (i) Energy
  - (ii) Material
  - (iii) Signal of Tool Trip
  - (iv) "Black Box"
- (8 marks)
- Q2** (a) List **FIVE (5)** major steps in the Pugh Concept Scoring Matrix (PCSM) for product concept selection.
- (5 marks)
- (b) (i) Assess **FOUR (4)** potential smartphones using the PCSM method that you are thinking of buying, as shown in the next page at **Table Q2**.
- (10 marks)

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Table Q2 : Concept Scoring Template

Pugh Concept Scoring		Student SmartPhone Options							
Selection Criteria	Weight	(Reference) Galaxy S9		iPhone X		Huawei Mate 10		Vivo V7 Plus	
		Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
Price	30%								
Display Screen	15%								
Processor	10%								
Camera	15%								
Battery	20%								
Sleek Design	5%								
RAM	5%								
	Total Score								
	Rank								
	Purchase?								

(ii) Discuss the main reason for you to purchase the chosen smartphone, which with the highest rank.

(5 marks)

Q3 Product architecture based on “modular” allows a design change to be made to one partial chunk without requiring a change to other chunks for the product to function correctly, as shown below in Swatch product components, in Figure Q3.

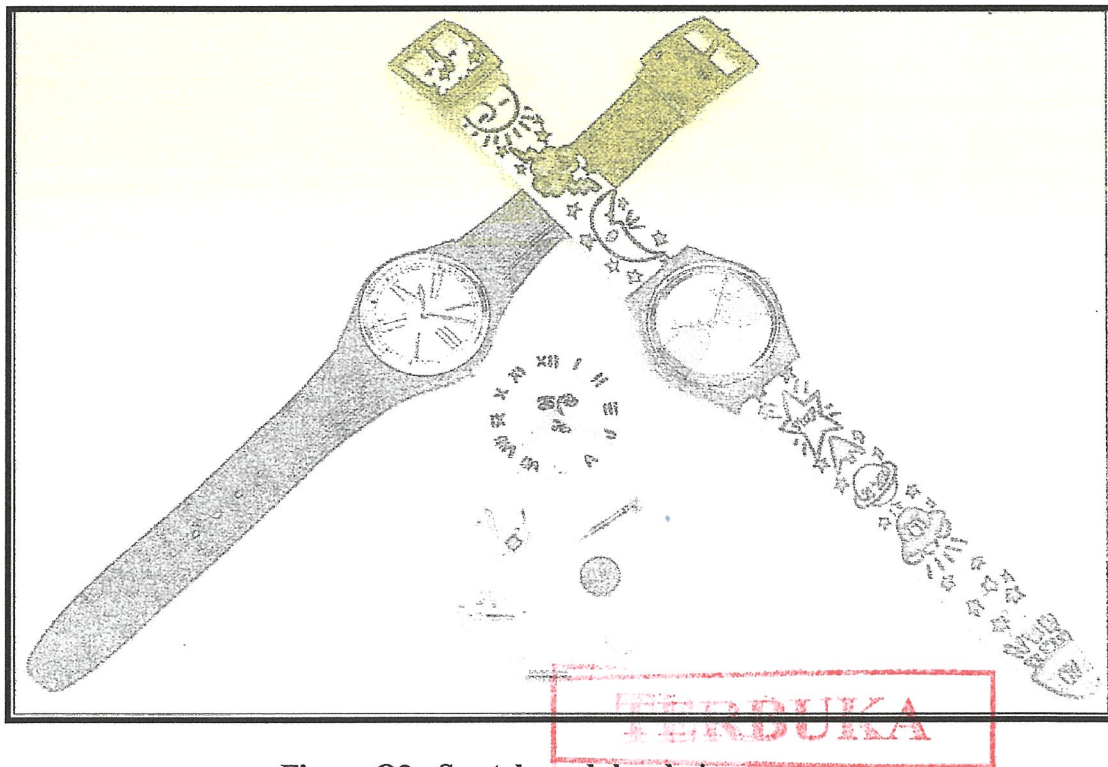


Figure Q3 : Swatch modular design

- (a) Describe product functionality of this modular architecture approach. (4 marks)
- (b) Elaborate **FOUR (4)** steps for the method of establishing a product architecture. (8 marks)
- (c) Sketch a schematic diagram and its operational interactions for a DeskJet printer, showing flow of forces, signals and material. (8 marks)

**Q4** (a) In 2003, Motorola Inc. launched a new product development effort to replace its aging flip-style mobile phone design. The StarTAC and V-series were having good industrial design, however these platforms have undergone several generations of product release. Eventually, the RAZR-based design concept of “thin to win”, as shown in **Figure Q4**, successfully emerged as the global market winner.  
 (Source: Ulrich & Eppinger, 2008, pg. 187)



**Figure Q4 : Motorola’s successful V-series**

Describe **FOUR (4)** factors of the Motorola RAZR mobile communication success. (12 marks)

- (b) Compare the perspectives of end customers on how industrial designs of the following two automotive brands, could establish their corporate identities.
  - (i) Volvo car
  - (ii) Lexus car

(8 marks)



**Q5** (a) Elaborate the followings;

- (i) Patent
- (ii) Stereolithography
- (iii) Design for Manufacturing (DfM)

(12 marks)

(b) (i) State **TWO (2)** purposes of constructing a technical prototype for new product development.

(4 marks)

(ii) Compare the roles of 3D printer to produce small-sized parts with conventional approach producing with moulds.

(4 marks)

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**- END OF QUESTIONS -**