


Philadelphia University Faculty of Engineering Department of Mechatronics Engineering		Date:- 27/08/2018 Allowed time:-2 Hours No. of pages: 6.
Reverse Engineering (640458,620437)		Final Exam
Student Name:-..... ID:-.....		

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Question 1: Choose the correct answer for the followings: **20 points**

1- One of the following documents is not generated at analysis step:

- A. block diagrams
- B. circuit schematics
- C. Bill of Materials
- D. mechanical drawing

2- One of the followings is not a characteristic of FAST :

- A. Top Down approach
- B. analyze and understand function
- C. generating BOM
- D. Identify the Basic Function.

3- One of the followings is not a primary purpose of product teardown

- A. Dissection and analysis
- B. Identify the product main function
- C. competitive benchmarking
- D. experience and knowledge

4- The result of PCB Reverse Engineering is:

- A. schematic diagrams
- B. Gerber files
- C. PCB prototype
- D. all of above

5- Rapid prototyping involves:

- A. produce physical prototype
- B. virtual 3-D prototype
- C. production of PCB
- D. all of above

6- The software Reverse Engineering tools is

- A. Disassemblers
- B. Debuggers
- C. System Monitoring Tools
- D. all of above

7- For product with 7 components, the SOP is repeated

- A. 7 times
- B. 14 times
- C. 49 times
- D. One time only

8- The starting material in Stereolithography 3D printing is

- A. Liquid
- B. Plastic
- C. Powder
- D. Solid

9- Software reverse engineers main language is

- A. VHDL
- B. Verilog
- C. C++
- D. Assembly

10- in electronic Reverse Engineering System Level Analysis involves:

- A. Hardware Analysis
- B. Software Analysis
- C. Signal Path analysis
- D. All of above.

Question 2: Define the following terms:

8 points

SWOT:

BOM:

SOP:

NetList:

Question 3: What are the basic categories of Rapid Prototyping: **4 points**

Question 4: Explain the principle of Binder Jetting 3D printing. **6 points**

Question 5: Compare between contact probs and laser probs in term of advantages and disadvantages:

10 points

	Advantages	Disadvantages
Contact Probs		
Laser Probs		

Question 6: For the computer printer below draw a black Box model that represent the inputs and outputs.

6 points



Question 7: Given the following assembly code; analyze the program then draw the Flow Chart of the operation. **12 points**

```
.data
Array1    WORD 4,5,-3,8,9,-1,10,60,50,-5
Array2    WORD 10 DUP(?)
.code
PROC      MAIN
MOV       ESI , 0
MOV       ECX , 10
TOP:      MOV       AX , Array1[ESI]
          CMP       AX , 0
          JGE      POSITIVE
          NEG       AX
POSITIVE: ADD       AX,1
          MOV       Array2[ESI],AX
          ADD       ESI,2
          DEC       ECX
          JNZ      TOP
          EXIT
MAIN      ENDP
END       MAIN
```

Question 8: Given the following VHDL code: draw the combinational circuits which represent.

10 points

```
ENTITY CC IS
    PORT(A , B , C :IN  BIT;
          F          :OUT BIT);
END CC
ARCHITECTURE Logic_CC OF CC IS
    SIGNAL      C1 , C2  :BIT
BEGIN
    C1<= A      AND B;
    C2<= A AND C;
    F<=C1 XOR C2;
END Logic_CC;
```

Question 9: For the following power screwdriver suggest a FAST model.

12 points



Question 10: Given the following Exploded view of a pen generate a BOM with SOP description **12 points**

